



MINISTERUL
CERCETĂRII
ȘI INOVĂRII



Proceedings of
The 10th Edition of

EUROINVENT

EUROPEAN EXHIBITION OF CREATIVITY AND INNOVATION



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IFIA President's Message

I would like to extend my profound appreciations to the organizing team of EUROINVENT, European Exhibition of Creativity and Innovation for providing a unique opportunity for inventors, researchers, engineers and scientists all over the world to present their innovations as well as research issues and gain international recognition.

EUROINVENT 2018 coincides with IFIA's 50th anniversary and I wish to use this opportunity to offer my sincere congratulations to inventors all around the world, the event organizers, IFIA members and partners who have contributed to the attainment of IFIA's mission of disseminating the culture of invention and innovation.

Invention and Innovation are the fundamental pillars of every nation through which economic independence, social welfare, and technological development can be gained. IFIA is proud to have contributed to the economic, social and technological prosperity by supporting the inventors, raising their status, enhancing awareness about the importance of invention and innovation in all aspects of our daily lives and supporting the organization of international invention exhibitions. EUROINVENT is categorized as IFIA official events and is organized under the patronage of IFIA.

IFIA members and the world inventors are highly encouraged to take part in EUROINVENT 2018 which offers you an exceptional chance to display your innovative accomplishments and connect with technology seekers.

Sincerely Yours,

Alireza Rastegar



IFIA President

Message of Mayor of Iasi

Your Excellencies,



On the occasion of the 10th European Exhibition of Creativity and Innovation, I am very happy to welcome you in Iasi, a modern and opened city for all cultures and people all over the world.

It is such a privilege to have such wonderful, talented and undeniable international inventors in the middle of the people in Iasi, a symbol of unity, peace and tolerance across borders.

Iasi will definitely become year after year a green, modern and dynamic city to work, live and invest energy for sustainable projects for the entire community.

I am very proud that inventors in Iasi are recognized all over the world, the awards in Bruxelles, Geneva, Bangkok, Warsaw, Helsinki etc. being just a proof that our invention and research school is at the top of international scientific standards.

Iasi City Hall offers you full support for your efforts towards progress and I am more than willing to work together with your prestigious community to identify the best resources in order to sustain your academic and scientific activity.

You are definitely excellent ambassadors of Romania all over the world and I hope that all of you will cherish Iasi and its memories close to your hearts forever.

I wish you full success for your exceptional event for our academic and research city profile and I am positively sure that a lot of good ideas will emerge from your diversity of thoughts and from our untapped creative power.

Once again welcome to Iasi and I wish you to have always inspiration of your side, to believe in your dreams and certainly one day they will come true!





Gheorghe Asachi Technical University of Iasi

The *Gheorghe Asachi* Technical University of Iasi (TUIASI) has the oldest tradition in the engineering field of education in Romania. In 1813 the scholar Gheorghe Asachi established the first school for surveyors and civil engineers considered to be the nucleus of the technical higher education in Iasi. Currently, the *Gheorghe Asachi* Technical University of Iasi has 11 faculties and 4 departments that offer educational and doctoral programmes for more than 17000 students in 61 engineering specializations, 73 *Master of Science* programs and 10 doctoral schools.

Besides its educational mission, the *Gheorghe Asachi* Technical University of Iasi has an important research dimension, having 21 accredited centers and laboratories for scientific research. These centers activate in different fields, within national and international research grants, research contracts with industry or governmental organizations, their activities placing our university in the Romanian top of scientific research.

The constant focus on interdisciplinary research, on innovation and knowledge transfer, as well the quality of the research staff and their commitment for excellence provided a constant dynamics of research activities and the recognition and visibility of our university. The increased trend observed in the number of research contracts, published papers in peer reviewed international journals and conference proceedings, books, international co-operation grants, as well as joint Ph.D. supervision with well-known European universities contribute to the continuous appreciation of our university as a successful research and innovation institution able to provide proactive relationships with industry and public services and a contributor to local and regional development. Only in the last academic year, our university has participated in more than 350 national and international projects as well as research contracts.

Our research profile is directed towards high-tech engineering areas, which enable our research staff to have a very innovative approach towards research problems. Innovation in our university comes as sum of experience provided by our 172 of senior researchers, PhD supervisors and the enthusiasm brought by our 1512 PhD. students. This focus on scientific research in high-tech areas and cutting-edge technologies is proven by the outstanding innovation capabilities of our staff members that have produced nearly 65% of the Romanian patents in the last 10 years, which enabled our institution to win the *Creativity Trophy* issued by the National Register of Inventions and Trademarks in 2006.



Alexandru Ioan Cuza University of Iași

Alexandru Ioan Cuza University of Iași is the oldest higher education institution in Romania. Since 1860, the university has been carrying on a tradition of excellence and innovation in the fields of education and research. With over 38.000 students and 800 academic staff, the university enjoys high prestige at national and international level and cooperates with over 250 universities world-wide. Alexandru Ioan Cuza University is a member of some of the most important university networks and associations: the Coimbra Group, EUA - European University Association, Utrecht Network, International Association of Universities, University Agency of Francophony and the Network of Francophone Universities (RUFAC). These partnerships offer us the opportunity to experience changes, to have student and teacher mobilities and joint academic, research and strategy programmes.

Alexandru Ioan Cuza University became the first student-centered university in Romania, once the Bologna Process was implemented. We believe in the power of individual choice and customized education. Thus, we became the first Romanian university to offer students the opportunity to choose both a major and a minor field of study, in a combination at their choice, that best suits their career goals.

Research at our university is top level. In 2008, for the third year in a row, Alexandru Ioan Cuza University was placed first in the national research ranking compiled on the basis of Shanghai criteria. Our teachers are involved in over 400 national and international research projects, with the logistic support of 24 research centres. Striving for excellence, the university takes unique initiatives to stimulate research quality, to encourage dynamic and creative education and to involve its best students in academic life.

Today, with its fifteen faculties, Alexandru Ioan Cuza University offers to all inquisitive young minds a large diversity of academic programmes which are aimed to open the way towards their personal fulfilment and social recognition. In a world characterized by rapid and profound changes, where knowledge is the most valuable asset, Alexandru Ioan Cuza University aims to strengthen the flexibility of learning, to create opportunities for the intellectual and professional development of its students, to assist quality research and to contribute to the society's cultural and economic growth.

THE ORGANIZERS

ROMANIAN INVENTORS FORUM

Romanian Inventors Forum (FIR), as a professional association of dialog and representation, has the purpose to support, stimulate, develop and valorize the scientifically, technically and artistically creativity. Under the aegis of FIR, Romanian Inventors have participated at more than 50 World Invention Exhibitions, where their creations have been awarded with orders, prizes and medals. The performance of Romanian inventics is renowned in the whole world, that is the reason why FIR became member in different international clubs, associations and federations, with special contributions.

**Contact:**

Str. Sf. P.Movila 3, L11, III/3
RO - 700089, Iași, România
Tel: +40.745.438604,
e-mail: euroinvent@yahoo.com
web: www.afir.org.ro

FORUMUL INVENTATORILOR ROMÂNÎ

Forumul Inventatorilor Români (FIR), este o asociație profesională de dialog și reprezentare a inventicii românești în context internațional, care are drept scop sprijinirea, stimularea, dezvoltarea și valorificarea activităților de creație științifică, tehnică și artistică. Sub egida FIR, inventatorii români au participat la peste 50 de saloane mondiale de invenții, creațiile lor fiind apreciate cu numeroase ordine, premii și medalii. Performanța inventicii românești este recunoscută în întreaga lume, motiv pentru care FIR a devenit membru a diverselor cluburi, asociații și federații internaționale de profil, unde are contribuții deosebite.

THE ORGANIZERS

EUROPE DIRECT IAȘI

Association for Ecology and Sustainable Development is the host for Europe Direct Information Centre Iași. The EUROPE DIRECT Information Centre Iași assures the European information transfer to Romanian citizens and the feedback to the E.C., enhancing dialog between European institutions and the common citizen concerning to all European policies and the personal expectations.

**Contact:**

Str. Păcurari 85, Iași, Romania

Email: +40.232.260410

Fax: +40.232.260122

e-mail: office@eudirect.ro

web: www.eudirect.ro

EUROPE DIRECT IAȘI

Asociația pentru Ecologie și Dezvoltare Durabilă este structura gazdă a Centrului EUROPE DIRECT Iași. Acesta asigură transferul informației către cetățenii români și feed-back-ul către Comisia Europeană, facilitând dialogul între instituțiile europene și cetățeanul de rând, referitoare la toate problemele privind politicile europene și așteptările individuale.

THE ORGANIZERS

„GHEORGHE ASACHI” TECHNICAL UNIVERSITY OF IASI Faculty of Materials Science and Engineering

“Gheorghe Asachi” University of Iasi is an excellent choice for the highschool graduates, who wish to embrace a carrier in the attractive field of engineering. The eleven faculties of the university are well equipped and have renowned specialists.

The Faculty of Materials Science and Engineering at the "Gheorghe Asachi" Technical University of Iasi has the mission to train specialists for the materials engineering, mechanical engineering and industrial engineering fields, through a 4-year programme (B.Sc.), Master Courses and Ph.D. Programmes. Also, our faculty is involved in the scientific research programmes, as well as in life-long education programmes for professionals that wish to extend their expertise. Besides the formative activity, research in various fields, focused to multi-disciplinary national and international co-operation is highly valued.

**Contact:**

Blvd D. Mangeron 41A,
RO - 700050, Iași, România
Tel: +40.232. 230009
web: www.sim.tuiasi.ro

UNIVERSITATEA TEHNICĂ “GHEORGHE ASACHI” IAȘI Facultatea de Știința și Ingineria Materialelor

Universitatea Tehnică din Iasi este o alegere excelenta pentru absolventii de liceu care s-au hotarat sa imbratiseze o cariera in domeniul provocator al ingineriei. Cele unsprezece facultati ale universitatii sunt dotate cu laboratoare si echipamente de ultima ora, unde isi desfasoara activitatea specialisti recunoscuti pe plan european si international.

Facultatea de Știința și Ingineria Materialelor din cadrul Universității Tehnice "Gh. Asachi" din Iași, are ca misiune pregătirea specialiștilor pentru domeniul ingineriei materialelor, ingineriei mecanice și ingineriei industriale, prin programe de licență (4 ani), masterat și doctorat. De asemenea, facultatea este implicată în proiecte de cercetare și în programe de perfecționare pentru specialiștii. Valoarea personalul academic din cadrul facultății aduce o notă distinctivă predării ingineriei materialelor. Pe lângă activitatea de formare și de cercetare în diverse domenii de activitate, apreciable sunt și cooperările multi-disciplinare naționale și internaționale.

THE ORGANIZERS

ALEXANDRU IOAN CUZA UNIVERSITY OF IASI

The Alexandru Ioan Cuza University of Iași is the oldest higher education institution in Romania. Since 1860, the university has been carrying on a tradition of excellence and innovation in the fields of education and research. With over 38.000 students and 800 academic staff, the university enjoys a high prestige at national and international level and cooperates with over 250 universities world-wide. The Alexandru Ioan Cuza University became the first student-centered university in Romania, once the Bologna Process was put into practice. Research at our university is top level. For the second year in a row, the University is placed first in the national research ranking. Striving for excellence, the university takes unique initiatives to stimulate research quality, to encourage dynamic and creative education and to attract the best students to academic life.

**Contact:**

Blvd. Carol I no. 11,
RO - 700506, Iași, România
Tel/fax: +40.232.201 662,
e-mail: ijcs@uaic.ro
web: www.uaic.ro

Universitatea "Alexandru Ioan Cuza" este cea mai veche instituție de învățământ superior din România continuând, din anul 1860, o tradiție a excelenței și inovației în educație și cercetare. Cu peste 38.000 de studenți și 800 de cadre didactice, universitatea se bucură de un important prestigiu la nivel național și internațional, având colaborări cu peste 250 de universități din străinătate. Universitatea "Alexandru Ioan Cuza" este membră a unora dintre cele mai importante asociații și rețele universitare: Grupul Coimbra, EUA - Asociația Europeană a Universităților, Rețeaua Utrecht, IAU - Asociația Internațională a Universităților, AUF - Agenția Universitară a Francofoniei și RUFAC - Rețeaua Universităților Francofone. Acestea permit schimbul de experiență, mobilități ale studenților și profesorilor și realizarea în comun a unor programe academice, de cercetare sau strategice.

THE ORGANIZERS

„GRIGORE T. POPA” UNIVERSITY OF MEDICINE AND PHARMACY OF IASI

Universitatea de Medicină și Farmacie „Grigore T. Popa” din Iași a fost fondată în 1879, fiind una dintre cele mai vechi instituții de învățământ superior din România. UMF Iași face parte din Grupul celor 12 Universități de Educație și Cercetare Avansată. Cele patru facultăți – Facultatea de Medicină, Facultatea de Medicină Dentară, Facultatea de Farmacie și Facultatea de Bioinginerie Medicală – sunt acreditate de Asociația Română de Asigurare a Calității în Învățământul Superior (ARACIS) iar managementul educațional instituțional este certificat de forul european de evaluare European University Association (EUA) și de Consiliul Internațional al Decanilor Facultăților de Medicină de Expresie Franceză (CIDMEF). Dintre cei 13.987 de studenți, masteranzi, doctoranzi și rezidenți ai săi (8.508 studenți, 321 masteranzi, 359 doctoranzi și 2.256 rezidenți), 2.534 provin din 49 de țări altele decât România, ceea ce face Universitatea de Medicină și Farmacie „Grigore T. Popa” din Iași cea mai cosmopolită instituție de învățământ superior din estul Europei. Reputația internațională de care se bucură UMF Iași este întărită și faptul că putem întâlni absolvenți ai Universității în toate spitalele mari din lume și în cele mai importante centre de cercetare. Raportul de evaluare din 2016 al European University Association (EUA) - Institutional Evaluation Programme (IEP) califică Universitatea de Medicină și Farmacie “Grigore T. Popa” din Iași drept lider regional și național în domeniului învățământului superior.

**Contact:**

Str. Universitatii nr.16
RO - 700115, Iași, România
Tel: +40.232.211818/820,
e-mail: rectorat@uaic.ro
web: www.umfiasi.ro

„Grigore T. Popa” University of Medicine and Pharmacy of Iasi was founded in 1879 and it is one of the oldest institutions of higher education in Romania. The University is proud to be part of the 12 Universities of Advanced Education and Research. The four faculties - Faculty of Medicine, Faculty of Dentistry, Faculty of Pharmacy and the Faculty of Medical Bioengineering - are accredited by the Romanian Association for Quality Assurance in Higher Education (ARACIS) and its institutional management is certified by the European forum for evaluation- European University Association (EUA) and by CIDMEF (Conférence Internationale des Doyens et des Facultés de Médecine d'Expression Francaise). Of the 13 987 students, master students, PhD students and its medical residents (8508 students, 321 graduates, 359 PhD students and 2,256 medical residents), 2,534 come from 49 countries other than Romania, which makes "Grigore T. Popa " University of Medicine and Pharmacy of Iasi one of the most cosmopolitan institution of higher education in eastern Europe. The University's international reputation is also sustained by the fact that you can find its graduates in all major hospitals in the world and even in the most important research centers. The 2016 evaluation report of the European University Association (EUA) - Institutional Evaluation Programme (IEP) describes the "Grigore T. Popa" University of Medicine and Pharmacy as a regional and national leader in higher education.

THE ORGANIZERS

The National Institute for Research and Development in Environmental Protection (INCDPM)

INCDPM is an institution with over 60 years of experience in the environmental protection field. INCDPM, through its activities, that involve the concept of sustainable development, ensures the development of win-win preventive solutions, adopted in an environmental friendly manner. The development of new monitoring and evaluation methods for various fields (environmental quality, habitats - avifauna and ichthyofauna) generates, develops and maintains the necessary knowledge for the elaboration of solutions that ensure the conservation status of nature and biodiversity. The institute also uses the most advanced techniques and research equipment, and develops partnerships with prestigious international institutions and with public and private national institutions. The research portfolio includes assessing and reducing the impact of natural and technological hazards, assessing climate change impact, numerical simulations and forecasts, renewable energies, etc.



INCDPM

Institutul Național de
Cercetare Dezvoltare
pentru Protecția Mediului

București, Splaiul Independenței nr.294
România

Contact:

294, Splaiul Independenței,
060031, Bucharest, Romania;

Phone: +40 (0)21 305 26 00;

Fax: +40 (0)21 318 20 01

E-mail: incdpm@incdpm.ro;

Website: www.incdpm.ro

Institutul Național de Cercetare și Dezvoltare pentru Protecția Mediului (INCDPM), reprezintă o instituție cu peste 60 de ani de experiență în domeniul protecției mediului. INCDPM, prin intermediul activităților pe care le desfășoară, coroborate cu conceptul de dezvoltare durabilă, asigură elaborarea unor soluții preventive de tip câștig-câștig, prietenoase cu mediul. Astfel, prin dezvoltarea de metode de monitorizare și evaluare pentru diverse domenii (calitatea mediului, habitate-avifaună și ihtiofaună) se generează, dezvoltă și se mențin cunoștințele necesare elaborării de soluții care să asigure starea de conservare a naturii și biodiversității. De asemenea, institutul utilizează cele mai avansate tehnici și echipamente de monitorizare, având direcții și arii de cercetare conexe, dezvoltând parteneriate cu instituții de prestigiu din străinătate și instituții naționale, din sectorul public și privat. Portofoliul de cercetare cuprinde evaluarea și reducerea impactului hazardelor naturale și tehnologice, evaluarea impactului schimbărilor climatice, simulări și prognoze numerice în domeniu, energii regenerabile etc. Pe lângă acestea, monitorizarea traseelor de migrare a sturionilor, generează o bază de date unică la nivel mondial.

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MISSING PUZZLE!

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International Conference on Innovative Research EUROINVENT – ICIR 2018

Organized by:

- ▲ **Romanian Inventors Forum**
- ▲ **Faculty of Materials Science and Engineering, The “Gheorghe Asachi” Technical University of Iasi, Romania**
- ▲ **ARHEOINVEST Platform, Alexandru Ioan Cuza University of Iasi**
- ▲ **Centre of Excellence Geopolymer and Green Technology (CEGeoGTech), Universiti Malaysia Perlis (UniMAP)**

With support of:

- ▲ **School of Fundamental Science, Universiti Malaysia Terengganu**
- ▲ **International Federation of Inventors' Associations - IFIA**
- ▲ **World Invention Intellectual Property Associations - WIIPA**

Chairman: Prof.Dr.Eng. Petrica VIZUREANU

The “Gheorghe Asachi” Technical University of Iasi, Romania

Event Coordinator: Lecturer Dr.Eng. Andrei Victor SANDU

Romanian Inventors Forum &
The “Gheorghe Asachi” Technical University of Iasi, Romania

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Gh. Asachi Technical University of Iasi, Romania

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Gh. Asachi Technical University of Iasi, Romania

Lecturer Dr.Eng. Mirabela Georgiana MINCIUNA

Gh. Asachi Technical University of Iasi, Romania

PhD student Marius MUNTEANU

Al. I. Cuza University of Iasi, Romania

PhD student Vasile PELIN

Al. I. Cuza University of Iasi, Romania

Lecturer Dr.Eng. Manuela Cristina PERJU

Gh. Asachi Technical University of Iasi, Romania

PhD student Daniel POTOLINCA

Al. I. Cuza University of Iasi, Romania

Lecturer Dr.Eng. Ioan Gabriel SANDU

Romanian Inventors Forum & Gh. Asachi Technical University of Iasi, Romania

Assist.Prof.Eng. Catalin Andrei TUGUI

Gh. Asachi Technical University of Iasi, Romania

S.R. III. Dr. Viorica VASILACHE

Al. I. Cuza University of Iasi, Romania

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Politehnica University Bucharest, Romania

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Alexandru Ioan Cuza University of Iasi, Romania

EUROINVENT JOINT PROGRAM

EUROINVENT Exhibition		EUROINVENT ICIR Conference	
DAY 1 – THURSDAY MAY 17			
08.00	Stand setup for participants	8.00	Participants registration
10.30	Artistic moment		
11.00	EUROINVENT Opening Ceremony		
		12.00	ICIR Opening Ceremony
13.00	First Jury Meeting	12.30	Keynote Speaker
13.30	Jury evaluation (I)	13.00	Keynote Speaker
	Visiting	13.30	Keynote Speaker
	Demonstrations of inventions	14.00	Lunch
		15.00	Plenary Session1
17.00	End of exhibition day	17.00	Invited Speakers Session
		19.00	End of conference day
DAY 2 – FRIDAY MAY 18			
		09.00	Invited Speakers Session
10.00	Exhibition start	10.00	Plenary Session
10.30	Jury evaluation (II)	11.00	Invited Speakers Session
11.00	Media Interviews	12.00	Plenary Session
13.00	Jury Final Decision	13.00	Poster Session
		14.00	Break for lunch (individual)
15.00	DEBATE INACO & FIR		
17.00	Book Award Ceremony		
17.00	Exhibition Closure		
19.00	Cocktail Dinner + Delegations Award Ceremony		
DAY 3 - SATURDAY MAY 19			
10.00	Exhibition Start		
10.00	Workshop PCCDI60 - 2018		
12.30	Artistic moment		
13.00	Euroinvent Award ceremony		
14.00	Exhibition teardown		

17th of May
Opening Ceremony
About Creativity in 2018
European Year of Cultural Heritage

17-19 May
ICIR EUROINVENT
International Conference on Innovative Research

18th of May
Horizon - 2020 –
Research and Innovation in Europe

19th of May
Excellence in Research and Innovation –
EUROINVENT
10th Edition Award Ceremony



EUROINVENT INTERNATIONAL JURY

- Honorary President:** **Kane KRAMER**
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- President:** **Mohd Mustafa Al BAKRI ABDULLAH**
Universiti Malaysia Perlis (Malaysia)
- Vice-Presidents:** **Alireza RASTEGAR**
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EUROINVENT INTERNATIONAL JURY

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AWARDS LIST

Euroinvent GRAND PRIZE

**The Youngest Inventor Award
The Woman Inventor Award
The Oldest Inventor Award
The Green Environment Award
The Medicine Award
The Best Design Award
The Exquisite Award
The AgroFuture Prize
The CyberLife Award
The Popularity Award
Special Prize**



**Gold Medal
Silver Medal
Bronze Medal**

**Prize of Croatia – Croatian Inventors Network
Prize of Malaysia - Universiti Malaysia Perlis
Prize of Turkey - TUMMIAD
Prize of Poland - Eurobusiness Haller
Prize of Poland – Association of Polish Inventors
Prize of Thailand - ATIP
Prize of Iraq – Iraqi Inventors Forum
Prize of Indonesia – INNOPA
Prize of Canada – TISIAS
Prize of Moldova - AGEPI Chisinau
Prize of Moldova - Academy of Science of Moldova
Prize of Moldova - Technical University of Moldova
Prize of Romanian Inventors Forum
Prize of Europe Direct Iasi
Prize of „Gheorghe Asachi” Technical University of Iasi
Prize of „Alexandru Ioan Cuza” University of Iasi
Prize of „Lucian Blaga” University of Sibiu
Prize of POLITEHNICA University of Bucharest
Prize of Stefan cel Mare University of Suceava
Prize of Banat USAMV, Timisoara
Prize of Technical University of Cluj-Napoca
Prize of Arheoinvest Platform
Special Prizes from Participant Institutions**

EXHIBITS CLASSIFICATION

1	Environment - Pollution Control
2	Energy and sustainable development
3	Agriculture and Food Industry
4	Medicine – Health Care – Cosmetics
5	Industrial and laboratory equipments
6	Mechanical Engineering – Metallurgy
7	Buildings and Materials
8	Aviation, car industry and transportation
9	Chemical and Textile Industry
10	Information Technology and Communication
11	Printing and advertising
12	Safety, protection and rescue of people
13	Sports, Games and Leisure
14	Other
X	Innovative Research



P R E A M B L E

The Inventions' exhibitions and shows, national or international ones, represent one of the exogenous determining factors, with multiple effects on the creative process. The system is one of the most encouraging, an interactive manner to disseminate inventions, a competitive background generating innovative ideas, while as an evaluative scientometric system, allow attracting the potential applicants or inventions' owners. It is the best medium for negotiating, conveying or transferring inventions, the place where the complete new results are exhibited.

The past 20 years experience, a time in which many Romanian inventors took their new releases in international exhibitions and were rewarded with numerous medals, orders, distinctions and diplomas, situated each time Romania, in unofficial statistics, on the first places. The honours list of the Romanian inventions create a paradoxal result of the two very close fields, the technological or applied research and on the other hand the fundamental or scientifically research. If the scientific output, represented by papers published in ISI Thomson acknowledged journals, situate Romania dragging behind the second league, in compensation, the patented awarded inventions turn it in one of first countries. So much more we should focus especially on the organizing of this kind of shows which offer real opportunities to many inventors to see their dreams come true by putting their results into a competitive-interactive system of evaluation.

Interdisciplinarity of inventics as a science is approached today in a connected, integrated way (education-research-production), with both educative and research functions, carrying great attractivity for the young generation and increasing standards both for inventors and for their products. In this respect, it is necessary to pay a special attention to the inventics schools, as they have, beside the role to form characters, professions, as well as vocations and talents, the mission to stimulate the technical creativity. We should underline the fact that after 1990 we noticed a slight lowering of the Iași inventics school contribution in its aim to form young inventors. Meetings and workshops in the inventions exhibitions should put light on and find

solutions to turn the inventics schools in institutions and to improving and harmonizing the laws regarding the intellectual propriety and the industrial one.

Another serious, upsetting and alarming aspect which I want to put light on is the fact that about 60 to 70% of the Romanian specialists with international output accepted to work abroad, where they are appreciated and stimulated according to their value. We should as well attract them and offer the opportunity to reevaluate them selves at home and participate to such representative competitions.

A peculiar notice is the fact that many Romanian inventors of success, internationally acknowledged, are invited in organizing committees, in international juries and are active members or founders of associations or professional clubs. The Romanian delegations created a tradition in the international exhibitions, to organize a Romanian event, the so-called “The Romanian Inventors Day”, where they present in a festive atmosphere their inventions, their contributions and offer diplomas and small gifts to the hosts and the other participants.

This tenth edition of EUROINVENT sent invitations to inventors associations from many countries, as Bosnia and Herzegovina, Bulgaria, Cambodia, Canada, China, Croatia, Egypt, Hong Kong, India, Indonesia, Iran, Iraq, Japan, Kazakhstan, Korea, Lebanon, Macedonia, Malaysia, Mexico, Morocco, Moldova, Philipines, Poland, Portugal, Russia, Saudi Arabia, Sudan, Taiwan, Thailand, Turkey, Ukraine, United States of America, Vietnam. A big number of institutions and individual inventors are participating from Romania, a remarkable fact being to have here many young inventors (from schools or universities) as well as older inventors. This show is exhibiting more than 570 inventions and research projects from 34 countries.

With pleasure and gratitude, acknowledgements to all the persons, institutions and organizations who participate to EUROINVENT, to the partners, Romanian Inventors Forum, EUROPE-DIRECT Iasi, “Gheorghe Asachi” Technical University of Iași and “Alexandru Ioan Cuza” University of Iasi and all the partners for all their support and efforts to organize the events.

Prof. Ion SANDU – Honorary President of Romanian Inventors Forum

ORGANIZERS



Romanian Inventors Forum



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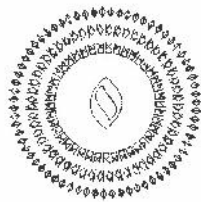
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Cine suntem?

Fundația Dan Voiculescu pentru Dezvoltarea României este o organizație non-guvernamentală, apolitică, înființată în anul 1990, care prin activitatea sa, urmărește valorificarea capitalului uman prin descoperirea, antrenarea și promovarea inteligenței și a excelenței.

Ce facem?

Susținem Excelența – organizația noastră a susținut și susține, tineri extraordinari din diverse domenii de activitate

Antrenăm Inteligența – peste 5000 de copii au participat de-a lungul timpului la cursurile gratuite organizate de noi

Promovăm inovația – oferim inventatorilor și cercetătorilor români sprijinul de care au nevoie pentru a-și continua cercetările





28

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* peste 5.000 de tineri cu performanțe remarcabile au beneficiat de programele FDV numai în ultimii 6 ani

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* mai mult de 200 de spectacole, concerte și evenimente cultural-educăționale doar în ultimii 3 ani

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SENATUL ȘTIINȚIFIC AL FUNDAȚIEI DĂN VOICULESCU

Valorificarea capitalului uman intelectual (tangibil și intangibil) a reprezentat o provocare pentru România și pentru elitele care au încercat uneori, deși în mod inconstant și incoerent, să creeze o arhitectură specifică care să asigure evoluția țării pe plan cultural, tehnic și științific.

Explorarea acestui capital a fost pe rând preocuparea unor personalități de marcă ale culturii române precum Spiru Haret, Titu Maiorescu, Grigore Moisil, Emil Racoviță, Henri Coandă, Ana Aslan, Virginia Andreescu Haret, Alice Voinescu și mulți alții etc.

Senatul Științific al FDVDR format din personalități remarcabile ale științei și cercetării românești își asumă misiunea de a continua acest deziderat de ordin intelectual și științific și de a contribui la procesul de formare a noilor elite.

Senatul Științific al Fundației Dan Voiculescu pentru Dezvoltarea României a reprezentat și reprezintă demersul prin care am încercat să oferim inginerilor, cercetătorilor, inventatorilor români puțin din sprijinul care le lipsea, nu doar aplauze simbolice și platitudini retorice. A fost un prim pas, iar acum suntem gata să-i facem pe următorii. Împreună cu importanți parteneri, reprezentând fie instituții ale statului, fie lumea afacerilor, încercăm să dăm acestui important proiect al nostru o nouă dimensiune, un nou ritm.





INCDPM

Institutul Național de
Cercetare Dezvoltare
pentru Protecția Mediului

București, Splaiul Independenței nr.294
România

The National Institute for Research and Development in Environmental Protection (INCDPM) is an institution with over 60 years of experience in the environmental protection field. INCDPM, through its activities, that involve the concept of sustainable development, ensures the development of *win-win* preventive solutions, adopted in an environmental



friendly manner. The development of new monitoring and evaluation methods for various fields (environmental quality, biodiversity - avifauna and ichthyofauna) generates, develops and maintains the necessary knowledge for the elaboration of solutions that ensure the conservation status of nature and biodiversity. The institute also uses the most advanced techniques and research equipment, and develops partnerships with prestigious international institutions and with public and private national institutions. The research portfolio includes assessing and reducing the impact of natural and technological hazards, assessing climate change impact, numerical simulations and forecasts, renewable energies, etc. In addition, monitoring the migration routes of sturgeon generates a unique global database. The patents developed by INCDPM researchers in the fields of energy, biodiversity, waste, as well as for improving the navigation conditions on certain river sectors are highly appreciated at national and international level, obtaining more than 100 platinum, gold and silver medals at exhibition shows.

Contact

294, Splaiul Independenței, 060031, Bucharest, Romania;

Phone: +40 (0)21 305 26 00; Fax: +40 (0)21 318 20 01

E-mail: incdpm@incdpm.ro; Website: www.incdpm.ro

General Director: Eng. DEÁK György, habil. PhD



INCDPM

Institutul Național de
Cercetare Dezvoltare
pentru Protecția Mediului

București, Splaiul Independenței nr.294
România

Institutul Național de Cercetare și Dezvoltare pentru Protecția Mediului (INCDPM), reprezintă o instituție cu peste 60 de ani de

experiență în domeniul protecției mediului. INCDPM, prin intermediul activităților pe care le desfășoară, coroborate cu conceptul de dezvoltare durabilă, asigură elaborarea unor soluții preventive de tip



câștig-câștig, care să protejeze mediul. Astfel, prin dezvoltarea de metode de monitorizare și evaluare pentru diverse domenii (calitatea mediului, biodiversitate-avifaună și ihtiofaună) se generează, dezvoltă și se mențin cunoștințele necesare elaborării de soluții care să asigure starea de conservare a naturii și biodiversității. De asemenea, institutul utilizează cele mai avansate tehnici și echipamente de monitorizare, având direcții și arii de cercetare conexe, dezvoltând parteneriate cu instituții de prestigiu din străinătate și instituții naționale, din sectorul public și privat. Portofoliul de cercetare cuprinde evaluarea și reducerea impactului hazardelor naturale și tehnologice, evaluarea impactului schimbărilor climatice, simulări și prognoze numerice în domeniu, energii regenerabile etc. Pe lângă acestea, monitorizarea traseelor de migrare a sturionilor, generează o bază de date unică la nivel mondial. Brevetele elaborate de cercetătorii INCDPM, în domeniul energiei, biodiversității, deșeurilor, precum și în ceea ce privește îmbunătățirea condițiilor de navigație pe diferite sectoare ale râurilor, sunt apreciate atât la nivel național cât și internațional, obținând un număr de peste 100 de medalii de platină, aur și argint la saloanele de invenție și expozițiile de profil.

Contact

Splaiul Independenței 294, 060031, București, România;

Tel: +40 (0)21 305 26 00; Fax: +40 (0)21 318 20 01

E-mail: incdpm@incdpm.ro; Website: www.incdpm.ro

Director General: dr. habil. ing. DEÁK György



INVENTION and INNOVATION
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International Federation of Inventors' Associations is an ensemble of 135 members from 95 countries collaborating in an unparalleled way to disseminate invention and innovation culture internationally and raise public awareness about the importance of inventors for the welfare of society. International inventors are provided the required information, linkages, and outstanding opportunities to share and discover innovative ideas and create an expanded network.

International invention exhibitions, seminars, training workshops are organized under the patronage of IFIA and with the cooperation of other international organizations of importance to provide an opportunity for the members to showcase their innovations and benefit from the wealth of its knowledge.



Besides, IFIA holds International Congress and Conference where all of the members can freely engage in dialogue and exchange their views in respect to further promoting the inventive and entrepreneurial spirit. Moreover, Social networking at IFIA events allows organizations to expand their contacts and knowledge base to explore possible commercialization with various stakeholders.

Some of the services IFIA offers include:

- Organize training workshops and seminars in related fields
- Provide expert advice on different aspects of patent and commercialization
- Award IFIA medal to event organizers, supporters, and ambassadors
- Disseminate member's news and events via IFIA professional publication
- Increase member's visibility by creating their specific page
- Display member's logo and contact details in IFIA website
- Provide access to the online course of patent drafting
- Create network between green technology providers and seekers



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processing**



**Industry and
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**Pipe for onshore and
offshore applications**

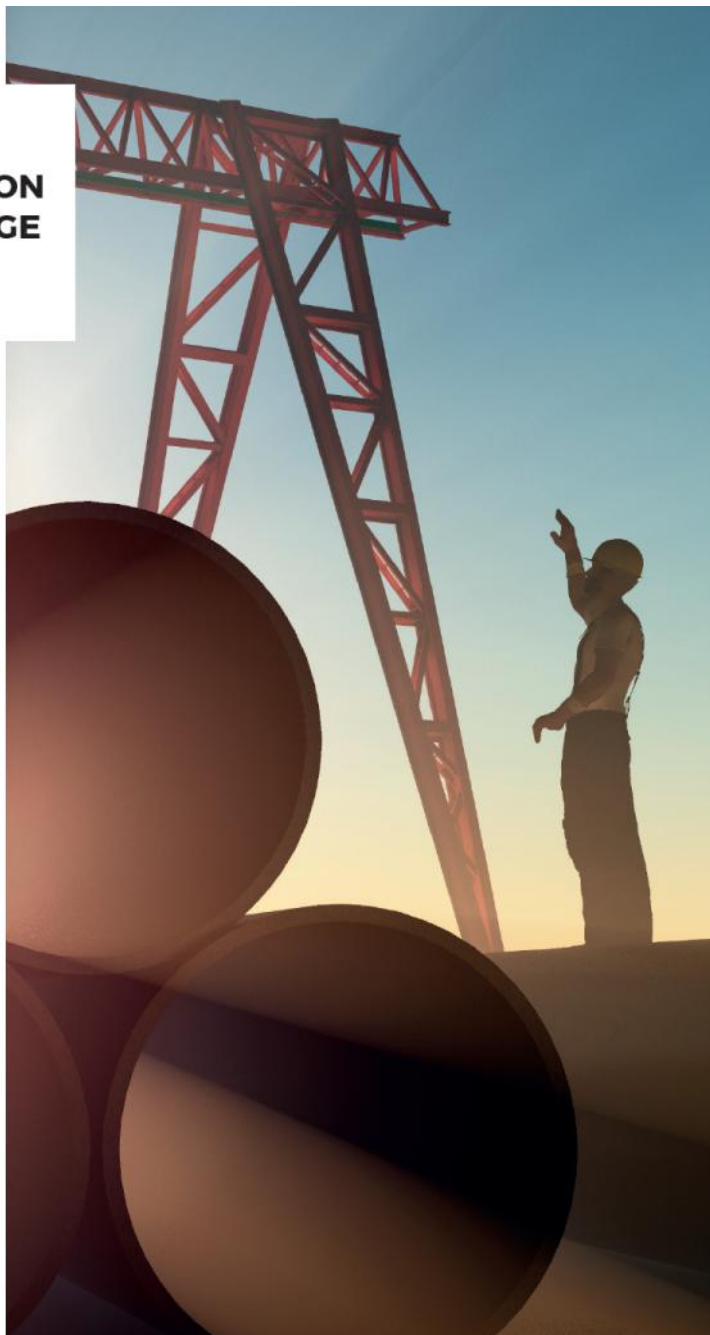


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TenarisSilcotub operates an integrated industrial system that turns local raw materials into the most comprehensive portfolio of tubular products with high-added value, powering the gas, oil, energy and automotive industries of the world.

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„Hofigal Export Import” S.A. este o companie specializata in fabricatia produselor exclusiv naturale, având caracteristic faptul ca își produce majoritatea materiilor prime folosite in serele si pe terenurile agricole proprii.

Materiile prime active folosite se obțin in condiții controlate, in cadrul unei agriculturi strict ecologice.

Diversitatea portofoliului si calitatea produselor impun „Hofigal” ca unul dintre cei mai puternici concurenți al unor firme, deja cu tradiție, din Franta, Italia si Elvetia.

Un punct forte privind portofoliul „Hofigal” il reprezinta faptul ca toate produsele sunt obtinute pe baza unor retete si tehnologii proprii, brevetate in tara si reprezinta premiere mondiale absolute.

Obiectivele majore ale companiei sunt de a aplica conditiile si masurile privind asigurarea calitatii, eficacitatii si sigurantei tuturor produselor, precum si obtinerea de ingrediente farmaceutici activi de natura vegetala garantata ce corespund in totalitate normelor ecologice internationale in vigoare. Toate etapele procesului, de la cultivare (pre-procesare, procesare planta), pana la faza de produs finit sub forma de medicamente, suplimente alimentare, cosmetice, ceaiuri, respecta cerintele internationale privind cultivarea si recoltarea plantelor, precum si Regulile GMP. Din punct de vedere al calitatii produselor, indiferent de etapa, acestea indeplinesc cerintele Farmacopeei Europene, completate cu cele ale altor farmacopei de circulatie internationala si ale conditiilor de calitate proprii filosofiei Hofigal.

Laboratoarele de control al calitatii produselor sunt dotate cu echipamente moderne, conforme cerintelor referentialelor de mai sus si opereaza cu un personal instruit si cu experienta, in care toate materiile prime procurate sau proprii, controalele interfazice pe parametri critici si produsele finite sunt analizate.

Toate liniile de fabricație respecta cerințele GMP internaționale în vigoare:

- fluxul de fabricație „Forme Solide Dozate” (comprimate, capsule, capsule filmate);
- fluxul de fabricație „Solutii de Uz Intern/Extern”;
- fluxul de fabricație „Extrakte Vegetale”;
- fluxul de fabricație „Supozitoare si Ovule, Cosmetice monodoze”;
- fluxul de fabricație „Ceaiuri”;
- fluxul de fabricație „Cosmetice, Semisolid”

Echipamentele de fabricație, de măsura și control sunt de fabricație occidentală și de ultimă generație.

Produsele portofoliului Hofigal reprezintă premiere pe plan mondial: *cea mai mare concentrație de β-caroten în ulei de cătină, de proteină în Spirulina, Coenzima Q10 în ulei de cătină.*

Aceste produse sunt rezultatul unei îndelungate și susținute activități de cercetare sau dezvoltare desfășurate în laboratoarele noastre de către colectivul propriu de cercetători, doctori în științe (farmaciști, ingineri chimiști, medici, biologi, microbiologi, biochimiști, chimiști, agronomi). Acest colectiv colaborează cu cele mai importante instituții de învățământ superior și Institute Naționale de Cercetare și Dezvoltare din România.

Urmare a acestor activități nomenclatorul de produse realizate de „Hofigal” a crescut de la 3 produse în anul 1990, la peste 450 în 2008.

Preocupati de studiul și introducerea de Terapii Noi, recent am adăugat un element novator portofoliului Hofigal: gama **Gemoderivate**, sub forma de extracte hidrogluceroalcoolice în diluție 1:10, obținute din tesuturi vegetale proaspete aflate în fază de creștere (muguri, boboci, ament, mladite, scoarta ramurilor tinere, scoarta internă a rădăcinilor, seva, semințe). Acestea sunt formate din tesuturi embrionare care concentrează întreaga energie și informație genetică a plantei, fiind mai bogate în vitamine, oligoelemente, minerale, acizi nucleici sau factori de creștere decât planta însăși.

Exemplificăm gemoderivatele 1 DH din: *afin negru, alun, arin negru, artar de câmpie, brad alb, castan salbatic, carpen alb, catina rosie, coacaz negru, dud negru, fag, frasin, ienupar, lemn cainesc, liliac, maces, mesteacan alb si pufos, mur, nuc, paducel, pin, plop, porumb, porumbar, rozmarin, salcie, sanger, stejar, tei argintiu, ulm, vita de vie, zmeur.*

Valorificarea materialului vegetal obținut de firma noastră are în vedere și domenii adiacente, deja aflate în studiu, cum ar fi: supernucleele pentru zootehnie (polivitamine), insectofungicide naturale vegetale netoxice.

Produsele noastre pot fi găsite în toate farmaciile din România.

Totodată Hofigal Export Import S.A. are și o rețea proprie de farmacii. În cadrul acestora produsele Hofigal se vând fără adaos comercial, adică cu costul de producție, în timp ce adaosul comercial pentru celelalte produse farmaceutice este mai mic decât în toate celelalte farmacii, cu excepția produselor cu preț fixat de Ministerul Sănătății.

În incinta fiecărei farmacii Hofigal există amenajat un cabinet de consultanță, în cadrul căruia medici autorizați, angajați ai Hofigal, cu pregătire atât în domeniul alopatiei, fitoterapiei cât și al homeopatiei, acordă gratuit consiliere oricărei persoane interesate de portofoliul Hofigal.

O inițiativa a firmei a fost înființarea Complexului de terapie naturală „Alexandra”

Prin întreaga sa activitate „Hofigal” este promotorul celor mai înaintate și moderne concepte legate de fabricația nepoluantă. De la materiile prime până la produsele finite, totul este natural, curat și nepoluat.

Nici un produs Hofigal nu are contraindicații sau efecte adverse !

„Natura nu minte niciodată...”

Mihai Eminescu

București, Intrarea Serelor nr.2, sector 4;

Telefon : 00(40) 21-334.74.86

E-mail: marketing@hofigal.eu;

Fax: 00(40) 21-334.74.86

Site: www.hofigal.eu

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15

Years of excellence with

ROMANIAN INVENTORS FORUM



The largest railway center in Romania, CFR Pașcani Workshops, was established in 1869, by Austrian and Polish specialists. Between 1936 and 1938, the company develops due to the construction of new halls and an electric plant. In 1992, Remar becomes a state-owned company and in 2004 is privatized: the majority share package is acquired by Grup Feroviar Roman. In 2013 the name has changed in ELECTROPUTERE VFU Pașcani.

ELECTROPUTERE VFU Pașcani is leader on the Romanian market of railway vehicles modernization. The company had developed and has been using a powerful concept, called Redesign & Rebuild aka „R&R”. The processes of this concept have been applied on trams, DMUs, passenger coaches, freight wagons, in more than 15 different projects.

The product strategy of ELECTROPUTERE VFU Pașcani S.A. is oriented on the **closed circle of competences**:

- **New constructed railway vehicles** - the company has projects for new constructed railway vehicles: Monovolume coach - maximum speed: 160 km/h; Sleeping car 1st and 2nd class - maximum speed: 200 km/h; EMU train set 3 and 4 modules – maximum speed: 160 km/h; DMU train set 2 and 3 modules - maximum speed: 120 km/h.

- **Modernization of railway vehicles** - passenger coaches projects (monovolume coaches, double deck coaches and trains, compartment cars), 1 project for D1M Diesel Multiple Units, 2 projects for a GT4 trams, 4 projects of freight wagons (capacity increase, purpose destination change – from colt to cereals). The company had delivered modernization services to more than 500 railway vehicles, to clients from: Romania, the Moldavian Republic, Congo, Gabon and Belgium.

- **Railway vehicles maintenance** – to passenger and freight transport railway vehicles. In this area the greatest achievement is the portfolio integration of the R8 capital repairing services to the Siemens Desiro SR 20 D DMUs from CFR's fleet.

- **Assemblies, subassemblies and spare parts manufacturing, modernization and repairing** for the rolling stock and related industries.

- **Consultancy, know-how, design, manufacturing, testing, training, warranty and post warranty, complex services and turn keys projects.**

Electroputere VFU Pașcani has an integrated management system which includes: the quality component ISO 9001:2008, the environment component ISO 14001: 2005 and the work health and security component OHSAS 18001:2008.



Cel mai mare centru feroviar, din Romania, Atelierele CFR Pașcani, a fost înființat în 1869 de specialiști Austrieci și Polonezi. Între 1936 și 1938 compania se dezvoltă, prin construirea de noi hale și a unei centrale electrice. În 1992 Remar devine companie o companie deținută de stat iar în 2004 este privatizată: pachetul majoritar este achiziționat de Grup Feroviar Român. În 2013 numele este schimbat în ELECTROPUTERE VFU Pașcani.

ELECTROPUTERE VFU Pașcani este lider pe piața României de modernizare a vehiculelor feroviare. Compania a dezvoltat și implementat un concept denumit Reproiectat & Reconstruit (R&R). Acest proces a fost aplicat pe tramvaie, automotoare Diesel, vagoane de călători și marfă, în mai mult de 15 proiecte diferite.

Strategia de produs a ELECTROPUTERE VFU Pașcani S.A este orientată pe cerul închis de competențe:

- **Vehicule feroviare construcție nouă** – compania deține proiecte de vehicule feroviare: vagon monovolum (viteză maximă 160 km/h); Vagon de dormit (viteză maximă 200 km/h); EMU (3 sau 4 module, viteză maximă 160 km/h); DMU (2 sau 3 module, viteză maximă : 120 km/h).

- **Modernizare vehicule feroviare** – proiecte de vagoane de călători (monovolum, etajate, compartimentate), un proiect de automotor Diesel, două proiecte de tramvaie GT4, patru proiecte de vagoane de marfă. Compania a prestat servicii de modernizare la mai mult de 500 vehicule feroviare, pentru clienți din România, Republica Moldova, Congo, Gabon și Belgia.

- **Mentenanță vehicule feroviare** – destinate transportului de marfă și de călători. Cel mai important proiect este cel de reparație capitală, de tip R8, la automotoarele Siemens Desiro SR 20 din flota CFR Călători

- **Producția de ansamble, subansamble și piese de schimb** pentru industria materialului rulant și industriei conexe.

- **Consultanță, know-how, proiectare, producție, testare, training, servicii complexe și proiecte la cheie.**

Electroputere VFU Pașcani a implementat un sistem de management integrat, ce include componenta calitate ISO 9001:2008, mediu ISO 14001: 2005 și sănătate și securitate ocupațională OHSAS 18001:2008.

ELECTROPUTERE VFU PAȘCANI SA



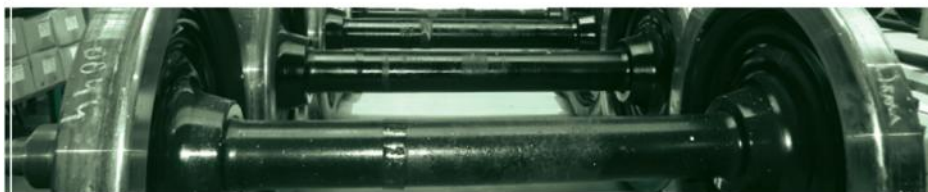
GRAMPET GROUP

Passenger & Freight railway vehicles

- Manufacturing
- Modernization and reconstruction
- Maintenance



Assemblies, subassemblies and services



An advertisement for Nescafé Alegria. The top half shows a man and a woman smiling at each other in front of a wall with a large, colorful, abstract lightbulb painting. The man is holding a small red Nescafé Alegria cup. The bottom half is a solid red background with white text and a large image of a Nescafé Alegria cup filled with coffee.

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Merlin's vitamin aqua

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vitamin aqua răspunde prin variantele sale la cele patru segmente esențiale actuale de necesități: hidratare, revigorare, sănătate (*wellness*) și controlul greutății. Ca băutură cu funcționalitate benefică, apa vitaminizată cunoaște un feedback pozitiv în rândul consumatorilor, fiind percepută ca o sursă excelentă de nutrienți vitali. Se încadrează ca produs în cele trei trenduri majore de consum: Health (sănătate); Convenience (portabilitate); Premium.

Prin transparența informațiilor și mențiunile de sănătate prezente pe etichetele celor cinci sortimente, **vitamin aqua** se identifică cu nevoile în creștere ale indivizilor pentru o informare corectă și onestă.

Gama largă de adresabilitate a produsului este dată de creșterea preocupărilor în rândul persoanelor active pentru îmbunătățirea stilului lor de viață. Mai mult, culorile, ambalajul și portabilitatea produsului fac din cele cinci sortimente **vitamin aqua** accesorii care reflecta personalitatea, indiferent de stilul de viață, a persoanelor interesate în a consuma produse premium.

Dimineața în mașină în drum spre locul de muncă, la școală, în vacanțe, în pauzele dintre mail-uri, când petreci, la apus, când simți nevoia de revigorare, la ski sau la o tură cu bicicleta, unul din cele cinci sortimente **vitamin aqua** disponibile va răspunde cu siguranță nevoii resimțite într-un anumit moment al zilei, indiferent de anotimp.

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With an experience of over 10 years, [ProtectMARK](http://www.protectmark.ro) is one of the most important Intellectual Property Company from the North-East region of Romania.

They are specialized in trademarks, community registered designs and geographical indications, looking forward to a patent division any time soon. In a world where novelty is everything, ProtectMARK represents their clients before the Romanian Office for Trademarks and Patents (OSIM), the Office for the Harmonization of the Internal Market (OHIM) and the World Intellectual Property Organization.

Their consultancy services include: analyzing a company's trademark portfolio, research and search reports, registration and renewal of trademarks, designs and geographical indications, monitoring registered trademarks, filing oppositions and cancellations against other similar trademarks, filing points of view, representation before the Offices etc.

Alongside their clients, ProtectMARK develops the trademark portfolio strategy and offers legal advice on risk management, continuous growth and market protection. For the benefits of their clients, ProtectMARK offers the best advice regarding intellectual property rights so that no infringement of rights occur. Moreover, they aid their clients in other aspects, such as transfer or licensing of trademarks.

With clients as Fiterman Pharma, Iași City Council, Iași City Hall, Oameni și Companii, Colegiul Național Emil Racoviță, EDUMANAGER, Children Academy, FIDELIA CASA, OXYGEN, ELEMATIS, REGALLIA, HOLTZMETALL, their services target growing businesses as well as some key players from Iași's business world.



Str. Petre Țuțea, nr. 5, Iași / Mobil: 0721 514264
office@protectmark.ro / www.protectmark.ro





Oficiul de Stat pentru Invenții și Mărci

Str. Ion Ghica Nr.5 Sector 3, Bucuresti
Tel.021.3060800-29; Fax:021.312.38.19; office@osim.ro; www.osim.ro

Oficiul de Stat pentru Invenții și Mărci (OSIM) își desfășoară activitatea ca organ de specialitate al administrației publice centrale, având autoritate unică pe teritoriul României în asigurarea protecției proprietății industriale, în conformitate cu legislația națională în domeniu și cu prevederile convențiilor și tratatelor internaționale.

Atribuții specifice ale O.S.I.M. conform obiectului său de activitate:

- înregistrează și examinează cererile din domeniul proprietății industriale, eliberând titluri de protecție care conferă titularilor drepturi exclusive pe teritoriul României.
- este depozitarul registrelor naționale ale cererilor depuse și ale registrelor naționale ale titlurilor de protecție acordate pentru invenții, mărci, indicații geografice, desene și modele industriale, topografii de produse semiconductoare și noilor soiuri de plante;
- editează și publică Buletinul Oficial al Proprietății Industriale al României;
- editează și publică fasciculele brevetelor de invenție;
- administrează, conservă și dezvoltă, întreținând o bază de date informatizată;
- efectuează, la cerere, servicii de specialitate în domeniul proprietății industriale;
- desfășoară cursuri de pregătire a specialiștilor în domeniul proprietății industriale;
- editează și publică Revista Română de Proprietate Industrială;
- atestă și autorizează consilierii în domeniul proprietății industriale, ținând evidența acestora în registrul național.



State Office for Inventions and Trademarks

Str. Ion Ghica Nr.5 Sector 3, Bucuresti

Tel.021.3060800-29; Fax:021.312.38.19; office@osim.ro; www.osim.ro

OSIM carries out its activity as a specialized government body having sole authority over the territory of Romania in ensuring the protection of industrial property.

The specific duties of OSIM involved in attaining the object of its activity:

- it ensures the protection of industrial property according to the special laws and international agreements where Romania is a party;
- it is the depositary of the national registers of filed patent applications and titles of protection granted to inventions, trademarks, appellations of origin, industrial designs, topographies of semiconductor products;
- it administers, preserves and develops the national patent collection, by international exchange, and generates the database in the field of industrial property;
- it edits and publishes the patent specifications;
- it edits and publishes the Official Industrial Property Bulletin with its sections on patents, trademarks, industrial designs;
- it edits and publishes, regularly, the Romanian Industrial Property Review as well as other publications designed for the promotion of the object of its activity;
- it renders specialized services in the field of industrial property, upon request;
- it examines and authorizes the industrial property attorneys;
- it lends assistance in the field of industrial property and organizes training courses, seminars and symposia on industrial property topics, upon request;
- it fulfils any other tasks deriving from the legal provisions and the international agreements where Romania is a party.

Agenția de Stat pentru Proprietatea Intelectuală a Republicii Moldova

The State Agency on Intellectual Property of the Republic of Moldova

str. Andrei Doga 24, bloc 1
MD-2024, Chișinău, Republica Moldova
Tel.: +373 (22) 40-05-00, 40-05-92, 40-05-93
Fax: +373 (22) 44-01-19
GSM : +(373)69181660
E-mail: office@agepi.gov.md
URL: www.agepi.gov.md

State Intellectual Property Agency (the Agency) is a public Institution subordinated to the Government, responsible for promoting and implementing activities in the field of legal protection of intellectual property.

Through AGEPI you can effectively protect your intellectual property (IP):

- Product and service of trademarks; inventions, industrial designs; geographical indications; traditional guaranteed specialties; appellations of origin; plant varieties, topographies of integrated circuits;
- Literary, artistic, scientific works, computer programs and other objects of copyright and related rights.

AGEPI issues titles of protection of IP objects, informs and provides legal consultations relating to the protection and enforcement of IP rights, publishes the Official Bulletin of Intellectual Property (BOPI) and the journal of intellectual property "Intellectus", promotes and popularizes intellectual property, organizes the attestation of patent attorneys, training and retraining courses for specialists in the field, provides IP pre-diagnosis services and other related services.

Agency's services are provided according to the Quality Management System ISO 9001: 2008, which ensures quality according to international standards.

Agenția de Stat pentru Proprietatea Intelectuală (AGEPI) este o instituție publică aflată în subordinea Guvernului, responsabilă de promovarea și realizarea activităților în domeniul protecției juridice a proprietății intelectuale.

Prin intermediul AGEPI vă puteți proteja eficient proprietatea intelectuală (PI):

- Mărci de produse și de servicii, invenții, desene și modele industriale, indicații geografice, specialități tradiționale garantate, denumiri de origine, soiuri de plante, topografii ale circuitelor integrate;
- Opere literare, artistice, științifice, programe de calculator, alte obiecte ale dreptului de autor și drepturilor conexe.

AGEPI eliberează titluri de protecție a obiectelor de PI, informează și oferă consultații juridice ce țin de protecția și realizarea drepturilor de PI, editează Buletinul Oficial de Proprietate Intelectuală (BOPI) și revista de proprietate intelectuală "Intellectus", promovează și popularizează proprietatea intelectuală, organizează atestarea mandatarilor autorizați, cursuri de instruire și perfecționare a specialiștilor în domeniu, acordă servicii de prediagnoză a PI și alte servicii aferente.

Serviciile AGEPI sunt prestate conform Sistemului de Management al Calității ISO 9001:2008, ceea ce garantează calitate în conformitate cu standardele internaționale.



World Invention Intellectual Property Associations

www.wiipa.org.tw

INTRODUCTION:

World Invention Intellectual Property Associations (WIIPA) is a non-profit social organization, taking the whole world as the area of organization. The memberships are foreign inventors associations, schools and related organizations. Now WIIPA has 18 member countries, like Japan, Indonesia, Malaysia, Korea, Hong Kong, Iran, Philippines, Kingdom of Saudi Arabia, Macau, Thailand, Myanmar and Vietnam in Asia; Croatia, Romania and Poland in Europe; Brazil, Canada and the United States in America.

PURPOSE:

To improve the status of inventors at international levels, enhance mutual assistance and experience amongst inventors of the world, encourage creative thinking and the spirit of invention among national university hence to establish the WIIPA.

OBJECTIVES:

The objectives of WIIPA are:

1. To encourage invention / creation development and protect the intellectual property of inventors or designers.
2. To promote and enhance the development and utilization of inventions and designs.
3. To secure cooperation and mutual assistance amongst international associations of inventors and designers.
4. To establish and carry on institutions of education, instruction or research and to provide for the experience of invention knowledge generally.
5. To promote cooperation amongst the associations of inventors, designers and persons who in different fields of interests and research work for invention, research and technology.
6. To improve the status of WIIPA inventors at international levels, and to promote cooperation between inventor associations worldwide.
7. Hold or assist in holding conferences, exhibitions, competitions and organize lectures for the purpose of promoting the objects of WIIPA.
8. To achieve the foregoing objectives with WIIPA members.

**ROMANIAN INVENTORS FORUM & EUROINVENT
is member of WIIPA**



Romanian Inventors Forum



2003 – 2018
15 years of creativity

Romanian Inventors Forum (FIR) is a professional association which aims to support, stimulate the development and valorization of scientific and technical creative activities, and cultural - artistic, but also copyright problems of its members, diversification of research and technological development, design, scientific investigation, micro-production etc.

Research and development institution **certified** by the National Authority for Scientific Research (ANCS), according to HG. 551/2007, Decision ANCS no. 9708/29.07.2009.

FIR was established in 2003 by a group of university professors, elite inventors and researchers from the University Center in Iasi.

www.afir.org.ro



Universiti Malaysia Perlis (UniMAP) is Malaysia's 17th public institution of higher learning. It was approved by the Malaysian Cabinet on May 2001. Originally known as Kolej Universiti Kejuruteraan Utara Malaysia (KUKUM), or Northern Malaysia University College of Engineering, it was renamed as Universiti Malaysia Perlis (UniMAP) in February 2007. The first intake consisted of 116 engineering students who started classes on June 2002. Currently, UniMAP has approximately 11,000 students and a workforce of more than 1,700 academic and non-academic staff members. It offers 21 undergraduate programs that lead to Bachelor in Engineering, one undergraduate programs that leads to an Engineering Technology degree and two undergraduate programs that lead to a Bachelor in Business. We also offer six Diploma in Engineering programs and 13 postgraduate programs that lead to the Master of Science in Engineering and PhD degrees.

CEGeoGTech

Center of Excellence Geopolymer & Green Technology (CEGeoGTech) lead by Vice Chancellor Universiti Malaysia Perlis (UniMAP), Professor. Dr. Kamarudin Hussin. CEGeoGTech located at the School of Materials Engineering, Kompleks Pusat Pengajian Jejawi 2, Taman Muhibbah, 02600 Arau, Perlis. CEGeoGTech has been established on July 2011 with the intention to induce innovation in green material technology among researchers in Universiti Malaysia Perlis. CEGeoGTech are able combining their expertise and skills in various fields to support the academic structure in the generation of human capital that contributes to the development of high quality research. This center also can become a pillar of academic activities, especially regarding research, development and innovation. CEGeoGTech have 8 fields of research includes:

- ☐ Geopolymer
- ☐ Polymer Recycling
- ☐ Electronic Materials
- ☐ Ceramic
- ☐ Electrochemistry Materials & Metallurgy
- ☐ Environmental
- ☐ Manufacturing and Design
- ☐ Green ICT



Malaysia Research & Innovation Society

No. 22 & 24, Taman Kechor Indah Fasa 2, Jalan Abi Tok Hashim,
01000 Kangar, Perlis, Malaysia

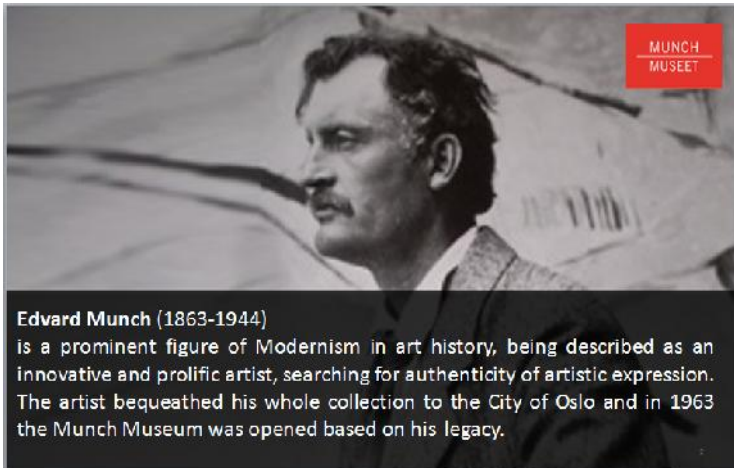
Phone: +604-9798885 & **Fax:** +604-9774026

Website: www.myris.org.my & **Email:** info@myris.org.my

The MyRIS acronym it came from “Malaysia Research & Innovation Society”.

We are solely a research & an innovation organization entity. Our goal is to create the research & an innovation environment among researchers & innovators to the high level standard thus international exposure. With various international mutual networks with several academic institutions & research & innovation entities, MyRIS able to bring up Malaysian innovation to high level standard recognition. The objectives of establishing of MyRIS are:-

1. Building research and innovation, networking between academic institutions and related societies.
2. Encouraging research and innovation activities, especially among young researchers.
3. Helping researchers in improving innovation in various aspects.

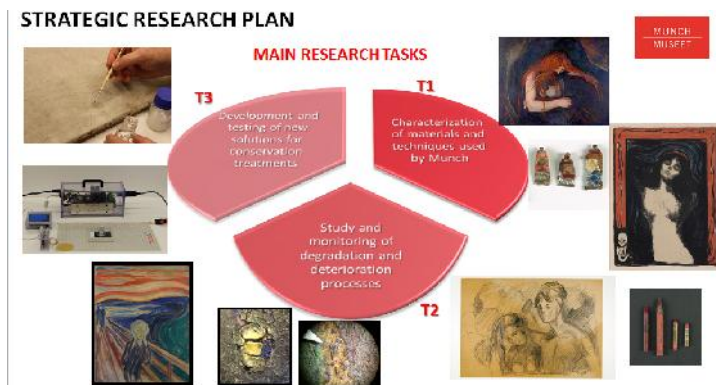


Thus the museum hosts the largest collection of the artist's original materials (oil tubes, pastels, watercolors, crayons, palettes and brushes) apart the already known collection of canvas and cardboard paintings, prints and drawings. The magnificent donation to the Oslo City consisted of approx. 1 150 paintings, close to 18 000 prints depicting more than 700 different motifs, 7 700 drawings and watercolours as well as 13 sculptures. In addition there are nearly 500 printing plates, 2 240 books, notebooks, documents, photographs, art tools, accessories and pieces of furniture.

The Conservation Department at the Munch Museum is responsible for preserving the Munch Collection and the Rolf E. Stenersen's Collection and also for developing research on main topics related with conservation challenges in the collection (unstable paint layers, with weak attachment to substrates (loss of adhesion) and weak binding cohesion; discoloration and fading phenomena on surfaces; extensive efflorescence of salts; deterioration of varnish and surface treatments from earlier restorations; probable metal soap formation in ground layers).



Research in the Conservation Department is led by the Conservation Scientist and will bring together competences from different research fields such as Art History/Technical Art History, Arts, Conservation and Heritage/Conservation Sciences. Research will be collaborative and with an international focus. Collaborations are devised with an aim of increasing doctoral and post-doctoral research opportunities.



In May 2013, the Oslo City Council voted to build a new Munch Museum in Bjørvika in the Oslo's harbour area, close to the new Opera. Spanish studio Herreros Arquitectos won the design competition and made the project.



The new museum will be completed in 2020. Modern, state-of-the-art facilities (conservation department, storage areas, scientific laboratory, library, concert hall) and larger exhibition areas will be available in the new museum.



PARTNER EVENTS



PARTNER EVENTS





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2. ANNUAL
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XIV

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Patent Office of the
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- One of the biggest international expositions in Asia
- A good chance to explore Formosa
- A great platform to exchange ideas and view with the participants from more than 25 countries



World Invention Intellectual Property Associations



Taiwan Invention Products Promotion Association



Bureau of Foreign Trade



COMPLEXUL
MUZEAL
NAȚIONAL
MOLDOVA
IAȘI



Palatul Culturii

Unul dintre cele mai impunătoare monumente ale României, edificiu simbol al Iașului

Complexul Muzeal Național „Moldova” Iași are sediul central în Palatul Culturii, unde se află patru muzee de talie națională:

- ▶ **Muzeul de Istorie a Moldovei;**
- ▶ **Muzeul Științei și Tehnicii „Ștefan Procopiu”;**
- ▶ **Muzeul de Artă;**
- ▶ **Muzeul Etnografic al Moldovei.**

Din cadrul Complexului face parte și

▶ **Centrul de Cercetare și Conservare-Restaurare a Patrimoniului Cultural.**

Complexul are în subordine și obiective muzeistice de pe teritoriul orașului Iași și, respectiv, al județului. Acestea sunt:

- ▶ **Muzeul Memorial „Mihail Kogălniceanu” Iași;**
- ▶ **Muzeul Unirii Iași;**
- ▶ **Muzeul „Poni-Cernătescu” Iași;**
- ▶ **Palatul Memorial „A.I. Cuza” Ruginoasa;**
- ▶ **Muzeul Arheologic de sit din Cucuteni;**
- ▶ **Muzeul Viei și Vinului din Hârlău.**

Palatul Culturii a făcut subiectul unui amplu proces de restaurare, finalizat în ianuarie 2016, desfășurat în cadrul Programului Guvernamental de reabilitare a monumentelor istorice.

În data de 27 aprilie 2016, Palatul Culturii a fost redeschis publicului larg, cele patru muzee care își au sediul aici inaugurând fiecare expoziții temporare ce pun în valoare doar o parte din colecțiile muzeale.

OBȚINEREA ȘI EXPERTIZAREA UNOR NOI MATERIALE BIOCOMPATIBILE
PENTRU APLICAȚII MEDICALE

OBTAINING AND EXPERTISE OF NEW BIOCOMPATIBLE MATERIALS
FOR MEDICAL APPLICATIONS

Medical Met Mat

60 PCCDI / 2018

PN-III-P1-1.2-PCCDI-2017-0239

Valoare Proiect Complex: 5.273.400 RON

PROIECTE COMPONENTE:

ORTOMAG

Coordonator - TUIASI
Prof. Univ. Dr. Ing.
Corneliu MUNTEANU

BioTIT

Coordonator - TUIASI
Prof. Univ. Dr. Ing.
Petrică VIZUREANU

BIODENTRUT

Coordonator - UPB
Prof. Univ. Dr. Ing.
Iulian Vasile ANTONIAC

HEAMED

Coordonator - UPB
Prof. Univ. Dr. Ing. Victoraș GEANTĂ

SOLION

Coordonator - TUIASI
Șef lucrări Dr. Ing. Ioan Gabriel SANDU

PARTENERI:

- Universitatea Tehnică "Gheorghe Asachi" Iași - Prof. Univ. Dr. Ing. Corneliu MUNTEANU
- Universitatea Politehnică București - Prof. Univ. Dr. Ing. Iulian Vasile ANTONIAC
- Universitatea de Medicină și Farmacie "Grigore T. Popa" din Iași - Prof. Univ. Dr. Norina Consuela FORNA
- Universitatea de Științe Agricole și Medicină Veterinară „Ion Ionescu de la Brad” din Iași
- Prof. Univ. Dr. Gheorghe SOLCAN
- Universitatea „Alexandru Ioan Cuza” din Iași - Prof. Univ. Dr. Ion SANDU
- Universitatea „Dunărea de Jos” din Galați - Prof. Univ. Dr. Kamel EARAR
- Universitatea de Medicină și Farmacie din Târgu Mureș - Conf. Univ. Dr. Kelemen HAJNAL
- Institutul Național de Cercetare Dezvoltare în Optoelectronică - Dr. Ing. Alina VLĂDESCU
- Institutul Național de Cercetare-Dezvoltare pentru Fizică Tehnică - IFT Iași - CSII Dr. Adriana SAVIN
- Institutul Național de Cercetare-Dezvoltare pentru Inginerie Electrică - Dr. Ing. Mirela CODESCU

OBȚINEREA ȘI EXPERTIZAREA UNOR NOI MATERIALE BIOCOMPATIBILE
PENTRU APLICAȚII MEDICALE

OBTAINING AND EXPERTISE OF NEW BIOCOMPATIBLE MATERIALS
FOR MEDICAL APPLICATIONS

Medical Met Mat

60 PCCDI / 2018

PN-III-P1-1.2-PCCDI-2017-0239

Valoare Proiect Complex: 5.273.400 RON

OBJECTIVE SPECIFICE:

- Proiectarea, realizarea și testarea diferitelor tipuri de materiale biocompatibile și îmbunătățirea acestora.
- Angajarea a 14 tineri cercetători pe posturi vacante cu normă întreagă conform contractului de finanțare, 10 aparținând partenerilor universitari (TUIASI, UP BUCUREȘTI, USAMV IAȘI) și 4 aparținând INCD-urilor (IFT IAȘI, INOE 2000 BUCUREȘTI).
- Utilizarea în mod echilibrat a cheltuielilor de întărire a capacității instituționale (cec-uri), atât pentru servicii de cercetare oferite între parteneri, cât și pentru mobilități și stagii de pregătire, în scopul perfecționării în înțelegerea de noi tehnici și tehnologii specifice proiectului.
- Asigurarea dezvoltării competențelor de ordin practic în realizarea și testarea de noi materiale biocompatibile cu utilizări în domeniul medical, prin identificarea unor compoziții optime ce vor fi brevetate și diseminate către mediul de afaceri interesat.
- Asigurarea transferului tehnologic a rezultatelor obținute în cadrul Proiectului Complex la nivel regional și național.

REZULTATE:

- Noi tipuri de biomateriale cu utilizări medicale diferite:
 - biomateriale biodegradabile cu utilizări în ortopedie;
 - biomateriale pe bază de titan pentru protetică medicală;
 - biomateriale cu aplicații stomatologice;
 - biomateriale cu entropie ridicată.
- Îmbunătățirea biocompatibilității acestor tipuri biomateriale prin acoperiri și sisteme de aerosoli.
- În realizarea activităților fiecărui proiect component sunt prevăzute livrabile obligatorii ce constau în lucrări științifice publicate în reviste ISI/BDI, cereri de brevete de invenții, participări la conferințe naționale și internaționale, respectiv workshop-uri de prezentare periodică a rezultatelor Proiectului Complex, cu participarea reprezentanților tuturor partenerilor, centrelor medicale locale și naționale, cât și a reprezentanților mediului de afaceri, producători și beneficiari de biomateriale, din țară și străinătate.

INTERNATIONAL EXHIBITORS

Bosnia and Herzegovina, Bulgaria, Cambodia, Canada, China,
Croatia, Egypt, Hong Kong, India, Indonesia, Iran, Iraq,
Japan, Kazakhstan, Korea, Lebanon, Macedonia, Malaysia,
Mexico, Morocco, Moldova, Philipines, Poland, Portugal,
Russia, Saudi Arabia, Sudan, Taiwan, Thailand, Turkey,
Ukraine, United States of America, Vietnam

Bosnia and Herzegovina

BH.1.

Title

SCOUT-CAM robot

Authors

Authors: **Sabanovic Almin, Topalovic Aldin**

Menthor: **Admir Aksamovic**

Institution

Srednja elektrotehnicka skola Sarajevo

Patent no.

Description

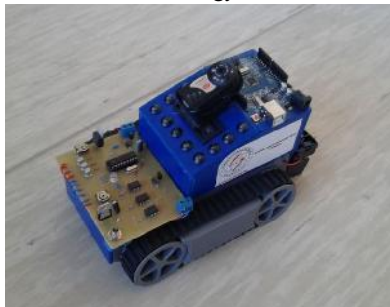
Due to the inaccessibility of the lower part of the vehicle for inspection, we came up with the idea of designing a SCOUT-CAM robot. This robot is programmed in the way that it follows the black line over the tert-sensor. The robot is controlled using one controller, and the microcontroller controls the entire object. A camera is mounted on it with the ability to send a direct signal to the computer and secure a direct video image of the lower part of the vehicle to the security staff. In addition, the camera automatically stores all the videos which can be viewed again later. The robot has an RFID sensor, so that members of the border police can operate the robot, i.e. only the people with the RFID card can operate the robot. In case of an emergency, the robot can easily be stopped via remote control.

Advantages: Easier access to the lower part of the vehicle, faster security check of that area.

Purpose: Checking the lower part of the vehicle.

Class

10. Information Technology and Communication



Bulgaria

University of Chemical Technology and Metallurgy, Sofia, Bulgaria

BG.1.	
Title	Development of analytical method for determination of heavy metals and metalloids in biomarker by ICP-OES
Authors	Darya Ilieva¹, Andriana Surleva¹, Manuela Murariu², Gabi Drochioiu³
Institution	¹ University of Chemical Technology and Metallurgy, Sofia, Bulgaria ² Petru Poni Institute of Macromolecular Chemistry Iasi, Romania ³ "Alexandru Ioan Cuza" University of Iasi, Romania
Description	<p>Plant species are used as a biometric indicator of the state of soil contamination with heavy metals and metalloids. According to their ability to accumulate hazardous substances the plants are divided into groups. Biomarker of heavy metals and metalloid pollution in soils is the triticum (wheat). In this study an analytical method for determination of heavy metals and metalloids accumulated in triticum biomarker planted directly on contaminated soils sampled around a barite mine in Tarnita-Suceava, Romania has been developed. The main stages of method development are: choice of biological sample decomposition methodology; estimation of the analytical characteristics of the ICP-OES method and selection of appropriate spectral lines, estimation of the precision of the developed method.</p>
Class	Innovative Research

BG.2.	
Title	Development of methods for the determination of pollutants in environmental and food samples using an Ion Chromatography and Inductively coupled plasma mass spectrometry
Authors	Veronika Ivanova, Andriana Surleva
Institution	University of chemical technology and metallurgy
Description	<p>The aim of the project is to develop a strategy for the analysis of natural waters and wine. For the complete characterization of the samples, the methods will be developed and validated. To determine the inorganic anions, an ion chromatography will be used and for the determination of the trace elements (metals), an Isotope Dilution Mass Spectrometry (IDMS) technique will be used.</p> <p>The ion chromatography is a well-established method for determination of inorganic anions in water samples. The method characteristic working range, linearity, limit of detection and limit of quantification, precision, accuracy, recovery and uncertainty less than 10 % will be studied according to the international regulations for methods validation. IDMS is the most powerful and precision primary method for determining trace elements, on the basis of measured isotope ratios of elements. Wine is a very popular and very consumed alcoholic beverage. The accurate analysis of wine, will give us a good information about the quality and organoleptic features.</p> <p>Both methods are very well complemented and provide complete information about the studied objects.</p> <p>An ion chromatographic method will be recommended for routine analysis in the field laboratories of the country to improve the quality of measurements and will increase the knowledge of how to obtain an uncertainty budget and how to improve the accuracy of the measurement results.</p> <p>IDMS will be applied for the first time in Bulgaria and used in a laboratory of Inorganic analysis.</p> <p>Acknowledgments: This study has been financially supported by the Operational Programme "Science and education for smart growth" 2014-2020 of the European Union cofounded by the European Social Fund through the project BG05M2OP001-2.009-0015</p>
Class	Innovative Research

BG.3.	
Title	Influence of the different factors onto amorphous phosphating of aluminum surfaces
Authors	Dimka Ivanova, Gergana Ilieva, Ludmil Fachikov
Institution	University of Chemical Technology and Metallurgy
Description	The influence of different factors such as concentration, temperature and cathodic polarization on formation, composition and morphology of the coatings obtained under treatment of aluminum (Al – 99.5 %) surfaces from the solutions (containing ammonium and sodium phosphates, and MoO_4^{2-} promoting ions), buffers, softeners, inorganic activators, as well as surfactants have been investigated. Gravimetric and electrochemical methods, optical microscopy, scanning electron microscopy, EDX and XPS have been used. The thicknesses of coatings rise by increasing the temperature and the cathode current density under other equal conditions. The coating contents include phosphorus, oxygen, molybdenum, sodium and nickel, and consequently a conjecture about probable chemical state in the film bulks has been conceived.
Class	Innovative Research
BG.4.	
Title	Corrosion behavior of austenitic stainless steels, suggested as biomedical materials
Authors	Rositza Simitchiiska, Dimka Ivanova, Ludmil Fachikov
Institution	University of Chemical Technology and Metallurgy
Description	The most important requirement for any metal used as an biomedical material is to be biocompatible and not to cause undesirable effects in the human body. Corrosion of such materials is included in the topic of biocompatibility because it is a determining factor in their sustainability and seamless fulfillment of their functional purpose. The work presents the results obtained in the comparative study of two austenitic stainless steels (Cr18Ni9 and Cr18Mn12N) in two models of Saliva solutions, accepted as environments for testing the corrosion behavior of materials for these aims. The nature of the corrosion attack, the composition of the corrosion products at 37 °C and at the different pH values of the model media were determined using different electrochemical and physical methods of investigation and analysis. It was found that Cr18Mn12N steel, exhibits higher corrosion resistance.
Class	Innovative Research

Cambodia

KH.1.	
Title	Pendulum Experiment for High School
Authors	SA Sokkry, POLY Pheary, KUCH Bunnareach, CHAN Mithona
Institution	NORTON UNIVERSITY
Description	- Education of science is very important for improved human resources to progress to reach advance on technology sector for develop country. But in Cambodia nowadays students in high school we compare as 2 type are science and social science but for science they study only theory and almost they aren't practice on experiment so my team created a project that called (Pendulum Experiment for High School) for experiment related to Physical that used to monitoring data of bob like angle, amplitude velocity, and maximum velocity of Pendulum.
Class	Goal of Project -To help teacher and Student to do experiment by donation - Verify theory with experimental - Low price - Easy to install and easy to use

Canada

by

Toronto International Society of Innovation & Advanced Skills (TISIAS)

CA.1.

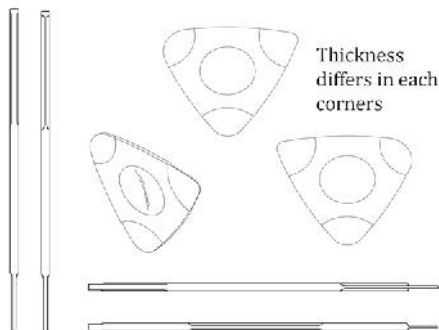
Title The Innovative Guitar Pick
Authors Ha Yoon Kil
Institution Cheong Won Middle School
Patent no. 30-2018-0010762

Description

This invention relates to guitar picks. Generally, the guitar picks vary in material, shape, and thickness. In particular, guitarists use a number of picks with different thickness. This affects the type of guitar performances (picking, strumming, etc.) and the timbre of guitar sound being played as well. Therefore, the thickness of guitar pick is a very important part of the guitar, and thus the materials that make the guitar pick. The thickness of guitar picks vary widely, usually from 0.15 mm to over 2 mm. Its thickness greatly affects the guitar's tone, play forms, and other aspects that deal with the guitar sound. This is why guitarists have to possess various picks with different thicknesses for performing different plays. This invention is about having three different-thickness picks formed in one guitar pick in each corner so that guitarists can choose the type they want to use for playing different types of musical performance.

Class

13. Sports, Games and Leisure



CA.2.

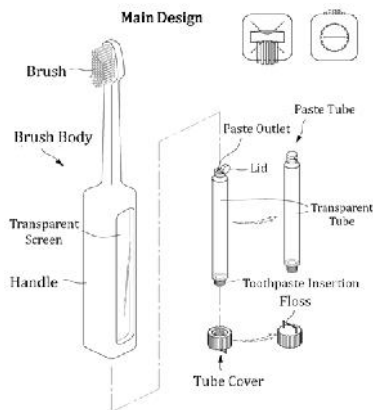
Title Multifunctional Toothbrush
Authors Seung Jae Baek
Institution Cheong Won High School
Patent no. 30-2018-0000807

Description

The present design shows a multifunctional toothbrush having three functions. First, it obviously features the basic function of the toothbrush. Second, it has an inner toothpaste tube that can be replenished which is featured by toothpaste storage. Third, it has the floss inside. Altogether, the multifunctional toothbrush provides maximum convenience and portability in every way possible to perfectly maintain users' health care of teeth and gums without having to possess a toothbrush, paste, and floss separately. With such innovative toothbrush making an all-in-one function is convenient to carry around and be stored easily. In particular, when the floss is required to be used, it is not necessary to provide a separate floss, and it is possible to separate or replace it with another, so that it can be used in a wide variety of applications. Therefore, it is different from the conventional travel or portable toothbrush set having each items separately. Thus, it is very effective in terms of utilization and economy.

Class

5. Industrial and laboratory equipments



CA.3.**Title****Genuinely Rice Germ****Authors**

Nut Prabpanja

Institution**Community Enterprise Group, Rice Innovation****Patent no.**

N/A

Description

The benefits of rice are diverse. Rice germ oil properties are antioxidants. Reduce cholesterol in the blood. Help digestive system better prevent colon cancer. Reduce symptoms of numbness of the upper extremities. The group has adopted organic rice grown in three varieties: Ricebury, Sungyod, HomPrathum. Each of them are processed for processing of germs. All three lines of rice are all about 1,000kg which is equivalent to 30% ricebury, 30% Sungyod, and 40% HomPrathum. After mill, the brown rice is still brown and the brown rice is brown. Repeat this process again, dying, milling or bleeding twice. The gills fall out with some rice and then glide. And winnow and filter. It can get the germ approximately 9 kilograms, equal to 0.9 percent of the 1,000 kilograms of rice, then roasted by the control. The temperature of the heat is very soft (cold). The germs of the rice contain oil, so it requires very light, roasted, cooked, fragrant, roasted rice and bring to cool then put it in a container.

Class

3. Agriculture and Food Industry



China

CN.1.

Title	MULTI-FUNCTION SOCKET
Authors	Hsieh, Wei-Lung
Institution	Wei Chun Co., Ltd China
Patent no.	-
Description	
Class	2. Energy and sustainable development

Croatia

Represented by
CROATIAN INVENTORS NETWORK

HR.1.

Title

MINI ELECTRONIC BOXING

Authors

PAVAO POTOCKI

Institution

-

Patent no.

D20170084

Summary of the invention:

Invention consists of two helmets and two jackets with sensors that register the punches which are scored and displayed on the display at the top of the helmet. In addition there is a mounting ring (3x3m or 4x4m).

Description

Advantages:

- Low risk of injury
- There is no need for judge

Purpose:

- Sport and Fun

Class

13



HR.2.**Title****HYALURON+VITAMINS INTENSIVE
REVITALIZING LINE****Authors****MIRJANA BRLECIC****Institution****PRIRODA LIJECI d.o.o.****Patent no.**

001622580-0001, 001622580-0002

Summary:

Hyaluron in combination with vitamins A, B, C and E and herbal ceramides in the form of liquid crystals provides intense anti-aging effect, photoprotection and hydration of the skin.

Description:

Innovation is based on natural ingredients and ecological cosmetics standards, environmental protection, efficient use of energy and production. Protects skin cell proteins with purified plant complexes. Improves microcirculation and skin immunity. Hydroxyl is a donor and free radical cleanser that prevents skin protein peroxidation. In a very short time, it rejuvenates the hydro-lipid barrier, the physiological functions of cells and the overall skin condition. Intense anti-aging skin formula, which has a high bioavailability. The synergistic action of vitamins, herbal complexes, and hyalurons for radiant and balanced skin, reduced wrinkles and hydrated skin.

Description**ADVANTAGES - ANTI-AGING EFFECT**

1. PHOTOPROTECTION
2. COLLAGEN SYNTHESIS
3. DEEP HYDRATATION
4. RESTORATION OF THE HIDRO-LIPID BARRIER OF STRATUM CORNEUM

Purpose:

Skin care

Class

HR.3.**Title****Automatic train protection system AP AUTOSTOP****Authors****ZVONIMIR VIDUKA****Institution****ALTPRO d.o.o.****Patent no.****HR-Z20160428 and HR-Z20160429**

AP AUTOSTOP is a turnkey safety system for railway vehicles based on INDUSI technology which stops the train in emergency situations. Emergency situation can occur when the train passes through the stop signal, the train driver is distracted, the train overspeeds...

Advantages:

Innovation advantages are as follows:

- Full computer diagnostics
- Complete set of testing devices
- Event recording which enables more precise maintenance and evaluation of incident states in an accident
- Train driver registration
- Integrated dead man's system

Description

- GPS positioning and communication which serves the purpose of remote diagnostics

Intended use:

By implementing AP AUTOSTOP system, the railway significantly increases its safety level. AUTOSTOP system, based on INDUSI technology, is a high tech product which warns the train driver and automatically stops the train depending on the information it gathered while passing by the signals on the railway and the information based on the train driver behaviour. The system is resistant to all sorts of vibrations, shocks and impacts which occur during exploitation on the railway vehicle and represents a turnkey safety solution for railway vehicles of a country. It is easily adaptable for communication to other safety systems and European standard for control/command and communication systems of ETCS level.

Class

8



HR.4.**Title**

OMEGA 6 CREAM – HYDRO for dry and dehydrated skin

Authors

MELITA PAVLEK-MOCAN, MIRA MOCAN

Institution

COSMEL d.o.o.

Patent no.

002683508-0001

This cream gives back „natural moisturizing factor“ and natural nutritive emollient properties to the dry and dehydrated skin. It contains COTTON SEED OIL – high with linoleic acid Ω 6 (58%), essential fatty acids necessary for normal growth and function of healthy cells. Quantity of Ω 3,6,9 is enhanced by VEGETABLE OILS – apricot, avocado and sesame. Cream also contains HYDRO COMPLEX whose composition protects the skin from loss of moisture, and CETINA- NATURAL SPRING WATER as the greatest gift of nature from Dinara, the highest Croatian mountain.

Description

Advantages for innovation:

- strenghtens the lipid barrier of epidermis in dry skin
- protects against transepidermal loss of water
- normalises the skin metabolism
- oiling, softening, smoothing and protective properties
- moisturising effect
- natural antioxydative properties

Usage

Natural organic cream is for dry and dehydrated skin with high content of linoleic acid (Omega 6). It revitalizes irritated, dry and sensitive skin. After usage young and mature skin is smooth, soft, elastic and healthy.

Class

4



HR.5.**Title****MINING BULLDOZER - MVD-XLPD****Authors****VJEKOSLAV MAJETIC****Institution****DOK-ING d.o.o.****Patent no.**

EU RCD 000483029-0001

The MVD Extra Low Profile (XLP) Dozer is designed as a very low profile, remote-controlled machine for multiple uses such as underground mining, construction, military and defence missions. Low profile and remote control makes it suitable for multi purpose tasks and missions.

The MVD is equipped with a blade for digging and pushing the blasted ore in front of the machine. During operation, the MVD is capable of handling 50 to 120 tons of ore per hour. The machine is designed to work continuously with minimal maintenance and downtime. Maintenance and repairs can be carried out in the field or in certified service centers, and the tools required are standard wrenches and some specially modified tools.

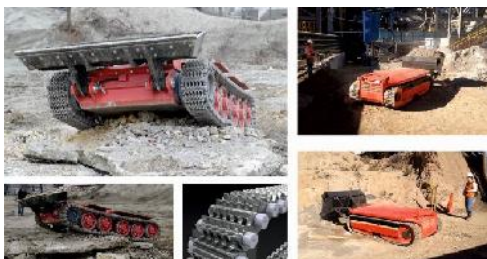
The major components not produced by DOK-ING such as motor and hydraulics are provided by large, international companies thus ensuring long-term availability of spare parts. The in-house service capabilities allows DOK-ING to send maintenance team at short notice to any location in the world.

Description

- Extra low profile remote controlled system
- Standard operating tool: blade tool attachment
- Additional operating tool: bucket that can be used as blade or as a carrier of ore, capacity 0,65 to 1,0 cubic meter
- Weight: 4,150 kg, Height: 830 mm
- Operated by a single operator using a remote control unit
- Excellent efficiency and productivity
- Capability of handling 50 to 120 tons of ore per hour
- Capable of operating on inclines up to 30 degrees
- Ability to work in high temperatures up to 50°C
- Environmental protection
- Low operating and maintenance costs

Class

6



INTERNATIONAL EXHIBITS

HR.6.**Title****Voice thermometer****Authors**Author: **MARIAN CIPRIAN MITRIC**Menthor: **GORAN ECIMOVIC****Institution****I. TEHNICKA SKOLA – TESLA****Patent no.**

-

Description

The device is primarily intended for the blind or the visually impaired persons and serves to measure the ambient temperature or temperature of the human body. The information is displayed on the LCD display. By pressing a key the temperature level is played on a loudspeaker.

Description:

Measurement precision is enabled using a precision digital temperature sensor. The resolution is 0.1 °C. Controlled with a microcontroller, the device operates reliably from -20 °C to +85 °C (-4 °F to +185 °F). Power supply is carried out using two Li-Ion batteries 2Ah and once the device is charged it is not necessary to recharge at least six months with daily use.

Advantages:

Thermometers for measuring the temperature of the human body are usually a liquid (mercury or alcohol) or a miniature digital. Visually impaired person can't read value and depends on others for help. By using such device they become more independent and their quality of life is improved.

The device may be used:

- blind,
- visually impaired,
- with motor disorders (finger problems)

Class

12



HR.7.**Title****DEVICE FOR MEASURING SOIL pH****Authors**Author: **JAKOV DAMJANOVIC**Menthors: **Drago Sostarec, Ivan Krka****Institution****POSTANSKA I TELEKOMUNIKACIJSKA SKOLA,**
Zagreb**Patent no.**

-

Description

Knowing correct pH value of the soil in order to optimize crop income using specific agrotechnical procedures is crucial to have successful food production. We have constructed an inovative, cheap and sufficiently accurate device for measuring pH value.

We chose, while observing the voltage (Volta's) series of metals, two readily available metals for electrodes – zink as negative pole and copper as positive one.

If the pH value changes from alkaline to acid (from 14 to 0), voltage increases from 1 to 1.1 V. In this specific voltage window the voltage itself changes in a logarithmic manner in regards to pH value.

“The heart” of the device is a logarithmic inverting, sensitive, operational amplifier with three accompanying potentiometers used for calibration.

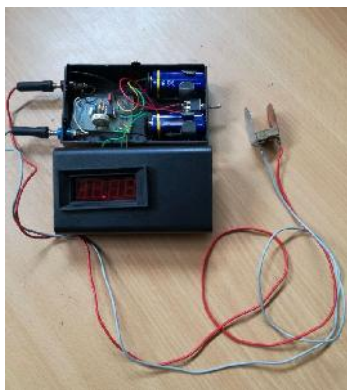
Voltage coming from electrodes is conducted to the inverting input gate of the operational amplifier. As a consequence to a higher voltage on the amplifier input gate, a lesser voltage on the output gate is detected and by that a smaller number is displayed on the screen and vice versa.

Digital voltmeter which directly shows the pH value is used as a screen.

This device is easy to use, cheap and has a sufficient class of accuracy.

Class

3



HR.8.**Title****WOODEN SANDALS WITH CHANGEABLE UPPERS****Authors****SANJA LONCAREK****Institution****LELS, obrt za proizvodnju, trgovinu i usluge****Patent no.****D20160137A****Description**

Wooden sandals with changeable uppers. Uppers are different in design, color and pattern and they can be changed by Druker system. By using this product we can save space while travelin because instead of carring couple pairs of sandals we have one set with one pair of soles and number of uppers that we chose regarding the number of looks we will need on our travel. This summer shoes travel set will give you a lot of make your own design possibilities and save you the space in your luggage.

Class

14



Egypt

Represented by
The Egyptian Inventors Syndicate
The Egyptian Society For Women & Youth Inventors

EG.1.

Title	RECYCLING SLAGS MACHINE
Authors	Hebatalrahman Ahmed (The Egyptian Inventors Syndicate)
Institution	THE EGYPTIAN SOCIETY FOR WOMEN & YOUTH INVENTORS
Patent no.	PatentNo. 1068-2015 -Egyptian patent office The method and machine to treat slag of metal industries, the method based on improve the mechanical properties of the slag as well as prevent its interaction with water; improvement is done by bonding slag with binders in slag treatment machine. consists of mill for crushing and grinding of slag, mixer to achieve homogeneity, bunker to assemble the bonding materials that do not need grinding, tank to collect and heat mixture to become viscous and easy deformed in pipes and a bowl to collect the treated slag
Description	Advantages & New Topics *Increase mechanical properties of slag & Decrease weight *Prevent reaction with water *Suitable for all kinds of slags *Different shapes & sizes are manufactured in molds *Mass production
Class	5. Industrial and laboratory equipments



Hong Kong

HK.1

Title	Spine Care
Authors	LAU CHING HEI (HongKong)
Institution	Hong Kong Tsuen Wan Government Secondary School
Description EN	
Class no.	

India

by

Indian Innovators Association

IN.1.

Title

Translating Research to Technology

Authors

-

Institution

International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

Patent no.

-

Mandate:

- Development of unique, novel and techno-commercially viable technologies in the area of advanced materials
- Demonstration of related technologies at prototype/pilot plant scale
- Transfer of technologies to companies in various industry sectors

Description EN

- Spread over an area of around 100 acres with expertise of more than 60 scientists in the identified thrust areas
- Application oriented R&D and industry centric
- Expertise in technology development, demonstration and transfer - already transferred 15 technologies to more than 27 companies.
- Extensive collaborations with companies/universities/R&D institutes in India and abroad.
- Providing testing and product characterization, consultancy, training as well as literature and patent search in areas of core competence
- Undertakes sponsored projects from government agencies to develop specific products and/or associated technologies, besides carrying out contract research for Indian and foreign companies.

Class no.

International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

(An autonomous Research & Development centre of Department of Science and Technology, Government of India)



Translating Research to Technology

ARCI's UNIQUE MANDATE

- Development of unique, novel and techno-commercially viable technologies in the area of advanced materials
- Demonstration of related technologies at prototype/pilot plant scale
- Transfer of technologies to companies in various industry sectors

ARCI AT A GLANCE

- Spread over an area of around 100 acres with expertise of more than 60 scientists in the identified thrust areas
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TECHNOLOGIES AVAILABLE FOR ADAPTATION

Technology	Applications
Ultrafast Laser Micromachining	Metal tubes, Piston rings, Machining inside glass, Solar cells
Laser Surface Hardening Treatment	Tailored microstructured blanks for automotive CRCA steels, Hammering beds, Cartridge tapered roller bearings
Laser Surface Coating (Alloying and Cladding)	Erosion resistant cermet coating on burner tip nozzle, Hard facing of fast breeder reactor components, Die tool repair, Cast iron component, Reclamation of worn out shaft
Laser Drilling	Inner and outer combustion liner, Deflector plates, High pressure nozzle guided vanes
Laser Welding and Laser-MIG Hybrid Welding	Tailor welded blanks (automotive), Solenoid valves (aerospace), Ti-6Al-4V alloy (aerospace), Ni based super alloy (Power plant)
Micro Arc Oxidation	Rollers, Friction disc, Spindle pots (Textile), Fuel injectors, Pistons (Automotive), Wire guides, Drawing pulleys (Cable)
Detonation Spray Coating	Landing gear axle (Aircrafts), High pressure impeller (General Engg.), Flattener rollers, Pump rotors (Steel)
Electro Spark Coating	Cutting tools, Localized repair of shafts and pump parts
Exfoliated Graphite and its value added products	Fuel cells, Automotive, Oil refineries, Petrochemical etc.

Technology	Applications
Tandem Solar Absorber Tubes	Solar water heater, Desalination, Industrial Steam & Power generations
Broadband Anti-reflective Coatings	PV and Solar thermal devices, Optical devices
Dust Repellent Coatings for PV Panels	PV panels, AI Mirrors for Concentrated Solar Thermal Power (CSP) and Optics
Exfoliated Graphite Bipolar Plates and Gas Diffusion Layer Technology	On 20 kW fuel cell for transportation applications

Technology	Applications
Silica Aerogels	Thermal insulation in automobiles, Thermal clothing
Decorative, Corrosion Resistant, Easy to Clean Coatings on Metals	AI blades of ceiling fans, SS modular kitchens
Decorative Coatings on Glass and Ceramics	Architectural, Perfume glass bottles etc.
Single Layer Anti-reflective Coatings on Glass	Ophthalmic lens, Automotive (wind shields, windows), Solar thermal plants etc.
Hard Coatings on Plastics	Helicopter and Automobile wind shields, Helmet visors, Road markers, Canopies of fighter aircrafts
Nanosilver Impregnated Ceramic Water Filter Candles	For drinking water purification
Nano Zinc Oxide based Varistors	Surge voltage protection in electrical and electronics industry



FOR FURTHER DETAILS, PLEASE CONTACT

The Director, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI)
Balapur PO, Hyderabad - 500 005. Phone: 0091 40 24443167, 24452304, 24452312 Fax: 0091 40 2444 2699, 2444 3168
E-mail: director@arci.res.in / sanjay@arci.res.in, Website: www.arci.res.in

Indonesia

Represented by

Indonesian Invention And Innovation Promotion Association (INNOPA)

ID.1.

Title

AUTOMATIC GLUE FROM TREE CASSAVA
(*MANIHOT GLAZIOVII*) TO PATCH TIRE LEAKAGE
IN REMOTED PLACES

Authors

Rakha Naufal Putra Dhaniwijaya, Mardiyah JH
Mansoor

Institution

SURYA BUANA

Patent no.

-

Tire is a ring-shaped component that surrounds a wheel's rim to transfer a vehicle's load from the axle through the wheel to the ground and to provide traction on the surface traveled over. It's one of the important component in modern vehicles like cars, motorcycles, bicycles, etc.

Description EN

Manihot carthaginensis subsp. glaziovii, also known as *Manihot glaziovii*, the tree cassava or Ceara rubber tree, is a species of deciduous flowering plant in the spurge family, Euphorbiaceae, that is native to eastern Brazil. The tree cassava is used a source of rubber throughout the world. The plant is introduced largely in the world, but now it is classified as one of the highly invasive plant of the world.

One of the problems usually occurs that is related to tire is tire leakage. Especially if it's happened in remoted places or a places where there is no vehicle station nearby. It willbe very hard to patch the tire's leakage. To solve this problem, we came up with the idea to make an automatic glue made from tree casava that can patch tire leakage automatically using the tire's pressure until the tire is fixed or changed.

Class no.

ID.2.**Title**

WatesQy : Water Test Quality (Real Time Water Test Station Connecting Bluetooth and GSM)

Authors

Muhammad Turmudzi Abdul Azis, Nada Tsusayya Waizh, Chaerul Anam

Institution

Islamic University of Indonesia

Patent no.

On Process

Description EN

WatesQy can be used to determine the water quality such as in laboratories, rivers, lakes, or in water treatment plants. WatesQy has a high-precision main figure and can measure multiple water quality parameters including some measurement modes include pH measurement using pH sensor SEN0161 is very suitable for measuring pH value, temperature measurement using Temperature Sensor (RTD) PT100 which can measure Temperature range: $-70 + 260$ C, The turbidity sensor detects the water quality by measuring the level of turbidity. It is able to detect suspended solids (TSS) in water. As the TTS increases, the turbidity level increases, TDS and salinity measurement using conductivity sensor.

WatesQy is also directly connected to the bluetooth making it easier to measure from the range of a maximum distance of 10 meters by using Smartphone or Computer and there is one more option that can be connected with GSM Module so that if needed to control this tool from a distance can be connected with SMS to the operator so that can remind the operator remotely. This water test kit offers:

- Immediate results, no waiting for lab analysis and no additional fees
- The best and trusted water test quality
- Connected with Bluetooth and GSM Module
- There is an LCD screen as Output measurement value on the tool

Class no.

5



ID.3.	
Title	"Utilization of Straw Waste to Preserve Apparel Color"
Authors	Nur Ahmad Wibisono
Institution	SMP Negeri 1 Malang
Patent no.	-
Description EN	<p>Straw is a waste of rice plants. Straw is sometimes made into brooms, roofs or brushes. Actually straw has an anti-color substance that is able to maintain colors of fabrics, to keep it good and not faded.</p> <p>By burning then soaking and mixing it with water then the straw is able to prevent the color of clothing from being faded. If developed, straw will be a superior product, cheap and simple.</p>
Class no.	3

Iran

Represented by Rayan Innovation Institute

IR.1.

Title

The filter of physical and chemical filtration of water in the depth and surface of the earth

Authors

FERIDOON HOSSEIN NIA

Institution

Idea Creative Co

Description EN

Making complete purification and limpidity in water polluted by suspended solids. Useful for surface and underground water .reduction of cost price of water purification using the said filter for 1/5 of the current expenses of usual and common methods

Class no.

IR.2.

Title

The construction of pancreatic implants to improve the growth beta cells

Authors

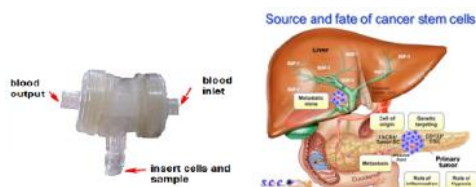
Hadise Goli, Fatemeh Akbari, Zahra Zaghari
FARZANEGAN2 HIGHSCHOOL

Institution

Idea Creative Co

Description EN

The pancreas is a gland of the body and one or two percent of the weight of a collection of interconnected cells that secrete hormones are necessary for the body .This set of cells called the islets of Langerhans said. Each island has a population that alpha cells produce glucagon hormones, populated by beta cells that make insulin are. Anti-hormones insulin and glucagon when blood glucose levels are regulated. This is a vital function for bioenergy production and maintain Homeostasis. In the absence of insulin secretion needed in an emergency, blood sugar goes up. . The purpose of the design and manufacturing process that can give physiological response, and continuous blood sugar levels. By making a semi-permeable membrane can be used with compatible blood acceptable techniques Immunoisolation for using the beta cells of the human resources outsiders and animal resources used



IR.3.**Title**

MAKING A PURIFICATION AND ANALYSIS OF MICROBIAL CONTAMINANTS IN DRINKING WATER

Authors

HANNANEH FARSI MADAN, MAHTAB GILAKI, ZAHRA ZAGHARI

Institution

BRILLIANT TALENT TRAINING CENTER

Idea Creative Co

Description EN

The contamination of the water causes many environmental problems and gastrointestinal disorders and diseases of various human. Therefore, addressing the various methods of water treatment we were forced to explore new methods and existing water treatment. Today's look at the methods available in the literature and report on innovation in the project by means of electrolysis and combining it with nanotechnology devices, water treatment design and built-in electrolysis connect the direct current from the source of the electrical two electrodes in water causes decomposition of water at the cathode is made $V_{gazaksyzhn}$ Drand $V_{gaz\cdot hydrvzhn}$. Pure water electrolysis at low speed takes a lot of energy. Vsrf this case the addition of a suitable electrolyte quick Tranjam accepts and energy consumption significantly up catcher. It noted that the device is capable of mass production and commercial buildings, as well as the testing and evaluation of microbial sampling device within the outlet water has been invented and has patented the original.



Class no.

IR.4.**Title****PREPARING HERBAL SHAMPOO USING
WILLOW LEAVE****Authors**

HOSSEIN VARMAZIAR

Institution

Idea Creative Co

Description EN

Today, the use of shampoo is considered to be an important matter. A shampoo is considered to have high quality if it makes the hair more transparent and contains less chemicals. the use of willow leaves is advised for the treatment of fever, aches, and colic and its extract can be used for eliminating dandruff and treating digestive problems that should be used after meals. the extract of willow leaves is prepared easily and just through grinding and heating. This extract is used not only to clean the hair, but also to treat dandruff and to make the hair longer and softer. One of the advantages of this shampoo is that it is prepared easily and without need to advanced facilities. As it does not contain any chemicals, it can be very useful for the hair.

Class no.

IR.5.**Title****Produce of natural green pigments from green skin
of walnut and turmeric****Authors**

Mahrokh Mohammadinarab

Institution

Idea Creative Co

Description EN

Today, the use of natural pigments is a growing need in communities and various food industries. Food pigments play a crucial role in improving the characteristics and beauty of food stuffs. Despite optimal color values, good stability and low price, the use of synthetic pigments in the food industry is faced with so many restrictions because of their toxicity. Not only the green skin of the nuts is not toxic but also because of desirable properties such as high anti-oxidant and coloring can be an appropriate case in the production of these pigments. In this project the pigment in the walnut green shell is separated from it through the two ways of heating and extraction and then is stabilized on a bed of turmeric powder to produce light and dark green pigments. These pigments are used in food, color, and other industries.

Class no.

IR.6.**Title**

The Preparation Of Glass Adhesive From Animal Gelatin And Plant Starch

Authors

Mohammad Haghbayan

Institution

Idea Creative Co

Description EN

Glue is one of the mostly used materials from ancient times, not only having plant origin, but also animal origin as well. In plants, the stickiness factors are starch and dextrin while in animals this factor is the main protein of the skin, the bones and sinews. The peculiarity of this material is that it can create adhesive joints between two levels. Such connections can be achieved through physical absorption (for example, interfacial forces) and chemical absorption (eg van der Waals forces, induction, hydrogenised bonds).

Class no.

IR.7.**Title**

Recovery Healing Bullet

Authors

Ali Mirzaeinowroozani

Institution

Idea Creative Co

Description EN

This seibel is used in bullet saloons and shooting range. Its surface layer is from polymer that is quite flexible. It works in this way: when a bullet is shot to the seibel, the trace of the bullet remains on the seibel. After the shooter was scored, the bullet trace is simply cleaned and the seibel would be ready for the next shooting. This seibel can be used for approximately 1000 bullets.

Class no.

IR.8.	
Title	Automobile Hydrogenic Filter
Authors	Jahanbakhsh Sarkhosh
Institution	Idea Creative Co
Description EN	<p>This filter is a complementary instrument used for the better performance and operation of the automobile engine. This instrument not only filtrates the input air entering the engine, but also by sending more hydrogen toward the engine it results in the engine's combination with hydrogen and its complete inflammation, and consequently high engine power and low fuel consumption.</p>
IR.9.	
Title	Recycling Instrument Producing Rope From Bottles
Authors	Soghra Nourafrooz Heris
Institution	Idea Creative Co
Description EN	<p>This instrument is used to cut in a rotation manner the plastic bottles of water, cola, etc to produce plastic layers with various length and width. These plastic layers can be used instead of rope. These plastic layers have been tested with respect to perseverance and their firmness has been estimated as acceptable.</p>
IR.10.	
Title	ANTI-EARTHQUAKE BRICKS
Authors	Shahin Osivand
Institution	Idea Creative Co
Description EN	<p>This kind of brick acts as an anti-earthquake due to having two special qualities; 1- physical appearance 2-stock and materials. The scalloped brick are fastened together that this action causes loose material not to be destructed. On the other hand, a rubber material is combined with other composite materials, causing severely reduced vibration.</p>

Class no.

IR.11.	
Title	OIL ABSORBENT EJECTOR FILTER
Authors	Farahbod Vahabi
Institution	Idea Creative Co
Description EN	<p>When you cook, and especially when you fry the food stuffs, the waxes inside the oil are vaped, remaining in the air. This can be very harmful and dangerous for human health. Moreover, it put us into trouble to clean the walls of the kitchen from these materials. So, this made us to prepare a filter that can absorb and keep inside itself these harmful materials in order to prevent these materials.</p>
IR.12.	
Title	SYNTHESIS, CHARACTERIZATION OF
Authors	NiFe ₂ O ₄ /Fe ₂ O ₃ /CeO ₂
Institution	Mersedeh Famili
Description EN	<p>Idea Creative Co</p> <p>NiFe₂O₄/Fe₂O₃/CeO₂ nanocomposite have synthesis by using walnut green hull extract because of its rich cellulose compounds that make it act as chelating agents. The as prepared samples were characterized by xrd, fe-sem, vsm techniques. The nanoparticles show uniformly dispersed and the thickness about 100 nm.</p> <p>The effect of different extract concentrations on the morphology, crystal growth, particle size and magnetic properties of the samples was investigated. The method has</p> <p>The advantages of low-cost, non-toxic, and use of walnut green hull extract as an environmentally friendly medium.</p>
IR.13.	
Title	LIGHT PROTECTION GLASSES
Authors	Armin Haghshenas Markhali
Institution	Idea Creative Co
Description EN	<p>Considering the point that sun light can disturb people in their homes or automobiles, the existence of colored gases in the space between two-wall glasses of automobiles and building windows not only can act as a</p>

light protector and prevent the penetration of harmful sunrays, but also it can prevent the entrance of hot and cold weather. Through the injection of these gases between the glasses, it would be possible to create special beauty in the intended space, using various colored spectrum. In this way, there would be no need to install expensive curtains.

IR.14.

Title

SMART CHAIR

Authors

Mahan Delavandani

Institution

Idea Creative Co

Description EN

These chairs can be used to create order and discipline in meeting saloons, seminars, and conferences. In public halls and similar places we can observe how disordered the audiences sit on the chairs, leading to quality decrease. To prevent such a disorder, we can make chairs that can be used for sitting only when their previous chairs have been used by other audiences. Connecting a sensor to the chair can make the next chair ready for sitting.

IR.15

Title

ISFAHAN TRAINING AND EDUCATION
HEADQUARTERS (MINISTRY OF EDUCATION)

Authors

Masoud Sheikhezad Saravani

Institution

Idea Creative Co

Description EN

These kinds of classes are held in order to increase the quality of classes. As visual-training and hand-training has/have become deep and permanent and creating interest among students will change to everlasting learners, the necessity of this kind of education is felt. The method of executing this kind of training is so that instead of having a specific classroom for each level, we will have classrooms as many as the number of lesson titles and some classes for the general subjects and each teacher will technically attend in a class and instead of being in one class, based on the lesson subject, the students will take part in the class that is suitable to his/her subject and will be in an objective and tangible atmosphere

IR.16.**Title****THE DESIGN OF LABORATORY SCIENCE BOOK FOR LEARNING SCIENCE IN THE LABORATORY CLASS****Authors**

Mohaddeseh Ezzatpajoooh

Institution

Idea Creative Co

Description EN

Natural sciences is one of the textbooks which is of significant importance in primary school and secondary school. What we realize through investigation in schools according to students' performance is that science learning as research-based can have a substantial effect on children's education and skills. Accordingly, we design laboratory books from preschool to ninth grade of high school that this book, in addition to have all practical activities of the textbook, includes complement experiments of that activity which study its other aspects. This book affects students' learning and education and it is a comprehensive and useful guideline for teachers, too.

IR.17.**Title****Evaluation of a carbon paste electrode modified with strontium substituted bismuth and titanium oxide nanoparticles in the toxic metal chromium (vi) determination potentiometric method****Authors**

Masomeh Mohammadzadeh Nodehi

Institution

Idea Creative Co

Description EN

Strontium substituted bismuth and titanium oxide nanoparticles with aurivillius morphology synthesized by chemical co-precipitation method and were characterized using xrd. The nanoparticles were used in the composition of the carbon paste to improve conductivity and transduction of chemical signal to electrical signal. A procedure for the determination of chromium is described based on pre-concentration of the dichromate anion at a carbon paste electrode modified. A novel potentiometric Cr^{6+} -carbon paste electrode incorporating strontium substituted bismuth and titanium oxide nanoparticles (ssbto). In a acetate buffer solution of pH 5, the sensor displays a rapid and linear response for Cr^{6+} over the concentration range 1.0×10^{-5} to $1.0 \times 10^{-1} \text{ mol l}^{-1}$ m with an anionic slope of $54.8 \pm 0.2 \text{ mv decade}^{-1}$ and a detection limit of the order of $0.002 \text{ } \mu\text{g ml}^{-1}$. The sensor is used for determination of Cr^{6+} by direct monitoring of Cr^{6+} . the average recoveries of Cr^{6+} at concentration levels of $0.5 \sim 40 \text{ pg/ml}$ is 98.3. The electrode has a short response time ($< 6 \text{ s}$) and can be used for at least twenty days without any considerable divergence in potentials and the working pH range was 4.5-6.5.

IR.18.**Title****DESIGN OF EDUCATIONAL SPACE AND THE
ROLE OF NATURE IN CHILDREN'S
EDUCATION****Authors**

Somayeh Ahmadidafchahi

Institution

Idea Creative Co

Description EN

Natural space in schools should be able to meet the specific needs of children. These needs include training needs, educational needs (social development and physical growth) and spiritual and emotional needs. Meeting these needs turns physical environment of schools into an effective environment for children's education purposes. The most important ideas in terms of education and architecture are the following: making a link between classrooms and outdoor environments of schools and natural spaces in order to integrate the classroom education with outdoor learning beyond the classroom, e.g. The use of collected rainwater on the roof of the school through transfer into a repository for use in ventilation and irrigation systems, or the use of optical and motor sensors in close and open places

In order to turn off the lights when they are not needed

Class no.

IR.19.**Title****ENGINE GLIDERS WITH REMOTE CONTROL
SYSTEM****Authors**

MOHAMMAD NIYAZMANDI

Institution

Idea Creative Co

Description EN

Gliders are usually air structures that move with launcher, wind force. Today, light electrical engine is added to the glider that causes the glider to have more capability and efficiency. Therefore, it was decided to use an initiative guidance and controlling system on this air instrument to increase its efficiency and show it through building a complete initiative glider.

Class no.

IR.20.**Title**

A NOVEL CONTROL APPROACH FOR AN ACTIVE SUSPENSION SYSTEM OF A VEHICLE BY USING THE CONCEPT OF MECHANICAL IMPEDANCE

Authors

KAVEH NEMATI

Institution

Idea Creative Co

Description EN

A novel control approach for an active suspension system of a vehicle is presented by using the concept of mechanical impedance. The dynamical behavior of the suspension system is controlled subject to road disturbances. The active suspension system is designed for a one-quarter model of vehicle with considering the effects of nonlinearity of the hydraulic actuator. The control design consists of two control loops; the outer loop is an impedance adaptive control while the inner loop is a proportional integral force control. This research presents the stability analysis and verifies the control method by the stability analysis and simulation results. Adaptive control can overcome the parametric uncertainty. This control approach provides the passenger comfort when passing a bump and ensures both the passenger comfort and vehicle handling after passing the bump.

Class no.

IR.21.**Title**

STONE AND GLASS CLEANER

Authors

FATEMEH SOODI

Institution

Idea Creative Co

Description EN

The device is used to wipe the surface of various types of glass and stone. It consists of three parts: an ergonomic handle, fiber and leather timber (goat leather).if it is made wet, it can remove stains and dirt from various stone or glass surfaces

Class no.

IR.22.**Title**

INVESTIGATION OF DIRECT HEAT INFLUENCES ON THE PAHS LEVEL OF HIGH CONSUMPTIONS HALLAL MEATS

Authors

MEHDI MAHMOODI

Institution

Idea Creative Co

Description EN

This study investigated the levels of polycyclic aromatic hydrocarbons (pahs) in different barbecued meat including chicken, lamb, beef, camel and ostrich. Pahs which have two or more connected aromatic rings are a large group of stable lipophilic organic chemical contaminants. In food processing these hydrocarbons can be produced during the combustion of organic materials including proteins, hydrocarbons, and lipids. The undesirability of pah in food is related to their carcinogenic properties, even in small amounts. The pahs were identified using gas chromatographic fitted with a flame ionization detector. This study confirms the presence of pahs in all barbecued meats. The higher the temperature, the increased production of pahs.

Class no.

IR.23.**Title**

THE INVESTIGATION OF PAHS CUMULATIVE IN BLOOD SAMPLES OF SOME WORKERS WHICH LIVE IN PETROL STATION

Authors

MOHADESE SADAT AFZALI

Institution

Idea Creative Co

Description EN

In this study we select several wintering adults from 15 different petrol stations in esfahan, iran. The level of polycyclic aromatic hydrocarbons (pahs) was tested in blood samples. Research on such a broad scale was undertaken for the first time in this place. Pahs, also are hydrocarbons—organic compounds containing only carbon and hydrogen—that are composed of multiple aromatic rings. Blood samples were drawn and levels of phas were determined by hplc. The data not only reveals that the appearance of these materials on selected blood samples is inevitable but also it increases during time.

Class no.

IR.24.**Title**

**HERBAL MEDICINE FOR WEIGHT LOSS:
PREPARATION AND SIDE EFFECT
DETECTIONS**

Authors

HOSSEIN DELAVANDANI

Institution

Idea Creative Co

Description EN

Anti-obesity medication or weight loss drugs which reduce or control weight are all pharmacological agents prepared in the form of pill, capsule and syrup. These drugs alter body's appetite, interfere body's ability to absorb food calories and increase body's metabolism and following change one of the fundamental processes of the human body means weight regulation. Medicinal plants for weight loss are some types of alternative medicine to decrease the side effects of chemically prepared weight loss drugs. In this project a new type of herbal anti-obesity drugs without any serious side backs was introduced.

Class no.

IR.25.**Title**

**THE FILTER OF PHYSICAL AND CHEMICAL
FILTRATION OF WATER IN THE DEPTH AND
SURFACE OF THE EARTH.**

Authors

FERIDOON HOSSEIN NIA

Institution

Idea Creative Co

Description EN

making Complete purification and limpidity in water polluted by suspended solids. useful for surface and underground water .reduction of cost price of water purification using the said filter for 1/5 of the current expenses of usual and common methods.

Class no.

Iraq

Represented by

Iraqi Forum of Inventors

IQ.1.

Title

Smart Security Checkpoint (AI)

Authors

Alaa Hussein Shawqi El-Enzi

Institution

Al Amaan Al Mutahida Company

Patent no.

899 / Patent application No. 27June /2016 Baghdad-Iraq

Leading the way in intelligent optical inspection and recognition solutions to secure borders, identify threats, and provide real-time actionable intelligence.

Providing all in one solution platform and device.

For border crossings, air and sea ports, railroads, military installations, nuclear power plants, oil refineries, 5-star hotels, embassies so on.

Provides a host of advantages with Smart Security and City surveillance support artificial intelligence.

Description EN

- Lighting Traffic Signs

- License Plate Number Recognition

- Under Vehicle Monitoring

- Real-Time Face Recognition and blacklist check

- ID Card Identification

- Biometric Identification

- All in One Platform, Real-Time Monitoring with Smart Alarm

- Smart Body Worn Camera

- Automatic Barrier Gates

- Road Blocker

- Central Command & Communication Center

- Staff Surveillance

- Traffic Video Analytics

- Real-Time Vehicle & Personal GPS Tracking System

Class no.

12

IQ.2.

Title

System of Teaching Hand for that caution by sound and light

Authors

Ali Abdulhussein Mahdi

Institution

Middle Technical University

Patent no.

4545 \2016

Description EN	This manufacture was made due to helping physicians and all medical specialization for blood collection or drug injection in vein , the manufacture was mimic to human hand to teach of students on blood collection or drug injection in vein without any riskiness to patient and the manufacture was encouragement the trainees to blood collection or drug injection in vein. This manufacture was new technique and not imitative .
Class no.	4

IQ.3.	
Title	Preparation and Identification of New Eugenol Derivative and Study of its Biological Activity
Authors	Abdulameer Abdullah
Institution	University of Basra
Patent no.	3400/ 2012
Description EN	This study encompassed preparation of one derivative (AM ₇) from eugenol, and purification. Many identification techniques have been used (IR, Mass Spectrum, ¹ H NMR, ¹³ CNMR, ¹³ Cdept NMR). The chemical analysis results showed novel eugenol derivative(AM ₇).The anticancer activity for compound investigated against HeLa cells line using three concentrations (0.5, 1, 2.5 µM) . The results showed that (AM ₇) exhibit greatest anticancer activity (0.011,0.040,0.011, respectively) absorbance in 750nm wavelength. Cytotoxicity of compound was determined on RBCs. The results showed that compound don't has any cytotoxicity at all studied concentrations .
Class no.	4

IQ.4.

Title	The use of herbicides application methods through the use of wiping technique after making a new adjustment on the addition machine and determining the best concentration of herbicides for the purpose of controlling water hyacinth plant with the lowest pollution to the aquatic environment.
Authors	Omar Abdulrazzaq Shihab AL GBURI, Adnan Hussien Ali
Institution	Ministry of Water Resources - General Commission for the maintenance of irrigation and Drainage/ Baghdad. Faculty of Agriculture at the University of Diyala, Diyala, Iraq
Patent no.	AO1M21/00 / Patent application No. 223/2012
Description EN	<p>The using the wipe machine. It has been making wipe machine which is tube a plastic for diameter of 3.15 cm and a length of 150 cm and represents a reservoir where drilling this tube to the 14 hole and a diameter of 1.26 cm and the distance between the hole and another holes 10 cm have been installed on these holes drip and under then roll lumbar between these drip and then the closure of one of the tube ends of bottle transparent of diameter 3.15 cm for way to know the amount of herbicide found inside the tube and the second party proved the opposite diameter of 3.15 cm for on the way kept the herbicide inside the tube also contains a faucet works to balance the pressure inside the pipe major holder of aluminum or plastic (pvc) 140 cm long can be shortened and lengthened as needed diameter(2.5cm).</p> <p>Applications: To controlling the aquatic weeds and all the weeds which are characterized by the difference of height and the preservation of the water environment and the environment in general from pollution through the use of herbicides while reducing the leakage in water</p>
Class no.	3



IQ.5.**Title**

The Effect of Aqueous Extract of the Bustj Gum Plant (*Boswellia Sp.*) on Diabetes.

Authors

Dr. ENAS MEHJEN NUMAN

Institution

Ministry of Industry & Minerals.

Patent no.

Corporation of Research & Industrial Development.

(4782) / Patent application No. (322/2016)

Description EN

The aim of this study is to evaluate the effect of crude extracts of *Boswellia sp.* on alloxan diabetic mice, all the types of crude extracts of *Boswellia sp.* contain a number of medicinally important compounds, that were indicated by phytochemical analysis in different amount such as tannins, carbohydrate, glycosides, resins, flavonoids, saponin, alkaloid and terpenes. The results showed rehabilitation and reactivation of the destroyed beta cells that's help to increase the hormone of insulin and reduce the level of blood sugar.

Class no.

4

IQ.6.**Title**

Safety Medical Electrical Stimulation Apparatus

Authors

Hikmat Faraj ALkhattat

Institution

University of AlMustansryia

Description EN

Patent No. 4225 in 8 / 6 / 2015

Class no.

The principle work is physics and work results are medical treatment, the energy is able to treat difficult diseases by adding this safe energy to the human body's energy, the resultant of two energies are to increase the activity of immunity apparatus and chemically to save the equivalent balance (the PH charge of the cell) , dealing with the mentioned diseases: Cancer, Diabetes, Gangren , Brain atrophy , Stroke (CVA) , Migraine , Athero sclerosis , proriasis , Joint pain, Spondy litis , Multiple sclerosis , Heamorrhoid , etc ...

4

IQ.7.**Title**

Treatment of some cancer diseases using nanoparticles of Iraqi crab.

Authors

Hanaa Naji Abdullah

Institution

College of Health and Medical technology/ Middle Technical University

Patent no.

5127/ 2017

Description EN

The Marine animal (Abu-Aljunib) as mentioned in ancient Islamic literature that used in treatment of cancer. The aim of this work is to use the nanoparticles prepared as anticancer to inhibit growth of cancers. The animal was converted to nanoparticles by crashing it to powder and then converting them to nanoparticles in a modern way, the method of moving balls then treated deep freezing method at several times to get 30-80nm. We provide preparation of nanoparticles using (FTIR,UV&SEM), and study physical, chemical and pharmacological properties of nanoparticles. Our results shows the ability of nanoparticles had a significant inhibitory effect on cancer cells

Class no.

4

IQ.8.**Title**

A new genetic pattern (SNP -1218) was detected in the promoter gene region of the interleukin-10 gene in infertile Iraqi women to be used as a genetic marker in cases of the fallopian tube adhesion due to chlamydia infection with the design of special primers for the new gene mutant site and adjacent sites.

Authors

Iqbal Harbi Mohammed

Institution

Ministry of Agriculture

Patent

5228 / Patent application No. 352/2017

Description EN

A new genetic variation among Iraqi women has been detected in promoter gene region of interleukin-10 (-1218 SNP), which is not proven in international sites, and which may have an important and effective effect for most

diseases in general and infertility women in particular who are infected with chlamydia ,which is one of the causes of infection in sexually transmitted diseases and it is characteristic that they live in the cells causing in most cases chronic damage of the fallopian tube because the patient remains infected because of the entry of bacteria in the process of hibernation which makes it difficult to be diagnosed by immunological and genetic methods sometimes. Therefore ,this mutation can be considered as a molecular indicator to assist in early diagnosis by detecting the genetic polymorphism of the interleukin-10 gene in women through the use of this mutation as well as other internationally proven mutations (three of which are approved and are associated with most of the immunological diseases of 592 C / A , -819 C / T and -1082 A / G), related to infertility and the design of specialized primers for mutant areas for use in early molecular diagnostics

Class no.

4

IQ.9.**Title**

The development of an innovative method for early detection of cervical cancer through molecular marker for gene methylation (PAX1).

Authors

Mohammad I. Mezaal , Nada A.S. Alwan , Ismail Hussein Aziz and Maad M. Shalal

Institution

Genetic Engineering and Biotechnology Institute for Postgraduate Studies.

Patent

4730 / Patent application No. 251/2016

Description EN

The design of new and innovative way of early molecular diagnosis for the detection of methylation pattern for PAX1 gene (promoter region) that responsible for Slicing of tumor suppressor gene (PAX1 gene) as a hallmarks of the tumor increasingly valuable for early detection of cervical cancer as a result of infection by papillomavirus (HPV) ,through the uses of modern techniques were used for the first time in Iraq, and in a manner designed (innovative):

- 1- MSP- Methyl specific PCR.
- 2- Bisulfate sequencing . (max 250 words)

Class no.

(4) Medicine - Health Care - Cosmetics

IQ.10.**Title**

The di-purpose device for extraction ruminal fluid – gastric juice or injected therapeutic –treated fluids in ruminant and single stomach animals

Authors

First Author,

Institution

Baghdad university /College of veterinary medicine /Public health Department

Patent

4693 //2016/55 – 2016/9/18

Description EN

This instrument is designed and provide with a absorbent capps hand pump working manually (have a piston included) the chamber of piston have two entry and exit provide with valve control to each entry which allowing to the fluids to pass in one direction from piston chamber to second direction in which connect with flexible plastic tube enter to the stomach of animal and it must be suitable to the type and anatomical shape of animal in which inserted through the mouth and esophagus, while the second opening connected with suitable container to collect the fluid extracted ,the machine is working according to the thesis of aren't pressure within the room piston to move the fluid from the container through the pipeline to the stomach of the animal when we reflect the connection of the pipeline joining .the main purpose of this device is used to avoid rumenotomy surgery operation and performed in case of accident like head and neck fractures and wounds also in case when we need to give a therapeutic medicines or scientific researches and to avoid complications that accompanied with surgery operations of head and neck areas and to reduce the waste in medicine and to shorten of the time that required to extract and fluid infusions from or into rumen and stomach>

Class no.

5. Industrial and laboratory equipments

IQ.11.**Title**

The development of an innovative method for early detection of cervical cancer through molecular marker gene methylation (PAX1).

Authors

Mohammad I. Mezaal , Nada A.S. Alwan , Ismail Hussein Aziz and Maad M. Shalal

Institution

Genome Group for Clinical and Research Services.

Patent

4730 / Patent application No. 251/2016

Description EN

The design of new and innovative way of early molecular diagnosis for the detection of methylation pattern for PAX1 gene (promoter region) that responsible for Slicing of tumor suppressor gene (PAX1 gene) as a hallmarks of the tumor increasingly valuable for early detection of cervical cancer as a result of infection by papillomavirus (HPV) ,through the uses of modern techniques were used for the first time in Iraq, and in a manner designed (innovative):

- 1- MSP- Methyl specific PCR.
- 2- Bisulfate sequencing .

Class no.

(4) Medicine - Health Care - Cosmetics

IQ.12.**Title**

Preparation of biopolymer (Dextran) and Gentamycin blend against multi drug resistant bacterial infections associated with catheters.

Authors

MOHAMMED A. SALMAN¹ ,Jehan A.S.Salman² ,Mohammed F.Al Marjani² and Mustafa Z.A.Salim²

Institution

1) Al Kindy teaching hospital, ministry of health, Baghdad, Iraq 2)College of Science ,Mustansiriyah University, Baghdad, Iraq

Patent

5008 / Patent application No. 336/2016

Description EN

In our study, extraction, purification and characterization of biopolymer from locally isolated *Leuconostoc* ssp was done. No toxicity of biopolymer in mice was observed with LD₅₀> 2000mg/kg. The antibacterial effect of the produced biopolymer was studied against the pathogenic bacteria isolated from urinary catheters which were resistant to multiple antibiotics. The antibiofilm effect of biopolymer dextran and its blender gentamycin was determined alone and as a blend (Dextran- Gentamycin)

INTERNATIONAL EXHIBITS

using precoated urinary catheters.

Results showed that the biopolymer dextran-gentamycin blend had antibiofilm effect with biofilm inhibition ratio reaching 85% and 75% against *E. coli* and *S. aureus* respectively.

Class no.

4

IQ.13.

Title

Preparation of biopolymer (Dextran) and Gentamycin blend against multi drug resistant bacterial infections associated with catheters.

Authors

MOHAMMED A. SALMAN¹, Jehan A.S.Salman², Mohammed F.Al Marjani² and Mustafa Z.A.Salim²

Institution

1)Al Kindy teaching hospital, ministry of health, Baghdad, Iraq 2)College of Science ,Mustansiriyah University, Baghdad, Iraq

Patent

5008 / Patent application No. 336/2016

Description EN

In our study, extraction, purification and characterization of biopolymer from locally isolated *Leuconostoc* ssp was done. No toxicity of biopolymer in mice was observed with LD₅₀> 2000mg/kg. The antibacterial effect of the produced biopolymer was studied against the pathogenic bacteria isolated from urinary catheters which were resistant to multiple antibiotics. The antibiofilm effect of biopolymer dextran and its blender gentamycin was determined alone and as a blend (Dextran- Gentamycin) using precoated urinary catheters.

Results showed that the biopolymer dextran-gentamycin blend had antibiofilm effect with biofilm inhibition ratio reaching 85% and 75% against *E. coli* and *S. aureus* respectively.

Class no.

4

IQ.14.**Title**

A New Experimentally Pharmaceutical product for Cutaneous Leishmaniasis Treatment in Iraq Consisting of Gentian violet with Arabic Gum *In vivo*

Authors

Nada Nori Younis

Institution

Ministry of Health/Central Public Health Laboratory/Baghdad

Patent

5167 / 451/2017

Abstract**Description EN**

The experiment was conducted on a group of white mice (30) with age of three months and weight between (30-35)g experiment the infection was done with cutaneous leishmaniasis culture(*Leishmania major*) by injection subcutaneously , after seven weeks of infection the skin ulcers were treated with Gentian violet and Arabic Gum every three days for six weeks , treatment was also used on donors with dermal leishmaniasis 60 Patients who the displaced attending at AL-Yarmouk teaching hospital also every three days for six weeks .The results of the experiments showed healing of the ulcer completely compared to the original treatment of pentostam where the cure is less and the longest period of about a year : The two treatment were also compared (*in vitro*) on the medium of the *Leishmania* containing the infected stage (promastigots) . A tissue study of the animals skin, the infection was done by *Leishmania* parasites obtained from culture media subcutaneously to identify the degree of variability before and after treatment .

Class no.

4

IQ.15.**Title**

Study Bacterial growth Curve by electricity (New Technique)

Authors

Sawsan Abdulhussein Mahdi /Ali Abdulhussein Mahdi

Institution

Middle Technical University

Patent

4935 \2017

Description EN

Ability to study of growth curve through new technique , it is used ampere measurement that transfer during culture media that it have bacteria growth Curve . this

new technique of growth curve dependent on quantity of Acidic and ampere that formed due to growing of bacteria in culture media , program was used to measure of ampere and draw of growth curve on computer (microAm or mA) pre (second or minute) dependent of type of bacteria.

Class no.

4

IQ.16.**Title**

Location Purification and Characterization lactoferen from goats colostrum and study it's anticancer activity against some cancer cells lines

Authors

Dr.zainab Hadi abbas

Institution

College of agricultural/University of karbla

Patent

4633 18/7/2016

Description EN

This study was conducted in an attempt to find an isolated alternatives from natural sources and used as a treatment to eliminate or limit the growth of some types of cancer cells and to reduce the side effects of chemical and radiation treatments presently in use for the treatment of cancer , which is of extreme effects on the patient's body and vitality and he signed the check on the lactoferrin protein , one of the milk proteins called whey proteins.

1-Pure lactoferrin from goat's milk with the fewest number of steps purification (step purification of one), and cost much less than commercial lactoferrin which the price per Almelgram him up about \$ 150 and I studied some of its characteristics such as molecular weight and content of carbohydrates and iron also studied afford the high temperatures used in the manufacturing and certain pH conditions and clear from the results of this study that one-step purification capable of obtaining a protein in a very pure and at the lowest cost (less hundreds of times) than the price of commercial lactoferrin also proved lactoferrin isolated high efficiency afford to high temperatures as well as the pH conditions while retaining full ability to act as an antidote to cancer.

Class no.

4

Japan

JP.1.**Title**

**DESIGN OF AN AUTOMATIC POWER SWITCH
FOR RENEWABLE ENERGY SOURCES**

Authors

Brandon Hill (Japan)

Institution

Japan Energy Corporation

Patent no.

-

Description EN

-

Class no.

Kazakhstan

KZ.1.

Title

Microstructuring of paint-finishing coatings in the presence of polyethylenepolyimines

Authors

Tyukanko V.Y., Dyuryagina A.N., Ostrovnoy K.A.

Institution

M. Kozybayev North Kazakhstan State University, Kazakhstan

Patent no.

-

One of the ways to improve the quality of paint coatings is the targeted adjustment of the microstructure of the protective film. The adjustment may be implemented by introducing in the existing brands of paint and varnish materials small amounts of surfactants (up to 5% by weight of the pigment). As a result micro- and nanostructured films with improved decorative (color, gloss), protective (anticorrosive) and structural-mechanical (hardness, strength) properties are formed.

Description EN

This project is aimed at studying the influence of polyethylenepolyimines (PEPI) on the processes of microstructuring of various paint coatings. Polysiloxane resin and pigment (aluminum powder) were used. Paint-and-lacquer suspension samples were subjected to a continuous computer-micro-optical scanning on the entire surface of the paint film. An intensified process of disaggregation of pigments was observed even at low amount of PEPI. Depending on dispersion conditions the average particle diameter of the pigment decreased by 10-30%, and the number of particles increased by 20-50%.

This study showed that, the introduction of polyethylenepolyimines in the paint and varnish compositions allowed fine control of the microstructure of the heterogeneous system (polymer-pigment). As a result microstructured paint coatings with improved operational characteristics are formed.

Class no.

Korea

by

Korea Invention News (KINEWS)

KR.1.

Title

Versatile Operation Table for Experimenting Animals

Authors

KANG, SEUNG HO

Institution

Bongun Middle School

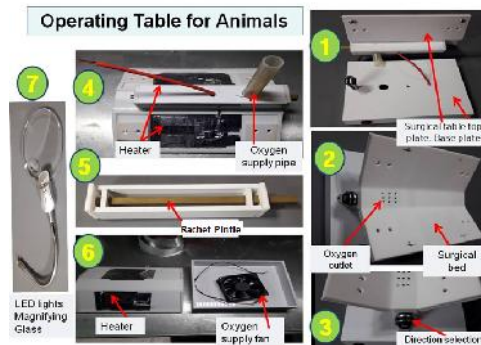
Patent no.

N/A

Description EN

A ratchet which can adjust rotary angle is installed on the lower part of the operating table so that the operation can be easily performed at both left and right side angles and the animal's legs can be positioned easily and fixed to the operating table when observing it or performing surgery. It is an operating table for animal experiment which is equipped with an oxygen supply unit and a temperature control unit so that injured or sick animals can be safely treated. It is possible to adjust the left and right angle of the observation bed for convenient operations and safely perform animal surgery or experiment with temperature control and consistent oxygen supply. It is easy to observe and manipulate the experiment due to the angle-adjustable observation bed, and it is possible to maintain the condition of the experimental animal more stably by the oxygen supply unit and the temperature control device.

4



KR.2.**Title****Mop with Rolling Function****Authors**

KANG, HO YOUNG

Institution

Seoul Samreung Elementary School

Patent no.

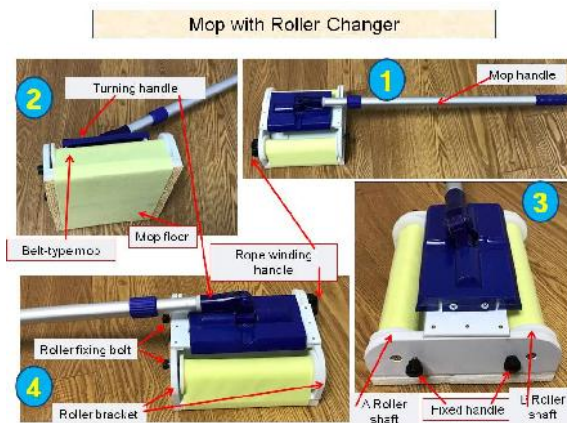
N/A

Description EN

Generally if the mop surface becomes dirty when cleaning with a mop, it is troubling and inconvenient to replace it with another mop or to wash it while cleaning. However, if the rollers and the belt type mop are installed, the mop surface can be continuously changed by rotating the rollers that. The rollers can be mounted on both sides of the rag before installing a belt-type mop between the rollers and then the securing clips. Loosen the clip and rotate the roller to replace it with the new mop surface, and then tighten the clip again. This way you can always clean with a new mop face. The rollers are connected to the mop plate, so that the mop surface can continuously wind and replaced with new surfaces to enable an efficient cleaning work as much as possible.

Class no.

5



KR.3.**Title****Anti-Shake Cup****Authors**

PARK, YE RIM

Institution**Kangnam University****Patent no.**

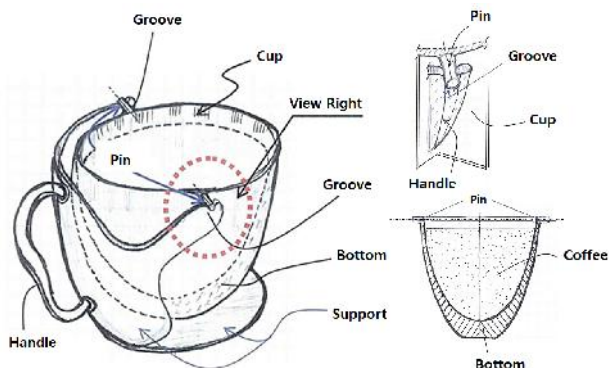
N/A

Description EN

This invention is about a stationary cup to prevent coffee spills during transport. More specifically, it is about cups for preventing coffee spills in hot water, which are made from powdered coffee in hot water, and being swayed during transport. A cup will prevent coffee spills during transport under this invention. It is divided into open-handled and oval-shaped cups, which are formed by cutting the handle in front of the inside, allowing the cup to move freely in the direction of the top half, while also providing a 180 degree orientation of the cup. This invention is based on a combination of the pleasant handle and cup structure, one cannot act freely during transport, and also do the possible pendulum movement in the back part of the handle by swinging the sub-coated pins between the handle and cup.

Class no.

5



KR.4.**Title****Multipurpose Bottle Cap****Authors**

PARK, HO JUN

Institution**Chung-Ang University****Patent no.**

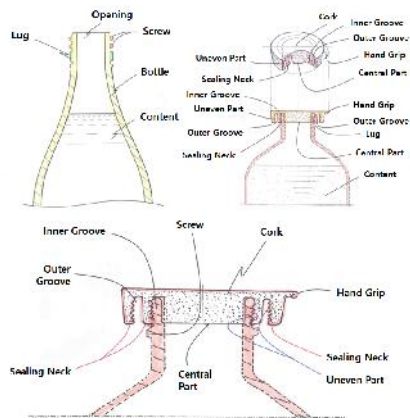
N/A

Description EN

This invention is a versatile bottle cap associated with a post-opening lid to prevent materials with a different diameter. This invention is designed to solve the above problems, and the purpose of this idea is to retain the content after a certain period of time after opening holes in the foreign drinks with different opening diameters. Multipurpose bottle caps can be opened and closed with one bottle cap even if they have different opening diameters from the open bottle. It is also very useful in its daily use, providing the effects of sealing and opening doors as needed to enhance the health of the people by storing hygienic contents and preventing waste and overconsumption of beverages.

Class no.

5



Lebanon

by

Lebanese Innovators Society (L.I.S.)

LB.1.

Title

Timer Medication Assistant

Authors

Christie Lattouf, Aya Fakih, Rabih Zaghloul

Institution

Lebanese Innovators Society (L.I.S)

Patent

Pending

The timer medication assistant is a box created to help the ones who are diagnosed with Alzheimer and need to take medications at different times during a day but have nobody assisting them in a certain period , so this machine comes as a temporarily replacement.

Description EN

This box is divided into different parts, in which each part contains a limited number of pills, depending on the person's needs. Each part has a hole, which help the tablets to pass through a tube and deliver it to a small landing, which makes it easier to reach. Meanwhile a buzzer will go off and a lamp will light up.

Class

4: Medicine-Health Care- Cosmetics.

Macedonia

MK.1.

Title
Biodegradable Rayon from Cotton
Authors

Martina Taneva, Stefani Petrova

Institution
Private Yahya Kemal College Skopje
Description EN

In our daily life we use essentials such as: plastic bags, glass bottles, Styrofoam cup, tin cans etc. We are able to replace some of the less environmentally friendly materials with those which degrade faster and we should raise the awareness of their importance. Scientists have invented a lot of new materials that have the same use, but are biodegradable which means they do not release toxic gases in order to be decomposed. We have become aware of the damage that the environment deals with so our aim was to find an interesting, inexpensive and harmless way to produce A BIODEGRADABLE RAYON FROM COTTON. Rayon is an artificial silk that can be made out of regenerated cellulose. This material takes part in the textile, medical and pharma packaging industries. By reaction of cellulose of ammonia, copper sulphate and acid we get viscose, a soluble polymer that can be converted into RAYON. This process is useful because instead of using the main resource – wood pulp it can be replaced with raw cellulose such as waste paper (unprinted), filter paper, cotton etc.

Class no.

1

MK.2.

Title
Turning Waste into Energy- a way of Saving Forests
Authors

Jovan Petreski, Kristina Petrovik

Institution
Private Yahya Kemal College Skopje
Description EN

The purpose of this project is to cease the woodcutting for fire purposes by providing efficient, easy and fast way of manufacturing fire briquettes made of organic wastes of fruit and vegetables that we consume in everyday life. Moreover, the projects aims the benefits of decreasing the deforestation

(mostly done by these purposes). Alongside with deforestation, the concentration of carbon dioxide increases, as well as the greenhouse effect. In order to accomplish this study, 9 different types of materials were used to test the amount of energy stored in the material itself. For each material one briquette was made: tangerine peel, peanut shells, chestnut shells, lemon peels, walnut shells, hazelnut shells, seeds from olives, sour cherry and dates. One standard briquette (pellet made of beech wood in our case) was used in order to compare the efficiency of the new briquettes. After that, all nine briquettes were put into fire and using a (self made) calorimeter the energy released was measured. The results showed that there is significant amount of energy which can replace the currently using briquettes (keeping in mind that these pellets are made from high caloric wood) and also not a bad profit can be made. At the end we calculated that the efficiency of the new briquettes production process is 52.3% for chestnut and around 46% for walnut and peanut. The project proved that at least half of the trees cut can be saved.

Class no.

2

MK.3.**Title**

Outstanding and classic: remediation of soil contaminated with heavy metals, Pb, Zn and Cd

Authors

Nesibe Deliktas, Ilmija Bajro

Institution

Private Yahya Kemal College Karposh-Skopje

Description EN

Our project is related to soil remediation from heavy metals: Zinc (Zn), Cadmium (Cd) and Lead (Pb). Soil is a multi-layered, complex system that has nutrients for plants and is the base of thousands of food chains. Heavy metals (Zn, Pb and Cd) are very dangerous for human health and the environment. Due to the presence of heavy metals in the soil, the use of farmland is reduced.

We observed that everyday organic wastes can be used for soil remediation. We took the soil from Tetovo, which is one of the most polluted cities in the world. The polluted air in Tetovo has a big influence on the soil. The organic wastes we used to purify the soil are: banana, lemon and orange

peels. We choose these peels because they contain citric acid that is effective for cleaning and disinfecting heavy metals, bacteria and other chemicals that are also toxic to nature. We planted the ground soil from Tetovo in eight pots with the peels, the peels are in different grams, and some are placed together, some individually. Also in the soil we planted a radish seed to see what effect the scum on the development of the plants will have. The pots were taken for testing in a professional laboratory. The results are: Zinc is most purified by orange peels, Lead is most purified by banana peels, and Cadmium is most purified by lemon peels. Our goal for this project was to demonstrate how to protect the environment in an easier and cheaper manner.

Class no.

1

MK.4.**Title****Antediluvian Miracle from the nature ideal solution for pests, diseases and insects****Authors**

Olivera Stojkova

Institution**Private Yahya Kemal College Butel Skopje****Description EN**

The fundamental purpose of our project is to come across with all the miracles provided by the nature in sequence to find a new, economical (inexpensive) and highly effective method to one of the most common issues ongoing in the everyday lives of our communities. In this project is presented how to reduce the pests, which are environmentally unfriendly to the plant such as insects and weeds with the help of three natural herbs: *Urtica dioica* (Stinging nettle), *Ocimum basilicum* (Basil) and *Melissa officinalis* (Lemon balm). Mixing this three herbs in certain ratios we made an organic and non-toxic pesticide which will be as effective as the chemical pesticide but in addition less harmful. By analyzing the specifications of the above mentioned herbs we succeed in providing our hypothesis as true. The miraculous properties of the stinging nettle against diseases, and the insect-repellent effect gained from basil and the lemon balm gave us the ability to produce a new product, which will be useful in pharmacology, agriculture and in our everyday live as shown to be our biggest target group. By treating three different plants in three different ways we were

able to recognize the difference exposed from the plant and the soil where it is growing, in both ecological and chemical way. All of that with no cost as the pesticide can be easily prepared in every household and the herbs can be found even in our nearest surroundings.

3

Class no.

MK.5.**Title**

Low costs natural and homemade DIY pesticide using garlic, onions, chili peppers, baking soda and sunflower oil

Authors

Mihaela Hadziska, Anastasija Tortevska

Institution

Private Yahya Kemal College Karposh-Skopje

Description EN

Pests can cause serious damage to flowers, fruits and vegetables. These creatures attack your garden in swarms, literally draining the life from your crops. Often inviting disease in the process. Many chemical pesticides are proven to be unsafe for the environment, or may make flowers and vegetables unsafe for consumption. However, thankfully there are many homemade organic options to turn to in the struggle against pests.

Our project's aim was to find a decent replacement, an organic pesticide which is *low-cost, nontoxic and easy to make in home environment* in order to protect plants and crops from many pests. We used ingredients that in our country were easy to find, like vegetables commonly used in Macedonian traditional cuisine.

We decided on using garlic, onions, chili peppers, baking soda and sunflower oil, as the onions' and garlic's pungent aroma, the chili peppers' insect repellent qualities, the baking soda's fungicide characteristics and the sunflower oil's unique insecticide qualities were a quite interesting combination. Everyday cooking supplies and vegetables turned out to be very powerful pesticides. We tested out several plants (*Nerium oleander*) on concentration gradients and on multiple types of pests.

3

Class no.

MK.6.**Title****How seed storage conditions affect plant growth****Authors**

Angela Dineva, AnaMarija Trnkovska

Institution**Private Yahya Kemal College Strumica****Description EN**

Proper storage of seed is vital to conserving its vigor and vitality. Seeds can last from a few years to centuries, depending on the species and the storage conditions. In general, most seeds stored in cool, dry conditions will survive longer than seeds stored in a wet, warm environment. In many parts of the world, agricultural seeds are stored in bins that are open to the ambient conditions, often resulting in short storage life and poor seed quality in hot, humid regions, as well as losses due to insects and rodents.

Seed scientists using modern technology and carefully developed, species-dependent procedures, can prepare seeds to be stored in cryostasis in facilities called gene or seed banks. However, in practical terms, these techniques and the necessary equipment are not readily available to the general public.

Therefore, we tried to store seed through very simple experiment with materials that can be easily found in our homes. The experiment consists of nasturtiums, which are fast-growing, easily maintained and beautiful to behold. Best of all, the entire plant is edible. The leaves, stems and flowers create a jazzy accompaniment to any salad.

The main idea is to encourage improvements of current agricultural methods. We determined how seed storage affect plant growth under three different conditions.

Rate of plant growth and development is dependent upon the temperature surrounding the plant and each species has a specific temperature range represented by a minimum, maximum, and optimum.

3. Agriculture and Food Industry

Class no.

MK.7.**Title****Implementing B12 in plants****Authors**

Daniela Gjorgieva, Elena Ivanova

Institution**Private Yahya Kemal College Strumica****Description EN**

B₁₂ has a key role in the normal functioning of the brain and nervous system via the synthesis of myelin and the formation of red blood cells. It is involved in the metabolism of every cell of the human body, especially affecting DNA synthesis, fatty acid and amino acid metabolism. This all shows the importance of B₁₂ and since B₁₂ is not contained or synthesized by any plant this can represent a huge problem considering the rise of vegetarianism and veganism. B₁₂ deficiency can have some serious damage on people, so that is why we thought up of this project.

Our idea is to implement B₁₂ in plants by using various methods in course of few months. We thought about using a plant that is widespread and is mostly made up of water since B₁₂ is a water-soluble vitamin. The first way we can try to do this is by artificially injecting the potato stem with small doses of B₁₂ so it can be stored in the edible part-the root. The second way is more elaborate and it includes genome mapping in order to attach strains of the B₁₂ producing enzymes to the potato. By using these two methods (a more commercial and a more elaborate method) we can try to produce a B₁₂ containing potato and solve a big issue.

3. Agriculture and Food Industry

Class no.

MK.8.**Title****How Tomato lycopene helps in the revention of cancer****Authors**

Bojana Trnkovska, Ratka Tancheva

Institution**Private Yahya Kemal College Strumica****Description EN**

In spite of the short history, scientists have been able to amass quite a significant amount of research that supports the role of lycopene in human health. Increasing evidence suggests that tomato lycopene may be preventive against the

formation and the development of lung, prostate and stomach cancers.

The Health Professionals Follow up study carried out in 1995 was the first to indicate that lycopene in tomatoes may have anticancer benefits, specifically that it may help to lower cancer risk.

Experimental studies demonstrated that lycopene may inhibit the growth of several cultured cancer cells and prevent tumor genesis in animal models through various mechanisms, including a modulation of redox status, cell cycle arrest and/or apoptosis induction, a regulation of growth factor signaling, changes in cell growth-related enzymes, an enhancement of gap junction communication and a prevention of smoke-induced inflammation. Several lycopene metabolites have been identified, raising the question as to whether the preventive effects of lycopene on cancer risk is, at least in part, due to its metabolites.

This article reviews data on the cancer preventive activities of lycopene, possible mechanisms involved, and the relationship between lycopene consumption and human cancer risk.

With this project we want to encourage people's awareness to pay attention to natural products (in our case the tomato lycopene) that we are not aware that they can help us.

4. Medicine – Health Care - Cosmetics

Class no.

Innovative Research

MK.9.

Title

A new way providing alternative energy source for green house treatment and the discovery of the effect of radio waves on waste water

Authors

Melin Paso, Lerondina Arslani

Institution

Private Yahya Kemal College Struga

Description EN

The discovery of salt-water burning (sodium heating up)* in radio-waves' surroundings is one of the biggest innovations in the modern world. For the first time this method* was used for a different purpose in waste water treatment. Also a second experiment was performed including the concept solution to the problem with greenhouse wintertime heating. Both experiments included 200W 13,56MHz radio-wave

transmitter. In the 1st experiment test-tubes filled with wastewater were placed between an antenna and receiver, and an apparatus-(reflux) was set. The 2nd experiment included pea plants sprayed with sodium nitrate-based fertilizer, placed in a greenhouse between the radio's elements, and other greenhouse heated with an electric heater.

In the 1st experiment we observed burning flame's temperature, condensed water and dry sediment's bacteriological analysis. While in the 2nd experiment, the nutrition value of plants and growth was observed. Results showed 1632,41°C temperature or 3,10MJ energy. Bacteria's amount was reduced from 107bacteria/ml to 12bacteria/ml. The condensed pure water was 64,31% of the wastewater. In the 2nd experiment, plants kept nutrition value in either case; however the rate of growth was reduced in the electric heater atmosphere. Sodium nitrate-based fertilizer acted just like a thermal blanket on the plant within the radio's elements.

The main goal of this project is efficiency. If a radio transmitter is used instead of an electric heater, we spend 17% less money. Also the wastewater treatment would be more efficient, because of the self-providing energy for the system.

2. energy and sustainable development

Innovative Research

Class no.

MK.10.

Title

A less toxic and more eco-friendly alternative to conventional antifreeze

Authors

Trajche Bojadziev, Ljubica Filipova

Institution

Private Yahya Kemal College Butel-Skopje

Description EN

In our daily lives we use many different types of chemicals. We are not always aware that some of them are actually harmful to us and our biosphere. Traditional antifreeze is well known for its toxicity, claiming the lives of small children and animals with several thousand cases reported worldwide each year. And so a better and safer alternative for antifreeze is due. And that particularly is the purpose of our project - to present a better, safer antifreeze and coolant fluid than that which is commercially the most widespread. For this we have considered

INTERNATIONAL EXHIBITS

the use of propylene glycol, a synthetic organic compound that is soluble in water and has the property of lowering the freezing point of water and raising the boiling point as well. We have also devised a way to overcome its shortcoming compared to ethylene glycol, its lower heat conductivity and smaller specific heat, by adding silver particles to increase the heat conductivity and specific heat. Our experiment has yielded favorable results, proving our hypothesis and so achieving an antifreeze solution that is effective and non-toxic, as the quantities of silver and propylene glycol are too small to be harmful in any way. We hope that with our developments we will eliminate one more environmentally unfriendly substance that we use on a daily basis. (max 250 words)

8

Class no.

Innovative Research

MK.11.

Title

Authors

Institution

Ecological Components in house insulation

Nikola Kamov, Sanja Kartova

Private Yahya Kemal College Karpos-Skopje

Description EN

There are many types of house insulation, but some of them are very expensive and not worthy for their price. Also there are cheaper ones but the biggest problem with them is the unhealthy influence of the human's life. Some of the insulations cause skin problems and some of them may even cause cancer. We found out a new formula for better, more economic, completely healthy and natural way of producing new kind of house insulation. Our product contains saw dust and ammonium sulfate. It's a fact that saw dust contains cellulose and ammonium sulfate is being considered as a fire- retardant chemical for cellulose insulation. Trees are getting cut every single millisecond. They are used in production of many raw materials. But they are never used completely. The residual of process of cutting trees or making furniture is often thrown as a waste. In some cases briquettes are produced. They are used to inflame, but while they're burning they release toxic gas. If we use the tree waste or also called saw dust we would have lot of benefits. The tree destroying would be less and the result would be natural products which would be better and cheaper for the environment.

2

Class no.

Innovative Research

MK.12.**Title****Nutritional properties of Fe Bio-fortified Soft Wheat Varieties 'RADIKA'****Authors**

Blaze Menkinoski, Marija Brakoska

Institution**Private Yahya Kemal College Karposh-Skopje****Description EN**

This research was conducted with a view to examine the influence of the usage of Fe-chelate fertilizers on the Fe's concentration in the seed, flour and the percentage of proteins and fat of the soft wheat. In the experimental part we used Yara Vera™ Amidas is a highly qualitative granular fertilizer which contains nitrogen and sulfur in four different variations. We mixed the fertilizer with the soil for the first variation, and the fertilizer is mixed with soil and is used for foliar feeding for the second variation, the fertilizer is used for foliar feeding for the third variation and the fertilizer is not used for the fourth variation. The Micro-Kjeldahl gave us the e results. Considering that the results are positive we can use this method for having a better environment, high-quality crops.

Class no.

3 / Innovative Research**MK.13.****Title****With the help From Zeolite, eggshells, and fish bones to clean soil****Authors**

Bisera Lozanovska

Institution**Private Yahya Kemal College Karposh-Skopje****Description EN**

Heavy metal contamination of soil is one of the most important environmental problems throughout the world. As chemical hazards, heavy metals are non- biodegradable and can remain almost indefinitely in the soil environment. However, the solution that may have been found refers to combining the heavy metals with the agricultural wastes throughout chemical processes and reactions and producing harmless minerals that would remain in the soil but will do no further damage to it. Agricultural waste is any waste being generated from different farming processes in accumulative concentration. Adequate utilization of agricultural waste reduces environmental problems caused by irresponsible disposal of the waste. Agricultural wastes such as fish bones and eggshells and the mineral zeolite are going to be used in

INTERNATIONAL EXHIBITS

reducing the toxicity of the soil. Zeolites are a group of minerals. I found it interesting that the zeolite can get the heavy metals from the soil and also from water. Fish bones are pretty much an affordable method of lead cleaning in the soil. When crushed fish bone is mixed into the soil, the calcium phosphate combines with the lead to form pyromorphite- a harmless, consumable, crystalline mineral. Eggshells show a promising removal capacity of heavy metal ions as well as has a good neutralization capacity in the treatment of strong acids.

1

Class no.

Innovative Research**MK.14.****Title****Authors****Institution****From Leaves to Biodiesel**

Lorik Vlashi, Albion Nazari

Private Yahya Kemal College Struga**Description EN**

Energy has always played an important role in our society, fuel especially has been one of the main source of energy for human species since the early beginnings of civilization, but the environmental and health costs of burning fuel are unseen but significant, this has a huge impact on global warming since we use fossil fuel mostly as a source of energy, carbon fuels are extremely dangerous are pollutants, the combustion of fossil fuels also releases sulfur dioxide carbonic and nitric acids, suffocating corrosive and suffocating gas, it may also get dissolved in rain water causing the so called acid rain. Fossil fuel is also harmful while it is extracted since it is found in deep layers of earth core, mostly in oceans, while it is extracted huge amounts of it are released in the water, causing extreme harm to the inhabitants of these environment. Furthermore fossil fuels have a huge impact in global warming, and are really unpleasing effects on the environment, so we decided to take up action and make biofuel from something that we entirely do not use, leaves fall and decompose. So we decided to give it a try, and we attained the goal of producing biofuel from leaves. A key point is that we use something completely useless, leaves that have fallen. We attained our main goal, producing biofuel from leaves. This not only that is a good idea of replacing fossil fuel, but it will also encourage people to plant more trees, green trees that will help on improving our environment.

2- Energy and sustainable development

Class no.

Innovative Research

MK.15.**Title****The Effect of Hypericum Perforatum over Pathogenic Bacteria that causes infection on human skin****Authors**

Zafer Muarem, Ozlem Zekmanovska

Institution**Private Yahya Kemal College Struga**

Biofilm embedded bacterial pathogens such as *Stafylococcus* spp. *Escherichia coli*, *Pseudomonas aeruginosa*, and *Acinetobacter Baumann* are difficult to eradicate and are major sources of bacterial infections.

In Macedonia there are many plants that are used for tea or for some other purposes. But very few of them know what is inside these plants. *Hypericum Perforatum* is a plant that is used to make tea but we used this plant by doing experiment if it contains antibiotics that can kill the bacteria that are pathogenic to our skin.

Hypericum Perforatum is found almost in every mountain in Macedonia and it is dried to be used as a tea which is also helpful for some internal organs. Instead of making tea we just extracted what's inside of *hypericum* by using acetone.

Description EN

New drugs are needed to combat these pathogens. *Hypericum* is a plant genus that contains species known to have antimicrobial properties. However, the specific metabolites for the antimicrobial properties are not entirely known.

Certain members of the *Hypericum* genus, including St. John's Wort (*Hypericum Perforatum* L.), produce metabolites possessing antimicrobial properties. These molecules may play defensive role in protecting the plants and human beings from assaults by environmental pathogens. In our experiment we wanted to use this plant by making cream that can be used against this kind of infections that is caused by pathogenic bacteria.

Class no.

Innovative Research

MK.16.**Title****Makeeasy Linens set****Authors**

Umit Uzunboy, Dea Rajhl

Institution**Private Yahya Kemal College Karposh-Skopje****Description EN**

I live that story every weekday morning (without being late). But it is a big problem. For example, you made your bed in the morning. Later in the day you want to lie on your bed. After doing your quest your bed became untidy again. So you have to make it again. The event in the story that you have just read is a disaster. I thought about this terrible problem. First I thought about an auto bed. But providing it was too expensive and I need a cheap and easy thing for costumers (also for me). Later I found this LINENS SET. It is suitable for every condition and it is cheap too.

The function of this set is same as a luggage or a coat.
So you can learn how to use very easily.

Class no.

Innovative Research**MK.17.****Title****Anti-dermatitis ointment (damaged skin)****Authors**

David Goshevski, Jana Majnova

Institution**Private Yahya Kemal College Karposh-Skopje****Description EN**

While living in 21st century we face real problems such as: air pollution, consumption of GMO food, unsafe cosmetics and personal hygiene products and ground pollution which results into food intoxication, usually affecting fresh fruits and vegetables. Many of the materials used in production of food and cosmetics contain toxic and dangerous chemicals, preservatives, and food stabilizers which often have a negative impact on human health. The consumption of those substances might result in a serious health issues for some individuals, and they are commonly known as skin allergy disorders. A big percentage of world population has some skin related problems, usually represented with itchiness, redness, and inflammations, medically recognized as different kind of dermatitis.

To fight against dermatitis we have decided to employ a traditional medicine remedies commonly used in

the region of Berovo, Macedonia with additional important customizations to increase their healing effects. Our main goal is to try to help people with skin related problems caused by allergy reactions and dermatitis. The anti-dermatitis medicine which we have developed is prepared using healing plants which are grown into the wild of the most famous eco-region in Macedonia called Malesevo. Furthermore, the oils used in our anti-dramatis medicine are purely organic and are produced using “extra virgin” extraction techniques.

Class no.

Innovative Research**MK.18.****Title****Authors****Institution****Hazelnut shell briquettes**

Eva Lazarevska, Eda Avmedovska

Private Yahya Kemal College Karposh-Skopje

One of the greatest eco-issues in the modern world is deforestation.

The aim of our project is to tackle this eco-problem by employing hazelnut shells to provide an alternative heating solution. A total amount of 7 kilograms of hazelnut shells was put through a chain of machines in the “Max Energy Bio Pellet” factory in Serbia. Here they were transformed into eco-friendly briquettes. We conducted several experiments to test the quality of our briquettes in the college laboratory in the Faculty of Design and Technology of Furniture and Interior, part of Ss. Cyril and Methodius University, Skopje, with the help of Prof. PhD Gjorgji Gruevski. We tested the

Description EN

a) Calorific Value –it was 22956 kJ/kg, notably higher than the standard for wood briquettes, measuring a minimum of 16750 kJ/kg.
 b) Ash Content –it was calculated to be 0.2%, strikingly low.
 c) Sulphur Content –we determined it to be 2%.
 d) Percentage Moisture Content – the briquettes contain 3.01% moisture, compared to the standard maximum 18% of wood briquettes. Based on the gathered data, we concluded that the hazelnut shell briquettes are more efficient and of higher quality than the standard wood briquette. They are completely safe and natural and pose no threat to the environment. Implementing their usage would reduce air pollution and deforestation in two aspects, the first one being that less trees are cut down for the

purpose of heating, and the second one being that this would encourage and stimulate the growing of hazelnut trees.

MK.19.

Title

COMPOSITION AND UTILIZATION OF GRAPE POMACE

Authors

Katja Runcheva

Institution

Private Yahya Kemal College Strumica

Description EN

Winery wastes include biodegradable solids namely stems, skins, and seeds. This socio-economic activity generates a large amount of solid waste. With 3 wineries operating in the region of Stip the pomace generated from wine processing presents a disposal problem unless this by-product can be utilized in some manner, such as animal feed, pallets, bio-fuel or even returned to the vineyard as mulch. To utilize the pomace in all three manners we should know the composition of it, so that is why we present the composition of pomace with description of some components that are essential for using in all three manners.

Advances in biofuel technology – where energy-rich combustible fuels are made of plants – are rapidly approaching the point where it becomes economically viable. The researchers showed that up to 400 liters of bioethanol could be produced by fermentation of a tone of grape marc. Another technique of bio-energetic recovery pomace is the production of biogas and also solid biofuel produced from the cane of the grape and grape marc.

To prevent negative effect on environment from grape waist could be to stabilize the grape marc prior to using it as crop fertilizer, and that means decreasing of microbial activity and concentration of labile compounds.

At best grape marc can have dry matter of 90% and up to 80 MJ/ME. Effectively this means grape marc is basic feed which can be used as a filler in a ration that depends of food composition that stock need and that is economically efficiently.

Class no.

- 1. Environment-pollution control**
- 2. Energy and sustainable development**

Innovative Research

INTERNATIONAL EXHIBITS

MK.20.**Title**

Turmeric miracle of nature that removes heavy metals from water

Authors

Valerija Ilievska, Anastasija Trenkoska

Institution

Private Yahya Kemal College Karposh-Skopje

Description EN

Clean water shall be available to everyone, and shall not be a luxury, but is it like that in the real life?! We are taking water for granted even though there are places in the world, where people have clean water neither for drinking nor for any other purpose. And yet we are polluting it constantly. Water pollution occurs when toxic substances enter water bodies, get dissolved in them. This is resulting in degradation of the water quality. Loads of factories are polluting the water throwing toxic substances and heavy metals in it, which are deadly dangerous for living creatures. That's why we are providing an innovative, efficient, inexpensive and environmentally friendly way to clean water, and reusing it in different ways such as drinking and for technical purposes. We will show a way of cleaning the water with turmeric, easily available plant, which in several, easy steps can clean a great percentage of the heavy metals in the water. According to the results obtained from the experiments we've done and their financial costs, compared to the methods used in water processing factories, this is an inexpensive and fast way to clean the polluted rivers and oceans and save the planet

Class no.

Innovative Research

MK.21.**Title**

Using of agricultural used materials as additives in concrete

Authors

Bojana Stefanoska, Stefani Shterjova

Institution

Private Yahya Kemal College Karposh-Skopje

Description EN

In our city, you can see construction sites going on almost everywhere you turn your head, on the way home, from the window of our school etc. Mostly students occupy this newly built flats since Skopje is the educational center of our country. With this in mind, we

started to think of a way to decrease the cost of the buildings materials, in our case concrete, yet still for it to retain its physical properties. The goal of our project is to test the physical properties of the mixtures obtained by adding agricultural waste materials, such as rice husk and corn cob and see if they make a good choice as an additive in concrete. We expect to observe a slight decrease in the physical properties of the concrete, which still remain in the allowed boundary. We believe that this decrease will not represent an obstacle in the further use of this additives.

Class no.

Innovative Research

MK.22.

Title

Authors

Institution

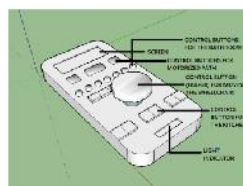
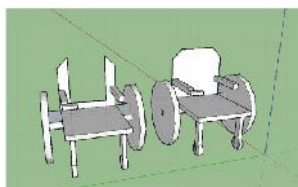
DisAmena

Bojana Vukovojac, Daniela Delovska

Private Yahya Kemal College Karposh-Skopje

Description EN

DisAmena is a one – bedroom house fully equipped for people that have a walking disability, i.e. people that are using a wheelchair. By combining the technology and the wheelchair, and also after days of research seeking the problems that these people face, we came up with a solution. Firstly, for this house specifically, we created a unique wheelchair with an appropriate controller, which will give the person all of the possibilities. There are two controllers, one on the wheelchair and one that is not attached



Class no.

Malaysia

Represented by Malaysian Research & Innovation Society (MyRIS) &
University Malaysia Perlis

MY.1.

Title	EcoFuel
Authors	Hasibah Che Ali, Suhaimi Abdullah, Ainnur Awatif Azizi and Zarina Said
Institution	Sekolah Menengah Kebangsaan Bakti
Patent no.	Patent Search
Description EN	EcoFuel is an environmental friendly fuel made using waste materials such as plastic straw, old newspaper, polystyrene foam, and pencil stick waste. Our invention is the first ever invention where waste materials can be converted into EcoFuel using simple method. By utilized these wastes, we can save the environment by turning wastes into valuable products such as EcoFuel.
Class no.	1. Environment



MY.2.

Title	Green-based Antibacterial Hand Sanitizer Serum (GreeSS)
Authors	Nor Aida Zubir, Mohamed Syazwan Osman, Norhaslinda Nasuha, Rasyidah Alrozi, Hawaiah Imam Maarof, Nurul Huda Hashim, Muhammad Zahiruddin Ramli, Zakaria Ismail, Mohd Nazar Zabadi Mohd Azahar, Mohammad Khairul Azam Selamat
Institution	Universiti Teknologi MARA (UiTM)
Patent no.	-
Description EN	Good hand hygiene practices enable to reduce the spread of illness-causing germs as well as risk of illness in our daily life. Instead of handwashing with soap and water,

INTERNATIONAL EXHIBITS

the use of alcohol-based hand sanitizer can be considered as one of the easiest way to keep hands clean on the go. The commercially available alcohol-based hand sanitizers (60 to 95 wt%) are mainly derived from the synthetic alcohol which can potentially lead to dry skin and/ or infection especially for those who suffer with skin problems such as eczema or psoriasis. In line with the growth of green technology towards nature based product, this work attempts in substituting synthetic alcohol by the bio-based alcohol (i.e. bioethanol) to produce green based hand sanitizer serum (GreeSS). Addition of biosynthesized silver nanoparticles (AgNPs) derived from *Christia Vespertilionist* plant extract into the formulation mixture confer the GreeSS with additional antibacterial characteristics that can effectively kills and inhibits growth of bacterial strains. Clinical trials have proven the efficacy of GreeSS in disinfecting 4 different types of bacteria (i.e. E.Coli ATCC 1175, Klebsiella Pneumoniae C6, Staphylococcus Aureus 9144 and Staphylococcus Pyogenes 19615) which were equivalent too and even better than existing commercial product. In addition, the GreeSS also possess a modest sensory experience that is gentler on the skin, and less likely to dry the skin out.

Class no.

4



MY.3.**Title****GreenFoam - Multifunctional Packaging Foam from Agricultural Wastes****Authors**

Hanafi Ismail, Ahmad Fikri Abdul Karim

Institution

Universiti Sains Malaysia

Patent no.

Patent Search

Description EN

Using the Latex Foam Technology, low cost manufacturing process and various kind of agricultural wastes a GreenFoam can be produced. GreenFoam – A cost effective, easy and modern way to produce degradable, highly impact resistant and fire retardant packaging foam materials can be used as green packaging product to replace conventional non-degradable commercial foams which create serious environmental problem.

Class no.

1. Environment

**MY.4.****Title****Utilizing Foamed Concrete for *Non-Finishing* Wall****Authors**

Ridho Bayuaji & M Sigit Darmawan

Institution**Institut Teknologi Sepuluh Nopember****Patent no.**

patent process in Indonesia (2018)

Description EN

In this innovation, to utilize foamed concrete materials is as wall panels with cement board on both sides. The motivation of this innovation is foamed concrete has a lightweight concrete. The standard used for this wall panel test were ASTM C 393-00 for flexural test of sandwich constructions, SNI 03-1974-1990 for compressive strength testing, SNI 03-0349-1989 for absorption test, and SNI 0096: 2007 for testing

INTERNATIONAL EXHIBITS

Resistance Against Seepage. Analyzed from the test results using SNI 03-0349-1989 as the quality parameters of the studied wall.

Applications: the panel wall for house fabricated

Class no.

7



MY.5.

Title

Potato Starch Nano-Composites As An Alternative Materials For Coronary Stent Applications

Authors

Noorhafiza Muhammad, Mohd Mustafa Al Bakri Abdullah, Nurul Husna Zakaria,, Mohd Shuhidan Saleh, Christine Liew Mei Wan, Chew Chun Heang.

Institution

Universiti Malaysia Perlis

Patent no.

-

Description EN

In recent years, the development of biodegradable materials from renewable sources based on polymeric biomaterials have grown rapidly due to increase environmental concerns and the shortage of petroleum sources. In this regard, naturally renewable polymers such as starch has shown great potential as environmental friendly materials. Besides, the unique properties of starch such as biodegradable and non-toxic, biocompatible and solubility make them useful for a various biomedical applications, including coronary stent. Regardless of their unique properties, starch materials are known to have limitations in term of poor processability, low mechanical properties, poor long term stability and high water sensitivity. In order to overcome these limitations, the incorporation of nano size fillers into starch materials (nano-composites) has been introduced. In this study, improvement in the potato starch properties was aimed by the incorporation of bentonite and hydroxyapatite (HA) nanofillers.

Class no.

6

MY.6.

Title	Novel Multipurpose Geopolymer Coating For High Temperature Applications
Authors	Liyana Jamaludin, Mohd Mustafa Al Bakri Abdullah & Kamarudin Hussin
Institution	Center of Excellence Geopolymer & Green Technology, Universiti Malaysia Perlis
Patent no.	PI 2012700134 and 12164099.9-2111
Description EN	Surface deteriorations, corrosion of concrete and steel becoming a major problem for durability of the structures. The surface deterioration could lead to the structural problems because of the loss cover and ensuing reinforcement corrosion. Multipurpose Geopolymer Coating from processing of fly ash geopolymer paste becomes major solution to minimize deterioration by protecting surface of materials and increased strength.
Class no.	2

MY.7.

Title	Geopolymer Underwater Concrete in Marine Construction
Authors	Zarina Yahya, Mohd Mustafa Al Bakri Abdullah, Muhammad Faheem Mohd Tahir, Long Yuan Li, Rafiza Abd Razak, Kamarudin Hussin
Institution	Centre of Excellence Geopolymer & Green Technology (CeGeoGTech) UniMAP
Patent no.	Patent application No. US008337612B2
Description EN	<p>The construction of structure surrounding by marine environment such as bridges or jetty required special precaution when concrete is to be placed underwater. The concrete should be plastic, cohesive and have good flowability. For conventional concrete (OPC), it required special admixture to obtain these properties. However, by using geopolymer concrete (GPC) it only required any source materials that rich in silica (Si) and alumina (Al) and alkaline activator. The durability of geopolymer concrete also exhibited impressive mechanical properties compared to conventional concrete.</p> <p>Applications: Geopolymer concrete can be used to construct structure components that lies underwater such as bridge piers.</p>
Class no.	7. Buildings and Materials

MY.8.**Title****New Discovery of Sm³⁺ in Reducing Cost for Red Phosphor in White LED Applications****Authors**

Nur Syazwanie Zailani, Mohd Fathullah Ghazli, Rosli Hussin, Shayfull Zamree Abd Rahim, , Mohd Nasir Mat Saad, Mohd Khairul Fadzly Abu Bakar, Muhamad Farizuan Rosli, Mohd Effendi Muhammad Suandi, Amarul Talip, Irfan Abd Rahim, Norshah Afizi Shuaib.

Institution**Patent no.**

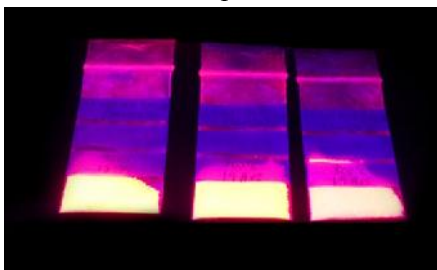
284711363 UK COPYRIGHT

Description EN

Red-emitting phosphor has strong absorptions in the blue region which makes it an important phosphor for converting blue LED light into red for lighting and display applications. Luminescent properties of red phosphor are due to the rare earth element. However, this rare earth element such as Eu³⁺ is very expensive and its mining activities is unsafe to environment. This project has reduced the use of rare earth element down to 70% while the luminescent efficiency is maintained.

Class no.

1

**MY.9****Title**

Intelligent Real Time Soil Moisture Detector using Synthetic Aperture Radar

Authors

Mardeni Roslee, Khairil Anuar

Institution

Multimedia University, Malaysia

Patent no.

PI2015703777

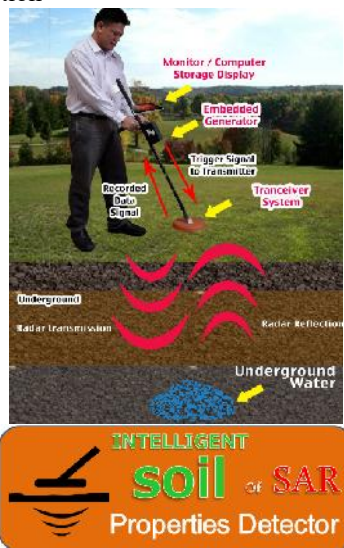
Description EN

Construction and agriculture industry relies heavily on soil moisture. It is essential for agriculture industry to know about soil moisture to provide optimum environment to grow the crops. Unfortunately, the challenging issue is found on the suitable device/system

in determining accurately the soil moisture. In our invention, we developed an alternative method without having to make major disturbances to the structure which has proven to be quite accurate, much faster and in most cases, very much cheaper than the conventional methods. This invention adopts an application of radio wave reflection method, as electromagnetic waves travel at the speed of light and non-destructive radar measurement without damaging the soil eco-system. The advantages are non-destructive, fast and real time, no license operator, wireless, small in size, low cost, lightweight, automated soil moisture detection and suitable for many types of soils.

Class no.

Invention Classification: Information Technology and Communication



Mexico

MX.1.

Title HARVESTT
Authors Emmanuel Campos Genaro, Jose Israel Romero Flores
Institution General Systech - Instituto Politecnico Nacional
Patent no. Patent in process

Description EN

A general concept of what HarvestT is, is an agro-technological system, implementing innovations, which proposes a construction chamber that, through certain humidity, temperature and photoperiod controls, is used to test and improve the germination of seeds and their germination in optimal conditions. In addition to having a greenhouse, which doubles the most efficient process in several seeds, using electronic elements, the practical theoretical content of instrumentation and control, accompanied by very elementary approaches to thermodynamics in a small space controlled at atmospheric pressure, and having a Specialized software for deeper study, adding fuzzy logic concepts for prediction and mathematical analysis for mass crops

Class no. 13

MX.2.

Title ZlatanTKD 01
Authors Emmanuel Campos Genaro, Jose Israel Romero Flores
Institution General Systech-IPN
Patent no. Patent in process

Description EN

Electronic taekwondo breastplate for training and combat for martial arts, with learning system and recognition of combat techniques

Class no. 13

Morocco

Represented by OFEED

MA.1.**Title****Intelligent device for automatically changing the orientation of a photovoltaic panel****Authors**

Majid EL BOUAZZAOUI

Institution**OFEED****Patent no.**

WO/2018/056797 - PCT/MA2017/050005

Description EN

Intelligent device for automatically changing the orientation of a photovoltaic panel for automatically and regularly removing dust or sand particles which may accumulate on the surface of a photovoltaic panel in order to ensure maximum long-term performance, while Avoiding the use of precious reserves of water and air pollution.

Photovoltaic panels are effective only if they are clean, dust-free and sand-free. This constraint requires regular cleaning of the photovoltaic panels with water. And there is a very high number of photovoltaic panels which require regular cleaning. For example, in Topaz solar plant there are 9 million solar panels. So how much water is necessary to clean them daily?

Generally, a great consumption of water and fuel (for the transport of this water) is required to clean the solar panels in solar plants, usually located in desert so far from water. And therefore, the use of precious water reserves and air pollution (transport of water containers).

In addition, this device can be used on existing photovoltaic panels and work for just few seconds a day using only electricity generated from those photovoltaic panels.

Class no.

1, 2

Moldova

Botanical Garden of Academy of Science Republic Moldova

MD.1.

Title The new variety „TITAN” of giant miscanthus grass (*Miscanthus giganteus* Greef et Deu)

Authors Victor ȚÎȚEL, Alexandru TELEUȚĂ

Institution Botanical Garden (Institute) of Moldova

Patent no. Patent application No. 20170019/2017.09.14

The variety „TITAN” of *Miscanthus giganteus*, plant height 350-385 cm, productivity reached 60-100 t/ha of green mass or 16.2-28.0 t/ha dry matter.

Multi-purpose crop: ornamental plant, feedstock for industrial conversion to biofuels and biomaterials.

Solid biofuel with specific density 882 kg/m³ of briquettes and 1262 kg/m³ of pellets, ash content 1.73-2.51 %, potential of energy production 325-500 GJ/ha, *equivalent to 11.1-20.1 t coal or 7.8- 12.2 t conventional oil.*

**Description
EN**

Feedstock for biogas production with biochemical methane yield 259-355 L/kg organic dry matter, the potential of biomethane production: 4100-7000 m³/ha.

Feedstock for cellulosic ethanol production, the biomass was characterized by high content of cellulose (557 g/kg), hemicellulose (283 g/kg), pentose carbohydrates (100 g/kg) and hexose carbohydrates (47 g/kg). The theoretical ethanol yield reached 610 l/t dry matter.

It is useful in phyto-amelioration of eroded land and phytoremediation of contaminated land.

Class no.

2,3



MD.2.**Title**

The new variety „ARGENTINA” of Columbus grass (*Sorghum alnum* Parodi)

Authors

Victor ȚÎTEL, Alexandru TELEUȚĂ

Institution

Botanical Garden (Institute) of Moldova

Patent no.

Patent application No. 20170018/2017.09.14

**Description
EN**

The variety „ARGENTINA” has been created by individual breeding of synthetic populations of Columbus grass (*alnum sorghum*), plant height 250-270 cm.

Multi-purpose crops: forage for animals (natural fodder, hay, haylage, silage, vitaminized flour, grains), biomass for renewable energy production, technical products. The productivity of the variety „ARGENTINA”, after 2 harvests, reached 44.0 t/ha of green mass or 9.2-11.8 t/ha dry matter. The biochemical composition of the dry matter of natural fodder: 8-10 % raw protein, 2.6-3.0 % raw fats, 27-38 % raw cellulose, 44-50 % nitrogen-free extractive substances, 7-12 % minerals. 100 kg of natural fodder contains 21-29 nutritive units and 216-290 MJ/kg metabolizable energy for cattle, sheep and goats.

The biochemical composition of the grains of Columbus grass:

10.1 % raw protein, 4.5 % raw fats, 10.5 % raw cellulose, 70.2 % nitrogen-free extractive substances, 4.7 % minerals.

Feedstock for renewable energy:

Solid biofuel with specific density 783 kg/m³ of briquettes and 1008 kg/m³ of pellets, the ash content 3.71 %, the potential of energy production 190-280 GJ/ha.

The biochemical methane yield: 290-350 L/kg ODM.

The theoretical cellulosic ethanol yield: 560 l/t dry matter.

It is useful in phyto-amelioration of salt-affected land, eroded land and phytoremediation of contaminated land.

Class no.

2-3



INTERNATIONAL EXHIBITS

Technical University of Moldova

MD.3.

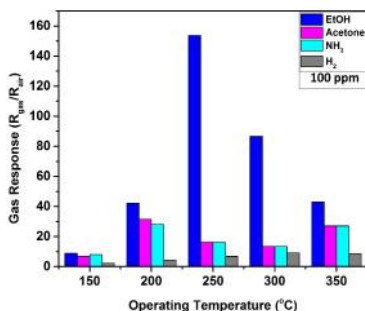
Title Ethanol sensor based of copper oxide
Authors ABABII Nicolai, POSTICA Vasile, TROFIM Viorel, LUPAN Oleg
Institution Technical University of Moldova
Patent no. MD 4495 B1 2017.06.30

Description EN

Ethanol sensor based on CuO nanowires (nanostructures), which includes a glass substrate, on the surface of which two gold contacts are deposited, a copper wire 30 μm is deposited between the contacts, characterized in that at the contact between the yarn and the gold is drizzled copper powder, which is thermally treated in air at 425 °C for 2 hours and has high sensitivity to ethanol vapor concentration 100 pmm, low response/recovery time and high reproducibility of parameters.

Class no.

1.



MD.4.

Title Device and method for measuring the resistance of sensors based on nanostructured semiconductor oxides
Authors VERJBIȚKI Valeri, LUPAN Oleg
Institution Technical University of Moldova
Patent no. MD 1065 Y 2016.08.31

Description EN The invention relates to the field of measuring equipment and can be used in measuring apparatuses that use sensors based on nanostructured semiconductor

INTERNATIONAL EXHIBITS

oxides.

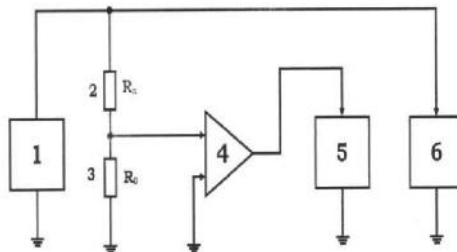
The method for measuring the resistance of sensors based on nanostructured semiconductor oxides consists in that it is

measured the U_1 voltage of the reference voltage source, is measured the U_3 voltage on the additional resistor, is calculated the voltage value that falls on the test sensor according to the formula $U_x = U_1 - U_3$, and is calculated the amount of current passing through the test sensor according to the formula $I_x = U_3 / R_3$. Calculation of R_x sensor resistance value is performed in accordance with Ohm's law, using the obtained values U_x and I_x .

The device for measuring the resistance of sensors based on nanostructured semiconductor oxides comprises a reference voltage source (1), connected to a voltmeter (6) and connected in series to the test nanostructured sensor (2) and to an additional resistor (3), to the connecting node point of which to the sensor (2) is connected the input of an amplifier (4). The output of the amplifier (4) is connected to a voltmeter (5), while the resistor (3), the common node points of the reference voltage source (1), the amplifier (4) and the voltmeters (5, 6) are connected to ground.

Class no.

1.



MD.5.

Title

Authors

Institution

Patent no.

Design concept "ROLLING LUGGAGE"

Andrei Botnariuc; Valeriu Podborschi

Technical University of Moldova

Patent application

Description EN

The project features a rigid support with wheels, attached to one or two standard suitcases (one large, another small) for the transport of hand luggage. In the rigid part of the support structure there is provided a compartment for clothes: suit, shirts, etc., that is, the garments which are easily siphoned in the usual underpants.

The invention consists in the placement of hand luggage on a single wheel holder, equipped with a suit container. The trolley is equipped with LED headlights for insufficient illumination conditions

Class no.

-



MD.6.

Title

Authors

Institution

Patent no.

„Autonom electric transport”

Licichin Dimitri, Podborschi Valeriu

Technical University of Moldova

Patent application --

Description EN

Urban transport for people, including locomotor disabilities, equipped and equipped with modern technologies - autopilot, cameras, decks for passengers with disabilities, devices for locating passengers in stations, intelligent information systems and communication.

Class no.

3, 4.



MD.7.

Title **Process for producing of alginates from brown algae**

Authors Dimova Olga, Baerle Alexei, Tatarov Pavel, Verejan Ana

Institution **Technical University of Moldova**

Patent no. MD-669

Description EN

The algae are treated with citric acid solution, for 20...30 minutes, then in an alkaline medium at a pH of 11.8... 12.8, at the temperature of 65...70°C, for 1...2 hours, the liquid fraction is separated by centrifugation, treated with hydrogen peroxide solution and citric acid, then concentrated sulfuric acid is added with continuous agitation, in order to obtain pH of 2.0...3.0. The resulting gel is matured for 30...45 min, is centrifuged, afterwards is added an alkaline solution and is filtered through cationite, the pure alginates are precipitated in form of solid fibers.

The invention can be used to produce food grade alginates in its native form, without partial hydrolysis. These dietary fibers possess famous biological properties and can to have waste applications in the food industry.

Class no. 3. Agriculture and Food Industry

MD.8.

Title **Process of obtaining a butter-like spread based on sweet cream**

Authors Radu Oxana, Popescu Lilia, Tatarov Pavel, Baerle Alexei

Institution **Technical University of Moldova**

Patent no. Patent application no. S 2017 0126 / 2017; 2017.12.08

Description EN

The process of obtaining a butter-like spread based on sweet cream refers to the food industry, especially to butter-like spreads with a high content of ω -3 and ω -6 essential fatty acids. According to the process, the emulsion formed from vegetable lipids with up to 75% polyunsaturated fatty acids (ω -3 and ω -6), pasteurized skim milk and emulsifier is mixed with a sweet cream, matured at 3...7°C and beaten. As a result, it is obtained a spread with 19...46% polyunsaturated fatty acids, which is washed, homogenized and packaged.

High nutritional value and safety butter-like spread is obtained because chemical treatments as hydrogenation, trans-isomerization are excluded.

Class no. 3. Agriculture and Food Industry

MD.9.**Title****Drying plant for fruits and vegetables****Authors**Bernic Mircea; Țislinscaia Natalia; Balan Mihail;
Vișanu Vitali; Melenciuc Mihail**Institution****Technical University of Moldova****Patent no.**

Patent application No. 1750 / 06.03.2018

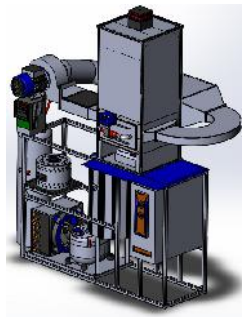
The drying of fruit and vegetables is ensured by an installation consisting of a housing on which the drying chamber is mounted to which a centrifugal fan is mounted by means of a heat generator; a recycling channel is also connected to the drying chamber, which is adjusted to a condenser, which is connected with a centrifugal fan through an intermediate channel. A microwave generator is mounted on the drying chamber and at the bottom there is an intermediate chamber in which a weighing machine is placed; Also in the lower part of the drying chamber is a lid, on which is placed a CO₂ indicator and a CO₂ receiver.

Description EN

At the bottom of the installation, a processor is mounted in the casing to guide the microwave generator; a refrigeration plant for conducting the condenser via a pipe; and a resistor for directing the heat generator. At the same time the plant is equipped with a CO₂ tank, which allows it to be fed through a hose.

Thus, the product destined for the drying process is loaded into the drying chamber, opening a lid.

The drying plant for fruit and vegetables allows to obtain a qualitative product by optimizing the drying process of the product by applying three drying methods in a single plant; convection drying, microwave application drying and CO₂ drying with microwave application, convection or combining. 3, 4.

Class no.

MD.10.

Title

Autonomous integrated irrigation systems based on photovoltaic installations

Authors

Bostan Viorel, Bostan Ion, Dulgheru Valeriu, Sobor Ion,
Secrieru Nicolae, Vaculenco Maxim, Ciobanu Radu,
Ciobanu Oleg, Gangan Sergiu, Gladîş Vitalie, Candraman
Sergiu, Margarint Andrei, Ilco Valentin, Levinet Nicolae

Institution

Technical University of Moldova

Patent no.

Patent application No. 4401MD, 29.02.2016. BOPI No. 2/2016; 1052MD, 11.16.2015. BOPI No. 6/2016;

The autonomous micro-irrigation system integrated with photovoltaic plants is based on a group of inventions and includes a solar installation with a mechanism of orientation of a group of photovoltaic panels and an autonomous system of irrigation management.

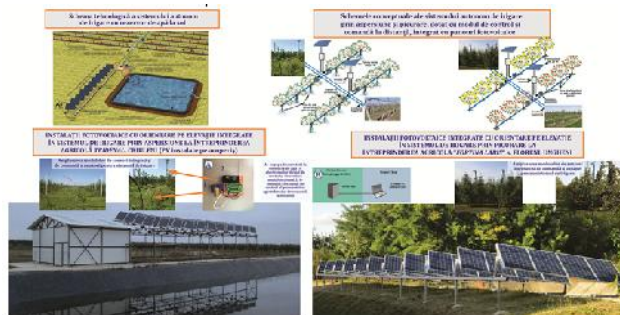
Description

Autonomous irrigation system integrated with photovoltaic panels, implemented in the agricultural household „TriDenal”, Criuleni. November 2017.

Autonomous drip irrigation system integrated with photovoltaic panels, implemented in the agricultural household „Fortina Labis”, s. Floreni, Ungheni. November 2017.

Class no.

B60K 16/00, F24J 2/54



MD.11.**Title****Wind energy conversion plant****Authors**

Bostan Viorel, Bostan Ion, Dulgheru Valeriu, Guțu Marin, Rabei Ion, Vaculenco Maxim, Ciobanu Radu, Ciobanu Oleg

Institution**Technical University of Moldova****Patent no.**

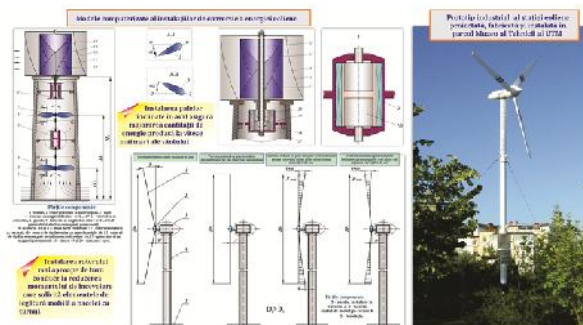
Patent application No. 1151MD, 12.09.2016. BOPI No. 2/2016

Description EN

The invention relates to renewable energy conversion systems, in particular to wind energy conversion devices. The wind energy conversion plant comprises a tower, in which at different heights $H1=f(V_{nom})$ and, respectively, $H2=f(V_{nom})$ are coaxially installed wind rotors with opposite direction of rotation, the shafts of which are connected to the cylindrical parts of the rotor of an electric generator with permanent magnets. On the upper end of the tower at the height $H3=f(V_{nom})$ are vertically installed Savonius and Darrieus-type rotors, which are connected to the rotors of an electric generator with permanent magnets. Levels of computerized modeling and aerodynamic pallet manufacturing are applied.

Class no.

F02D 3/02



MD.12.

Title	Wave energy conversion system
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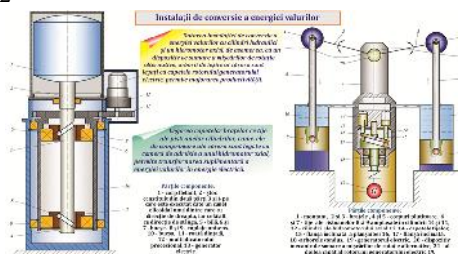
Authors Bostan Viorel, Bostan Ion, Dulgheru Valeriu, Dumitrescu Cătălin, Ciobanu Radu, Ciobanu Oleg

Institution Technical University of Moldova

Patent no. Patent application No. 1183MD, 1184, 1185, 10. 02. 2017. BOPI no. 8/2017.

Description EN	The invention relates to the field of renewable energy sources, namely to waves energy conversion installations by using floating bodies kinematically connected with motion transformation mechanisms.
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Class no. F02D 3/02



MD.13.

Processes for generating gears from precessional transmissions

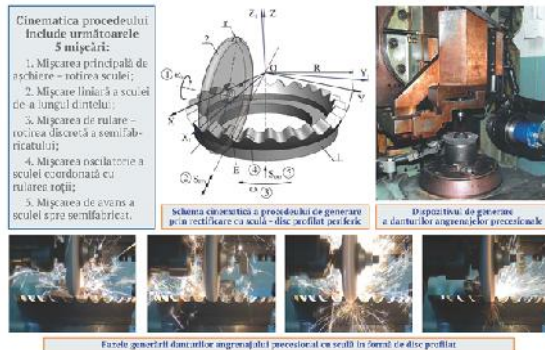
Title	Mazuru Sergiu, Vaculenco Maxim, Bostan Ion
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Institution Technical University of Moldova

Patent no.	Patent application No. 1116 Z MD, 2017. BOPI no. 1/2017; 4, 2120 MD, BOPI no. 3/2003;
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Description
EN

The processes developed by grinding, honing with diamond, machining by non-conventional electrochemical methods for precession planetary gears and not no more. Due to their advantages, they can be used in all areas where transformation of movement and load is required - from simple general-purpose drive mechanisms to automobiles, robots, cosmic flight technique, special technique, etc. Planetary Precessional power transmission technologies (machinery) are being developed, industrial prototypes of devices and tools that have been studied and tested in the laboratory, are proposed to be implemented.

**MD.14.**

Title Installations for vibration smoothing with diamond of the outer and inner of surfaces of cylindrical parts

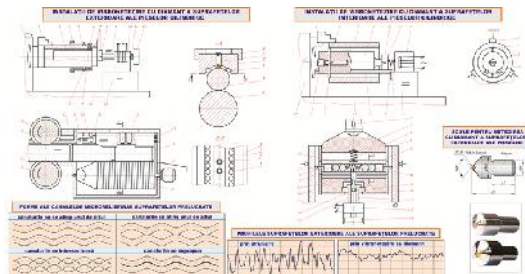
Authors Botez Ilie, Stoicev Petru, Ciobanu Radu, Ciobanu Oleg, Cartofeanu Vasile, Botez Alexei, Platon Andrei, Botez Dumitru

Institution Technical University of Moldova

Patent no. Patent application No. 1122MD, 28. 02. 2017. BOPI no. 2/2017; no. 1157MD, 30.06.2017. BOPI no. 6/2017; no. 1210MD, 11.30.2017. BOPI no. 11/2017; no. 1215MD, 31.12.2017. BOPI no. 12/2017;

Description EN The inventions relates to the field of construction machines, namely, processing plants and the surface by plastic deformation of the vibrating grinder of the outer and inner of surfaces of cylindrical parts. Is applied in the field of machine building, to surface processing by plastic deformation.

Class no. B24B 39/04



MD.15.**Title**

Device for controlling the valve timing and the valve lift of the gas-distributing mechanism (embodiments)

Authors

PETROV Oleg, MD; MANOLI Ilie, MD; DOLOMANJI Gheorge MD

Institution

Departamentul Transporturi Universitatea Tehnica a Moldovei,

Patent no.

Patent application No. 4433 (13) B1 priority 2015.07.23

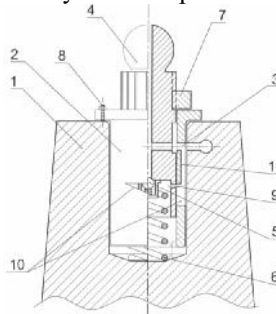
**Description
EN**

The invention relates to propulsion engineering, in particular to devices for controlling the gas distribution of the internal combustion engine and may be used for the production of new engines, and for upgrading engines in service, in which the valve drive is carried out by the camshaft with hydraulic tappets and throttle gate.

The device for controlling the valve timing and the valve lift of the gas-distributing mechanism, according to the first embodiment, comprises a bush (2), in which is installed a plunger (4) with a ball bearing, a skirt and an axial channel with a ball check valve (5). On the plunger (4) are made longitudinal teeth, which engage with a bar (7) or with an electric device for controlling the angle of rotation of the plunger (4), and in the wall of the skirt of which is made an oil drain hole (9) for oil discharge. In the wall of the bush (2) is made a side opening (3) for oil supply and a shaped transverse recess (10) with control edges for opening of the valve of the gas-distributing mechanism. On the outer surface of the bush (2) is made an oil discharge groove (11). The device, according to the second embodiment, is characterized in that the shaped recess is made in the wall of the plunger skirt, and the drain hole is made in the bush.

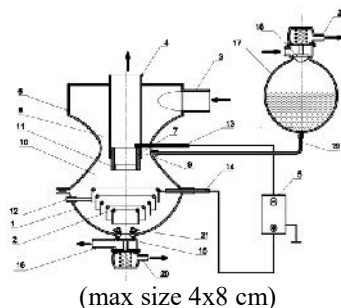
Class no.

8. Aviation, car industry and transportation



MD.16.

Title	Electrostatic filter for cleaning exhaust gases (EG) of motor vehicles
Authors	PETROV Oleg, MD; MANOLI Ilie , MD; DÂNTU Sergiu, MD; BEIU Ilie, MD
Institution	Departamentul Transporturi Universitatea Tehnica a Moldovei,
Patent no.	Patent application No. a 20170048
Description EN	The device comprises: a) a semi-spherical receiving chamber 6 and a confusor 8 for centrifugal separation of liquid and solid fractions from incomplete combustion; b) a high voltage pulse source with a negative crown electrode 11 for ionizing fluids and solid exhaust fractions; c) sedimentation chamber 1 for collecting liquid and solid fractions on the metal electrode strip 2 and contacting them with nitrogen dioxide and atomic oxygen; d) reservoir with cleaning liquid 17 and atmospheric valve 18 and nozzle neck 9 for spraying a cleaning fluid into the exhaust gas stream and cleaning the precipitation of the electrode 2; e) an exhaust gas recirculation valve 15 in the lower part of the settling chamber 1 for blowing the liquid jet gas stream to clean the liquid and solid fractions of the precipitation chamber 1 through the engine exhaust gas recirculation line for combustion in the combustion chamber.
Class no.	1. Environment - Pollution Control



MD.17.**Title**

Ensure the medicinal support by the cardboard multifunction health kit for the house

Authors

Șcerbaniuc Vasile, Cazac Viorica

Institution

Technical University of Moldova

Patent no.**Description****EN**

The project presents the concept of a multipurpose sanitary kit for the house, made of cardboard. The elaborated kit brings as novelty the fact that is made out of stationery. Moreover this makes it inexpensive and lightweight product to be transported, in relation to similar products made of plastic, textile etc. Another aspect of the concept is to adapt the kit to the special needs of people with chronic illnesses. In order to facilitate the rapid identification of needed medicines in crisis situations quickly. The sanitary kit developed within this project can be modified in terms of space-dimensional and multi-level, which determines its multifunctionality. Moreover it would capture and maintain the interest of the users in the long term.

Class no.

MD.18.

Title	The device and method for measuring the parameters of nanosensors based on semiconductor nanostructured oxides in the range of microwatts
Authors	VERJBIȚKI Valeri, LUPAN Oleg, RAILEAN Serghei
Institution	Technical University of Moldova
Patent no.	Application S 2017 0139, 2017.12.27
Description EN	<p>The device for measuring the resistance of nanostructure of semiconductor oxide sensors includes an adjustable reference voltage source connected to a series-connected nanostructure R_x and a reference resistance R_0, the voltage drop of which is applied to the inputs of the microprocessor's analog-to-digital converters (ADC). Microprocessor controls the voltage of the regulated reference voltage source such that the electrical power dissipated on the nanostructure is not more of the given permissible value. The calculated resistance value of the nanostructure is displayed on a four-digit seven-segment display.</p>
Class no.	1.

MD.19.

Title	Non-polluting projector with performant features
Authors	Secieru V, Rusu N.
Institution	Technical University of Moldova
Patent no.	Pending patenting
Description EN	<p>The device is based on the Seoul Semiconductor LED in the 5730 body with a power of 0.5W that have a light efficiency $\sim 217\text{Lm/W}$ and $\text{CRI} > 80\text{Ra}$. The 220W power consumption is divided into six equal segments of $36\text{W} \pm 5\%$, which considerably enhances the reliability of the power supply developed and used by us. The device can replace a metal-halogen projector with a power consumption of around 1000W. Individual lenses are provided for each led with 30°, 60° light output angle or for outdoors $90^\circ \times 150^\circ$, which allows the use of the designed projector for night lighting of large areas or stadiums.</p>
Class no.	1 or 2

MD.20.**Title** **Optic filters based on anisotropic crystals****Authors** Sirbu N., Dorogan A. , Ursachi V.**Institution** Techical University of Moldova**Patent no.** Pending patenting**Description**
EN

The optical anisotropy of ZnP_2 , $\text{Cu}_2\text{ZnSiSe}_4$, and CdCa_2S_4 crystals are manifested by strong gyration effects, birefringence, dichroism, rotation of the polarization plane of light. The birefringence is characterized by the refractive indices, which coincide at the isotropic wavelength λ_0 . These effects allow manufacturing narrowband "Band-pass" and "Band-Elimination" filters for optoelectronics and communication systems. The phenomena of optical activity affect and influence the spectral characteristics of photoelectronic devices, which can change the photo current sign depending on light polarization.

Class no. 5,10

MD.X.**Title****Innovative clothing products for children in the incubator****Authors**

Victoria Danila, Antonela Curteza, Marcela Irovan, Stela Balan, Irina Tutunaru, Ana Ischimji

InstitutionTechnical University of Moldova
Technical University Gh. Asachi Iasi**Patent no.**

Patent application No. 1724

**Description
EN**

Innovative clothing products are products that can be used for children in the incubator. The patterns are original and designed in accordance with the requirements for premature clothing. The products correspond to premature child morphometry are made of natural materials. The advantages of the products are the winding system for obtaining the shape of the product, because this system allows the product to be obtained on the basis of flat elements and the exclusion of the seams, which can be traumatic for the premature child. Also, this system allows to increase the degree of thermal insulation of the product by overlapping several layers of material on some parts of the body. The products will be dressed by folding flat parts of the elements, forming soft holes for the head and limbs, offering the possibility of limb movement without twisting or pressing the attached medical devices. To close the product, the locking system with overlapping buttons placed on the edges of the planar elements, which will not have contact with the child's body, is selected and is ergonomic. One of these products is the Prema type product, which by folding forms holes for the head, upper limbs and lower limbs.

Class no.

14



Clothes for children in the incubator

"N.Testemiteanu"
State Medical and Pharmaceutical University

MD.21.**Title**

Device for skin step-by-step fixation in the decellularization process

Authors

MACAGONOVA Olga, MD; NACU Viorel, MD; MUŞET Gheorghe, MD; COCIUG Adrian, MD; JIAN Mariana, MD; SAREV Violeta, MD; COBZAC Vitalie, MD;

Institution

State Medical and Pharmaceutical University "Nicolae Testemitanu"

Patent no.

1148 (13) Y
Patent application No 103/06.03.2018

Description
EN

Device for skin step-by-step fixation in the decellularization process (57) The invention relates to the field of regenerative medicine, in particular to devices for skin fixation in the decellularization process. The device for skin step-by-step fixation in the decellularization process comprises a carcass, made up of three tubular sections (1) with the diameter of the tube of 2 cm, made in the form of a **circle** of a diameter of 10 cm, coaxially placed and fixed to each other by means of four tubes (2) of a length of 10 cm and a diameter of 1 cm, placed on circumference, at the same distance from each other, at the same time on the upper part of the sections (1), diametrically opposite, are made four holes of a diameter of 2 mm. The device further comprises rods (3) of a length of 2 cm and a diameter of 1 mm, one end of which is made sharp, and on the other end is made a handle in the form of a cylinder. At the same time, on the upper part of the lower section of the carcass, diametrically opposite, are fixed with one end four rods, fixed with the other end to a round plate (4) for the placement of a magnet. All elements of the device are made of stainless steel.

Applications: regenerative medicine, stem cell domain, combustiology, experimental dermatology.

Class no.

4

MD.22.**Title****Grafting for restoring the osteochondral defect****Authors**

COBZAC Vitalie, MD, NACU Viorel, MD; CROITOR Gheorghe, MD, COȘCIUG Stanislav, MD, JIAN Mariana, MD

Institution

State Medical and Pharmaceutical University « Nicolae Testemițanu »

Patent no.

MD 1177

**Description
EN**

The invention relates to regenerative medicine and tissue engineering and can be used for restoration of osteochondral defects. According to the invention, the graft for restoration of osteochondral defect comprises decellularized cartilage, subchondral and spongy demineralized bones. The graft can be an allo- or xenograft, has a regular or irregular shape of a height of 4...20 mm and a diameter of 3...30 mm, at the same time through all layers of the graft are perforated multiple longitudinal through parallel channels of a diameter of 50...800 μm .

Class no.

4



MD.23.**Title**

Invention Title: Method of plasty of achilles tendon defect with vascular flap.

Authors

Feghiu Leonid, MD; Furtuna Liudmila, MD; Ostahi Stefan, MD; Georgescu Alexandru, RO; Verega Grigore, MD

Institution

STATE UNIVERSITY OF MEDICINE AND PHARMACY NICOLAE TESTEMITANU, REPUBLIC OF MOLDOVA

Patent no.

Patent application No. **MD 1238/2017**

The invention relates to medicine, in particular to traumatology and orthopedics and can be used for plasty of Achilles tendon defect with vascular flap.

**Description
EN**

Summary of the invention consists in that it is performed the dopplerography with the determination of the projection of the perforating vessels of the shin, nearby is selected one posterior tibial perforating artery, are performed two curved incisions with the concave sides directed toward the lateral and medial margin of the Achilles tendon with the common point of origin above the calcaneal tuberosity, the incision with the concave side directed toward the lateral margin is performed at a distance of 2 mm more posterior of the selected perforating artery, afterwards is mobilized the covering fascia, the Achilles tendon and the selected posterior tibial perforating artery, are excised the soft ulcerated and necrotized tissues of the Achilles tendon, from the medial part under the tendomuscular junction of the triceps muscle of calf is prepared a tendinous graft from the posterior wall of the tendon and the covering fascia of a width of 30 mm, a length of 300...100 mm and a thickness of 2...3 mm, then is prepared an ellipsoid flap that includes the skin, the covering fascia of the Achilles tendon with the vascular pedicle from the posterior tibial perforating artery and the tendinous graft, afterwards the prepared flap is rotated by 180° in the distal side and placed into the Achilles tendon defect region, and the ends of the tendinous graft are placed in the sagittal gaps of the Achilles tendon fragments and are sutured, after which the wound is sutured in layers.

Class no.

4

MD.24.

Title	Method for preventing dental caries in children with intellectual disabilities
Authors	SPINEI Aurelia, MD
Institution	STATE UNIVERSITY OF MEDICINE AND PHARMACY „NICOLAE TESTEMITANU”, REPUBLIC OF MOLDOVA
Patent no.	Brevet nr. MD 996 /2015
Description EN	Method for preventing dental caries in children with intellectual disabilities. The invention relates to medicine, in particular to dentistry and can be used for preventing dental caries in children with intellectual disabilities. According to the invention, the method consists in that it is carried out the oral hygiene, is used the 5.0% anthocyanin extract as a photosensitizer, for 10...20 min, then is irradiated the surface of the teeth with LED light with the wavelength of 625...635 nm, the power of 2.0...3.0 W and exposure of 10...30 sec, is washed the oral cavity with distilled water, then on the tooth surface are applied 1...3 droplets of solution for deep dentin and enamel fluoridation, which contains fluoride (F) and copper (Cu ²⁺) ions, then is irradiated the enamel of the teeth in the same regimen, are applied 1...3 droplets of suspension which contains finely dispersed calcium hydroxide, is repeatedly irradiated the enamel of the teeth in the said regimen, and then the dental surfaces are treated with a suspension of probiotics, which comprises Lactobacillus rhamnosus and Bifidobacterium bifidum and is administered, per os, one capsule, which contains Lactobacillus rhamnosus, Bifidobacterium bifidum – 4.9 x 10 ⁹ CFU, once a day, for 20 days.

Class no. 4

MD.25.

Title	Method for predicting the risk of developing severe chronic venous insufficiency in patients with varicose veins
Authors	CASIAN Dumitru, MD; GUȚU Evghenii, MD
Institution	„Nicolae Testemitanu” State University of Medicine and Pharmacy of the Republic of Moldova.

Patent no. Patent nr. MD 1203

Description
EN

The invention relates to medicine, namely to surgery and can be used for predicting the risk of developing severe chronic venous insufficiency in patients with varicose veins. Summary of the invention consists in performing the clinical and paraclinical examination of the patient with the determination of the following risk factors and scoring, namely: for the body weight with the body weight index of 30 kg/m² and more - 13 points, the presence of one or more concomitant chronic diseases - 8 points, the level of fibrinogen in the blood higher than 4 g/L - 12 points, the saphenous reflux extended to the lower 1/3 of tibia - 17 points and the absence of incompetent inflows of the saphena vein on the thigh - 11 points. In the case when the sum of scores is greater than 20 it is predicted the presence of a risk of developing severe chronic venous insufficiency

Class no.

4

MD.26

Title

Method for treatment of giant hiatal hernia

Authors

UNGUREANU Sergiu, FOSA Doina, GLADUN Nicolae, USMF „N.Testemițanu”, IMSP Spitalul Clinic Republican

Institution

MD 1034/2016

Patent no.

Patent application No. 31/2016

Description
EN

The invention relates to medicine, particularly to surgery and can be used for treating patients with giant hiatal hernia. Summary consists in that it is carried out the general anesthesia, is laid the patient in the supine position with the inferior limbs in abduction and anti-Trendelenburg, is created the pneumoperitoneum, by means of trocars are introduced 4 working instruments, are mobilized the crura of diaphragm, is formed a retroesophageal window with abdominization of the terminal part of the esophagus and reposition of the herniary contents from the mediastinum into the abdominal cavity, is performed the posterior cruroraphy by applying sutures in the form of a double loop with thread passage through the hypotrofied crus of diaphragm by double fixation to it, is carried out the

calibration of the newly created esophageal aperture, is introduced into the lumen of the esophagus an orogastric tube of 20 Fr, the last cruroraphy suture is carried out 1 cm from the wall of the esophagus, is performed the fundoplication, the revision of the operative zone, are removed the working instruments, is eliminated the pneumoperitoneum and are sutured the postoperative wounds in layers.

Class no.

MD.27

Title	Composition for medicated film for the treatment of periodontal diseases and lesions of tunica mucosa of mouth (embodiments)
Authors	BOLUN Radu, FALA Valeriu, LACUSTA Victor, RUDIC Valeriu
Institution	Nicolae Testemitanu State University of Medicine and Pharmacy
Patent no.	Patent nr. : MD 4503

Description EN	<p>The invention relates to the field of medicine, namely to dentistry, in particular to the production of sustained-action drugs for the treatment of periodontal diseases and lesions of tunica mucosa of mouth. The composition for the medicated film for the treatment of periodontal diseases and lesions of tunica mucosa of mouth comprises a film-forming agent 1.0...4.0 g, a plasticizer 0.5...2.0 g, dimethylsulfoxide 1.0...3.0 g, extract of <i>Spirulina platensis</i> cyanobacterium strain biomass calculated for dry substance 0.5...2.5 g, extract of mature nutshells (<i>Juglans regia</i> L.) calculated for dry substance 0.5...1.0 g, sodium hypochlorite 0.5...1.0 g, water 100 mL, it can also comprise extract of <i>Calendula officinalis</i> L. flowers calculated for dry substance 3.5...5.0 g and extract of <i>Armoracia rusticana</i> Lam. roots calculated for dry substance 0.5...1.0 g, or combinations thereof.</p> <p>The interaction of the components in the obtained drug enables the achievement of a synergistic effect within the final product, influencing the pathogenesis of inflammatory periodontal diseases. The claimed composition of the drug guarantees anti-inflammatory and anti-microbial effects and</p>
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improves the tissue regeneration and vascularization, due to the intensification of non-specific immunity and tissue amelioration, in the absence of any negative secondary manifestation. The effect of sudden increase in the action is obtained due to the optimal quantitative and qualitative choice of ingredients in the requested drug. In the claimed invention, the enlisted ingredients demonstrate a specific, much higher activity.

Class no.

4

**MD.28**

Title

Method of assessing the anti-inflammatory activity of biologically active substances

Authors

Pantea Valeriana, Tagadiuc Elena, Gudumac Valentin

Institution

STATE UNIVERSITY OF MEDICINE AND PHARMACY „NICOLAE TESTEMITANU”, REPUBLIC OF MOLDOVA

Patent no.

MD 1233

Description
EN

The method of assessing the anti-inflammatory activity of biologically active substances, which includes preparation of biologically active substances probes in physiological solution to which is added a reaction medium containing trypsin in phosphate buffer, the mixtures are shaken and incubated at 37 ° C for 5-10 minutes then add a solution of N-benzoyl-L-arginine 4-nitroanilide hydrochloride in phosphate buffer, incubate at 37 ° C and measure the absorbance of the mixture at 405-410 nm and the percent inhibition of the proteases is determined. The higher the percentage of inhibition, the higher is the anti-inflammatory activity of the investigated substances.

Class no.

4

MD.29

Title

Method for treating the decellularized liver matrix to enhance cell adhesion

Authors

JIAN Mariana, MD, NACU Viorel, MD, COBZAC Vitalie, MD, PALADI Constantin, MD, PANTEA Valeriana, MD

Institution

STATE UNIVERSITY OF MEDICINE AND PHARMACY „NICOLAE TESTEMITANU”, REPUBLIC OF MOLDOVA

Patent no.

MD 1171/2017

Description
EN

The invention relates to regenerative medicine and tissue engineering and can be used for treating the decellularized liver matrix to enhance cell adhesion. Summary of the invention consists in that is washed the decellularized liver matrix by injecting into the portal vein a mixture, then is injected a solution of type I collagen, obtained from bovine Achilles tendon, after which the hepatic matrix is perfused with phosphate buffered saline with a pH 7.4 in an amount of 300 ml/10 g of liver at a rate of 5 ml/min.

Class no.

4 - Medicine - Health Care - Cosmetics



MD.30

Title

Device for the treatment of pelvic ring injuries with vertical displacement

Authors

KUSTUROVA Anna, MD; KUSTUROV Vladimir, MD

Institution

Nicolae Testemitanu State University of Medicine and Pharmacy

Patent no.

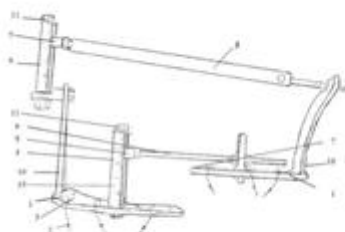
Patent nr. : MD 1081/2015

Description
EN

The invention relates to medicine, in particular to medical engineering and can be used in orthopedics and traumatology for surgical treatment of pelvic ring injuries. The device for the treatment of pelvic ring injuries with vertical displacement comprises two pelvic supports (1) in

the form of plates, bent at an angle of $90...110^\circ$, provided with fastening elements (2) and (3). In the middle part of the first support (1) is vertically mounted a head assembly (4) of vertical reposition. At the end of an arm (10) of the first support (1) is vertically installed a rear assembly (8) of vertical reposition. Each assembly (4), (8) is composed of a frame, inside which is placed a threaded rod (12) with a runner (5). The runner (5) of the head assembly (4) is connected to a threaded distractor (6), fixed in the middle part of the second support (1), and the runner (5) of the rear assembly (8) is connected to a rod (9), fixed to the end of the arm (10) of the second support (1).

Class no.

4. Medicine-Health Care-Cosmetics**MD.31**

Title

METHOD FOR DETERMINING THE DEGREE OF SEVERITY OF GASTROESOPHAGEAL REFLUX DISEASE

Authors

DUMBRAVA Vlada-Tatiana, **LUPAȘCO** Iulianna, **GRIBINIUC** Anatolie, **VENGHER** Inna,

Institution

State University of Medicine and Pharmacy „Nicolae Testemitanu” from Republic of Moldova

Patent no.

MD 1152 /31.01.2018

Description
EN

The invention relates to medicine, in particular to gastroenterology and for evaluation of the gastroesophageal reflux disease (GERD) severity degree. The invention consists of clinical examination with assessment of such symptoms as retrosternal pain, regurgitation, deglutition difficulties, nausea, vomiting, discomfort in mouth and abdomen, dysphonia, neck and ear pain, weight loss; evaluation of their duration and expression and factors that improve and/or worsen them, with the assignment of scores

INTERNATIONAL EXHIBITS

for each symptom (*fig.1*). In the case when the sum of the scores is of 1...70, a minimum degree of severity is determined, of 71...129 – a medium degree and when it is of 130...211, a severe degree of GERD severity is determined

Benefits and the novelty of this method is that it determines the degree of severity of GERD, with accurate assessment of evolution, offers the possibility to indicate early differential treatment, depending on the disease severity, to monitor clinical symptoms during medication, permits to prevent disease progression and complications such as esophageal ulcers, Barrett esophagus, esophageal adenocarcinoma, esophageal stenosis, esophageal strictures, esophageal perforation, upper gastrointestinal bleeding, to reduce the frequency of recurrences, and thus substantially improve patients' quality of life. The proposed method presents an effective, profound, representative, sensitive and convenient tool that greatly enhances the quality of the examination, giving the information about main causes determining GERD severity (*fig.2*), permitting initiate treatment strategy and monitor patient's response in a long-term therapy

Application: in medicine, especially in gastroenterology in a hospital department and outpatient clinics.

Class no.

4. Medicine-Health Care-Cosmetics

MD.32

Title	Minimally invasive method for treating spontaneous ascites-peritonitis in decompensated liver cirrhosis
Authors	ANGHELICI Gheorghe, MD; CRUDU Oleg, MD; PISARENCO Serghei, MD; LUPU Gheorghe, MD; ZUGRAVU Tatiana, MD;
Institution	STATE UNIVERSITY OF MEDICINE AND PHARMACY „NICOLAE TESTEMITANU”, REPUBLIC OF MOLDOVA
Patent no.	Brevet : MD 1155 /2017
Description EN	he invention relates to medicine, in particular to hepatology and hepatosurgery, and can be used for treating spontaneous ascites-peritonitis in decompensated liver cirrhosis.

Summary of the invention consists in performing the laparoscopy under general anesthesia, slowly aspirating the peritoneal exudate, examining the abdominal organs and debriding the fibrin adhesions, then performing the lavage with 1-2 L of physiological solution with 8-16 mg of dexamethasone, after which the solution is aspirated, then a mixture is introduced, containing 370-40 IU of hyaluronidase dissolved in 200...400 ml of physiological solution and 10-50mg of 1,10-decamethylene-bis(N,N-dimethyl-mentoxycarbonylmethyl)ammonium dichloride dissolved in 500-2000ml of physiological solution, simultaneously is intravenously administered ciprofloxacin 200 mg, 2 times a day, and ceftriaxone 2 g, 2 times a day, at the same time the parenteral treatment is repeated for 3-5 days.

Class no.

4. Medicine-Health Care-Cosmetics**MD.33**

Title

COPPER CONTAINING AGENTS WITH ANTIBACTERIAL ACTIVITY AGAINST GRAM POSITIVE MICROORGANISMS

Authors

Bălan Greta, Burduniuc Olga, Țapcov Victor, Mitkevich Natalia, Rudic Valeriu, Gulea Aurelian

Institution

State University of Moldova, State University of Medicine and Pharmacy „Nicolae Testemitanu”, National Public Health Agency, Institute of Microbiology and Biotechnology

Patent no.

Patent MD Nr. 4462; Request for Patent a 2018 0010
Chemical synthesis and characterization of coordination compounds of the class of biometal thiosemicarbazonates. New copper coordination compounds of the thiosemicarbazonate class with high antimicrobial activity have been obtained using the directed synthesis methods. These compounds exhibit selective antimicrobial activity against gram positive microorganisms that exceeds 256-1.2 times analogous characteristics of the prototype and can be used in medicine and veterinary medicine as antimicrobial drugs.

Description
EN

Applications: Human health; Animal health.

Class no.

4. Medicine-Health Care-Cosmetics

MD.34

Title	INHIBITOR OF INCREASE AND MULTIPLICATION OF THE FUNGI
Authors	Burduniuc Olga, Balan Greta, Rusnac Roman, Tsapkov Victor, Grossu Trofim, Rudic Valeriu, Gulea Aurelian
Institution	State University of Moldova, State University of Medicine and Pharmacy „Nicolae Testemitanu”, National Public Health Agency,
Patent no.	Patent MD NR. 4402, Patent Request a2018 0003 The invention concerns chemistry and medicine, namely the application of organic biologically active compound of the class of thiosemicarbazones, which manifests high antifungal activity in the relation <i>Candida albicans</i> . The compounds exhibit antifungal activity against <i>Candida albicans</i> that exceeds 114 times analogous characteristics of the <i>Nystatin</i> .
Description EN	Applications: Human health; Animal health. They can be used in medicine and veterinary medicine for the prevention and treatment of mycoses.
Class no.	4. Medicine-Health Care-Cosmetics

Moldova State University

MD.35.

Title

Detection of thin oil films on the water surface from a remote distance when fluorescence is excited by laser light.

Authors

Arcadi Chirita, Tatiana Bulimaga, Vladimir Prilepov

Institution

Moldova State University

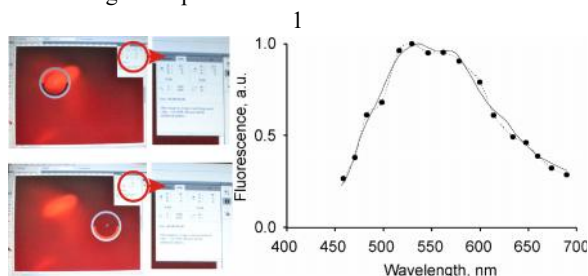
Patent no.

MD1186Z/ 2018

Description
EN

The crude oil spot is illuminated by laser radiation 447 nm exciting the photoluminescence of petroleum products. Using a long-focus optical system, the luminescence signal is projected through a set of narrow-band interference filters to the matrix of the digital camera. The obtained luminescence images are processed on a computer and the oil pollution on the water surface is identified by the spectral dependence of fluorescence. The small oil spots (from 1 mm) detection is possible from remote distance during both day and night. The production and transportation of oil can begin with just minor leaks of the petroleum products, for example, a volume of ~ 1 ml. For the fast detection of such minor leaks can be used compact unmanned aerial vehicle (drone), equipped with light-weight small-size equipments. The modern drones usually have the compact telescopic system and CCD camera. Placing of compact set of narrowband interference filters between optical system and CCD camera of drone allows not only visual monitoring, but also to register fluorescence spectra of the oil spills. Excitation of fluorescence can be done using a compact laser diode.

Class no.



MD.36.

Title

New procedure of cyanobacterium *Spirulina platensis* cultivation for increasing of exopolisaccharides production .

Authors

Bulimaga Valentina, Pisova Maria, Zosim Liliana, Trofim Alina

Institution

Moldova State University

Patent no.

[4492 MD](#), Patent publication date [2016.07.28](#)

Description
EN

The new procedure of cyanobacteria *Spirulina platensis*

cultivation and increasing of exopolysaccharides production is proposed. Cultivation of spirulina in 2 stages under guided conditions with the use of two stress factors (varying of lighting regime and Cu^{2+} supplementation) at the 2nd stage of cultivation.

Applications The obtained exopolysaccharides preparations are recommended for application in medicine and cosmetics as skin protectors against UV irradiation, anti-aging, antiviral and antioxidant agents, as emulsifiers and nanoparticles stabilizers etc.

Class no. 4.Medicine-Health Care-Cosmetics

MD.37.

Title

Obtaining of large ZnO single crystals with controllable electrical properties

Authors

Gleb Colibaba

Institution

Moldova State University

Patent no.

MD 4455, MD 4500, a 0110/2016

Purpose: The elaboration of technology of obtaining large zinc oxide (ZnO) single crystals with controllable electrical properties by chemical vapor transport in sealed ampoules.

Solution: HCl, as a chemical vapor transport agent, favors obtaining void-free ZnO single crystals; however, its use is limited by very low growth rate of crystals. The use of $\text{H}_2/\text{C}/\text{CO}$ favors higher growth rate, but it is limited by strong wall adhesion effect (high dislocation density) and high growth nucleus density (polycrystalline growth). The proposed inventions are dedicated to technology of the simultaneous use of HCl and $\text{H}_2/\text{H}_2+\text{C}/\text{CO}$, for fast growth of large ZnO crystals.

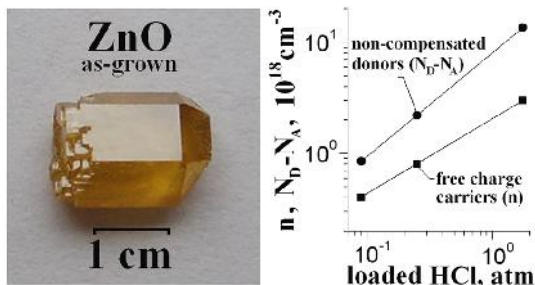
Description EN

Advantages: $\text{HCl}+\text{H}_2$, $\text{HCl}+\text{H}_2+\text{C}$ and $\text{HCl}+\text{CO}$ transport agents provide: (i) an increase of growth rate by 10–30 times up to 1.5 mm/day (at growth temperatures of 950–1050 °C); (ii) a decrease of wall adhesion effect and dislocation density by several orders of magnitude down to $10^2 - 10^3 \text{ cm}^{-2}$; (iii) a minimization of growth nucleus quantity down to 1; (iv) stable growth of the single crystals with a diameter of at least 2 cm.

Applicability: Doping efficiency of ZnO by d- and f-elements can be increased by several orders of magnitude at the presence of HCl. Such doped ZnO crystals can be used as effective lasers. The electrical properties of ZnO can be varied by changing the HCl concentration. These crystals with controllable conductivity can be used for manufacturing of nanoporous matrices, nanowires and nanotubes, for optoelectronics and photonics.

Class no.

9

**MD.38.****Title****COMBINED TECHNOLOGY OF HIGH CALORICITY BIOGAS PRODUCTION WITH MICRO-ALGAE CULTIVATION****Authors**

Dr. Victor Covaliov, Dr.hab. Olga Covaliova, Dr.hab.Valentin Bobeica

Institution

Moldova State University, Institute of Research and Innovation

Patent no.

Patent MD # 4372

**Description
EN**

The invention involves a series of novel approaches designed for biogas processes intensification, with the increasing in biomethane contents in biogas and its caloric value. The technology proposed involves the selective biogas purification from carbon dioxide and its introduction into the microalgae cultivation basin.

A complex innovative biological system is presented that ensures the decrease in nitrogen and phosphorus contents in liquid fraction resulted from anaerobic digestion of organic waste biomass. The treated water meets the standards for the release in natural water bodies.

The process proposed also involves the extraction of bioactive components from the microalgae biomass and their application as catalysts in methanogenic process, thus promoting an essential increase in high-caloricity biogas production rate.

The presented technology provides an essential increase in methane contents in biogas composition, from 60-65% under conventional conditions, up to 85-92% and higher. In this way, biogas calorificity is increased from 5500 kJ/m^3 up to about 8000 kJ/m^3 .

The proposed 24-hours cycle of microalgae cultivation using the energy-saving LED Grow lamps, provides 3-4 times increase in daily algae biomass growth. The protein contents in microalgae *Spirulina* reaches up to 70%, making it a valuable feeding source for animals.

The elaborated technology and equipment have been included in wastewater treatment plan reconstruction project for the Comrat municipality, Republic of Moldova.

Class no. Invention Classification: 2. Energy And Sustainable Development

MD.39.

Title **PSYCHICAL AND BEHAVIORAL DISORDERS IN EPILEPSY: classification, diagnostics, behavioral conduct algorithms, anamnesis, clinical manifestations, paraclinical investigations, treatment, rehabilitation, necessary resources, prophylaxis, patient guide and assistants**

Authors **POPOV Alexandru, BUTNARU Mariana, CĂPĂȚÂNĂ Gheorghe, CĂPĂȚÂNĂ Ana**

Institution **Moldova State University**

Patent no. AGEPI Certificate of Registration of Copyright and Related Rights, Series Ser. 5526 of 16.12.2016.

The an objective of the research was to propose for the first time to National Mental Health System a National Clinical Protocol Project “Psychical and Behavioral Disorders in Epilepsy” (NCPP PBDE), was elaborated based on the experience gained of over 25 years with over 100 remissions of PBDE.

NCPP PBDE contains the following compartments: conduct algorithms, anamnesis, clinical manifestations, paraclinical investigations, treatment, rehabilitation, necessary resources, prophylaxis, patient guide and assisting persons.

NCPP PBDE is oriented in obtaining therapeutic remissions to patients with PBDE and follows the next objectives:

- facilitating diagnosis;
- early detection of insidious onset patients;
- avoid patient disability and stigmatization
- enhancing the quality of management, treatment and patient’s quality of life;
- promotion in National Mental Health System;

The experience reflected in NCPP PBDE is used in:

- PMSI Clinical Psychiatric hospital of the Ministry of Health of the Republic of Moldova;
- “Constructorul” Hospital
- State University of Moldova:
 - In the Project “The development of intelligent family-oriented information systems of decision-making problems with application in education and research strategy direction 50.07 “Materials technologies and innovative products with a cipher 15.817.02.38A;
 - At the elaboration of two Doctor theses.
- State University of medicine and Pharmacy “Nicolae Testimiteanu”:
 - Students consultation;
 - Making doctoral and master theses.

**Description
EN**

INTERNATIONAL EXHIBITS

MD.40.

Title	COPPER CONTAINING AGENTS WITH ANTIBACTERIAL ACTIVITY AGAINST GRAM POSITIVE MICROORGANISMS
Authors	Bălan Greta, Burduniuc Olga, Țapcov Victor, Mitkevich Natalia, Rudic Valeriu, Gulea Aurelian
Institution	State University of Moldova, State University of Medicine and Pharmacy „Nicolae Testemitanu”, National Public Health Agency, Institute of Microbiology and Biotechnology
	Patent MD Nr. 4462; Request for Patent a 2018 0010
Description EN	Chemical synthesis and characterization of coordination compounds of the class of biometal thiosemicarbazones. New copper coordination compounds of the thiosemicarbazone class with high antimicrobial activity have been obtained using the directed synthesis methods. These compounds exhibit selective antimicrobial activity against gram positive microorganisms that exceeds 256-1.2 times analogous characteristics of the prototype and can be used in medicine and veterinary medicine as antimicrobial drugs.
Applications:	Human health; Animal health.
Class no.	4. Medicine - Health Care – Cosmetics

MD.41.

Title	INHIBITOR OF INCREASE AND MULTIPLICATION OF THE FUNGI
Authors	Burduniuc Olga, Balan Greta, Rusnac Roman, Tsapkov Victor, Grossu Trofim, Rudic Valeriu, Gulea Aurelian
Institution	State University of Moldova, State University of Medicine and Pharmacy „Nicolae Testemitanu”, National Public Health Agency,
	Patent MD NR. 4402, Patent Request a2018 0003
Patent no.	The invention concerns chemistry and medicine, namely the application of organic biologically active compound of the class of thiosemicarbazones, which manifests high antifungal activity

EUROINVENT 2018

in the relation *Candida albicans*.

The compounds exhibit antifungal activity against *Candida albicans* that exceeds 114 times analogous characteristics of the *Nystatin*.

Description

EN

Class no.

Applications: Human health; Animal health.

They can be used in medicine and veterinary medicine for the prevention and treatment of mycoses.

Institute of Emergency Medicine (IMSP) – R. Moldova

MD.42.

Title	METOD FOR PREVENTING AND TREATING THE CONTRACTURE OF THE ELBOW JOINT
Authors	BOROVIC E., CIOCANU M., PAVLOVSKI E.
Institution	The Institute of Emergency Medicine
Patent no.	Patent MD Nr. 1131 Z 2017.10.31
Description EN	The method refers to medicine, especially in orthopedics and traumatology, and is dedicated to patients with post-traumatic articulation of the elbow joint and complicated fractures of type C (AO) metastasis in the distal extremity of the humerus, with the modification of the normal anatomical shape of the olecranon fossa. Z-shaped osteotomy of the olecranon in the sagittal plane was performed with the oscillating saw or thin chisel on the lateral side, from the middle of the olecranon at the level of insertion of the posterior portion of the collateral ligament of the ulna, in the frontal plan anteriorly in the direction $\frac{1}{4}$ proximal of the trochlear incisure. With the aim of creating of the conditions for the restoration of active movements of flexion-extension in the elbow joint in maximum volume, during the resynthesis of the olecranon, was used the element of change of the curvature radius of the trochlear incisure with its increase and the keeping of maximal "work" surface of the trochlear incisure cartilage, thanks to the specificity of the proposed osteotomy line.
Class no.	4. Medicine - Health Care – Cosmetics

MD.43.

Title	IMMUNOHISTOCHEMICAL PROFILE OF MUCINOUS LESIONS OF APPENDIX AND OVARIES.
Authors	Ghidirim Gh, Mişin I., Mişina A., Rojnovanu Gh., Vozian M.
Institution	The Institute of Emergency Medicine & USMF „Nicolae Testemiţanu”
Patent no.	Certificat AGEPI ser. OŞ MD 5293, 10.02.2016
Description EN	Thorough morphological analysis allowed the determination of the histological type of lma, ovarian mucous cysts, and peritoneal implants within pmp. Immunohistochemical phenotyping is a useful and informative tool for determining the origin of mucosal

lesions, which makes an important contribution in deciding the subsequent course of these patients. Thus, mucinous lesions of appendicular origin exhibited immunohistochemical expression CK 20 (+), CEA (+) and CK 7 (-). Surgical treatment of LMA and pseudomixom should be individualized and largely dependent on the integrity of the appendix, exteriorization of the mucinous content, damage to the adjacent organs, and degree of peritoneal dissemination. Termenul „mucocel apendicular” include diagnosticul histologic de 1) mucocel simplu sau chist de retenție, 2) hiperplazie a mucoasei, 3) chistadenom mucinos și 4) chistadenocarcinom mucinos, cu excepția cazurilor care au fost inițial depistate cu pseudomixom peritoneal

Class no. 4. Medicine - Health Care - Cosmetics

MD.44.

Title

THE EXPERIMENTAL MODEL OF PERITONEAL PSEUDOMIXOM.

Authors

Ghidirim Gh, Mișin I., Mișina A., Rojnovceanu Gh., Vozian M.

Institution

The Institute of Emergency Medicine & USMF „Nicolae Testemițanu”

Patent no.

Certificat AGEPI ser. OȘ MD 5294, 29.03.2016

Description EN

MA is a progressive dilatation of the appendix as a result of intraluminal accumulation of mucinous substance and can be both a benign and a malignant process. The experimental study was carried out in accordance with the Directive of the European Parliament on the protection of animals used for scientific purposes "DIRECTIVE 2010/63/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL". In the experimental study, 30 Wistar rats of both genders with a mass of 350-400g were included. The rats were divided into 4 batches according to the group of patients that served as a source of solid and mucinous component-two batches of 10 rats implanted with pseudomixoma specimens of chistheno-carcinoma origin from 2 patients and two groups of 5 rats implanted with specimens of pseudomixoma of chistogenic carcinoma origin in 1 patient (n = 5) and mucinous component of simple appendicular mucocoele (n = 5). The time period from sampling to implantation did not exceed 60 minutes. The solid and mucinous component was implanted by median laparotomy with distribution in the upper, lower and peritoneal cavities (Fig.1.2). All animals were provided with food and water ad libitum for 90 days after the intervention. On the 90th day subjects were subjected to relaparotomy to assess

intraperitoneal tumor growth and eventual sampling for morphological examination.

Class no.

4

MD.45.

Title	ESTIMATING THE PROBABILITY OF OCCURRENCE OF POSTOPERATIVE COMPLICATIONS IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA.
Authors	Ambrosii T., Șandru S., Corlăteanu Al., Ciocanu M., Cobălețchi S., Rojnovceanu Gh., Belîi A., Sîrcu V.
Institution	The Institute of Emergency Medicine & USMF „Nicolae Testemițanu”
Patent no.	Certificat AGEPI ser. OȘ MD 5611,13.04.2017
Description EN	Obstructive sleep apnea syndrome is a type of sleep disturbance during sleep with a high prevalence among surgical patients. The research revealed a prevalence of obstructive sleep apnea greater than 70% in the surgical population. The risk factors were: increased risk of obstructive sleep apnea identified by the Berlin questionnaire, presence of hypertension, age > 50 years and abdominal circumference > 100 cm. The developed probabilistic model that includes the parameters of the assessment of the presence of the risk of obstructive sleep apnea, body mass index, sex, age, neck and abdomen circumference, "round" morphophytes for women, hypertension, predicts cardiovascular complications of 80.2% but not respiratory and side effects Identificarea factorilor de risc cu AOS ce influențează prevalența complicațiilor postoperatorii perianestezice la pacienții cu apnee obstructivă de somn vs. fără apnee obstructivă de somn
Class no.	4

MD.46.

Title	DETERMINING THE COST-EFFECTIVENESS OF THE FINANCIAL CONTRIBUTION TO HEALTH PROMOTION OF NURSES IN THE HEALTH CENTERS AT COMMUNITARIAN LEVEL.
Authors	Ciocanu M., Grejdean F., Baroncea A
Institution	The Institute of Emergency Medicine & USMF „Nicolae Testemițanu”
Patent no.	Certificat AGEPI ser. OȘ MD 5615,19.05.2017
Description	Healthcare nurses, "central figures" in the process of promoting

EN the health of the community population, must continually raise their level of knowledge in order to contribute more effectively to the prevention of chronic non-communicable diseases, to promoting a healthy lifestyle and decreasing of medical expenses from the state budget. Since the nursing process involves performing various operations (investigations, treatment, recovery or prophylaxis), we have determined to determine the time budget allocated to health promotion during the working day, the duration of each operation was measured. The contribution of the full income to the professional activity of a nurse for one hour is 63 lei, and for one year 90 428 lei. The financial contribution to the health promotion of a nurse during one hour is 10 lei, and for one year is 15 620 lei.

Cercetările efectuate la nivel global și național indică o creștere continuă a maladiilor cronice netransmisibile, așa-numitelor maladii ale "modului de viață", care au devenit o problemă de sănătate publică, mai ales la nivel comunitar. Acestea sunt cauza a 96,0 % din totalul deceselor înregistrate în Republica Moldova.

Class no.

MD.47.

Title **STOMACH GASTROINTESTINAL TUMORS. THE IMAGISTIC AND INSTRUMENTAL FEATURES. SURGICAL AND COMBINED MANAGEMENT. The cycle of works.**

Authors Ghidirim Gh., Ghidirim N., Mișin I., Cernat V., Cernat M.

Institution **The Institute of Emergency Medicine**

Patent no. Certificate AGEPI ser. OȘ MD 5646 din 30.06.2017 / ser. OȘ MD 5649 28.06.2017

Description Surgery is the method of choice for the treatment of locally advanced and locally advanced primary TGIS, following complete tumor excision with negative oncological margins (R0) and preservation of tumor pseudocapsule integrity. The anatomical location and size of TGIS plays an important role in choosing the volume of surgery, by directing the surgeon to a low volume surgery for tumor localization in the proximal and middle segment of the stomach, the large curvature and the anterior gastric wall and in the duodenal segments not involving papillary Vater . To achieve the radicality of the surgical act, the combined operations are argued in the case of TGIS invasion in adjacent organs, and omectomy is appropriate and must be performed for prophylactic purposes. Lymphodisis is

INTERNATIONAL EXHIBITS

recommended for intraoperative detection of lymph nodes enlarged in size. The rate of early postoperative complications is low, and postoperative lethality is null.

Tumorile gastrointestinale stromale (*gastrointestinal stromal tumors*) prezintă o categorie largă de tumori primare, mezenchimale, non-epiteliale ale tractului digestiv, localizate în peretele organelor cavitare, ce expresează markerul tumoral c-KIT(CD117). TGIS constituie 1-3% din totalul neoplaziilor gastro-intestinale și circa 5% din totalul sarcoamelor de părți moi

Class no.

4

MD.48.

TITLE PARTICULARITIES OF SURGICAL TREATMENT METHODS OF DISTAL FEMORAL FRACTURES OF TYPE A (AO) AND TYPE B (AO), TYPE C (AO) AND OPEN FRACTURES OF DISTAL FEMUR IN POLITRAUMATIZED PATIENTS. The cycle of works.

Authors Hîncota D., Croitor Gh., Ciocanu M.

Institution The Institute of Emergency Medicine & USMF „Nicolae Testemițanu”

Patent no. Certificate AGEPI ser. OȘ MD 5659 din 12.07.2017 / ser.OȘ MD 5660 din 12.07.2017

Description Applying the surgical treatment method of the FFD provides the following results: restoring the joint surface, which is a principle desideratum in the success of treatment success and subsequent knee functionality. Absolute stability of osteosynthesis, restoration of the normal axis, particularly difficult to cominutive fractures, is ensured. Absolute stability in A1, B1, B2 and C1 fractures is ensured by perfect reduction and favoring calicidal formation "by primary intent". Relative stability is ensured in fractures of type A2 and A3 by observing fracture time, working distance between proximal and distal fracture bolts to promote callus formation "by secondary intent". Absolute stability in C2 and C3 fractures at the joint surface and metadata level stability is assured. Maintain blood supply by limiting lateral depersonalisation and avoiding medial depersonalisation (use of minimally invasive techniques). Early mobilization.

Optimizarea tratamentului chirurgical prin evaluarea metodelor de diagnostic, precizarea tacticii de tratament și perfectarea procesului de recuperare al pacienților cu fracturi ale femurului distal.

Class no.

4

MD.49.

Title	CLINICAL AND PARACLINICAL MONITORING IN THE DYNAMICS OF PATIENTS WITH PATHOLOGICAL VERTEBRAL FRACTURES ON METASTATIC OUTBREAK.
Authors	Caproș N., Mereuță I., Olaru A., Borovic Ed.
Institution	The Institute of Emergency Medicine & USMF „Nicolae Testemițanu”
Patent no.	Certificate AGEPI ser. OȘ MD 5769 din 28.11.2017
Description EN	<p>The application of minimally invasive combined surgical techniques has improved the quality of life of the patients treated by improving the functionality of these patients (HC = 95%, $p < 0.05$). From the surgical methods practiced in research, VP + RxT has demonstrated its long-term effectiveness, making this technique reasonably practicable to achieve lasting functionality. The high level of de facto survival of patients at 12 months after applying minimally invasive combined surgical techniques and increased overall lifespan in most surgically treated patients confirms the correctness of choosing surgical treatment tactics as an effective way of improving quality of life of these patients and consequently to increase their life expectancy.</p> <p>Tumorile locomotorului, în special tumorile țesutului osos, din punct de vedere diagnostic și curativ fac parte dintre cele mai dificile probleme ale oncologiei clinice. Depistarea tumorală tardivă este caracteristică țării noastre, deoarece în peste jumătate din cazuri pacienții prezintă tumori aflate în stadiile III-IV de avansare, având deja stabilite metastaze, inclusiv în coloana vertebrală.</p>
Class no.	4

Institute of Microbiology and Biotechnology

MD.50.

Title	The method for cultivation of fungal strain <i>Fusarium gibbosum</i> CNMN FD 12 producer of protease, xylanase and β-glucosidase
Authors	Ciloci Alexandra, Tiurina Janetta, Bulhac Ion, Danilescu Olga, Labliuc Svetlana , Dvornina Elena
Institution	Institute of Microbiology and Biotechnology of the Academy of Sciences of Moldova, Institute of Chemistry, of the Academy of Sciences of Moldova
Patent no.	Patent application No 6323, 201803 21
Description EN	<p>Nutrient medium for the cultivation of the <i>Fusarium gibbosum</i> CNMN FD 12 fungal strain with the content of corn flour, soy flour, CaCO_3, $(\text{NH}_4)_2\text{SO}_4$ and water, characterized that additional contains as a biostimulator one of the Fe(III) coordination compound: $[\text{Fe}(\text{H}_2\text{L}^{1,2})(\text{H}_2\text{O})_3(\text{NO}_3)_3 \cdot n\text{H}_2\text{O}]$ in the next ingredient report, %: corn flour – 2.0, soy flour – 1.0, CaCO_3 – 0.2; $(\text{NH}_4)_2\text{SO}_4$ – 0.1, $[\text{Fe}(\text{H}_2\text{L}^{1,2})(\text{H}_2\text{O})_3(\text{NO}_3)_3 \cdot n\text{H}_2\text{O}]$ – 0.0010 – 0.0015, drinking water, initial pH of the medium – 6.25.</p> <p>The technical result of the invention consists in increasing the biosynthesis of neutral protease by 225.6–247.9% against the prototype and in reducing the producer's duration of cultivation by 24 hours.</p>
Class no.	3 Agriculture and Food industry

MD.51.

Title	The method for cultivation of fungal strain <i>Aspergillus niger</i> CNMN FD 01 producer of lipases
Authors	Ciloci Alexandra, Bivol Cezara, Tiurina Janeta, Guțul Tatiana, Clapco Steliana, Labliuc Svetlana, Dvornina Elena, Rusu Emil
Institution	Institute of Microbiology and Biotechnology, Republic of Moldova Institute of Electronic Engineering and Nanotechnology D. GHITSU, Republic of Moldova
Patent no.	Patent application No a.2016 0124, 2016 11 09
Description EN	A process for submerged cultivation of <i>Aspergillus niger</i> CNMN FD 01 fungal strain – producer of lipases, including the inoculation of the sterile nutrient medium, with the composition, g/L: soy flower – 35,0, K ₂ HPO ₄ – 5,0, (NH ₄) ₂ SO ₄ – 1,0 and water the rest, with the suspension of culture spores and cultivation under continuous stirring conditions at the temperature of 28...30°C for 96 hours, characterized that prior to the inoculation the inoculum is treated with nanoparticles of titanium dioxide TiO ₂ with dimension of 40 nm, in the concentration of 5...15 mg/L.
Class no.	3 Agriculture and Food industry

Institute of Chemistry

MD.52.

Title	(1R,2R,8aS)-1-((5-mercapto-1,3,4-thiadiazol-2-il)metal)-2,5,5,8a-tetrametildecahidronaphthalen-2-ol with antimicrobial and antifungal activity
Authors	Arîcu Aculina, Lungu Lidia, Ciocărlan Alexandru, Vornicu Nicoleta.
Institution	Institute of Chemistry
Patent no.	Patent application No. a 2017 0101 (2017.11.28) The synthesis of new homodrimane sesquiterpenoid with thiadiazole fragment - (1R,2R,8aS)-1-((5-mercapto-1,3,4-thiadiazol-2-il)metil)-2,5,5,8a-tetrametildecahidronaphthalen-2-ol - is reported. The structure of novel compound was confirmed by IR, ¹ H and ¹³ C NMR spectral analyses.
Description EN	The synthesized compound was preliminary screened for his <i>in vitro</i> antimicrobial and antifungal activity against five (<i>Aspergillus niger</i> , <i>Fusarium</i> , <i>Penicillium chrysogenum</i> , <i>Penicillium frequentans</i> , <i>Alternaria alternata</i>) fungal strains and two Gram-negative (<i>Pseudomonas aeruginosa</i>) and Gram-positive (<i>Bacillus sp.</i>) bacterial strains. Caspofungin and Kanamycin were used as standards for antifungal and antibacterial assays. According to these, reported compound exhibited very good antifungal activity with minimum inhibitory concentration (MIC) of 0.032 µg/mL in comparison with that of the reference compound Caspofungin (0.24 µg/mL) and good antimicrobial activity 0.094 µg/mL in comparison with the reference compound Kanamycin (3.5 µg/mL).

Class no.

4.Medicine-Health Care-Cosmetics

MD.53.

Title	Method for purification of deep waters from ammonium (ammonia) and nitrites ions.
Authors	Lupaşcu Tudor, Ciobanu Mihail
Institution	Institute of Chemistry
Patent no.	Patent application No a 2017 0056 (2017.05.23) The invention relates to the processes for purification of deep waters from ammonium (ammonia) and nitrites ions.
Description EN	

The process, according to the invention, comprises treatment of water with calcium hypochlorite in the ratio of 150...400mg per 750ml of water, concentration of nitrites 3.2...10.3mg/l at a temperature of 15° C, mixing for 30min, correction value pH 6.94...9.0.

Class no.

1.Environment-Pollution Control**MD.54.****Title**

Method for application of nanosilica as regulators of influence on phase transitions of water in hygroscopic systems

Authors

Turov Vladimir, Krupska Tatiana, Lupascu Tudor, Povar Igor

Institution

Institute of Chemistry

Patent no.

Patent application No a 2017 0104 (2017.12.12)

Description EN

Method of application of nanosilica as regulators of influence on phase transitions of water in hygroscopic systems has been developed. The utility model refers to chemical technology, biotechnology, biology, cryobiology, microbiology, medicine, agriculture and can be used to control the parameters of water phase transitions in hygroscopic systems. The use of a hydrophilic, hydrophobic or a mixture of nanosilica, depending on the humidity of the environment, converts the biocomponent into a nanoscale state that promotes or prevents the absorption of water by the biological component while preserving its properties. The way nanosilica affects the phase transitions of water in hygroscopic systems can be used to stabilize lyophilized biological tissues and cell cultures, as well as by adjusting the ratio of hydrophilic and hydrophobic nanosilica, it is possible to influence the processes of freezing and evaporation of water in hygroscopic systems.

Class no.

4. Agriculture and Food Industry**MD.55.****Title**

Catena-(bis-μ-(6-hydroxy-3-((4-(pyridin-2-ylsul-famoyl)-phenyl)-diazonyl)benzoato-O, O', N, N' (4-pyridine) ethane) -dicadmium) formic acid which exhibits luminescent properties

INTERNATIONAL EXHIBITS

Authors	Vitiu A., Croitor L., Siminel A., Coropceanu E., Bourosh P.
Institution	Institute of Chemistry, Institute of Applied Physics
Patent no.	Patent application no a2017 0075, (2017.08.30)
Description EN	The invention relates to chemistry, namely to a new cadmium(II) two-dimensional coordination polymer with polydentate mixed-ligands and formic acid as crystallization molecules with composition $\{[\text{Cd}(\text{HSAZ})(\text{bpe})] \cdot 0.5(\text{HCOOH})\}_n$ (1) (H_3SAZ = 2-hydroxy-5-[[4-[(2-pyridinylamino)-sulfonyl]phenyl] benzoic acid and bpe = 1,2-bis-(4-pyridine)ethane). The bideprotonated HSAZ^{2-} ligand shows a new coordination mode and the obtained novel compound exhibits luminescent property.
Class no.	9

MD.56.

Title	NEW HYDRAZONE COMPOUNDS POSSESSING ANTIMICROBIAL ACTIVITY
Authors	A. Lazarescu, E. Melnic, P. Bourosh, E. Zariciuc
Institution	Institute of Chemistry Republic Moldova.
Patent no.	Patent application No a 2017 0061, Nr.a 2017 0062 (2017)
Description EN	The invention relates to the series of new copper(II) coordination compounds of hydrazones possessing antimicrobial activity. The compounds can be used as antiseptic for application in medicine, veterinary medicine and agriculture. The essence of the invention consists in the synthesis of new S-methyldithiocarbazate Schiff base ligand, derived from 4-formyl-3-hydroxy-2-naphthoic acid, H_3L ($\text{C}_{14}\text{H}_{12}\text{N}_2\text{O}_3\text{S}_2$) and its copper(II) complexes with composition $[\text{Cu}(\text{H}_2\text{L})\text{X}] \cdot \text{Solv}$ ($\text{X}=\text{Cl}, \text{Br}$) and $[\text{Cu}(\text{HL})\text{Solv}]$. The structures of organic ligand and complexes were proved by single crystal X-ray diffraction analysis. The compounds exhibit pronounced bacteriostatic and bactericidal properties against <i>S.aureus</i> (+), <i>C.albicans</i> (+), <i>E.coli</i> (-), <i>Kl.pneumoniae</i> (-) pathogens.
Class no.	4

MD.57.**Title**

From new hits towards preclinical trials of antituberculosis activity.

Authors

Macaev Fliur, Zveaghintseva Marina, Stingaci Eugenia, Pogrebnoi Serghei, Boldescu Veaceslav, Duca Gheorghe.

Institution

Institute of Chemistry, Republic Moldova

Patent no.

Patent No 4519 MD, No 4404 MD, No 4009 MD.

Description EN

The invention propose 3 active compounds as antituberculosis agents with low toxicity and prominent antimycobacterial properties.

The tested compounds exhibit inhibitory activity against Mtb H37Rv (ATCC 27294) comparable to that of Rifampicin. Experimental results for (Z)-4,4-dimethyl-1-(4-nitrophenyl)-2-(1H-1,2,4-triazol-1-yl)pent-1-en-3-one and 2-(propylthio)-5H-[1,3,4]thiadiazolo[2,3b]chinazolin-5-one have demonstrated that there was no lethal effect observed in animals after administration of the experimental doses:2000 -5000 mg/kg of body weight, orally. Biochemical analysis have revealed insignificant variations of blood sugar, uric acid and creatinine concentrations in serum as compared to the control group

Class no.

4. Medicine – Health Care - Cosmetics

MD.58.**Title**

The complex agent with antioxidant properties

Authors

Bulhac Ion, Ștefiriță Anastasia, Coropceanu Eduard, Brânză Lilia, Covaci Olga

Institution

Institute of Chemistry, Institute of Genetics, Physiology and Plant Protection, Tiraspol State University, Republic Moldova

Patent no.

Patent application no. 6320 MD, 2018. 03. 19.

Description EN

The core of the invention is the development of a complex agent "Polyel", which contains, %: thiourea - 50,0; $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ - 20,12; $\text{Ca}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$ - 14,51; potassium salicylate - 11,43;

$[\text{Co}(\text{DmgH})_2(\text{SeUree})_2]\text{BF}_4 \cdot 2\text{H}_2\text{O} - 1,73;$
 $[\text{Fe}_3\text{O}(\text{CH}_3\text{COO})_6(\text{H}_2\text{O})_3]$
 $\text{NO}_3 \cdot 3\text{H}_2\text{O} - 0,69; \text{Mn}(\text{CH}_3\text{COO})_2 \cdot 4\text{H}_2\text{O} - 0,55;$
 $[\text{Co}(\text{DmgH})_2(\text{Nia})_2] \text{BF}_4 \cdot 2\text{H}_2\text{O} - 0,36; \text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O} -$
 $0,26; (\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O} -$
 $0,19; (\text{HOC}_6\text{H}_4\text{COO})_2\text{Cu} \cdot 4\text{H}_2\text{O} - 0,16,$ with antioxidant properties.

The invention is related to new chemical compounds with biologically active properties, which can be used in agri-culture to reduce a negative effect of oxidative stress caused by reactive oxygen species, for antioxidant protection and decrease of oxidative damage to cellular components.

Technically, the use of the new complex Polyel results in the decrease of malonic di-aldehyde complex - the final product of lipid peroxidation by reactive oxygen species - and in the enhanced activity of the enzymes of the system of antioxidant protection.

Class no.

3. Agriculture and Food Industry

Institute of Genetics, Physiology and Plant Protection

MD.59.

Title

Authors

Institution

Patent no.

Methodology for the use of genetically distant species in the creation of rhizogenic interspecific genotypes of vines (*Vitis vinifera* L. x *Muscadinia rotundifolia* Michx.) with increased resistance to environmental factors.

dr. Alexandrov E., dr. hab. Botnari V., acad. Gaina B.

Institute of Genetics, Physiology and Plant Protection

Nr. 6315 din 2018

The European vine varieties homologated in the Republic of Moldova are susceptible to the attack of the filoxera, which requires the production of the planting material grafted on the filoxerorezistent rootstock. Founding vineyards on their own roots is a perspective. Although *V. vinifera* ssp. *sativa* has great genetic potential, genotypes of intraspecific origin do not ensure the overcoming of the genetic susceptibility barrier to the adverse environmental conditions within the cultivation area. As a result of interspecific hybridization of varieties of *V. vinifera* ssp. *sativa* ($2n=38$) and *M. rotundifolia* ($2n=40$), the creation and selection of rhizogenic interspecific genotypes in BC3 ($2n=38$) with valuable characters, which allows the vine growing area to grow on its own roots, where varieties in the group *V. vinifera* ssp. *sativa* do not withstand the low temperatures during the wintering period, as well as the reduction of the number of chemical treatments, which will contribute to the obtaining of ecological products and environmental protection.

Class no.

3.

[illegible]

MD.60.**Title**

Process for *in vitro* production of *Rhodiola rosea* L. callus biomass

Authors

Calugaru-Spataru Tatiana, Caus Maria, Dascaluic A.

Institution

Institute of Genetics, Physiology and Plant Protection

Patent no.

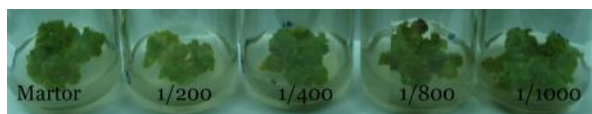
MD 894 Z 2015.11.30.

Description EN

The invention is related to biotechnology, namely to a process for *in vitro* production of *Rhodiola rosea* L. callus biomass. *R. rosea* widely used in medicine, pharmaceutics and being at risk of extinction, the obtaining of active compounds characteristic for its rhizomes from callus cells biomass obtained by biotechnological method represents one of the ways of solving the problem. Supplementation of the culture medium with one volume of sterilized natural growth regulator *Reglalg* aqueous solution has ensured increasing biomass accumulation by 38% and the content of chlorophyll *a*, *b* by 92%, 49% and respectively of *carotenoids* by 53% in *R. rosea* callus cells.

Class no.

3

**MD.61.****Title**

Moldova 77- a perspective winter common wheat variety

Authors

Buiucli P., Gore A., Rotari S., Veverita E., Lupascu G., Ceban A., Toma Z.

Institution

Institute of Genetics, Physiology and Plant Protection

Patent no.

MD 265, 2018. 02. 28

Description EN

The cereal variety **Moldova 77** have been developed through hybridization of varieties *Moldova 5 x Moldova 79*, followed by repeated selection. This variety belongs to the *Lutescens* variation and have white awnless spike without pubescence, it has a medium size (8-10 cm), and a density of 24-26 spikelets at 10 cm. The kernel is big, cylindrical, MMB – 40-41g. The gluten content varies between 26-30% and the protein – 12,9-13,3%. The number of kernels in spike varies from 40 to 45 and the

INTERNATIONAL EXHIBITS

length of plant is of 78-90 cm. The variety is high-productive, with a medium yield of 5,7- 6,1 t/ha, which is 0,3-0,5 t/ha higher than control variety Moldova 5. This wheat variety is resistance to lodging. It has higher and better qualities of baking than witness variety. It belongs to a medium ripening group. In field conditions they are characterized by high resistance to diseases, such as mildew, brown and yellow rust, root rot, smut, black embryo and other diseases.

Class no.

3

MD.62.**Title**

Method of selection of the maternal wheat forms for hybrids with high weight of kernels in spike

Authors

Lupascu Galina, Gavzer Svetlana

Institution

Institute of Genetics, Physiology and Plant Protection

Patent no.

MD 1161, 2018

Description EN

The invention relates to agriculture, in particular to a method of assessing the maternal effect in the formation of the wheat grain mass in the wheat. According to the invention, the method of assessing the maternal effect in the formation of the wheat grain mass in wheat includes the appreciation of the productivity elements in the parental forms and the F₁ hybrids, characterized in that as the criterion of the maternal effect, the degree of dependence between the grain mass in spike of the F₁ hybrids and the multiple regression coefficient β for the number of kernels in spike in the maternal form, it is also considered that the maternal effect is significant if the correlation coefficient (r) between these indices is equal to $0.85 * (p \leq 0.05)$, and the maternal form whose coefficient β registers values within the range of 0.656-0.712 for the number of grains *per* spike contributes to the formation of F₁ hybrids with high grain mass index *per* spike: 2.35-2.63 g.

Class no.

3

MD.63.**Title**

New Tomato Cultivars - MaKrista, MilOranj, Stefani
Milania Makovei, Liudmila Guseva, Vasile Botnari,
Galina Lupaşcu, Anastasia Ştefîră

Authors**Institution**

Institute of Genetics, Physiology and Plant Protection

MaKrista – MD 157 2014-06-30;

Patent no.

MilOranj – MD 158 2014-06-30;

Stefani – MD 159 2014-06-30

Tomato cultivars **MaKrista, MilOranj, Stefani** are the genotypes of new generation. They are interesting from the social and economic perspective. These are salad cultivars with large fruits of the intense pink and orange colours; they are much-in-demand in the modern market of customers.

MaKrista. Cultivar of superdeterminant type of growth (*spp*). It has large fruits of the intense pink colour, with high palatability qualities. Fruit weight is of 140 to 200gr. It is characterized by the long-lasting retention of fruits on the plant at the biological maturity stage (20 to 25 days), highly transportable. Total yielding capacity is of 57.1...60.4 t/ha with fruit vendibility exceeding 93%.

Description EN

MilOranj (*sp*) is distinguished from the others by the large (200 to 300gr) fruits of the intense orange colour. Fruits are glossy, fleshy, without white strands, with the thick pericarp, and high palatability qualities. Due to the high content of β -carotene in the fruits, they are recommended for children and dietetic nutrition. Total yielding capacity is of 57,7...63,0 t/ha with fruit vendibility exceeding 90%.

Stefani (*sp*⁺) is intended for growing in the plastic-covered unheated greenhouses. This cultivar has very large (400gr) glossy pink fruits with soft sugary flesh and high palatability qualities. It is resistant to heat and cold. It is intended for cultivation in the unheated greenhouses in the early periods and also in the later periods with the high ambient temperatures. Yielding capacity is of 17.3...21.8 kg/m² with high quality of fruits (91.3% to 95.6%).

Class no.

MD.64.**Title****CisGen – new tomato cultivar****Authors****MARII Liliana, BUJOREANU Valeriu, ANDRONIC Larisa, SMEREA Svetlana, BOTNARI Vasile, BERZOI Valentina****Institution****Institute of Genetics, Physiology and Plant Protection****Patent no.**

Patent application No. V20150015/02.13/2015

The tomato cultivar CisGen is created as a result of interspecific hybridization of the Nistru variety and spontaneous form *S.cheesmaniae*. The seeds of hybrid F₁ were irradiated with gamma rays (100Gy), then individual selection has been applied.

Description EN

The variety with medium time of maturity, the plants of determinate growth type. The fruits are small, ovate shape in longitudinal section, without green shoulder (before maturity). Average fruit weight 13.5 g. The content of total soluble solid - 6.80 g%, sugar 5.84 %, ascorbic acid 25.37 mg%, and total acidity 0.45%. Total harvest 36.9 t/ha, harvest 34.4 t / ha.

It is recommended for seedling and open-field cultivation.

Class no.

3

MD.65.**Title****New tomato cultivare Exclusiv****Authors****Authors:** Mihnea Nadejda, Botnari Vasile, Lupașcu Galina, Grati Vasile, Saltanovici Tatiana, Mihnea Mihaela**Institution**

Institute of Genetics, Physiology and Plant Protection

Patent no.

MD 241

Description EN

The fruits of the variety *Exclusiv* are medium sized weighing 75-80 g, cylindrical shape. The fruits contain 4,9-5,2% of dry matter, 4,5...4,7% of sugars, 25,0...41,0 mg/% of vitamin C, 0,29...0.37% of acidity. The variety is early ripening with a vegetation period is 100-108 days. In the increased by seeds, the variety ensures a yield of 43.0...59.0 t/ha, while the standard fruit yield is high (93.0%). The variety *Exclusiv* harmoniously combines high productivity, good tasting qualities with the resistance to cold and drought. The productivity is

INTERNATIONAL EXHIBITS

high at cultivation through both seeds and seedling transplants.

Class no.

3. Agriculture and Food Industry

MD.66.

Title

Hordeiforme 340- a new winter wheat variety

Authors

Buiuclii P., Rotari S., Veverita E., Lupascu G., Gore A., Ceban A., Toma Z.

Institution

Institute of Genetics, Physiology and Plant Protection

Patent no.

MD 266, 2018. 02. 28

Description EN

Hordeiforme 340 is a variety created by the repeated individual selection of the elite plant of the Hordeiforme 333 x Hordeiform 335 hybrid population. The variety has a medium size (80-88cm.), red spike with a length of 7.5-8.0 cm and a density of 26-30 spikelets at 10 cm. The kernel is big, white-yellowish, cylindrical, MMB-48-52g. The gluten content varies between 28-32.4% and the protein-15.0-15.6%. The production capacity is 5.5- 6 t / ha. It is a mid-early variety, resistant to drought, fall, wintering and diseases; is recommended to sow in optimal terms; the sowing standard of 5 mln, grains per hectare. It is characterized by a high resistance to diseases in field conditions namely mildew, brown and yellow rust, root rot, smut etc. Having high quality grains and a big content of protein and gluten, it is irreplaceable in the pasta industry. The pasta from this flour are yellow and are not boiled soft.

Class no.

3. Agriculture and Food industry

MD.67.

Title

New tomato varieties Jacotă (*Solanum lycopersicum* L.)

Authors

Sîrmeatnicov Iulia, Botnari Vasile, Balaur Nicolae, Ciobanu Renata, Cotenco Eugenia, Chirilov Eleonora

Institution

Institute of Genetics, Physiology and Plant Protection

Patent no.

Patent of varieties MD 240 of 2017.08.31

Description EN

Tomato variety Jacota was obtained as a result of spontaneous hybridization between the *Solanum lycopersicum peruvianum* var. *dentatum* CH Mull. with

small green fruit with glandular hairs and the Victorina variety (*Solanum lycopersicum* L.) with red medium-sized fruit, reproduced by *in vitro* culture of embryos and undeveloped ovules. The vegetation period is 106-118 days. The fruit is round and flat with the weigh 100-150g, without the wrinkled peduncle, with fleshy pericarp and interior pulp. Fruits with high taste qualities, the dry matter content of the fruits 5,9-6,5%, sugars 4,72-5,75%, ascorbic acid 45,6-54,5 mg/%, titratable acidity 0,35-0,41mg/%. The total harvest of tomato is 57,6-60,2t/ha and commodities 57,6-60,2 t/ha. The share of commodities is 96,3%. The variety is productive, resistant to drought. It is recommended for fresh consumption and processing

Class no.

3. Agriculture and Food Industry

MD.68.**Title****A new variety of triticale INGEN 40****Authors**

Buiucli P., Veveriță E., Lupașcu G., Rotari S., Gore A., Ceban A., Toma Z.

Institution***Institute of Genetics, Physiology and Plant Protection*****Patent no.**

MD 264, 2018. 02. 28

Description EN

The Ingen 40 variety was obtained by hybridizing Titan x (Atol x Ingen 93) and subsequent individual selection from the F₃ generation. The variety is part of the variety Erytrospermum. Spike – medium-sized (10.5-13.0 cm), cylindrical, medium density (28-34 spikelets at 10 cm of the rachis). The kernels has a large mass (1000 grains - 47-50 g), are oval-elongated, color - yellow, contains 12-13.5% protein and 20-22% gluten. The number of kernels in the spike varies between 65-80. Vegetation period: 275-282 days and is part of the medium precocity group. Height of plant: 95-105 cm, holds 2.8-3.0 sprouts *per* plant. It is resistant to drought, winter, fall and disease. It records a harvest of 5.5-8.0 t / ha, 2.0-3.0 t more than control cultivar Ingen 93. It has good technological and biochemical qualities. On poor soils (sandy, clayey) when mineral and organic fertilizers are low, high yields are obtained.

Class no.

3

MD.69.

Title	Method of selecting the type of drought-resistant tomatoes
Authors	Cravcenco A., Antoci L., Saltanovici T.
Institution	Institutul de Genetică, Fiziologie și Protecție a Plantelor
Patent no.	MD653 Z 2014
Description	The method allows the assessment and selection of drought-resistant genotypes at the initial vegetation stage with the use of mature pollen, which ensures the inclusion of the best genotypes in the current year in the process of improvement.
EN	
Class no.	3

MD.70.

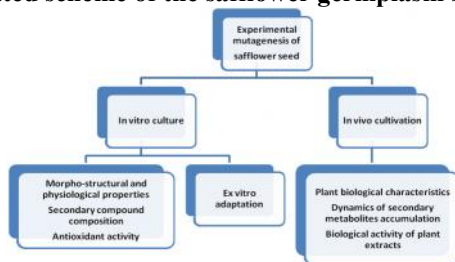
Title	Biological, chemical and biotechnological researches of safflower
Authors	IVANOVA Raisa, ANDRONIC Larisa, SMEREA Svetlana, MASCENCO Natalia, SCHIN Victoria
Institution	Institute of Genetics, Physiology and Plant Protection
Description	Safflower (<i>Carthamus tinctorius</i> L.) plants, being a valuable agronomic species for multipurpose utilization (red and yellow pigments as food colorants, phenolic substances as antioxidants, vegetable oil as source of alphanatocopherol, silage for livestock feed etc.) until present are remaining unused in the Republic of Moldova. The aim of this research was diversification of safflower germplasm by <i>in vitro</i> culture and experimental mutagenesis in order to increase the bio-morphological characters and content of biologically active substances (see Integrated scheme of the safflower germplasm selection). The research resulted in new genotypes of safflower which were obtained by seeds irradiation with different doses of gamma rays and selection by <i>in vitro</i> culture, field and greenhouses cultivation of plants. There was developed the scheme for obtaining of proliferative callus, <i>in vitro</i> induction of morphogenesis in order to diversification of the morphological characters. The variation of quantitative indexes of safflower plants was influenced by both the radiation dose and cultivation conditions. The antioxidant activity was increased in calluses and leaves of safflower exposed to gamma radiation. The flavonoid glycosides isolated from callus and leaves of
EN	

safflower demonstrated the stimulatory activity at the initial stages of vegetable (tomatoes, cucumber, and cabbage) crops growth.

Applications. Agriculture. The most important practical results of this study are the description of morpho-physiological and biochemical characteristics of new genotypes and methodology of safflower multiplication.

Advantages. Safflower could become an alternative of other oilseeds crop such as sunflower, which suffers greatly in droughty seasons.

Integrated scheme of the safflower germplasm selection



Class no.

3

**The Institute of Physiology and Sanocreatology
Republic of Moldova**

MD.71.

Title	Method for stimulating the formation of conditioned reflexes in the period of diminution of functions
Authors	Vladimir Sheptitsky, Iulia Bereziuc, Svetlana Burtseva
Institution	The Institute of Physiology and Sanocreatology
Patent no.	Patent MD 1180
	The invention relates to experimental physiology, experimental medicine and pharmacology, in particular to methods for stimulating the formation of conditioned reflexes in the period of diminution of functions.
Description EN	According to the invention, the method comprises the administration as a food additive of Streptomyces fradiae CNMN-Ac-11 strain biomass metabolites, in a dose of 250 mg/kg body weight per day, for 90 days prior to the formation and in the period of formation of conditioned reflexes.
Class no.	4 – Medicine-Health Care -Cosmetics

**National Institute of Economical Research
Republic of Moldova**

MD.72.**Title**

THE METHODOLOGY OF IMPLEMENTATION OF THE PERFORMANCE-BASED BUDGETING WITHIN THE ECONOMIC ENTITIES OF THE REPUBLIC OF MOLDOVA

Authors

GANEA Victoria, MIHAILA Anastasia, STRATAN Alexandru

Institution

National Institute of Economical Research

Patent no.

Certificate AGEPI OȘ Nr. 5713 11.09.2017

Description EN

Performance-based budgeting is a progressive budgeting method that can be defined as a budget based on results-oriented functions, activities and projects. Under this budgeting system, the costs are related to the final results, or in other words, the focus is shifted from expenditure to outcome. The proposed methodology comes with a well-defined, step-by-step algorithm through which performance-based budgeting, integrated with company strategy, comes not only as an operational management tool but also contributes to the implementation of the strategy chosen through regular monitoring executing the budget and reaching the KPI indicator values. Metoda se referă la activitatea economică, în special la gestionarea activității entităților economice și anume - bugetării pe bază de performanță.

Class no.

14. Other. Economics

MD.73.**Title**

THE ASSESS OF THE IMPACT OF CONTROLLING ON THE DEVELOPMENT OF THE ACTIVITY OF ECONOMIC ENTITIES IN THE REPUBLIC OF MOLDOVA

Authors

MIHAILA Svetlana, STRATAN Alexandru

Institution

National Institute of Economical Research

Patent no.

Certificate AGEPI OȘ 5879 05.02.2018

Description EN

Controlling is an integrated operational and strategic information system that interconnects and coordinates the processes of recording, controlling, analyzing, monitoring and planning, to avoid certain risks from the entity's activity in order to achieve the proposed performance. The results of the research consisted of evaluating the vision of the specialists in the field and analyzing the real situation of the controlling within the entities of the Republic of Moldova on a sample of 37 managers in order to elaborate the recommendations for the increase of the performances and at the same time we

Class no.	identified shortcomings, development perspectives and concrete proposals for good implementation of the controlling system. Metoda se referă la activitatea economică, în special la gestionarea activității entităților economice și anume - bugetării pe bază de performanță. A fost aplicată în: „Orange” SA, „Lukoil Moldova” SRL, ÎM „Efes Vitanta Moldova Brewery” SA, ÎCS „Metro cash & Carry Moldova”, SRL, „Medpark International Hospital”, SRL „Erhtrans”, etc. 14. Other. Economics
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MD.74.

Title	ZERO-BASED BUDGETING - A MANAGEMENT TOOL FOR AUTOCHTHONOUS ENTITIES
Authors	ULIAN GALINA, MIHAILA Svetlana, STRATAN Alexandru
Institution	National Institute of Economical Research
Patent no.	Certificate AGEPI OȘ 5910 28.03.2018
Description EN	Zero-based budgeting is a method by which managers need to justify planned costs, as if the activity is first performed, requires from each budget center a detailed analysis of the activity to identify inefficient operations and select the most advantageous use of resources. The results of the research consist in establishing the algorithm and the stages of the implementation of the method from the theoretical and practical point of view. It was: mirrored the scheme of operation compared to the traditional method; identified the factors that ensure the success of the method; elaborated model of information consolidation and reporting; evaluated the specialists' vision on the budgeting process at the local entities, elaborated the recommendations for increasing the quality of the activity of the entities. Metoda se referă la activitatea economică, în special la gestionarea activității entităților economice și anume - bugetării pe bază de performanță. A fost aplicată în: „Carmez” SA, „Balcan Tir” SRL „Lukoil Moldova” SRL, ÎM „Efes Vitanta Moldova Brewery” SA, ÎCS „Metro cash & Carry Moldova”, SRL, „Nona Autoconsult”, etc.
Class no.	14. Other. Economics

**Practical Scientific Institute of
Horticulture and Food Technology
Republic of Moldova**

MD.75.

Title

Process of sparkling white wine production

Authors

Taran Nicolae, Soldatenko Eugenia, Morari Boris,
Soldatenko Olga, Roșca Oleg, Vasiucovici Svetlana

Institution

**Public Institution Practical Scientific Institute of
Horticulture and Food Technology**

Patent no.

1.The invention relates to oenology, in particular, to methods for producing white sparkling wines.

The method, according to the invention, provides the production of white wine stock for white sparkling wines from the **Viorica** and **Aligote** grape varieties and getting the blend from processed wine **Viorica** and **Aligote** at the ratio of 50-70% and 30-50% respectively, and the expedition liqueur is prepared based on the **Viorica** wine stock.

The result consists in improving the quality of sparkling wines and expanding the range of sparkling wines from local grape varieties.

Description EN

2. The invention relates to oenology, in particular, to methods for producing white sparkling wines.

The method, according to the invention, provides the production of white wine stock for white sparkling wines from the **Florica** and **Chardonnay** grape varieties and getting the blend from processed wine **Florica** and **Chardonnay** at the ratio of 50-70% and 30-50% respectively, and the expedition liqueur is prepared based on the **Florica** wine stock.

The result consists in improving the quality of sparkling wines and expanding the range of sparkling wines from local grape varieties.

Class no.

MD.76.

Title	Process for producing brine cheese from goat milk with extended shelf life
Authors	Bogdan Nina, Necrîlova Liudmila, Cartășev Anatoli, Coev Ghenadie, Rudic Valeriu
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	Patent application No.1753/ s 2018 0017 Deposite date 15.03.2018
Description EN	The invention relates to the dairy industry, namely to a method for producing brine cheese from goat milk. The process, according to the invention, comprises pasteurization of goat milk, coagulation of milk proteins by adding the ferment of bacteria <i>Lactococcus lactis</i> , <i>Lactococcus cremoris</i> <i>Lactococcus diacetylactis</i> , <i>Streptococcus thermophilus</i> , calcium chloride and rennet enzyme, aging, separation of the whey from the curd, cheese self-pressing, salting and maturing.
Class no.	3. Agriculture and Food Industry

MD.77.

Title	Process for preparing starter culture for the dairy products manufacturing
Authors	Cartășev Anatoli, Coev Ghenadii
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	Patent application No. 1682/ s 2017 0090 Deposite date 07/08/2017
Description EN	The invention relates to biotechnology, namely to the process for preparing freeze dried starter culture from lactic acid bacteria using autochthonous <i>Streptococcus thermophilus</i> strains which comprises biomassobtaining, adding cryoprotective agentsas follows: skimmed milk, glycerol, sucrose, sodium citrate, gelatin and freeze-drying.The ratio biomas-cryoprotective medium 1: 1 (w/w). The process ensures the survival of lactic bacteria at 95-97%. In, additional, reduce time of freeze-drying process at positive temperatures from 25 h to 19 h. Freeze-dried starter culture composition can be used as

probiotics in a probiotically active product such as for example yoghurt.

Class no.

3. Agriculture and Food Industry



MD.78.

Title

Process for apple acidifier obtaining

Authors

Roman Golubi, Eugen Iorga, Bucarciuc Victor, Arnăut Svetlana, Crucirescu Diana

Institution

Public Institution Practical Scientific Institute of Horticulture and Food Technology

Patent no.

Patent application No. 1762/ 27.03.18

Description EN

The invention relates to the food industry, in particular to processes for apple acidifier obtaining in native and concentrated forms.

Process apple acidifier obtaining, according to the invention, includes primary apple processing, crushing, heating up to temperature of 50°C and treatment with pectolytic + amylotic enzymes for 1 hour, pressing, deburring, clarifying and filtering, heat treatment at 60 °C for 20 min., packing and sealing, in case of concentrated acidifier production it must be evaporated at the 55°Brix concentration, then packaging and sealing, followed by pasteurization and cooling.

Class no.

3. Agriculture and Food Industry

MD.79.

Title	Process for obtaining the CO₂-extract and CO₂-meal from tomato waste and their valorisation in food industry
Authors	Olga Migalatiev, Marina Carelina, Vavil Caragia, Iurie Golovco, Valentina Gordeeva, Golubi Roman, Vicerova Larisa
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	Patent application No. 1755/2018-03-20
Description EN	Tomato waste consists of seeds, skin and pulp in a ratio of 62.3: 35.7: 2.0%.
	The proposed process allows the processing of tomato waste with the production of CO ₂ -liposoluble extract and CO ₂ -meal, at different supercritical extraction regimes: 37-73 °C, 18-42 MPa, 24-96 min.
	The CO ₂ -extract of tomato waste is a liposoluble liquid, homogeneous consistency, without impurities, translucent, red-orange up to a brick tint, with a pleasant smell and taste typical for tomatoes.
	It has a rich content of carotenoids; lycopene; vitamin E and polyphenols; unsaturated fatty acids, especially linoleic and oleic acid.
	The CO ₂ -meal from tomato waste is characterized by low moisture and lipid content, but with a significant content of sugar and vegetable protein, and rich in dietary fiber. It contains all essential amino acids, being rich in phenylalanine and tyrosine; leucine and lysine. The limiting essential amino acid is tryptophan.
	The CO ₂ -extract from tomato waste can be redeemed by adding 0.7-3.2 g in a portion of traditional salad, such as: stew of zucchini, eggplant stew; marinated cauliflower, marinated celery. This quantity ensures the presence of biologically active substances in significant amounts (carotenoids 3-15%, lycopene 6-30%, vitamin E 15-76% of RDI).
	The CO ₂ -meal from tomato waste can be harnessed in the manufacture of pretzels by replacing 5-7% of high quality wheat flour, which is poor in fiber and lysine is the limiting essential amino acid. Thus, pretzels with added CO ₂ meal will be the source (15% of RDI) of fiber and protein, with a higher biological and nutritional value.

Class no. 3. Agriculture and Food Industry

Tudor Bounegru

Practical Scientific Institute of Horticulture and Food Technology

MD.80.

Title	Countercurrent extractor with continuous operation
Authors	Tudor Bounegru, Mihai Stîţiu
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	Nr.1182, 2017.02.06
	The invention relates to the chemical, pharmaceutical and food industry, namely to the equipments for extracting the components of the raw material.
Description EN	The countercurrent extractor with continuous operation contains a cylindrical inclined body, connected to the bottom end with a vertical cylindrical body. Inside the inclined cylindrical body is a perforated screw driven by an electric motor. The extractor's body is clothed in a heating jacket, allowing extraction at different temperatures.
Class no.	3

MD.81.

Title	Distillation plant for wines with a high content of continuous sulphurous anhydride
Authors	Mihai Stîţiu, Tudor Bounegru, Vladimir Vişnevschi
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	Nr.1181, 2017.08.31
	The invention relates to the wine-making industry, namely distillation plants for wines with a high content of continuous sulfur dioxide, consisting of a distillation column, a purification column, a wine preheater, a primary deflector and one for the hetero-aldehyde fraction . The plant also contains a concentration column, a separator, a condenser, a desulphite, which is connected to the distillation column.
Description EN	The new plant allows to distil wines with a high sulphide anhydride content of up to 100 mg / dm ³ and to obtain a quality wine distillate.
Class no.	3

MD.82.

Title	Direct distillation plant for wines with a high content of discontinuous sulfuric anhydride
Authors	Mihai Stîțu, Tudor Bounegru, Vladimir Vișnevschi
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	Nr.1140, 2016.04.13
Description EN	<p>The invention relates to the wine-making industry, namely distillation plants for high-content disulfide-containing sulfide-containing wines, consisting of alambic, 6-taler copper distillation column, deflector, preheater for wine, desulphite, refrigerant, epiuret . The distillation column is no longer mounted on alabaster but separately and is connected through a pipe provided with a tap and on the top of it is connected to the deflector. The desulphite is mounted between the alabaster and the distillation column.</p> <p>The new plant allows to distil wines with a high sulphide anhydride content of up to 100 mg / dm³ and to obtain a quality wine distillate.</p>
Class no.	3

MD.83.

Title	Desulfurization process for wine intended for distillation
Authors	Tudor Bounegru, Margarita Crasnosciocova
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	Nr.4491, 2017.06.30
Description EN	<p>The invention relates to the wine-making industry, namely a desulfurization process for distilling wine using an aqueous slurry of lime, resulting in the formation of a calcium sulfite and calcium tartrate precipitate which is removed by filtration . The use of lime is done until the pH of the wine is 5.5-6.6. The desulfated wine is guided to distillation. The separated sediment is used to produce tartaric acid. This process allows the distillation of wines with a high sulphurous anhydride content of up to 200 mg / dm³.</p>
Class no.	3

MD.84.

Title	Process for obtaining tartaric acid from calcium tartrate obtained from wine waste
Authors	Tudor Bounegru
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	Nr.4504, 2016.04.13
Description EN	The invention relates to the field of production of organic food acids, namely to a process for the production of tartaric acid from calcium tartrate obtained from wine waste. This process involves watering the calcium tartrate with water at a temperature of 85-90 ° C, solubilizing it with a solution of 5.0-8.5% orthophosphoric acid at a temperature of 85-90 ° C, neutralizing the excess acid with calcium carbonate, decanting it filtering the obtained precipitate, treating the obtained solution with calcium hexacyanoferrate (II), filtering the obtained precipitate, purifying the active cobalt solution, concentrating the solution at low pressures and crystallizing the tartaric acid
Class no.	3

MD.85.

Title	Process for obtaining bioactive anthocyanin concentrate from grapes
Authors	Tudor Bounegru
Institution	Public Institution Practical Scientific Institute of Horticulture and Food Technology
Patent no.	-
Description EN	The present invention proposes a process for obtaining anthocyanin concentrate from bioactive grapes by vacuum distillation at temperatures lower than 40 ° C of a mixture of clarified grape juice and red wine, such as an aqueous extract of red grape marc, treated with aqueous solution of 0.1% sulfuric anhydride. The process of concentration of the given mixture will take place until the concentration of the sugars in it does not become equal to or higher than 80% after the meal. The present invention allows to obtain a stable bioactive anthocyanide concentrate with antiradical and antioxidant properties in which the enzyme active complex is preserved without the use of synthetic preservatives.
Class no.	3

National Agency For Public Health

Republic of Moldova

MD.86.

Title	Detection of DNA-repair genes polymorphisms in people exposed to ionizing radiation.
Authors	Corețchi Liuba, Cojocari Alexandra, Bahnarel Ion, Gîncu Mariana.
Institution	National Agency for Public Health
Patent no.	Seria OȘ Nr. 5877 din 13.02.
Description EN	The scientific work refers to the principles of the chain polymerization reaction, the equipment and materials needed to evaluate polymorphism of genes involved in DNA repair in people exposed to ionizing radiation. The DNA-repair genes polymorphisms are analyzed using PCR (Polymerase Chain Reaction), which allows the amplification of the nucleotide sequences followed by electrophoresis visualization of the results in the polyacrylamide or agarose gel. The PCR (<i>chain-reaction polymerization</i>) is based on <i>in vitro</i> technology that imitates the natural DNA replication capacity and consists in the rapid generation of multiple copies of a target nucleotide sequence from a gene of interest or a specific pathogen; then, the amplified product is detected by various methods.
Class no.	4

MD.87.

Title	Biodozimetry of the exposure at the ionizing radiation by micronucleus method.
Authors	Liuba Corețchi, Alexandra Cojocari, Ion Bahnarel, Mariana Gîncu.
Institution	National Agency for Public Health
Patent no.	Nr.5379 of 09/06/2016.
Description EN	The invention relates to the field of medicine, in particular to processes for the evaluation of the cytogenetic mutation by micronucleus test under the conditions of stressogenic factors, including increased ionizing radiation conditions. The work is intended for cytogenetic investigations in biodozimetry and includes

INTERNATIONAL EXHIBITS

methodology for determining the cell reaction to the action of ionizing radiation by determining the number of micronuclei. This presents a express method, estimating the level of patient exposure to stressogenic factors, including ionizing radiation within limited time, useful as a screening test in case of nuclear accident/incident.

Class no.

4

MD.88.**Title****THE MONITORING OF IONIZING RADIATION SOURCES****Authors**

COREȚCHI Liuba, Dr. Sc., associate professor;

Institution

Corețchi Liuba, Bahnarel Ion, Ursulean Ion, Cojocari Alexandra, Plăvan Irina, Vîrlan Serghei.

Patent no.

National Agency for Public Health
Nr. 5599

Description EN

The paper represent the radiological investigations which includes: the characteristic of the sources of ionizing radiation from the principal component of the environment; the techniques and detecting equipment of ionizing radiation; the methodology of determining the concentrations of the natural radionuclides: ^{226}Ra , ^{90}Th , ^{238}U și ^{40}K ; significant hygiene, environmental pollution indicators: ^{90}Y , ^{134}Cs , ^{137}Cs , ^{90}Sr , ^{210}Po , ^{210}Pb by the spectrometric, radiochemical and radiometric methods. This paper is intended for institutions of Public Health Surveillance which including the specialists, investigations who perform the radioactivity: the hygienists; the students and residents of the Faculty of Public Health of state University of Medicine and Pharmacy "Nicolae Testemițanu", who study the radiation hygiene at the stage of university/postgraduate education.

Class no.

1

MD.89.**Title****The methodological monitoring of the natural sources of radon (^{222}Rn) and evaluation of the radiological risk to the exposed population.****Authors**

COREȚCHI Liuba, Dr. Sc., associate professor;

Corețchi Liuba, Bahnarel Ion, Ursulean Ion, Apostol

INTERNATIONAL EXHIBITS

Institution	Ion, Plavan Irina, Cojocari Alexandra, Virlean Serghei.
Patent no.	National Agency for Public Health Nr. 5478
Description EN	The paper represents the radiometric investigations and establishes the methodology for determining the radon concentrations and its progeny indoor, in soil and water. It described the calculating methods of the internal and external gamma dose and the radiological risk of exposed population. This paper is intended for institutions and scientific/practical public health organizations to assess the level of exposure of the population and the workers exposed to ionizing radiation.
Class no.	1, 4

MD.90.

Title	RHIZOPUS STOLONIFER FUNGI STRAIN FOR BIODEGRADATION OF COBALT AND NICKEL COMPOUNDS.
Authors	COREȚCHI Liuba, Dr. Sc., associate professor; PLAVAN Irina, Scientific researcher in med., MD BAHNAREL Ion, Dr. Sc., professor.
Institution	National Agency for Public Health
Patent no.	Nr. 4486
Description EN	The invention relates to Biotechnology and Environmental protection. The novelty consists in developing a new biotechnological process to reduce the risk of environmental pollution, based on the use of non-pathogenic microorganisms. It is proposed fungi <i>Rhizopus stolonifer</i> 67 CNMN-FD-18, which possesses the biodegradation of toxic compounds of cobalt and nickel.
Class no.	1, 4

MD.91.

Title	Immune status assessment process
Authors	Corețchi liuba, dr. sc, associate professor Bahnarel ion, dr. sc, professor Gîncu mariana, doctorand
Institution	National Agency for Public Health

Patent no.

2667 C2 MD A 61 B 5/145

Description EN

The invention relates to the field of medicine, in particular to processes for the evaluation of the immune status under the conditions of stressogenic factors, including increased ionizing radiation conditions. There is provided a process for the individual assessment of the immune status in patients exposed to radiostresogen factor, according to the correlation of sum of the populations of T-lymphocytes, including correlation of TCD4+ (T-helper lymphocytes) and TCD8+ (T-suppressor lymphocytes) populations to the TCD3+ (pan T-lymphocytes) $\times 100$, investigated by using of immunofluorescent immunotherapy or the biphenotypic method. The technical result consist in increasing of individual assessment of immune status in patients exposed to radiostresogen factor with detection of the correlation between expression of tension index of immune response and manifestation of clinical pathologies.

Class no.

4

Institute of Mother and Child**Republic of Moldova****MD.92.****Title****THE MODERN APPROACHES IN DIAGNOSTICS AND TREATMENT OF HIRSCHSPRUNG DISEASE AT NEWBORN****Authors****BOIAN Veaceslav****Institution****The Institute of Mother and Child****Patent no.**

Certificate AGEPI OS 5605 02.05.2017

Description EN

Recently, thanks to the evolution of medical and biological knowledge, the pediatric community's option for a Surgical Diagnosis and Successive Surgery of Hirschsprung (MH) has been activated in the very first months of the child's life. Currently, virtually unanimous agreement has been reached on the importance of general and locoregional clinical signs in suspected MH in neonates. Controversial seems to be the position of physicians in the role of different paraclinical examination methods designed to objectively diagnose. The discrepancies of opinions are deepened in the atypical evolutionary forms of MH. As a result serious errors of diagnostic and curative behavior are followed, followed by premedicinal complications, deaths, treatment difficulties, etc. The presented method of diagnostics and surgical treatment is the results of supervision, diagnostics and treatment of 58 newborn with Hirschsprung disease are stated. The most effective method of preventive maintenance of lethality and complications at this disease is the early revealing and duly correction of defect. Most informative trouble-shooting test is histomorphological research of biopsy material of the rectum. The surgical intervention in neonatal period is not end in itself and is carried out under the special indications.

Class no.**4. Medicine - Health Care - Cosmetics**

Fig.1 Pacientul T., vârstă 18 zile, prematur (masă 1700 g),
MH forma acută.

MD.93.**Title****THE PREVENTION AND PREOPERATIVE TREATMENT OF THE OBSTRUCTIVE ENTEROCOLITIS IN NEWBORNS AND INFANTS WITH HIRSCHSPRUNG DISEASE****Authors****BOIAN Veaceslav****Institution****The Institute of Mother and Child****Patent no.**

Certificate AGEPI OŞ 5607 02.05.2017

Description EN

Aggressive enterocolitis carries out multiple metabolic disorders, modifies intestinal synthesis and absorption processes, contributes to the generalization of septic-piemic processes, etc. Particularly severely these processes occur in neonates with acute forms of MH, because the pathology in question prevents normal colonization of the digestive tract. The method of prevention and preoperative treatment of the obstructive enterocolitis is based on the results of the complex study (clinical, laboratory, imaging, morphologic, bacteriologic) of 52 newborns and infants with Hirschsprung disease are presented. There were established that 53,8% of children had obstructive enterocolitis which directly affects the overall mortality and postoperative complications. The obtained results during preoperative preparation of these children allow affirming that the optimal method of prevention and treatment of the obstructive enterocolitis is prolonged intubation of the supragenital zone combined with local use of the enterosorbents and eubiotics. This technique permitted to avoid colostomy and to decrease the mortality from obstructive enterocolitis up to 6,6%.

Class no.

4. Medicine - Health Care - Cosmetics

Clinical Hospital Of Orthopedics And Traumatology

Republic of Moldova

MD.94.

Title

SONOGRAPHIC INDICATIONS OF THE MEDIAN NERVE AT THE CARP LEVEL IN CARPAL TUNNEL SYNDROME DIAGNOSIS

Authors

Vetrilă Viorel, URSU Sergiu, CAPROȘ Nicolae, COJOCARI Ștefan

Institution

Clinical hospital Of Orthopedics And Traumatology & USMF „Nicolae Testemițanu”

Patent no.

Certificat AGEPI ser. OȘ MD 5612, 19.05.2017

Diagnosis of carpal tunnel syndrome should be performed on the basis of a clinical examination with paraclinical confirmation, particularly by ultrasonography. The ultrasound examination method allows the morphological parameters of the median nerve to be assessed in the carpal tunnel, and the sonic index of the median nerve of the carp determines the percentage degree of compression of the median nerve. In the diagnosis of carpal tunnel syndrome, the sonic index of the median carpal nerve is more practical and has a sensitivity (95,15%) and specificity (96,36%) higher compared to the flattening ratio (sensitivity 4,34% and 98.79% specificity) and cross sectional area (sensitivity 89.13% and specificity 72.12%).

Description EN

Each patient with a median nerve or ulnar nerve compression suspect should be clinically examined and paraclinically confirmed, particularly by ultrasonography. In the presence of trauma in the anamnesis and the obvious clinical picture with the sonic index of the carpal median nerve > 28% recommend the application of surgical treatment. Indexul sonografic carpian al nervului median (ISCNM) este diferența în procente a grosimii nervului median la nivelul canalului carpian și ieșirii distale a canalului în plan vertical (G₂) față de grosimea nervului median la nivelul intrării în canalul carpian (G₁) în plan vertical, punct de referință fiind osul pisiform, a fost utilizată formula:

$$ISCNM = 100\% \left(1 - \frac{G_2}{G_1} \right)$$

Class no.

4. Medicine - Health Care - Cosmetics

MD.95.**Title**

DIAGNOSIS AND SURGICAL TREATMENT OF PATIENTS WITH CARPAL AND GUYON TUNNEL SYNDROME

Authors

Vetrilă Viorel, URSU Sergiu, CAPROȘ Nicolae, COJOCARI Ștefan, Borovic Eduard

Institution

Clinical hospital Of Orthopedics And Traumatology & USMF „Nicolae Testemițanu”& The Institute of Emergency Medicine

Patent no.

Certificat AGEPI ser. OȘ MD 5612, 19.05.2017

Description EN

Surgical technique. The incision is carried out in the form longitudinal curve (semi-moon with a bottom to the side) v begins only distally from the carp flexion envelope and sliq from the ulnar to the midline of the carp (framing in the m safety space) distancing about 2.5cm in line. Exposure of t anterior carpal transversal ligament (LaTC) and retraction o parallel fibers of the palmar fascia and hypoparticular adip tissue. In 1/3 proximal, LaTC passes with the active part o curved mosquito tweezers and penetrates carefully under L to a distal of 1.0 cm, then open the lace supporting LaTC. t the scalpel blade, a secure incision is made on LaTC supp by the brush (Figure 4 a), step by step, reviewing the opera anatomy to the full tomtom of the LaTC and then 1.5 cm to proximal (this method allows us to analyze the presence or absence of anatomical variations). If the median nerve is adherent to LaCT, excision of LaCT is performed with the necessary neurolysis. Suture-to-skin incision closure and compression dressing application. The essence of the meth consists in the concrete determination of the incision surgic approach and the necessity of LaTC excision for decomp with or without necessary neurolysis in a safe fist area to maximally avoid iatrogenic lesions and drag the carpal cha content to a bed subjected to scarring, which avoids maxim postoperative adhesions both theoretically and practically i operative and to obtain a positive hemodynamic result as q as possible after surgery.

Class no.

4. Medicine - Health Care - Cosmetics

TOPAZ Moldova**Republic of Moldova****MD.96.****Title****Process current generator for dimensional electrochemical machining****Authors**

ȘIRVO Valeri, MD;

Institution

JVSC the plant TOPAZ

Patent no.Short-term patent No. **550**, date of filing: 15.07.2011, valid until 15.07.18 (AGEPI, Moldova);

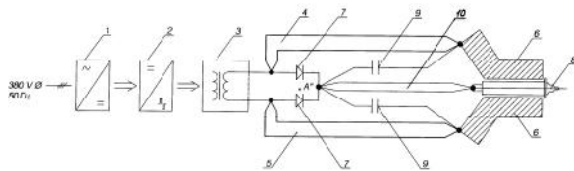
Patent No.125111, date of filing: 15.08.2011, valid until 15.08.21 (Russian Federation).

Description EN

The invention relates to process current generators for machine tools, which provide the dimensional electro-chemical machining of turbine blades of compressors. The process current generator for dimensional electrochemical machining contains a three-phase half-controlled rectifier (1) to which is connected a controlled inverter (2), to which, in turn, is connected the primary winding of a power high-frequency low-profile transformer (3), the magnetic circuit of which is made of nanocrystalline alloy GM 414-2. The secondary winding of the transformer (3), made stamped single-turn, is connected to the buses of the current leads (4 and 5) for connection to tool electrodes (6). To the secondary winding of the transformer (3) are connected diodes (7), connected into a common point (A), which is connected to the bus of the current lead (10) for connection to the work part (8). Between the common point (A) of diodes (7) and the tool electrodes (6) are connected capacitors (9).

Class no.

8. Aviation, automotive and transport

**MD.97.****Title****Process for regeneration of electrolyte****Authors**

TIFOI Ruslan, MD;

Institution

JVSC the plant TOPAZ

Patent no.Short-term patent No. **919**, date of filing: 13.01.2015, valid

EUROINVENT 2018

until 13.01.19 (AGEPI, Moldova);

Patent No.2624553, date of filing: 16.01.2015, valid until 26.01.35 (Russian Federation).

Description EN

The invention relates to a process for regeneration of electrolyte based on aqueous solutions of sodium chloride and nitrate with a content of hexavalent chromium, and can be used in the process of electrochemical machining of gas-turbine engine blades. The process for regeneration of electrolyte based on aqueous solutions of sodium chloride and nitrate with a content of Cr+6 includes applying a direct current of normal polarity 0.5 A dm²...with a density of 0.4 10...for 5 min and subsequently applying the direct current of reverse polarity with the same density and duration, after which by centrifugation is removed the sludge from the electrolyte

Class no.

8. Aviation, automotive and transport

MD.98.

Title

Process for electroerosion alloying

Authors

RÎBALKO Alexandr, MD;

Institution

JVSC the plant TOPAZ

Patent no.

Short-term patent No. **1133**, date of filing: 21.04.2016, valid until 21.04.19 (AGEPI, Moldova);

Description EN

The invention relates to electrophysical material working processes and can be used for hardening the surfaces of conductive machine and tool parts. The process for electroerosion alloying consists in the application of current pulses between the electrode-tool and the part working surface, connected to the discharge circuit of the current pulse generator as the anode and cathode, respectively. The pulses are formed of trains of paired rectangular 56 Hz,...pulses, applied with a frequency of 48 the first pulse being of a duration of 100 μs, an amplitude of 200 A and a quantity of energy released between the electrode-tool and the 0.536 J, and...part working surface of 0.268 of a duration of 200 μs, an—the second 400 A and a quantity of..amplitude of 200 energy released between the electrode-tool and 1.05 J, and...the part working surface of 0.468 the pause duration between the first and second 285 μs....pulses is of 180

Class no.

8. Aviation, automotive and transport

Applied Physics Institute

Republic of Moldova

MD.99.
Title
LIQUID DECONTAMINATOR: DK_LIQUID
Authors

 Nicolae Enaki , Ion Mihailescu, Carmen Ristoscu ,
 Tatiana Pislari, Sergiu Bizgan, Marina Turcan, Elena
 Starodub, Nelly Ciobanu.

Institution

Institutul de Fizica Aplicata, Moldova.

Patent no.

-

Description EN

The equipment proposes new methods and technologies for ultraviolet C (UVC) decontamination, which use the back-up space between elements of a UVC-transparent periodic structure such as quartz metamaterials. Effective decontamination processes use the evanescent area of each metamaterial element, leading to a substantial increase in the contact surface between the contaminated liquid and the metamaterial elements that are estimated and experimented in the laboratory. Different metamaterial classes with different optics and topological structures are used in the DK_liquid decontamination equipment, taking into account their influence on the effectiveness of UVC treatment. In our experiments, a quartz tube with diameters of about 1.5-2 cm and about 100 cm in length, called the "base tube," was wrapped consecutively with the metamaterial elements consisting of small granules such as granules (254 nm), glass spheres (non-transparent for UVC but transparent for light with a wavelength greater than 290 nm), and black plastic spheres (non-transparent to UVC, UV and visible light). A comparative analysis of the decontamination rate for these three types of metamaterials is made.

Class no.

5. Industrial and laboratory equipments



Junior Achievement Moldova IPLT,,Universul,,

The program targets high school students in grade X-XII and provides youth with possibility to understand economics based on hands-on applications and case studies with real-market examples. It is an up-to-date approach to economics from the perspective of their future roles as entrepreneurs, employees or consumers. The added value of the methodology is working in teams and making presentations of case studies, developing valuable skills for the business milieu. By applying case analysis, group discussions and presentations, students improve competences to evaluate a big variety of real-life economic situations. During the program implementation youngsters understand economics, the free enterprise system, supply and demand, market clearing price, as well as aspects including financing a business, role of government in ensuring economic stability/

Business Ethics Program shows the students role of personal values, as well as universal values in developing a strong and respectable character, so necessary in business world. Program is designed in a way to offer pupils possibility to interact, discuss and analyze ethical dilemmas and widen perspectives on ethics through understanding multicultural issues. The program targets students in grade XII and contains twelve modules with case studies for analysis and solving. The topics are build-in with questions and directions to facilitate understanding of business ethics, its role in the society, universal as well as personal values/

Student Company Program offers participants opportunity to manage their own small business to understand stages in setting up, managing and reaching success by an enterprise. Youngsters conduct market researches; raise capital by selling stock, and manage accounting books of their company. **Student Company** is an opportunity to apply economic and business principles and help develop organizing and leadership skills, basics in management competences and team work. **Trainers** have practice of basic training without this content and me Silvia Scortescu ,I want to assure you that in those conditions, it is those enrolled in basic secondary education, although students had a fairly high level of intelligence, but compared to those who studied applied economy, does not meet the requirements that are advancing in the specialty items. Neither economic theory, in the form requesting competitions in economy, which can contribute to economic offers training in applied economy. Form of exposure inductive string of examples, especially in older textbooks; give opportunity to see inside the theoretical contents all our students studying later, let alone case studies contribute to a better understanding of the more sophisticated theories. Experience American didactics is one useful considering the current changes in the world.

Coordinator: Silvia SCORTESCU
Volunteer Teacher J.A Moldova
Mentor J.A. School Companies

Junior Achievement Moldova IPLT „Universul,,

MD.100.

Title Full-Lamp
Authors Nagherneac Eduard, Ceban Timotei
Institution Junior Achievement Moldova, IPLT „Universul,,
 Full-lamp is a all in one lamp ,aroma-therapy ,tea-made ,dried-plants garden decoration/ in glass bowl, with sun lamp and are recommended outside and inside of house, in the kitchen, house -terrace in the living – room.Because it Is Sun free light ,IT is Full-lamp by aromatherapy/

Description EN

MD.101.

Title Nisty
Authors Iaseniuc Anastasia, Gisca Elena
Institution Junior Achievement Moldova, IPLT „Universul,,
 Nisty is an organic doll with straw, dried leaves in cotton and has trapped in her hair a peppermint brooch for inhalation treatment baby, chest heart accessory with lavender petals / Nisty –Doll is called Healthy-Doll

Description EN

MD.102.

Title Season-Shoes(4-for)
Authors Tanasachi Dorian, Tanasachi Adriana
Institution Junior Achievement Moldova, IPLT „Universul,,
 Season-Shoes This is a pair of Shoes for all seasons includes additional parts that are attached depending on the season outside.(Winter, spring, summer, autumn)

Description EN

MD.103.

Title Depo-Coat
Authors Adela Juravliov, Naomi Juravliov
Institution Junior Achievement Moldova, IPLT „Universul,,
 Depo-coat is a short suitcase that stores the clothes in the walls of the inner docket of the short, being covered very carefully because you do not realize that in the back you take your clothes without being siphoned

Description EN

MD.104.

Title Deco-Mask
Authors Lozinschi Daniel/Beznos Valeriu
Institution Junior Achievement Moldova, IPLT „Universul,
 Deco-mask is a decorative mask for celebrations and birthdays for teenagers, it is very useful during New Year's Eve, Haloween, as an original and unique product, contains a mask made of recyclable paper-mache ,decorated with two-color LEDs red and green with portable power adapter very useful and convenient in use
Description EN

MD.105.

Title Uz-lamp
Authors Ganja Daniel, Frunze Victor
Institution Junior Achievement Moldova, IPLT „Universul,
 Us-lamp is a portable battery lamp, charged on batteries, designed for the use of a cable-free lamp and minimal power consumption
Description EN

MD.106.

Title Solar-Box
Authors Scortescu Marius-Silviu, Ciobotaru Anisia
Institution Junior Achievement Moldova, IPLT „Universul,
 Solar-box is a decorative box that loads from the sun,this hand –made solar-box illuminates the room at night, inside is a led and a solar battery, the exterior is a box in Moldovan ornament that characterizes Routes of Moldova
Description EN

MD.107.

Title „My Home,,
Authors Macari Iuliana, Parfeni Inga
Institution Junior Achievement Moldova, IPLT „Universul,
 My-home is a recyclable storage box for dolls and is very comfortable at night, because it illuminates the room and things can be seen exactly where it is on the shelf, it has a socket, illuminated led and a portable adapter / My -home very useful in operation
Description EN

MD.108.

Title	Cover-Toy
Authors	Barbuta Valeria
Institution	Junior Achievement Moldova, IPLT „Universul,
Description EN	Cover-toy is a baby bag carpet where the toys are stored inside, but when we undo it turns into a carpet very useful, convenient, light and colorful

MD.109.

Title „ITS” Smart Shower
Authors Serdeșniuc Igor
Institution Lyceum „Ginta Latină”
Patent no. -

Description EN

Analyzing several issues that arise both locally and globally, we have come to the conclusion that water in some cases is used in vain and we have found methods that allow some of the water to be reused without the need to use filters or other equipment expensive treatment. One person per day uses about 70 liters of water, of which 50 percent can be re-used using the developed mechanism. ITS Smart Shower reuses water used in the shower, both clean and water containing impurities (soaps, detergents). The mechanism separates the water containing impure clean water into two tanks (water containing impurities will be used in the toilet, and the clean one will be reused for the user's needs).

Philippines

by *Manila Young Inventors Association*

PH.1.

Title

PremCo-Med

Authors

Ma. Chat Donna V. Ofilas, James Benedict G. Cuesta,
Chem Beaver P. Valenzuela, Erlinda H. Tabora

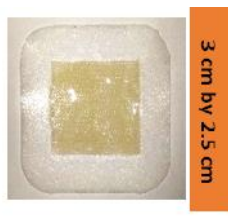
Institution

**Manila Young Inventors Association/Ramon Magsaysay
High School-Manila**

Description EN

Alagaw, *Premna odorata* Blanco, is a native tree of the Philippines, traditionally for vaginal irrigation and tuberculosis and one of the seven components of a commercialized Philippine herbal preparation called “Pito-Pito”. The leaves extract contains flavone aglycones which were the widespread acacetin and the nonwidespread diosmetin. They had been reported by earlier studies to exhibit medicinal properties as antimicrobial, anti-inflammatory and chemopreventive (Pinzon et. al., 2011). Combining the water-based extract of Alagaw and Alginate as an addition to the gauze applied to the injured skin in a First-aid dressing for wounds will aid healing process. This also resides in the elimination of the intermediate step of applying a liquid medicant to the injury and possibility that the medicinal will be lost by run-off or leakage. PremCo-Med is an innovative wound dressing for exudating wounds that develops an effective alternative to band aids with comparable healing properties made up of *Premna odorata* blanco (Alagaw) extract and alginate which speeds up the healing process of the wounds.

Class no.



4



PH.2.**Title****LighTraGeo****Authors**

Ma. Chat Donna V. Ofilas, Angela Gwynette D. Ongjoco

Institution**Manila Young Inventors Association/Ramon Magsaysay High School-Manila****Patent**

- / Patent application No. -

Description EN

There are many home stealing crime cases that happen. To minimize or even prevent the risk of the household from danger due to criminal acts, security system gadgets widely exist all over the world such as the CCTV cameras, keyless door lock systems using code numbers and intrusion alarm. But these systems are mostly expensive. With the concept of light transmission of the optic fiber, solid waste disposal and the use of geopolymer in place of concrete with the addition of corn husk ash is LighTraGeo. LighTraGeo is a type F geopolymer made up of fly ash and corn husk ash embedded with discarded optic fibers which conduct light from end to end casting shadow onto one side and appear as silhouettes. Its purpose is for safety and security. It is intended to be placed in the exterior walls along the door post to give initial check, allowing the resident to see when there is a person standing outside.

Class no.

7

**LighTraGeo Block**

PH.3.	
Title	PHYTOLICE REMOVER
Authors	Sonny D. Valenzuela, Abigail D. Aquino, Maria Joie S. Española
Institution	Manila Young Inventors Association/ Tondo High School
Patent	- / Patent application No. -
Description EN	This invention involves the use of Anona squamosa Linn. seed extract in the formulation of a novel phytolice remover shampoo that is safe, cheap, eco-friendly and effective. Results showed that the seed extract contains alkaloid; neutral resin 0.56 %; fixed oil 14%. The seed contains 45% of a yellow, nondrying oil and an irritant poison which kills lice.
Class no.	4

PH.4.	
Title	ANTI FUNGAL OINTMENT FROM TINOSPORA RUMPHII
Authors	LEA PUNZALAN VALENZUELA, SEAN EMMANUEL V. FLORENDO
Institution	Manila Young Inventors Association/ Florentino Torres High School
Patent	- / Patent application No. -
Description EN	This invention relates to the stem decoction of Tinospora Rumphii as active ingredient in the formulation of an antifungal ointment for ordinary and cancerous skin wounds, itches and scabies. Phytochemical analysis shows the presence of berberine, a glucoside and a bitter principle being valued for anti-inflammatory and antibacterial properties.
Class no.	4

Poland

Represented by Eurobusiness-Haller

PL.1.

Title

Development of an innovative safety management system for facilities of historic value in urbanized city centers

Authors

Paweł Ogrodnik, Paweł Kępka, Wiktor Gawroński, Jacek Zboina, Jacek Smyczyński, Dariusz Mielnik

Institution

The Main School of Fire Service, Słowackiego 52/54 Street 01-629 Warszawa

Patent no.

-

Description EN

OZAB is an innovative ICT system for management support which raises the level of safety of facilities of historic value complexes. The system counts hazard scenarios for historical complexes, including rescue response, comprehensive rescue technology and the training module. OZAB is a system consisting of two parts. The first one is based on a set of active and passive sensors supporting navigation inside historic buildings. The second part presents the IT tool, it is the trainer characterized by a high level of simulation realism, which supports training in the frame of procedures for dealing with the emergence of selected threats in the historic buildings complexes with special reference to all barriers and geological features. The trainer enables the training of security managers in the facility and people responsible for the collections, rescuers operating in the facility as well as the operational officer. The OZAB system raises the level of safety management in facilities of historic value located in city centers, which leads to an increase in the safety of the objects itself as well as exhibits of outstanding importance. Thanks to the applied innovations occurs the evacuation process improvement of goods and exhibits located in protected facilities. Significantly damage or destruction risk decreases during emergency situations.

Class no.

12



PL.2.**Title****MASTER100 Extension module MR-104S****Authors**

-

Institution**Institute of Power Systems Automation Ltd.****Patent no.**

innovation

Description EN

Extension module MR-104S is a part of MASTER100 control system which is realising complex automation algorithms via inputs/outputs ports.

The system structure consists of a control module and universal expansion modules. The extension modules connect to the controller via the RS-485 network using the Modbus RTU protocol. Thanks to this, MASTER100 works as a distributed control system.

The MR-104S module is an innovative module that complements the MASTER100 system with the ability to measure temperature.

Class no.

2/10

**PL.3.****Title****The roller mill with inter roller plate****Authors****Józef Flizikowski, Andrzej Tomporowski, Weronika Kruszelnicka, Adam Mroziński****Institution****University of Science and Technology in Bydgoszcz****Patent no.****UPRP 2017, P.422676 - Data zgłoszenia: 29.08.2017****Description EN**

The subject of the invention is a mill with an inter-roll plate for the grinding of grained minerals, biological raw materials, especially very fine ones. The roller mill assembly consists of two rotating rollers with outer treadmill, between which a grinding plate is fixed permanently and the rollers are connected to drive shafts. Mill is equipped with a hopper and a grinding product basket. The gaps between the rotating rollers and the friction plate are adjustable, depending on the nature of

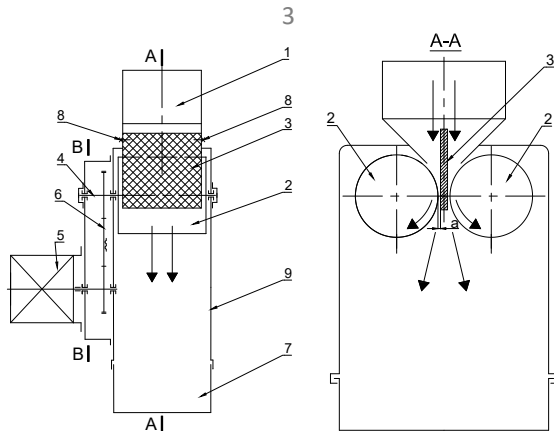
the batch and the requirements of the grinding product. The preferred gaps dimensions are below 0.10 mm.

The benefits of implementation: improving the product quality, increasing productivity and reducing the proces energy consumption.

The technical advantage of the invention is that numerous grinding elements have been eliminated by introducing an integrated, dynamically balanced plate-and-cylinder system with cutting and grinding properties superior to those mentioned.

In addition, the shape, relative motion and form of rollers on external treads and solid plate provide good conditions for moving the charge in the preparation, grinding and ejection space of the product, subject to crushing, uniform, gentle runs of loads, deformations and displacements to a given product dimension, for example, below $10\ \mu\text{m}$ (colloidal milling) and with a different gap adjustment - less than 0.10 mm (fine milling). These have a positive effect on increasing efficiency, reducing power consumption, unit energy consumption and eliminating the consumption of large elements of mill construction, improve the economic, economic and environmental characteristics of grained materials processing.

Class no.



1 - hopper, 2 - grinding rollers, 3- inter-roller plate, 4 - drive shafts, 5 - engine, 6 - belt gear transmissions, 7 – basket for grinding product, 8 - screw connectors, 9 - body

PL.4.**Title****Innovative endoprosthesis design and manufacturing system****Authors**

Konstanty Skalski, Anna Makuch, Pawel Marchlewski, Jakub Banczerowski

Institution**Institute of Precision Mechanics****Patent no.**

-

Description EN

The innovative endoprosthesis design system is a unique, composite scheme of procedures and technical solutions developed at the Institute of Precision Mechanics to design and manufacture individualized implants in patients with musculoskeletal disorders. The processes of synostosis and restoration of the mobility of pathologically or traumatically altered bone structures are conditioned not only by the surgical technique and the design of endoprostheses themselves, but also by the individually variable mechanical properties of the tissue structures. The system consists of 3 groups of measurement techniques:

I. techniques enabling the analysis of mechanical and structural properties of the patient's maternal tissue on the basis of the samples obtained during the arthroplasty with the consent of the Bioethics Committee:

- μ CT - computer microtomography that makes it possible to obtain an image of the porous structure from the selected anatomical area during the arthroplasty;
- 3D rapid prototyping techniques to make models of the maternal tissue;
- DIC - Digital Image Correlation - a system used to assess the bone tissue strenuous microstructure;
- DSI - Depth Sensing Indentation - nanoindentation providing information on hardness and elasticity parameters as well as their response to microload;
- Rotational Bridge - a special device for assessing the behaviour of material during axial twisting with an increasing amplitude.

II. techniques supporting the implementation of geometric models and techniques for the production of implant prototypes, i.e.

- CAD programming,
- Rapid Prototyping incremental techniques for the production of implants.

III. techniques used for a geometrical, material and functional verification of custom design endoprosthesis.

Class no.

6



PL.5.

Title

Bacterial strains of the *Lactobacillus* and *Fructobacillus* genera isolated from the gastrointestinal tract of honeybees for the use in the control and prevention of bee diseases and for probiotic preparations based on such bacterial strains

Authors

dr hab. Aneta A. Ptaszyńska, prof. dr hab. Wanda Małek, Grzegorz Borsuk, mgr Mirosław Grzęda, mgr Magdalena Wicha, mgr Artur Pachla

Institution

Maria Curie-Skłodowska University

Patent no.

Patent application P.423363/2017

Description EN

FLAB microbiota of honey bees play an important role in the health of these insects by inhibiting pathogens and promoting the digestion of carbohydrates. Honeybee populations still decline worldwide, mainly due to the presence of various pathogens (*Paenibacillus larvae*, *Nosema apis*, *N. ceranae*, *Melissococcus plutonius*), pesticides, industrial agriculture, and climate change. The aim of the patent application was to isolate and characterize probiotic bacteria associated with honeybees' intestinal track.

The bacteria were isolated from intestines of healthy honeybees (*Apis mellifera*). Biochemically, all isolated lactic acid bacteria showed typical fructophilic features. Residents of the honeybee gut were classified as heterofermentative lactic acid bacteria. Isolated FLAB bacteria inhibited the growth of major honeybee pathogen, *Paenibacillus larvae*, meaning that investigated FLAB show health-conferring properties of probiotics. Therefore, one strategy to reduce the

INTERNATIONAL EXHIBITS

disappearance of honeybee populations may involve using probiotic lactic acid bacteria so as to prevent infections in honeybees.

Benefits of using ours probiotics:

- Strengthening the condition of bee colonies and lengthening bee life,
- Supporting the eradication and reducing the risk of infection with pathogens, i.e. *Paenibacillus* larvae (American moth), *Nosema ceranae* (nosemosis) and others, as e.g. *E. coli*.
- Probiotic activity - colonization of bee intestine, positively affecting digestion and absorption of necessary compounds and microelements,
- Acidification of the habitat environment resulting in lowering the risk of spreading pathogenic microorganisms,
- Supporting the natural microflora of bees especially during winter with limited contact of bees with the external environment.

Class no.

4

PL.6.

Title

The method of seed preparation using a biological stimulator

Authors

Grażyna Dąbrowska, Justyna Boniecka

Institution

Nicolaus Copernicus University in Toruń

Patent no.

P.424925

Description EN

The invention is designed to be a solution for farming and seed industry, where its usage will lead to an increase in rapeseed crops production and a decrease in costs of obtaining high quality food, both in conventional and organic farming systems. The use of the biological stimulator in a form of application on seeds accelerates their germination, stimulates plant growth, and increases yield one of the most important oil crops in UE as well as all over the world. In addition, it increases the tolerance of plants to unfavorable environmental factors, such as drought, low temperatures, and pathogens.

Our product can compete with universal products since it is designed specifically for rape. The studies

EUROINVENT 2018

conducted in conditions of strict field experiment showed that the crop yield and straw production of plants treated with the stimulator increase by as much as 15-20%. Our product helps to minimize the usage of pesticides and fertilizers known to affect negatively health and environment. The cost of preparing ready to use seed is low and the application of the invention in the field conditions easy. Our inventions will contribute to the improvement of human health, the protection of environment and biodiversity preservation.

Class no.

3

Poland

Represented by

Association of Polish Inventors and Rationalizers

Stowarzyszenie Polskich Wynalazców i Racjonalizatorów. SPWIR

PL.7.

Title

TRM® Tactical Throwable Robot

Authors

Adam Aftyka, Konrad Bożek, Łukasz Dudek, Mariusz Kozak, Rafał Czupryniak, Bartosz Stankiewicz

Institution

Industrial Research Institute for Automation and Measurements PIAP

Patent no.

-

Description EN

TRM ® Tactical Throwable Robot is a small, robotic device designed to deliver support in antiterrorist operations. TRM ® has been designed in response to the threats faced by special forces units during area reconnaissance. The TRM ® can be thrown into a building or to an open area and steered by remote control in order to perform inspection. TRM ® 's construction is designed to withstand the impact produced by a fall from a high altitude (9 meters). Currently offered robot's second generation with new quiet drives and small control panel makes TRM ® a product even better than before. Main features of TRM ® robot • quiet drives, • possibility of smooth, manually adjusted regulation of camera viewing angle within 360° radius, • various illuminators can be installed (white light/IR), • possibility of launching & initiating flash bang grenades, • low mass and small dimensions of control panel, □ digital audio-video recorder integrated with control panel, □ possibility of steering three robots from one control panel. Application of TRM® □ inspection and reconnaissance of the terrain or objects, □ possibility to listen to conversations in the immediate vicinity of the robot, □ day and night operational, □ possibility to illuminate targets or dangerous objects, □ possibility of video and sound recording (SD card)..

Class no.

12

PL.8.**Title****PIAP FENIX ® robot****Authors**

Tomasz Krakówka, Mariusz Kozak, Stanisław Nycz, Rafał Czupryniak, Paweł Górecki, Jacek Mickiewicz

Institution**Industrial Research Institute for Automation and Measurements PIAP****Patent no.**

-

Description EN

Unique characteristics of PIAP FENIX ® robot • Its compact size enables quick inspection of hard-to- reach areas and premises; • The robot's wheels as well as front flippers can be uninstalled easily. This allows the robot's overall dimensions to be reduced, enabling operation in hard-to- reach spaces; • The robot's small weight facilitates transporting and handling of the robot (e.g. carrying it in a military knapsack;); • Owing to its drive mechanism, the robot swiftly overcomes surface undulations and obstacles with angles of ascension of up to 45°; • The robot's modular structure allows quick and easy replacement of additional equipment; • Using the manipulator arm, the robot may transport packages weighing up to 4.5 kg (at full extension of the manipulator arm); • The remote control station (in the form of a small, lightweight suitcase) allows controlling the robot and its additional equipment; PIAP FENIX ® robot consists of three basic modules: a) Mobile base with battery pack (two batteries within the mobile base) b) Remote Control Station (portable) with battery c) Chargers (one for the mobile base and one for the RCS) Furthermore, PIAP FENIX ® robot may work with a broad range of accessories.

Class no.

12

PL.9.**Title****SHOCK ABSORBING HULL FOR TRACKED MILITARY VEHICLES****Authors**

D.Sc. Eng. Wiesław Barnat, Eng. Jerzy Doliński, Prof., D.Sc. Eng. Lech Starczewski

Institution**Military University of Technology****Patent no.**

-

Description EN

Safety of personnel during military operations is one of the most fundamental problems in modern vehicle design. Ensuring safety of vehicle's occupants during explosion is a challenging task, especially when tracked vehicles are considered. This is mainly due to little clearance and very

stiff structure. To overcome the difficulties, versatile approach must be introduced.

Occupant safety depends on many factors that not only influence global effect on human body but also have significant effect of vehicle's mission capabilities.

Proposed solution can be easily applied to light and medium-weight tracked armored vehicles. It proved its capabilities and is an interesting proposition that can be adjusted to customer requirements. Modern materials, in-depth understanding of energy absorption and lightweight design are common features of this invention. The procedure itself can be used to build solutions for similar use cases.

Class

8

PL.10.

Title

The application of ergonomics in the special vehicles design and optimization process

Authors

Wiesław Barnat, Radosław Ciepielewski, Paweł Dybcio, Daniel Nycz, Malwina Trzaska

Institution

Military University of Technology

Patent no.

-

Description EN

Firefighter trucks used by Fire Brigades are design for average body build firefighters. This work presents the application of ergonomics in design and optimization process of special vehicle to use by every firefighter irrespective of height. To provide the safety many vehicle body configurations were checked. The main frame strength was tested for various load configurations. Firefighter trucks have high center of gravity and this makes them more vulnerable to roll over. To prevent the possibility of rollover a numerical analyses of sloshing in partially filled tank were made. Sloshing may be accounted as unpredictable force imposed on the whole faces of the tank walls. The influence of fill rate on the loads generated on the mounting frame was analyzed. To obtain the optimal configuration of construction the frame and tank were optimized. Finite element method was used. Numerical calculations give the opportunity to check many configurations in short period of time. Proposed method allows to check the strength of main and support frame, not only for maximum loads, but also for various load

configurations. Conducted analyzes allowed to make the optimal element configuration mounted to frame, frames wall thickness and also adapt the system and geometry of baffles in container. Proper system of baffles minimize sloshing in container and have influence on stability and braking during rescue actions.

Class

8

PL.11.

Title

ELEPHANT- a biomedical mobile system and textronics bodysuit for newborns capable of sensing, diagnostics and physiotherapy as well as infant's medical monitoring and health emergency assistance

Authors

Mariusz Chmielewski, Magdalena Lebiechiewicz, Paweł Pieczonka, Bartosz Miłoś, Sylwia Sławińska, Piotr Witowski, Michał Olek

Institution

Military University of Technology

Patent no.

-

Description EN

Elephant is the first smart clothing system integrated with smartphone application for infant muscle tone, heart, skin conductance and temperature monitoring supplemented with physiotherapy vibration units for muscle system stimulation. System consist of textronics suit electronic integrator unit with medical sensors, smartphone application and cloud-based services for analytical processing of medical data. System offers several channels of biomedical signals electromyography, electrocardiography, body inertial data, electro dermal activity and temperature. All biomedical electrodes together with mini vibration units are integrated within the suit and fusion unit which performs digital signal processing and transmission to smartphone application. Elephant android application is specialized application for biomedical signal processing, signal patterns recognition and rule reasoning. Application offers recognition and notification services for parents assessing child's health state, preparing physiotherapy programs and stimulating the body to prevent possible disabilities. System can be applied for treatment of spasticity, abnormal muscle tone, disabilities cardiovascular risks and monitoring of respiratory failure, infections, epilepsy, seizures.

Class

4

PL.12.**Title**

Device for measuring the coefficient of friction for flat surfaces

Authors

Jarosław Rajczyk, Marlena Rajczyk, Jarosław Kalinowski

Institution

Częstochowa University of Technology

Patent no.

PAT-24/06/09/11

Description EN

The subject of invention is a device for measuring the coefficient of friction for flat surfaces, especially road surfaces and industrial floors. A device for measuring the coefficient of friction uses a covered with rubber measuring wheel, coupled with an electric motor by means of a transmission gear with a toothed strip. To measure a static and dynamic coefficient of friction, the measuring wheel uses a rotational speed as well as a rotational moment measurement conveyed directly to the measuring wheel, measured by means of two encoders. The device should be placed on the tested surface. The measuring set presses the measuring wheel against the tested surface by means of its own weight. The control system determines the inclination of the measuring set longitudinal axis relative to the perpendicular by using data from inclinometers fixed to the frame of the measuring set. The control set gradually increases the voltage conveyed to the electric motor and reads the angular position of two points on the measuring axis divided by an elastic system, by means of encoders. Knowing the mass of the measuring set and the angle of the measuring set position in two axes relative to the vertical axis determined by gravity, the measuring wheel force of pressure can be calculated. The angular difference between readings from encoders determines the turning moment transmitted to the measuring wheel.

Class

7

PL.13.**Title**

Tool for testing the strength of the glued connection of the brake shoe lining

Authors

Adamus Janina, Lacki Piotr, Nabiałek Jacek

Institution

Częstochowa University of Technology

Patent no.

Pat.223543

Description EN The tool for testing strength of a glued connection of a friction lining of the brake shoe, especially intended for the use in the aerospace and automotive industries, is the patent object. The tool design allows it to be used in the universal laboratory testing machines. According to the invention, the essence of the solution is a base plate with a rotary two-armed lever, wherein a part of the brake shoe with the glued section of frictional lining is removably attached to the shorter arm of the lever, while opposite to the part of the brake shoe, a counter sample with a peg that prevents free rotation of the two-armed lever is fixedly attached to the base plate. The longer side of the counter sample at the side of frictional lining images the curvature of brake shoe part. It is advantageous when the counter sample is provided with the heaters and a temperature sensor. According to the invention, the tool construction allows for extending the scope of its use and performing the tests using testing machines with a force of several hundred kN. Thanks to the applied heating and measuring system, the glued connection can be tested in a wide range of temperature.

Class

8

PL.14.

Title

A unit for adjusting location of the induction furnace heating element

Authors

Nabiałek Marcin, Szota Michał, Pietrusiewicz Paweł, Gruszka Konrad, Błoch Katarzyna, Gondro Joanna

Institution

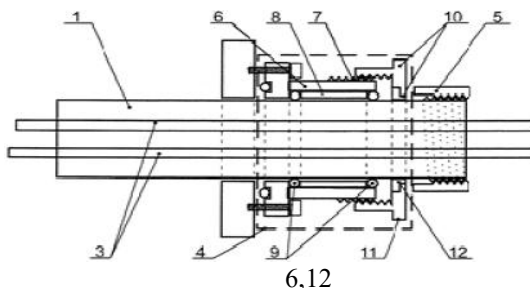
Częstochowa University of Technology

Patent no.

Pat. 228009

Description EN

The induction furnace heating element adjustment unit has a sealing member (4) mounted on the cylindrical holder (1) of the heating element and has an adjustment-locking nut (5) placed on the threaded end of the cylindrical handle (1) for blocking its position in the chamber opening an induction furnace, wherein the sealing member (4) forms a flanged outer sleeve (6) with an external thread (7), removably secured and sealed by a sealing element to the wall of the induction furnace, inside which the inner sleeve (8) and sealing elements (9) are arranged) on both sides of it, and from the side of the adjusting and locking nut (5) there is a pressure ring (10), threadedly connected with a flanged outer sleeve (6).



Class

PL.15.

Title

Methods of silicon carbide recovering from post-grinding effluent

Authors

Jabłońska Beata, Siedlecka Ewa

Institution

Częstochowa University of Technology

Patent no.

PAT.227000

The subject of the invention is the method of silicon carbide recovery from post-grinding effluent arising in glassworks during mechanical treatment of glass, in particular crystal glass. So far, there is no known way of recovering the silicon carbide from post-grinding effluent containing 87-90% of silicon carbide and 10-13% of pollutants in the form of crystal glass with lead compounds and grinding iron from grinding discs.

The object of the invention is to provide a process for the recovery of silicon carbide from post-grinding effluent in glassworks, which will enable it to be reused as fully valuable abrasive material.

Description EN

The essence of the process according to the invention is that the sludge from the post-grinding effluent is mixed with water in a working vessel in a weight ratio of 1:1 to 1:5, and the resulting slurry is sedimented for a period of 30 to 120 minutes, then the supernatant liquid is decanted to the flocculating tank. Next a flocculant in the form of acrylamide copolymer or polyacrylamide in the amount of 0.0001 g to 0.15 g per 1 kg of dry weight of the sludge effluent is added and mixed with it in a time of 1 to 2 minutes. The resulting suspension is clarified and the resulting sediment containing silicon carbide is dried until the humidity 5% to 30%.

Class

1

PL.16.**Title****Method of obtaining magnetic composite for retention systems in reconstructive medicine****Authors**

Radomska Klaudia, Klimecka -Tatar Dorota, Pawłowska Grażyna

Institution**Częstochowa University of Technology****Patent no.**

Pat. 226565

Description EN

The invention relates to the process for the production of magnetic composites for retention systems in reproductive medicine - in particular to dental prosthetics for the manufacture of retention elements for the maintenance of dental prostheses. This is a method of producing magnetic composite based on etched magnetic powders containing in their composition rare earth elements (RE) and transition metals (M), which have been consolidated with a biopolymer (having the PMMA in its composition). In this process, the powdered composition with a defined ratio of constituents content (magnetic powders and bio-tolerant binder) is pressed in selected form. The invention includes the determination of the general parameters of pressing method, as well as the temperature and time of binder polymerization process. The above technological operations give the opportunity to receive the new magnetic composite with advantageous properties for use in retention systems (overdenture prosthesis).

Class

4

PL17.**Title****Electrical energy processing, storage and return system KAPS****Authors**

Gałaszkievicz Zbigniew, Sutkowski Marcin

Institution**Częstochowa University of Technology****Patent no.**

Pat. 225294

Description EN

The essence of the invention is a solution that contains all of the components of the system that allow quick storage, processing and recovering stored energy. The device contains a charging line which includes a transformer, rectifier, power electronics commutator and the appropriate kinetic energy storage. The storage contains a PM BLDC motor in the outrunner version, which is also a high-speed brushless DC motor, generator and energy storage. The energy recovery system includes a special rectifier and inverter that generates a three-phase 50Hz voltage. The device allows fast charging of traction batteries of the electric cars as well as enables its use as energy storage with the possibility of efficient recharging, storing and recovering stored energy for a period of 60-70 hours with an efficiency of 92-93%. The device has got the ability to store energy from 100 kWh to dozens of MWh. The device is characterized by optimized compact design, mobility, ease of moving empty energy storage with all the components of the system. It makes it possible to connect the power and start the system which will allow its implementation as a device used by, for example owners of gas stations in order to effectively and efficiently charge accumulators in electric vehicles, it also gives the possibility to accelerate trains at railway stations, recharge buses at bus stops in a short period of time, stabilize power grids and it can be used as a large UPS. The technology enables simultaneous charging of minimum 10 vehicles in about 10 minutes. High energy capacity allows charging from 1 to 250 vehicles with a capacity of 40 kWh (energy for a minimum of 200km) without recharging.

Class

2

Portugal

By

Inventarium-Srd.Com

PT.1.

Title

Al Quds Watch For Peace

Authors

Muhammad Abdul Aziz Al Baker

Institution

Lord Of Swiss

Patent no.

PCT / IB2016 / 000 183

Al Quds watch For Peace --- The Master Peace

The first technology in the world which leads to watch damage in case it is being opened except our company for quality reasons

New technology which don't allow any scanning system to view what is inside it.

Lifetime warranty

Automatic and Lifetime battery

Description EN

Battery level Indicator

The watch battery can be charged once every 20 years for 10 minutes with certain charger

Indicators for phone calls and messages since it is connected directly to the phone by Bluetooth

Fasting time Indicator for Muslim, Christians and Jewish

Praying time Indicator

It is manufactured in Switzerland by our company Lord of Swiss in a very high quality

Class no.

14



PT.2.

Title

**Anti-fire tactical barrier, reusable and removable,
for rapid interception against forest fires**

Authors

Jorge Alves

Institution

-

Patent no.

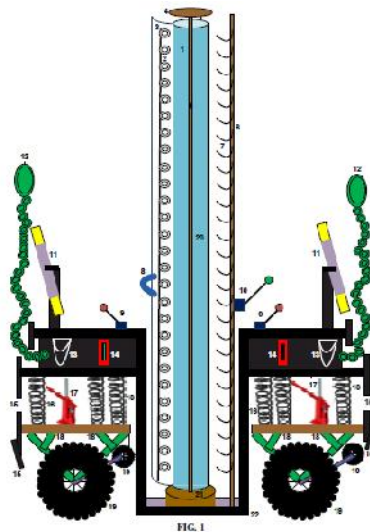
Patent of Portugal №...(20151000035964)

Description EN

New fireproof transport vehicle that will stand in the fire line, as it will hold together the fireproof fabric. It will allow a quick deployment of a large contiguous fireproof fabric barrier (several meters high), and hundreds (or thousands) meters long, recurring to the number of vehicles that are available, and according to the diagnostic that firefighters consider appropriate in each situation. The distance between each fireproof vehicle is about 20 meters.

Class no.

12



Russia

RU.1.

Title
Optical Measuring Setup
Authors

Miroshnichenko Igor Pavlovich*,
Parinov Ivan Anatolievich**

Institution

*Don State Technical University, Rostov-on-Don,
Russia,

**Southern Federal University, Rostov-on-Don, Russia

Patent no.

Patent RU No.No. 2606245/2017, 2407988/2010,
2388994/2010, 2373492/2009, 2343403/2009.
Certificates for computer programs inventions RU
No.No. 2017663050/2017, 2017663048/2017,
2017614900/2017, 2017614861/2017,
2017614764/2017, 2017614715/2017,
2017614710/2017.

Description EN

It is designed to investigate the physical and mechanical properties and state diagnostics of construction materials by acoustic active methods of nondestructive testing in the structure of stationary and mobile diagnostic stations in engineering, aircraft building, shipbuilding, instrument making, fuel and energy complex, etc.

It combines technical solutions for measuring small spatial displacements of control object surfaces and for protection against internal and external destabilizing influences, as well as software allowing for *a priori* modeling and preparing of the measurement process, itself measurement process, processing and analysis of its results. Moreover, it possesses a possibility of numerically-theoretical modeling of functional characteristics in the development of promising optical measuring means.

It is based on the use of modern laser technologies and new optical interference methods.

It realizes in full all advantages of high-precision optical interference measuring means to solve urgent scientific and practical problems.

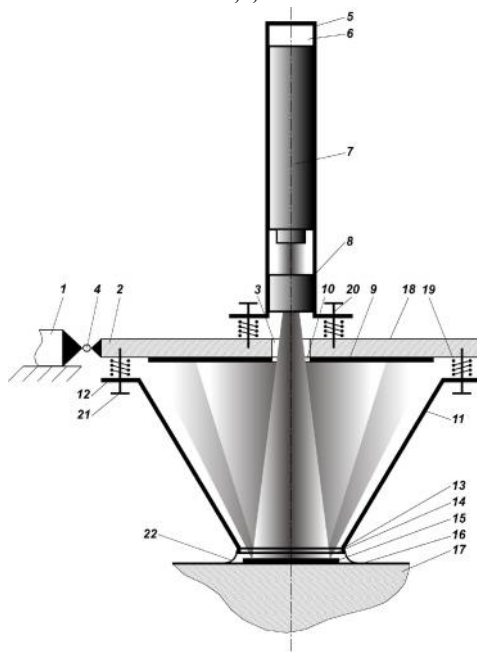
It allows to increase the informative and significantly up to 20-30% accuracy of measurement results, and also to perform correction of results in the process of

measurements, excluding the influence of internal and external destabilizing effects without using additional measuring means, allowing one to improve the quality of results up to 20-40%.

It is supported by 5 patents of the Russian Federation for inventions and 7 certificates of state registration of computer programs.

Class no.

5,6,7



RU.2.**Title****DEVICES AND TECHNOLOGIES FOR LIVING
SYSTEMS AND ENVIRONMENT
HARMONIZATION****Authors**

V. Goch, V. Selishchev

Institution**„TSEL” LTD (Moscow)****Patent no.**

Patents of Ukraine, Eurasian Patents (2009, 2011).

Description EN

Generation of high positive energetic zones by means of device configuration effect which combines golden section and Reich accumulator effect (phenomena). ECD application permits: oil viscosity; increase the productivity of agriculture, plant, animals and fish keep food; increase food quality and its subsistent properties; eliminate insects and rodents in living and working areas and other.

Class no.

14

Saudi Arabia*Represented by**Highly Innovative Unique Foundation (HIUF)*

SA.1.	
Title	CooZn, for healthy and soft skin
Authors	Prof. Dr. Najia Alzanbagi
Institution	Highly Innovative Unique Foundation (HIUF) / King Abdulaziz University
Patent no.	Pending
Description EN	Natural mixture contains active ingredients to maintain the health and smoothness of human skin. It composed from <i>Indien Costus</i> oil, olive oil and the concentrated oil of <i>Boswellia Carterii</i> which preserved in natural wax with smell of natural flowers. It can be used for all ages and in all areas of the body including the face. Preferably not exceeding used for a maximum of twice a day.
Class no.	4

Sudan

SD.1.

Title

Smart Care Stick for the Blinds (SCSB)

Authors

Abdalbasit Ibrahim Adam Abdulla

Institution

Smart Care Tech(SCT)

Patent

PCT/SD/00001/2018 & 3189

Description EN

It has been technologically challenging to invent a tool that helps the visually handicaps, it should insure the measures of safety, reliability, quality and cost effectiveness. There are two types of tools used for this purposes: the white electronic stick and the traditional white stick. The efforts to promote these tools have been rapidly increased. As a result, we now see the stick that works through the technology of laser which effectively prevents the risks on roads, dumps and other obstacles. It's strong, lightweight, flexible, water proof, and accommodates all natural conditions usable by the disabled (kinesthetic and auditory, visual, even the elderly), because of the technical keep pace with the progress in age and all types of disability. The function of Smart Care 1-High and low objects alarming, 2- Alarm notification for requesting help 3- Remote in case the loss 4- GPS locator send a message to the family telling them the location of blind 5- Water and booby-traps alarming

Class no.

12



INTERNATIONAL EXHIBITS

Taiwan

Represented by WIIPA

TW.1.

Title

Foamed Cement Slurry Agitation System

Authors

CHENG.CHIN-HSIANG

Institution

YOUNG-AN Mineral Tech Co., Ltd

Patent no.

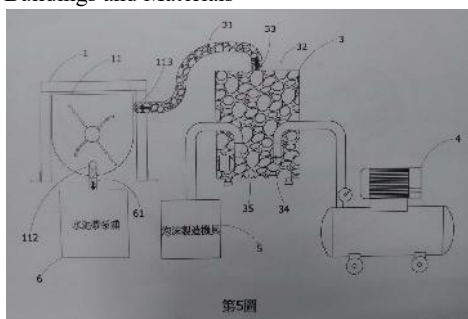
M509107

Description EN

This foamed cement slurry agitation system, featuring the impeller tilted relative to agitator shaft, therefore, agitation module can stir grout in different sections of stirred tank horizontally and vertically at the same time. All the grout will be pushed to same direction makes grouting more easily.

Class no.

No. 7: Buildings and Materials



TW.2.

Title

Electric auxiliary cart

Authors

ZHANG SHI-LIANG, KANG TSAI-HUA, HUANG YU-CHIEN, YIN ZHENG-HU, HUANG YAN-QUN

Institution

Ningde Normal University/ HungKuo Delin University of Technology

Patent no.

M495983

Description EN

The utility model provides an electric auxiliary cart, a motor is electrically connected to the electric source to provide energy needed to drive the. In this way, the user can get the help effectively when pushing the goods.

Class no.

No.6: Mechanical Engineering



TW.3.

Title	Improved human tow rod pull rod
Authors	KANG TSAI-HUA, CHIU CHIEN-CHING, HUANG YU-CHIEN, WEI WEN-SHENG, LIN XI-FU
Institution	HungKuo Delin University of Technology/Tamkang University/Ningde Rui Xun Network Technology Company
Patent no.	M515309
Description EN	The utility model provides a modified human Trailer rod. This can save the strength of the user to drag the human trailer and reduce the user's burden.
Class no.	No.6: Mechanical Engineering



TW.4.

Title Smart pet feeder
Authors CHIEN WEI, KANG TSAI-HUA, HAN KAI-XU
 HUANG CHUN-LIAN, LIAO XIN-YI
Institution Qinzhou University / Hungkuo Delin University Of
 Technology
Patent no. M 496343
Description EN The utility model provides a smart pet feeder, a user can
 wirelessly transmit the control signal to the wireless
 signal receiving control unit. In this way, the user can
 remote control the feeding unit for feeding pets.
Class no. No.10: Information Technology and Communication



TW.5.

Title Builder and anti wrinkles laundry bag
Authors Huan-Mei,Chu, Chun-Te, Lee, Yu-Ting, Lin
 Yi-Rou, Lin, Chia-Sheng, Ma
Institution Cheng Shiu University
Patent no. M489880
Description EN Usually laundry can't really solve the problem of
 wrinkled clothes and the shortcoming have been
 improved by development of new anti-wrinkle laundry
 bag.
Class no. No. 14: Other



TW.6.**Title****Detachable efficient scissors****Authors**

Chun-Te, Lee, Huan-Mei, Chu, Chien-Mei, Lee, Lian-Chun Lee, Chia-Sheng, Ma

Institution**Cheng Shiu University****Patent no.**

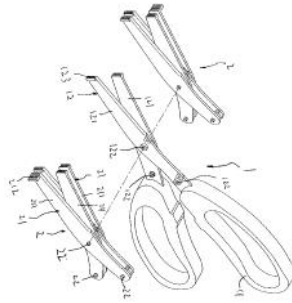
M554846

Description EN

This product is about the Detachable Scissors. Normally, scissors have only two blades but we make it into ten blades and we also designed pound bumper at in front of the cutter.

Class no.

No. 14: Other

**TW.7.****Title****Multifunctional pipeline maintenance and engineering robot****Authors**

Fa-Shian Chang, HSU SHIH, JIA-YAO, JHANG, CHIH-CHUNG, HSU, JIN-WEI GUO

Institution**Cheng Shiu University****Patent no.****Chung Shan Industrial & Commercial School**

M516467

Description EN

The invention uses the automatic monitoring device to replace the manual operation mode to carry out the investigation and to clean the module into the pipeline for cleaning to replace the problem of manual brushing in the past. The transmission design of the vehicle body structure can make the wheels run at a constant speed, Effectively reduce the oil-filled, flammable gas environment dangerous work, and to avoid staff accidents and injuries by a variety of workers.

Class no.

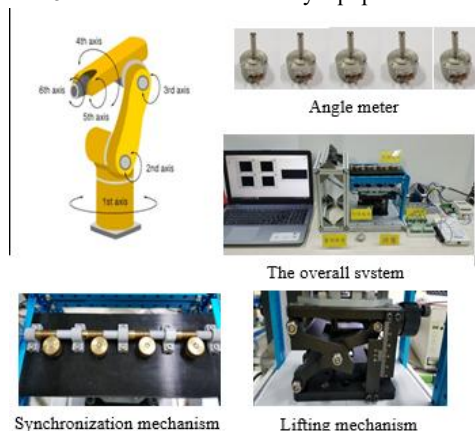
1

**TW.8.****Title****Synchronous precision measuring device****Authors**Fa-Shian Chang, I Chang Hsu,
JIA-YAO,JHANG, CHIH-CHUNG,HSU
JIN-WEI GUO**Institution****Cheng Shiu University**
Chung Shan Industrial & Commercial School**Description EN**

The invention is a measuring device capable of measuring a plurality of potentiometers at the same time, and is used for industrial 4.0 automatic production machine tool calibration. The device can improve the detection and comparison efficiency, change the previous one-to-one comparison method, greatly increase the proper rate of the robot arm in the automated production equipment, and increase the output value.

Class no.

No. 5: Industrial and laboratory equipments



TW.9.**Title**

Use palm-type touch switch structure of the mechanical control palm

Authors

Fa-Shian Chang, HSU SHIH, JIA-YAO, JHANG, CHIH-CHUNG, HSU, WEI-HENG CHAN

Institution

**Cheng Shiu University
Chung Shan Industrial & Commercial School**

Patent

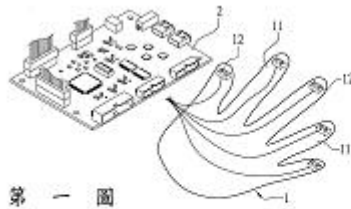
M527602

**Description
EN**

This invention is a palm-type touch switch structure. The main structure includes a palm-type remote control, each finger portion of the palm-type remote control is provided with a touch switch. Each touch switch is connected to the circuit board. It can be used as a mechanical prosthesis for integration with wireless control technology in the future or in a robotic arm for carrying out detailed operation

Class no.

No.12: Safety, protection and rescue of people



TW.10.**Title****The Webcam With Multi-Output Device Function****Authors**

Hsieh, Hsin-Ming

Institution**Patent no.**

M50342

Description EN

The difference between The webcam with Multi-output device function and the webcams in the market is to improve to connect multi-output device to control the webcam.

Class no.

No.10: Information Technology and Communication

**TW.11.****Title****A Device for Electricity Collecting by Solar Energy****Authors**

Hsieh, Man-Li

Patent no.

M540398

Description EN

This is a device for electricity collecting by solar energy. It includes a distributed solar energy collector and a photoelectric conversion unit. The distributed solar energy collector has at least one solar panel and this panel connects the power display by electric wire and through the power display, the electricity which collected by the solar energy collector can be shown directly. Furthermore, the measurable value of the electricity from the distributed solar energy collector can transfer to the data collection center via the long distance wireless transmission module to monitor the condition of the energy collection.

Class no.

No.2:Energy and sustainable development



TW.12.

Title Negative potential mat composition structure

Authors HUANG,DING-BAO

Institution Sheng Hong Co.,Ltd

Patent M533454

Description EN

A negative potential therapy mat uses a controller and a potential unit to make the heating wire produce a warming effect. At the same time, it can also achieve the therapeutic effect of reducing headache, relieving shoulder pain, improving insomnia and chronic constipation.

Class no.

No.4: Medicine - Health Care - Cosmetics

**TW.13.**

Title

Preparation Method for Copper Plating with Excellent Thermal Conductivity and Luminance

Authors

TSUNG-HSIN LIN, CHIAMEI LIN, CHIALING LIN

Institution

Asia-Pacific Institute of Creativity

Patent

I 597377

Description EN

The present invention describes Cu deposition of a buffer possessing excellent thermal conductivity, and luminance characteristics, containing Ti and B using a Cu and Ti/B target under a sputtering power of 20-200 W, for use as a buffer layer to reduce Cu oxidation.

Class no.

No. 14 Other: Electricity / Electronics

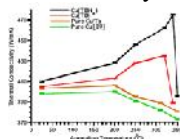


Fig. 1. Thermal conductivity variations of the Cu, TiB, Cu(TiB)₂, and pure Cu films deposited on a Ti/Pt substrate at various temperatures.

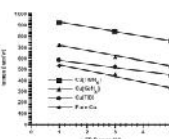


Fig. 2. Per watt illuminances at 40 °C for 1, 5, and 10 W LEDs with various heat dissipation films.

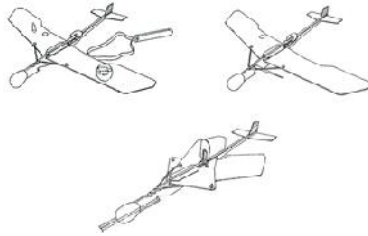
TW.14.**Title** **Intravenous Drip Sensor****Authors** Shih, Yang-Chen**Institution** -**Patent no.** M540658**Description EN**

This is a sensor for intravenous drip. The main purpose of the invention is when the patient has a drip-feeding, attached a sensor which connects with a beeper at auxiliary drip bottle. The detector will detect the lower level of the auxiliary drip bottle automatically when it is about to use up, and immediately notify the buzzer on a beeper to give a warning sound to inform the medical personnel to make a replacement of the new bottle.

Class no. No.4:Medicine - Health Care - Cosmetics**TW.15.****Title** **The Catapult Glider With Light Effect****Authors** Shih, Yang-Lung**Institution** -**Patent no.** M546838**Description EN**

The general catapult glider is not with light effect. When it's dark, it is difficult to see the flying route of the catapult glider and not be able to adjust the height and the distance. The feature of the invention is to install the Illuminators on the two wings. The front of the glider is to control the height and the distance; furthermore, the angel of the wings can be adjusted to 90 degrees (parallel) or 45 degrees (tilt).

Class no. No.13: Sports, Games and Leisure

**TW.16.****Title****Aquaponics System based on Internet of Things(IoT)****Authors**

Wen-Tsai sung, Yu-Hsiang Huang, Chung-Yen Hsiao, Chun-Wei Sung

Institution**National Chin-Yi University of Technology****Patent no.**

M553471

Description EN

This patent is aimed at stimulating the establishment of a set of automation, fish and vegetable symbiosis cycle and monitoring system for agricultural and fishery cultivation and breeding environment. The system uses temperature, humidity, soil moisture, light sensing and other sensing modules to transmit the captured physical sensing signals to the Arduino UNO via the Bluetooth wireless signal processing and operation. The monitoring module is monitored by the software provided by the Internet of Things SAAS service platform. The system also provides remote monitoring functions for mobile phones and tablets, and displays the status of the system with the LCD panel display and IP Camera. This patent, combined with the benefits of the Internet of Things, enables the system to provide features such as low cost, low energy consumption, stable power supply and easy operation under wireless transmission.

Class no.**No.10: Information Technology and Communication**

Thailand

By ATIP

TH.1.

Title

GARLICO : Innovative garlic extract from non chemical process and non-solvent extraction

Authors

Thitiphan Chimsook, Poompob Pitakkwanskul,
Rawiwan Wongpoomchai

Institution

Maejo University, Faculty of Science, 63 Moo 4, Sansai,
Chiangmai, Thailand

Patent no.

1703002556

Description EN

Garlic has a pungent smell, and is a great healthy herb. It has vital chemical compound called allicin, which is a wonderful therapeutic ingredient with many medicinal qualities. The health benefits of garlic are innumerable. It helps fight heart ailments, cold, and lowers blood pressure. GARLICO, an innovative product from garlic extract in tablet formula is produced by using green chemistry processes. Different processes perform without using chemical solvent in particular the extraction process. Interestingly, natural substance such as honey is used in low temperature to keep active substances, especially essential oil.

With innovative extraction process can remain all natural physical properties such as color, odor, and flavor of garlic extract without adding some synthetic substances. Furthermore non-chemical or synthetic substances are not added in tableting process. GARLICO is easy to digest, absorb and as good as vital nutrients.

Class no.

3. Agriculture and Food Industry

TH.2.

Title	Coffee Go Green: Semi-carbonic Maceration Process Plus
Authors	Wanphen Jitjaroen
Institution	Rajamangala University of Technology Lanna 200 Moo 17 Phahonyothin road, Muang, Lampang 52000 Thailand
Patent no.	1701001773 /2017
Description EN	<p>Coffee Go Green : Semi-carbonic Maceration Process Plus is an innovative process for producing green bean coffee by integrating semi-carbonic maceration technique with enzymatic method in a short period. The biochemical pathway on intact mucilage of pulped coffee berries is firstly degraded to simple sugar by using mixed glucanase and pectinase enzymes to increase sweetness. Then the fermentation process begins in a sealed tank which is filled with carbon dioxide at certain temperatures for 2-3 days. With no oxygen, the berries begin to asphyxiate and results in the intracellular fermentation process. Sugar and malic acid are converted to ethanol at a level of 0.5-1.0 % (by volume). With this innovative process it can dissolve the mucilage which helps spread the berries easily and dry quickly. Volatile aroma substances such as acetate esters and a range of other compounds are produced, resulting in complex fragrances of white florals, ripe fruits, oranges, a hint of berry and roasted chocolate. The juicy acidic taste of fruits is prominent by 0.1% of both higher citric and malic acids. Brew coffee gives a creamy mouth feel, and has a well-balanced acidity with a lingering finish of sweetness. The coffee has a clean taste confirmed by containing a half of acetic acid content less than in the pulped natural process. This indicates less contamination which is safer for consumers. This makes a smart coffee product and is an eco-friendly process because there is no wastewater after the fermentation process which helps support a green community and industry</p>
Class no.	3. Agriculture and Food Industry

TH.3.

Title	Plee Ncap™ : Microencapsulate Tablet of banana blossom extract for maternal breastfeeding
Authors	Kanittha Jankajonchai, Kanjana Narkprasom, Supinya Suyalek , Nukrob Narkprasom , Doungporn Amornlerdpison
Institution	¹ Pleepreme Corp.,Ltd, 28/13 Sanmuang Rd. Muangnga Muang Lamphun Thailand 51000 ² Maejo University, Faculty of Science, 63 Moo 4, Sansai, Chiangmai, Thailand
Patent no.	1801000647
Description EN	<p>Plee Ncap™ is a dietary supplement for maternal breastfeeding from banana blossom extracts. The extracts are rich in saponin and tannin, which are known to increase milk production in postpartum mothers. It also contains natural antioxidants including phenolic compounds and anthocyanin. These compounds from banana blossom extract enhance efficiency of secretion of prolactin hormone which resulting in increased lactation for maternal breastfeeding.</p> <p>Microencapsulation technique is applied to control the release of bioactive compounds of the banana blossom extract as well as extend the shelf life-stability of the product. In addition, the innovative process can protect the Plee Ncap™ product from undesirable effects cause by light, oxygen and moisture. The formulation of Plee Ncap™ is delicious and ready to eat for the benefit of maternal breastfeeding</p>
Class no.	3. Agriculture and Food Industry

TH.4.

Title	Chlorogenic acid foundation cosmetic series from organic green bean coffee
Authors	Wilasinee Kositchaiwat
Institution	VOWDA Co. Ltd. 1329/5-6 Phetkasem road, Cha-am, Phetchaburi, 76120
Patent no.	1601000771/2016
Description EN	Chlorogenic acid is well known as high antioxidant substance which can moisturize skin and reduce wrinkles. With non-chemical solvent extraction, the using CO ₂ supercritical fluid extraction is employed to extract chlorogenic acid from low grade of organic green bean coffee. It is found that organic green bean coffee contains high amount of chlorogenic acid more than 20 % W/W by using HPLC analysis.
Class no.	4. Medicine - Health Care - Cosmetics

TH.5.**Title****Mosq-Away™ : Day Emulsion for Mosquito Repellent****Authors**Theeraphap Chareonviriyaphap¹, Unchalee Sanguanpong²,
Rungarun Tisgratog¹, Jirod Narara¹**Institution**¹ Kasetsart University, 50 Ngam Wong Wan Rd., Ladyao,
Chatuchak, Bangkok 10900 THAILAND² Rajamangala University of Technology Thanyaburi, 39
Rangsit-Nakornnayok Str., Patumthani 12110, THAILAND**Patent no.**

1803000973

Description EN

Mosq-Away™ is an innovative formulation of O/W vetiver emulsion for mosquito repellent. Natural ingredients such as sweet almond oil, sesame oil and bee wax are mixed with water by using sodium stearyl glutamate, a strong anionic substance as emulsifier to obtain O/W emulsion or lotion base. The blend of different volatile oils such as vetiver oil as main active ingredient, bergamot oil and lemon oil is stirred with lotion base to formulate a good viscosity microemulsion for mosquito repellent.

By using a non-contact repellency assay system (NCRSA), **Mosq-Away™** was investigated. Six volunteers were used in the tests and WHO standard protocols were followed. The results showed that this product protected volunteers from *Aedes aegypti* (primary vector of dengue virus and chikungunya virus) for a mean duration of 235 min and a maximum protection time of 300 min. Similarly, for *Culex quinquefasciatus*, vector of lymphatic filariasis and a number of arboviruses including St. Louis encephalitis virus and West Nile Virus (WNV), the mean protection time was 265 min with the maximum protection time being 330 min. Additionally, the number of resting mosquito on the arm of each volunteer were observed with volunteers in each condition. For *Aedes aegypti*, an average of 14 mosquito were found resting in the treated arm condition while an average of 78 mosquitoes was found.

Class no.

4. Medicine - Health Care - Cosmetics

TH.6.

Title	Eggplant extract: a functional ingredient for cosmeceutical and nutraceutical products
Authors	Taweesak Amornlerdpison ¹ , Raweeporn Amornlerdpison ¹ and DOUNGPORN Amornlerdpison ²
Institution	¹ All About Extract Co., Ltd. ² Maejo University, Thailand
Patent no.	1803000597
Description EN	<p>Eggplant (<i>Solanum melongena</i>, L.) is ranked among top ten vegetables which displays potent anti-oxidant activity. It also has a high nutritional value and fiber, and rich on magnesium and vitamins however it contains low fat. The Senryo No.2 is a selected type of eggplant cultivar in Thailand due to its display of high phenolic content. The under grade quality and by-product of eggplants from industrial food processing are value added as a functional ingredient in cosmetic and food supplement products.</p> <p>The research results are found that certain extraction of eggplant provided high yields and good phenolic content, all at a suitable cost. Microencapsulation is used for enhancing the shelf life and stability of functional extract, especially the phenolic compounds of the eggplant. In addition, the extraction processes are safe for consumers and environment-friendly. Our study showed that eggplant extract can eliminate free radicals in scavenging of ABTS and DPPH radicals assays. Interestingly, the eggplant extract at the dose of 300 mg/kg can reduce blood glucose levels in diabetic rats when receiving the extract for 8 weeks. Thus, the extract obtain the functional potential on health and beauty.</p>
Class no.	4. Medicine - Health Care - Cosmetics

TH.7.**Title****Plasma Burner****Authors**

Kosin Savanananda

Institution

Chitralada Technology College, 604 The Bureau of Royal Household, Sanam-Suepa, Sri-Ayutthaya Rd., Dusit, Bangkok 10300 ,Thailand

Patent no.

1603000982

Description EN

Some used tools must be eliminated by means of burning. They cannot be buried because they are contaminated with toxin or become infections waste, such as hypodermic needles. However, the materials are hard to be destroyed in short time with general burning and also cause ecological and water pollution. Therefore, the technology of high temperature plasma burning can be used to prevent or lessen toxic <80-95%> and greenhouse from the process, and to reduce the production cost.

Specification: Weight Approx.: 18 Kg, Input Current: 100-250A Voltage:220 1 phase, Temperature Frame: 1900 - 4500 Celsius, Dimension: 11" x 18" x 10", Power: 22- 33 KVA, Electrode: Cathode 500 hours Anode 250 hours, Gas: Air 1-5 Bar, Safety: Electrically isolated torch design, Cooling: Water 5-20 L/m

Application: Waste Treatment Gas Heating R&D, High Technology Manufacturing Materials, Destroy Hospital Waste such as syringes.

Class no.

6. Mechanical Engineering - Metallurgy

TH.8.	
Title	Thermal and Sound Insulation Wall from Fast Growing Wood Chips and Energy Crop Fibers
Authors	Prachoom Khamput, Thawatchai Ariyasutthi, Acting Captain Dr.Kittipong Suweero
Institution	Rajamangala University of Technology Thanyaburi 39 Moo1, Rangsit-Nakornnayok Road, Thanyaburi, Path Thani, Thailand 12110
Patent no.	4107, 4108
Description EN	<p>The thermal and sound insulation wall from fast growing wood chips and energy crop fibers are the prefabricated wall which the 2 outside cover panels were made by the fast growing wood chips such as <i>Leucaena leucocephala</i>, and <i>Acacia mangium</i> from the processing or remaining in biomass power plants. The grinding and compression processes of TIS.876-2004 standard were the method for casting their outside cover panels. The middle layer of sandwich thermal insulation wall was inserted by the energy crop fibers such as</p> <p>coconut fiber, top and leaf sugarcane, and napier grass etc. The compressed sheet of these fibers is the thermal insulation layer, and it was verified by the TIS.966-2547 standard. The 2 outside cover panels and thermal insulation sheet assembled with adhesives as the sandwich prefabricated wall. The flat edge, pin, or sliding canopy are designed to accommodate the transportation, installation and saving cost during the construction, and give the freedom for customer to adjust the dimension of wall. This prefabricated wall is suitable for partition room with good engineering properties, standard verifying, thermal insulation, sound insulation and environmentally friendly.</p>
Class no.	7. Buildings and Materials

Turkey

Represented by
TUMMIAD (Turkish Inventor's Association)

TR.1.

Title

Helping Glove

Authors

Atoosa Bahari Kordabad, Elina Bahari Kordabad ,
 Mehran Khosravani, Mohamamd Safary Taze Kand

Institution

ANIA ASSOCIATION

Patent

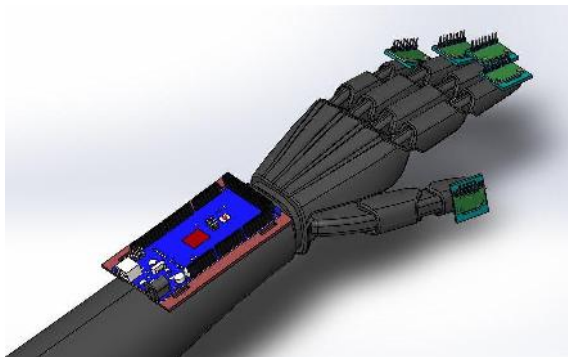
Pending

Description EN

This system is a wearable device equipped with 5 accelerometers that are used to quantify forearm, wrist and finger angles. Additionally, and EMG with conductive fabric electrodes is secured into the sleeve of the device to monitor muscle activity. The glove houses and Arduino UNO R3 which runs an interactive program to prompt the user through motions in order to gauge range of motion and detect muscle activity which can be used by physical therapist.

Class no.

4/12



TR.2.**Title****Black box for Survive****Authors**

Ahmadreza Afshari , Dr. Ahmad Akbari

Institution

ANIA ASSOCIATION

Patent

Pending

Description EN

Smart security system against gases is a mechatronic and communication system which is sensitive to any flammable or suffocating gases. During the leakage of any hazardous gas (carbon monoxide- methane), this system automatically deals with the dangers caused by the leakage and initiates alarming, contacting related organizations, Purifying and controlling the air stream, shutting of the gas, and informing the people trying to enter the place.

Class no.

12/14



TR.3.**Title****Authors****Institution****Patent no.****NOVEL AR GYM**

Sahar Shahrsabz, Mehran Khosravani, Reza Shahrsabz

ANIA ASSOCIATION

Pending

Description EN

This device has been designed to resolve the problems related to the correct implementation of athletic movements, especially in terms of the bodybuilding for all age groups. These problems include the lack of sufficient knowledge of some instructors to train movements, lack of sufficient safety for all athletes during doing movements, lack of attention to the correct implementation, lack of specialist personnel according to the number of people, creation of musculoskeletal problems, pain caused by long-term improper movements and the like. The use of artificial intelligence and augmented reality and the timely warning of improper implementation will prevent these problems. It is worth noting that there are few devices around the world designed and used for this purpose, but none are comparable with this device in terms of ease of use and level of control and safety. The ability to select different movements and the momentary processing of movements allows the instructor or athlete to do the most effective exercise at the different athletic levels and movement diversification by spending less time and energy. The ability for athletic rating and providing the proposed training plan and displaying the error point and instantaneous modification of the movements and easy installation of the device in any place are included of other advantage of this device, which makes it possible to use it anywhere by people with any age.

Class no.

4/13

TR.4.**Title****Smart Gym****Authors**

Sahar Shahrabaz, Maedeh Talezadehlari, Mehran Khosravani

Institution

ANIA ASSOCIATION

Patentn no.

Pending

Description EN

Sports have been part of the human society. Much people spend part of their time in the sports clubs. The motivation is clear: not only is an active and healthy life increasingly valued in our society, but the equipment available has become more sophisticated than ever. Amateur athletes now use high-tech materials that were until recently available only to professionals, while constantly measuring their performances and analyzing their health. Nowadays data analysis helps reduce the risk of injuries. Here we want to introduce an idea of smart clubs which can provide some kinds of new approaches to decrease the probable injuries for amateur athletes and energy loss for mentors as well. In this system, we can reduce the risk of these injuries by recording the data and by adding them to the personal sport file, which is already made by smart club for each athlete. In fact, we are going to collect and store the individual information of each athlete for analyzing. Moreover, by using the finger print sensor we are able to evaluate the expected progress for each athlete for the whole day. All these methods are able us to observe the athletes' circumstances much better.

Class no.

13/4

TR.5.**Title****Authors****Institution****Patent no.****Acid type detector without spectroscopy**

Pedram Yousefi , Mohammad Safary Taze Kand

ANIA ASSOCIATION

Pending

Description EN

Typically, acid detection mechanism is detected through expensive and bulky devices. This has led laboratories and small workshops to not have the economic power and space to buy and install the device, and this is done in a non-automatic diagnosis using human resources. Thus, when using acids, common mistakes are detected and used in laboratories. Using old methods such as smelling and diagnosing using direct human interaction and solubility, in addition to generating many economic disadvantages, is detrimental to the health and safety of workers. In addition to minimizing the relationship between the person and the acid at the diagnosis stage, the device has a reasonable dimension and price, while at the same time has been able to achieve the desired performance accuracy, which supplies the needs of laboratories and small workshops. By detecting the pH of the solution, the temperature and the vapors emitted from it, it has been able to detect a few acids well. Initially, the acid was detected using suction pumps in the chamber and then examined using different sensors. The test result is shown on the LCD on the device and also the solution temperature. In the next step, the diagnostic compartment first drains the acid and then rinses it completely in two steps using water and base solution. At the same time, the accumulated gases inside the machine are discharged from the inside by two fan blowers and three fan-suckers. No matter, at each stage, the proper weight of the solution in each human being is checked and, if not appropriate, is notified to the user.

Class no.

9

Ukraine

UA.1.
Title
Hemocontrol: Haemostatics With Junction Coupling
Authors

V. Kurylenko

Institution
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" Ukraine
Patent no.

Pending

Description EN

The injection "HemoControl" allows to stop the bleeding of different intensity (including arterial) within the shortest time. The mineral that is a base of the product forms a blood clot quicker. The developed injection can not only stop the bleeding, but it will securely clog the wound for safely transportation of the victim. The injection can be used to stop the bleeding and disinfect deep penetrating wounds, including gunshot. With the help of "HemoControl" it becomes possible to anesthetize and stop bleeding quickly, to avoid infection and wound contamination, which will increase the survival of the victim. The patch can be used on open skin and muscle wounds. The components of the "HemoControl" are widely available and inexpensive. In that case the prime cost of the product will be significantly below the price of analogue.

Class no.

4

United States of America

By TISIAS

US.1.

Title

Multi-Dispenser Refrigerator

Authors

Teresa Harris

Institution

Stillwater Dispensers

Patent no.

US 7712328 May 11, 2010

Description EN

A refrigerator having ice and water dispensers on both the front, back and side improves efficiency and utilization of the refrigerator. Home floor plans show openings in interior walls to access the second and third dispensers. Great for large families or group homes by reducing the traffic jams at the refrigerator and increases accessibility while maintaining energy efficiency. The refrigerator is ergonomically designed with practicality and efficiency in mind, this new fridge is built with between 2 to 4 water and ice dispensers. With this innovative design, you are virtually able to access water and ice from anywhere in your home. It is the perfect solution for families, couples, college dormitory lounges, restaurant kitchens, offices, and parties that enjoy having a company. There will be no more waiting in line for water – between 2 to 4 people can access water/ice at all times without interfering with the refrigerator. The design fits any apartment and house layout. With this refrigerator, everyone becomes happy as there will be no more congestion and discomfort upon their ways to getting water and ice.

Class no.

7

Vietnam

VN.1.

Title

Green synthesis of silver nanoparticles in plant extract and the application in skin care product

Authors

Nguyễn Hiền Thảo
Đoàn Thái Hoàng Nam
Hanoi-Amsterdam High School
Dao Duy Tu, High School, Hanoi

Description EN

We synthesized silver nanoparticles with precursors of silver nitrate and a reducing agent aloe vera plant leaves. We have investigated the reaction time and reactant ratios to find the optimal conditions. The product is evaluated by UV-Vis spectrum and SEM image. Silver nanoparticles (AgNPs) are 8-15 nm in size. Synthetic products were tested for bactericidal activity on two strains of *E. coli* and *S. aureus*. The results showed that AgNPs had a high antibacterial and can be effectively utilized in pharmaceutical and biomedical applications.

Class no.

5

VN.2.

Title

Automatic and early warning fire detection system

Authors

Nguyễn Mỹ Hằng, Lê Vương Khải
Dao Duy Tu, High School, Hanoi

Description EN

The automatic system monitors fire, smoke to use in a large area motorbike parking of the apartment building. The system operates as a line tracking robot which installed in the ceiling of room. The residents can see the system working continuously 24 hours per day that makes them feel safe. An alarm will come on in seconds after the smoke or fire is detected. When the fire alarm is activated, it will turn on the alarm or extinguish fire system. For example, emits a laser light that point to the dangerous area, send the signal to the related people via wireless transmitter, activate the passive infrared motion detector that will check for any body heat inside the unsafe area...

Class no.

12

VN.3.**Title***Using nano SiO₂ as aliment in marine diatom culture***Authors**

Nguyễn Quốc Dũng, Bùi Chí Nguyễn

Dao Duy Tu, High School, Hanoi

Description EN

Diatoms are regarded as useful neutral lipid sources as foods for marine culture of zooplankters, larval and post-larval shrimp, and juvenile oysters and as micromachines in nanotechnology. Finding out a new culturing medium in order to increase the development of the diatom is good way to assist the development of marine culture. From end-half of last century, various culturing media were found by Provasoli (1968), Guillard (F/2, 1982), Bold (1949), Couteau (1996). Since then, the culturing media have been improved based on above mentioned techniques. One of the most important issues in the diatom culturing media is Si content, which has been consumed via Na₂SiO₃. No published issue has been found yet using nano SiO₂ as aliment in the culturing medium.

Class no.

3

NATIONAL EXHIBITORS

Universities

Research Institutes

Companies

Individuals

University POLITEHNICA of Bucharest

RO.1.

Title EN
INNOVATIVE COMPOSITION FOR DENTAL APPLICATIONS
Authors

Anton FICAI, Denisa FICAI, Ovidiu OPREA, Ecaterina ANDRONESCU, Stefan MANEA, Anna-Maria PANGICĂ, Petru BODOGA, Ludmila MOTELICA

Institution

POLITEHNICA University of Bucharest

Patent no.

A00734/27.09.2017

**Description
EN**

The invention discloses the technology of obtaining antibacterial compositions for washing and / or storing toothbrushes and dental floss. The solutions contain ZnO nanoparticles coated with various natural extracts and are supplied as a single component (does not require mixing of two solutions, adding a substance to the mum solution before use). The unit must be shaken before use to ensure homogeneity. The composition of ZnO nanoparticles coated with natural extracts can also be applied to products such as dental floss, providing not only an antimicrobial effect in use, but also a lasting action by the transfer of antibacterial agents.

Class no.

4

RO.2.

Title EN
POLYMER/CERAMIC COMPOSITE MATERIALS AND PROCESS FOR THEIR MANUFACTURING
Authors

Anton FICAI, Mădălina Georgiana ALBU-KAYA, Denisa FICAI, Valentina MITRAN, Anișoara CIMPEAN, Ecaterina ANDRONESCU

Institution

POLITEHNICA University in Bucharest

Patent no.

A 01045/07.12.2017

**Description
EN**

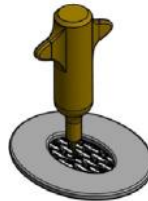
The invention relates to a process for the preparation of composite gels and bone grafts derived from soluble / dispersible polymers (collagen, polyvinyl alcohol, chitosan, alginate) and suitable precursors (especially calcium phosphates) required for the production of bone grafts with medical applications. These formulations are especially developed to be processed by modern techniques such as 3D or electrospinning, techniques that require homogeneous formulations, preferably viscous solutions that can be processed and using thin needles.

Class no.

4

RO.3.

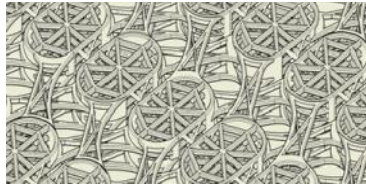
Title EN	CRANIAL ENDOPROTHESIS WITH A SLIDING SYSTEM
Authors	DOICIN Cristian Vasile; ULMEANU Mihaela Elena; ANTONIAC Vasile Iulian; SEMENESCU Augustin; COSTOIU Mihnea Cosmin; MITRICĂ Marian; MURZAC Roman; CHIRTEȘ Alin; DAVIȚOIU Dragoș-Virgil; DOICIN Irina Elena; MATEȘ Ileana Mariana
Institution	University POLITEHNICA of Bucharest, Romania, EU
Patent no.	Patent application No. 00907/2017
Description EN	The invention relates to a cranial endoprosthesis with a sliding system, used to repair the traumatic defects of the skull, by the surgical procedure of cranioplasty. The cranial endoprosthesis consists of a superior sliding layer, a lower sliding layer and a fastening system, and the sliding layers are made up of mobile cells (which generally have a parallelepiped shape with fileted edges) with sliding system
Class no.	4

**RO.4.**

Title EN	CRANIAL IMPLANT WITH OSTEOINTEGRATING STRUCTURES AND FUNCTIONAL COATINGS
Authors	ANTONIAC Vasile Iulian, MOHAN Aurel, SEMENESCU Augustin, DOICIN Vasile Cristian, ULMEANU Mihaela Elena, CAVALU Simona, COSTOIU Mihnea Cosmin, MURZAC Roman, DOICIN Irina-Elena, SĂCELEANU Vicențiu, MATEȘ Ileana Mariana
Institution	University POLITEHNICA of Bucharest, Romania, EU
Patent no.	Patent application No. 00914/2017
Description EN	The invention relates to the structure and fastening method of a mesh implant with functional coatings having the role of osteointegration, used for cranioplasties and reconfigurations of major cranial defects. The implant made of pure Ti or a

biocompatible Ti alloy with osteointegration structures, consists of two layers, one fixed and the other movable, interconverted so that translations in two perpendicular directions can be made while maintaining the fixed layer. The cells of the two layers are arranged in two directions whose intersection at any point forms the angle α

Class no. 4



RO.5.

Title EN

ACETABULAR MILLING DEVICE

Authors

NICULESCU Marius, ANTONIAC Vasile-Iulian, SEMENESCU Augustin, DOICIN Cristian-Vasile, ULMEANU Mihaela-Elena, COSTOIU Mihnea Cosmin, MURZAC Roman, MATEȘ Ileana, DAVIȚOIU Dragoș-Virgil

Institution

University POLITEHNICA of Bucharest, Romania, EU

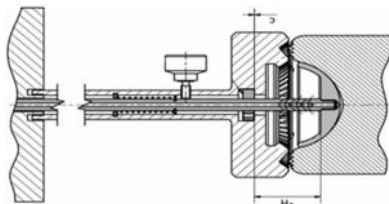
Patent no.

Patent application No. 00672/2017

**Description
EN**

The invention relates to an acetabular milling device used in hip joint reconstruction surgery. The acetabular milling device is made up of a cylindrical front cutter assembled with a quick-change bush and a central rod. The device allows a movement on the rods' axis direction of the milling body, limited to the distance defined by the height of the osteophyte type acetabular formations. The geometry of the active edges ensures the controlled direction of the bone chips within the collecting cup through the milling tooth profile, for which the angle of alignment (α) is greater than the angle of clearance (γ).

Class no. 4

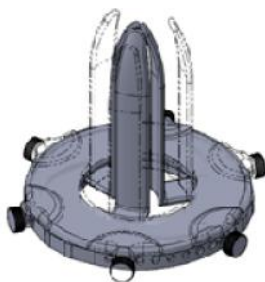


RO.6.**Title EN****ANOSCOPE WITH ADJUSTABLE OPERATIVE FIELD****Authors****DAVIȚOIU Dragoș-Virgil, DOICIN Cristian-Vasile, COSTOIU Mihnea-Cosmin, ULMEANU Mihaela-Elena, SEMENESCU Augustin****Institution****University POLITEHNICA of Bucharest, Romania, EU****Patent no.**

Patent application No. 01173/2017

**Description
EN**

The invention relates to an anoscope with adjustable operative field used for performing anorectal surgery. The anoscope with adjustable operative field consists of a lower cover, a top cover, an intermediary translational flange, three movable tabs, and three locking screws. The anoscope with adjustable operative field can be adjusted according to the patient's anatomy with incremental angular steps providing a variable surface of the operative field by adjusting the working diameter, thus facilitating access to the operator field depending on the type of surgery.

Class no.**4****RO.7.****Title EN****METHOD AND INSTALLATION FOR ELECTROCHEMICAL OBTAINING OF A COMPOSITE MATERIAL WITH METALLIC MATRIX****Authors****ARGHIRESCU Marius, COSTOIU Mihnea Cosmin, SEMENESCU Augustin, AVRAM Vasile, BURADA Marian, MILITARU Nicolae Gheorghe, AMZA Catalin Gheorghe, CHIVU Oana-Roxana****Institution****University POLITEHNICA of Bucharest, Romania, EU****Patent no.**

Patent application No. 00133/2017

Description

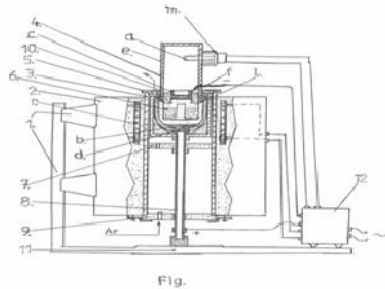
The invention relates to a process for the electrochemical

NATIONAL

EN production of a metal matrix composite material, including a preliminary phase of forming a sintered electrode: cathode or anode, from powder / oxide powders / of microwave absorbing oxides of one or more metals: Ti, Zr, Al, Cu, etc., mixed with carbide and / or nitride particles of some metals, obtained by pressing and sintering at about 900° C and fixing the formed electrode into a metal support connected to the negative or positive pole of a current source in an electrolysis cell using a second electrode of graphite or other suitable electro-conductive material and an electrolyte of a molten salt of a metal.

Advantage: for energy efficiency and shortening the process completion time, the sintered electrode is subjected during the electrolysis process to the action of a suitable microwave flux, corresponding to the electromagnetic heating of the oxide material at a minimum of 300 ° C.

Class no. 6



RO.8.

Title EN

ESO-TRAHEOSCOPE

Authors

DEMETRIAN Alin-Dragoș, SEMENESCU Augustin,
CHIVU Oana-Roxana, COSTOIU Mihnea Cosmin,
DEMETRIAN Camelia, MATEȘ Ileana Mariana,
DUMITRESCU Silviu

Institution

University POLITEHNICA of Bucharest, Romania, EU

Patent no.

Patent application No. 00913/2017

Description

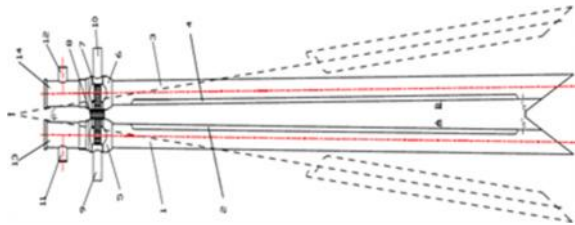
EN

The invention relates to a combined instrument (eso-tracheoscope) for simultaneously approaching the two tubular organs located in the mediastinum (trachea and esophagus), allowing simultaneous and coordinated

maneuvers on the wall that separates them. The eso-tracheoscope, consisting of two cylindrical bodies which are articulated between them either from the beginning or after the successive introduction into the trachea, respectively into the esophagus, solves this technical problem, because each body has a slit or window(facing each other) of sufficient size to allow therapeutic maneuvers directed to the commun eso-tracheal wall with long instruments, inserted through the two working channels.

Class no.

4



RO.9.

Title EN

INSTALLATION FOR EVALUATING QUALITY OF INDUSTRIAL PRODUCTS

Authors

AMZA Catalin Gheorghe, CICIC Dumitru Titi, POPESCU Diana, AMZA Gheorghe, SEMENESCU Augustin

Institution

University POLITEHNICA of Bucharest, Romania, EU

Patent no.

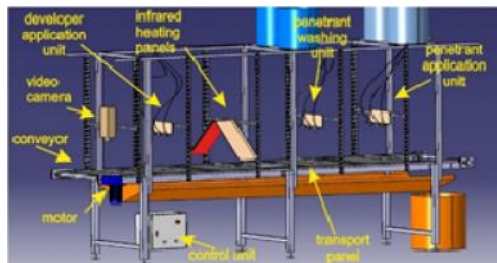
Patent RO 128159 B1/2015

**Description
EN**

The invention refers to an automatic quality assessment installation of industrial products intended for the non-destructive inspection of products resulting from industrial processes, direct on the manufacturing line, with different degrees of rejection of non-compliant products.

Class no.

5



RO.10.

- Title EN** *Rotary head for ultrasonically aided electrical discharge machining*
- Authors** GHICULESCU Liviu Daniel, MARINESCU Niculae Ion, ALUPEI COJOCARIU Ovidiu Dorin, CĂRUȚAȘU Nicoleta Luminița
- Institution** “Politehnica” University of Bucharest
- Patent no.** Patent application A 2015 00528 / 23.07.2015
- Description EN** *The invention deals with a rotary head for ultrasonically aided electrical discharge machining (EDM), used for milling EDM, which has a tool-electrode at the end of an ultrasonic chain with simultaneous oscillation and rotation. The electric supply is made in nodal points with a bottom brush vertically adjusted in contact with the ultrasonic horn, and a top brush in contact with a bushing positioned at the transducer level.*
- Application: Machining by complex kinematic (milling) EDM, to obtain complicate surfaces using simple shape tool-electrodes through ultrasonic assistance of EDM process, which assures its stability, high machining rate and surface quality.
- Class no.** 5

**RO.11.**

- Title EN** *Equipment for ultrasonically aided electrochemical machining*
- Authors** MARINESCU Niculae Ion, GHICULESCU Liviu Daniel, BANU Alexandra, TARBĂ Cristian, JUGĂNARU Cristina
- Institution** “Politehnica” University of Bucharest

Patent no. Patent application, A 2015 00537 / 24.07.2015
The invention deals with equipment for ultrasonically aided electrochemical machining, having a counter-pressure chamber in which the workpiece is inserted at its bottom part, through a wedge blocked and sealed. The tool-electrode vibrates with ultrasonic frequency, at the end of an ultrasonic chain, whose horn is covered by an isolator layer and inserted in the counter-pressure chamber at its top part.
Description Application: Electrochemical machining aided by ultrasonic
EN vibration of the tool to obtain polished surfaces under conditions of high machining rate and low production cost by avoiding supplying with high pressure electrolyte liquid.
Class no. 5



RO.12.

Title EN **Method and system for obtaining customized surgical guides based on patient anatomy**
Authors Diana Popescu, Dan Lăptoiu, Hadăr Anton, Ilie Cătălin, Dorobanțu Alin Anghel
Institution **University POLITEHNICA of Bucharest**
Patent no. Patent application: A1004/15/12.2015
The invention refers to a method and an online collaborative intelligent system for the design and manufacturing of patient customized surgical guides, which provides and integrates applications and computer-aided tools for facilitating the decision making process based on medical and engineering knowledge.
Description
EN
Class no. 10

University of Agronomic Science and Veterinary Medicine Bucharest

RO.13.**Title EN**

Synthesis of silver nanoparticles mediated by the atomized extract of blueberry and cranberry

Authors

Emanuel Vamanu, Adriana Mirela Tache, Cosmin-Daniel Călin, Adrian Claudiu Gata

Institution

University of Agronomic Science and Veterinary Medicine

Patent no.

Student research project

**Description
EN**

The purpose of this study was the biological synthesis of silver nanoparticles by using atomized extracts of cranberry and cranberry fruits. Both nanomaterials were characterized and the antioxidant and antimicrobial effect were determined. The synthesis was performed starting from 1 mM AgNO_3 solution, and the extractant (reducing agent) was added at a ratio of 1-5%. The reduction reaction was completed after 48 hours, and then the mixture was lyophilized. The UV-VIS spectrum, between 340-700 nm, and FT-IR analysis were performed. The UV-VIS spectrum was about 450 nm, which showed the formation of identical nanostructures even with the use of ethylene glycol. There was a high content of phenolic compounds and a yield depended on the concentration of the extract. Antimicrobial activity was influenced by the extract, and by the addition of ethylene glycol there were constant inhibition patterns, demonstrating its importance as a stabilizer in the expression of the biological response.

Class no.

7



RO.14.**Title EN**

RoBioMush - Bioactive product from edible wild mushrooms for improving colon microbial fingerprint

Authors

Emanuel Vamanu, Sârbu Ionela, Pop Octavian, Pop Erdelyi Andrea, Ene Mihaela

Institution

University of Agronomic Science and Veterinary Medicine

Patent no.

Patent application No. a 2017 00459 din 07/07/2017

**Description
EN**

The invention concerns a bioactive product used in nutritional and cardiovascular pathologies in order to improve the colon microbial fingerprint. The product according to the invention consists of an atomized fungal extract of the mushrooms species *Boletus* sp., *Pleurotus ergyngii*, *Armillana mellea* and *Tuber melanosporum*, in a ratio of 30: 7: 2: 1 and 7% maltodextrin. The product having a phenolic compounds content of 7.8 mg/mL gallic acid equivalents and a total antioxidant activity of over 90%.

Class no.

4



RO.15.**Title EN**

The use of herbicides application methods through the use of wiping technique after making a new adjustment on the addition machine and determining the best concentration of herbicides for the purpose of controlling water hyacinth plant with the lowest pollution to the aquatic environment.

Authors

Omar abdulrazzaq shihab AL GBURI, Adnan Hussien Ali

Institution

Ministry of Water Resources - General Commission for the maintenance of irrigation and Drainage/ Baghdad.

Faculty of Agriculture at the University of Diyala, Diyala, Iraq

Patent no.

AO1M21/00 / Patent application No. 223/2012

**Description
EN**

The using the wipe machine. It has been making wipe machine which is tube a plastic for diameter of 3.15 cm and a length of 150 cm and represents a reservoir where drilling this tube to the 14 hole and a diameter of 1.26 cm and the distance between the hole and another holes 10 cm have been installed on these holes drip and under then roll lumbar between these drip and then the closure of one of the tube ends of bottle transparent of diameter 3.15 cm for way to know the amount of herbicide found inside the tube and the second party proved the opposite diameter of 3.15 cm for on the way kept the herbicide inside the tube also contains a faucet works to balance the pressure inside the pipe major holder of aluminum or plastic (pvc) 140 cm long can be shortened and lengthened as needed diameter(2.5cm). Applications: To controlling the aquatic weeds and all the weeds which are characterized by the difference of height and the preservation of the water environment and the environment in general from pollution through the use of herbicides while reducing the leakage in water .

Class no.

3



RO.16.	
Title EN	Sustainable valorization of by-products from medicinal and aromatic plants industry into value-added products – SuSMAPWaste
Authors	Project manager Milen Georgiev
Institution	University of Agronomic Sciences and Veterinary Medicine of Bucharest
Patent no.	-
Description EN	<p>The main objective of SuSMAPWaste project is the development of green technologies for obtaining a fibrous support material from oleaginous plants waste, enriched with a penta-component formula with multi-target effect (antioxidant, probiotic and detoxifying) from medicinal and aromatic plants waste, for human consumption. The project is going to develop tools, methodologies and processes for the valorization of wastes through an integrated bio approach, using advanced biotechnological methods. Research and innovation actions are focused on the valorization of natural compounds with multi-target effect, which are essential for the development of a circular bio - economy and for the smart and efficient use of green resources.</p> <p>The direct beneficiaries of the project are the companies - manufacturers of natural products based on medicinal, aromatic or oleaginous plants that are producing plants waste. The project will increase the share of biomaterials produced in Europe by increasing the market share of bio-based materials, will allow improved management of renewable biological resources and the opening of new and diversified markets for bio – food and products, will contribute to the decrease of feed import.</p> <p><i>The authors gratefully acknowledge the support obtained through the project SusMAPWaste, SMIS 104323, Contract No. 89/09.09.2016, from the Operational Program Competitiveness 2014-2020, project co-financed from the European Regional Development Fund.</i></p>
Class no.	

Technical University of Cluj-Napoca, România

RO.17.	
Title EN	Method and composite material for ornamental synthetic plates manufacturing
Authors	Șl.dr.ing. Sabău Emilia, Prof.dr.ing. Bâlc Nicolae Octavian, Șl.dr.ing. Bere Petru Paul
Institution	Technical University of Cluj-Napoca
Patent no.	Patent OSIM no. RO130062/28.02.2017
Description EN	The invention relates to a method and a composite material that uses in the structure waste fiber-reinforced composite materials, with applicability in the construction domain, for building cladding. The obtained material is a solid material, resistant to external agents, the method being easy to perform. The composite material gives superior mechanical characteristics of traditional materials.
	Fields of application: Civil and industrial construction, composite materials, art
Class no.	7

RO.18.	
Title EN	Magnetic gear with transmission ratio in steps
Authors	Conf.dr.ing. Daniel FODOREAN
Institution	Technical University of Cluj-Napoca
Patent no.	Patent OSIM no. RO130450/30.03.2017
Description EN	For conventional high-power gears, getting a high ratio (1/16 for example) can only be achieved by linking (cascading) multiple gears, which involves an increased volume and weight, the effect being the decrease of overall power density and efficiency. The present invention, the magnetic gear with transmission ratio in steps, proposes a light and more compact high transmission ratio gear, with improved power density and efficiency. In addition, the proposed configuration of magnetic poles and ferromagnetic teeth produces a very smooth torque, with reduced ripples. The proposed invention, the magnetic gearbox with transmission ratio in steps, can be adapted for any configuration of magnetic gears.
	Fields of application: Electromechanical systems, Transportations, Aeronautics
Class no.	8

RO.19.	
Title EN	System for controlling the one-lane vehicle traffic and its operating method
Authors	Prof.dr.ing. Tiberiu Stefan Leția, Prof.dr.ing. Cornel Ciupan
Institution	Technical University of Cluj-Napoca
Patent no.	Patent OSIM no. RO127453/30.08.2017
	The invention relates to a system and method of operation for controlling the traffic of motor vehicles with the purpose of limiting the maximum speed in a control section. When the speed of the vehicle that entering the controlled section is greater than the maximum permissible speed, the system emits warning signals and raises an obstacle in the form of an asymmetric cylinder mounted in a channel. The method can be used to: 1 - limit the maximum allowable speed to a band; 2- controlling machine flow on tape; 3 - control of vehicle flows on two adjacent bands; 4 - traffic control at traffic lights.
Description EN	By applying the invention the following advantages are obtained: <ul style="list-style-type: none"> - high efficiency and safety in traffic control and requiring drivers to comply with traffic rules; - avoiding congestion or traffic jams by imposing desired flow rates (machine speeds) that can be calculated on the basis of a program; - equity in advancing machine columns - flexibility in scheduling and operating under different regimes; - supports the dynamic allocation of bands for different directions of a street or road; - simple, reliable construction.
Class no.	8

RO.20.	
Title EN	Iron-based friction composite
Authors	Viorel Căndea, Violeta Merie, Cătălin Popa, Angela Popa
Institution	Technical University of Cluj-Napoca
Patent no.	Patent OSIM no. RO129163/30.10.2017
Description EN	The patent claims an iron-based friction composite material with superior friction and wear characteristics. This material can be used in the automotive industry (brake pads etc.) or in other various friction applications. The main element of the

material is iron. It contains, also, in optimized amounts and granulations, copper, graphite, nickel, as well as titanium dioxide and alumina. These components are added to improve the tribological properties of the composite material.

The material might be used for manufacturing components for the automotive industry (i.e. brake pads, clutch plates etc.). It can also be used in other friction applications for different industries.

Class no.

8

RO.21.

Title EN

Method for obtaining an iron-based friction composite

Authors

Violeta Merie, Viorel Căndea, Cătălin Popa, Angela Popa

Institution

Technical University of Cluj-Napoca

Patent no.

Patent OSIM no. RO129834/30.10.2017

**Description
EN**

The patent claims the method for obtaining of an iron-based friction composite material with application in different industries. The material is elaborated by powder metallurgy specific methods. The technological parameters (compaction pressure, sintering temperature, sintering time etc.) that lead to obtaining of a material characterized by superior tribological properties are stated.

Class no.

6

RO.22.

Title EN

Agitating installation by balancing for bioextraction of heavy metals from polluted soils

Authors

Dr.ing. Cociorhan Camelia Simona, Prof.dr.ing. Micle Valer, Prof.dr.ing. Ardelean Ioan

Institution

Technical University of Cluj-Napoca

Patent no.

Patent OSIM no. RO128372/29.11.2017

**Description
EN**

The installation consists of two subassemblies: the mechanical structure and the control system of temperature. The mechanical structure contains a cylindrical tank supported by two rolling bearings, water tank, gearmotor, quadrangle mechanism. The cylinder is driven in a balancing-type oscillation by a quadrangle mechanism crank-rocker type. Heating and temperature control system ensures the maintenance of temperature in the tank at 500C.

The installation avoids the potential stratification of the mixture by the balancing motion and allows the creation of a favorable ambient for the growth of microorganisms. This leads to a substantial reduction of the treatment duration and increases the extraction efficiency.

Fields of application: Decontamination of soils polluted with heavy metals - there have been developed an innovative installation for biological treatment of soils contaminated with heavy metals (such as historically contaminated areas due to metallurgical industry). This installation can also be adapted to treat polluted soils with other pollutants such as hydrocarbons.

Ecological rehabilitation of polluted sites - a larger capacity biological treatment facility based on the patent can be used in a technology for the treatment and ecological rehabilitation of soils polluted with inorganic and organic pollutants (heavy metals and hydrocarbons).

Class no.

1

RO.23.

Title EN

Traffic warning device for vehicles and special situations and its operating method

Authors

Mihai SAFRIUC, Cornel CIUPAN, Emanuela POP

Institution

Technical University of Cluj-Napoca

Patent no.

Patent application OSIM no. A/10058/2017

**Description
EN**

The invention relates to a device for early signaling of special situations in traffic, such as the presence of motorcycles, accidents or police vehicles or ambulances on mission and other unpredictable events in the field of traffic safety. The device comprises of a reception system (1) provided with front (1a) and rear receptors (1b) and an emission system (2) provided with front transmitters (2a) and rear transmitters (2b). The received signal is transmitted by a DSP filter (3) to a microcontroller (4) which analyzes the received signals and communicates with other traffic vehicles. The device was experimentally tested and tested along with the exploitation method.

By applying the invention the following advantages are obtained:

- dynamic signaling of special situations
- reducing the number of accidents

- reducing noise pollution by eliminating sound alerts in certain situations
- increasing the attention and concentration of drivers in the travel direction, as the special situations that may occur in traffic are brought to their attention by device
- increasing the efficiency of special motor vehicles.

Class no.

8

RO.24.**Title EN****Spherical robot for the rehabilitation of the proximal area of the upper limb****Authors**

Vaida Călin, Plitea Nicolae, Pîslă Doina, Carbone Giuseppe, Gherman Bogdan, Ulinici Ionuț

Institution**Technical University of Cluj-Napoca****Patent no.**

Patent application OSIM no. A00374/14.06.2017

**Description
EN**

The invention refers to a spherical robotic system for the rehabilitation of the proximal zone of the upper limb, containing three active couplers for the purpose of reproducing the abduction/adduction and flexion/extension of the shoulder in the horizontal and vertical plane and reproducing the forearm pronation/supination in the vertical plane. The invention is directed towards post-stroke patients suffering from paralysis at the level of the upper limb following stroke, but its use may be extended to other afflictions that result in the partial or total loss of upper limb mobilization capacity. The robot has three degrees of freedom, achieved through three active rotation joints that have the axis intersection in a single point, more specifically the center of a sphere, which relative to the patient will be transposed over the center of rotation of the shoulder joint, for the first two rotations, and the third being done around the midline of the upper limb.

The specific application of the system proposed in the present invention is to perform upper limb rehabilitation exercises, namely: performing translational movements along guides located on the surface of a sphere being centered in the gleno-humeral joint for the shoulder rehabilitation motions, and also performing the rotation of an end effector connected to the patient's forearm and hand for the purpose of rehabilitating the forearm.

Class no.

4

RO.25.	
Title EN	Family of robots for the rehabilitation of the upper limb
Authors	B. Gherman, G. Carbone, N. Plitea, M. Ceccarelli , A. Banica , D. Pisla, A. Pisla
Institution	Technical University of Cluj-Napoca
Patent no.	Patent application OSIM no. A00375/14.16.2017
Description EN	<p>The patent relates to a family of robots for the medical rehabilitation of the upper limb, designed using two different architectures. The first one is a serial (anthropomorphic) mechanism with four degrees of freedom (dof) for the achievement of elbow flexion, pronation/supination and the wrist flexion/extension and abduction/adduction. The second one has a parallel modular structure, each one with two degrees of freedom: the first module has been designed for the mobilization of the forearm (flexion in the elbow) and the achievement of the pronation/supination, while the second has been designed to mobilize the wrist (flexion/extension and abduction/adduction). The advantages of this patent consist in a great range of motions, while the parallel robot adds increased stiffness and modularity.</p> <p>The specific application of the robotic system proposed in this invention is the upper limb rehabilitation, namely the achievement of the elbow flexion, pronation/supination and the hand (palm) adduction/abduction and flexion/extension. A great variety of rehabilitation exercises can be implemented using different control types like: passive, passive-assisted, active or resistive.</p>
Class no.	4

RO.26.	
Title EN	Automated medical instrument for radiofrequency ablation
Authors	D. Pisla, C. Vaida, I. Birlescu, F. Graur, B. Gherman, P. Tucan, N. Plitea
Institution	Technical University of Cluj-Napoca
Patent no.	Patent application OSIM no. 00379/2017
Description EN	<p>The invention relates to an automated medical instrument for radiofrequency ablation which employs an ablation needle mounted in the instrument holder, having two degrees of mobility. The first degree of freedom is for inserting and retracting the needle, and the second one is for inserting and retracting the antennas inside the ablation needle cannula.</p>

The instrument is designed to be guided by a positioning and orientation device relative to the patient's position, which may be a hand-held setting device or a medical robot that fixes the instrument prior to insertion and keeps it fixed throughout the entire period of the ablation procedure, thus increasing the precision of needle positioning for the ablation procedure.

The proposed device can be used for robotic assisted or manual treatment of hepato-carcinoma (liver tumours) through radiofrequency ablation (RFA) in a minimally invasive approach.

Class no. 4

RO.27.

Title EN

Automated multi needle medical instrument for brachytherapy

Authors

D. Pisla, C. Vaida, I. Birlescu, F. Graur, B. Gherman, P. Tucan, N. Plitea

Institution

Technical University of Cluj-Napoca

Patent no.

Patent application OSIM no. 00431/2017

**Description
EN**

The invention relates to an automated multi-needle medical device for brachytherapy with two degrees of freedom, which uses six needles mounted in the tool magazine which are loaded and inserted successively to a predetermined depth. The instrument is designed to be guided by a positioning mechanism, actuated manually or automatically in the form of a robotic system, thus allowing for a high-precision brachytherapy medical procedure with independent trajectories for each needle.

The proposed device is developed for robotic assisted real-time CT guided brachytherapy where multiple needles are required for the treatment of malignant tumour(s).

Class no. 4

RO.28.

Title EN

Wind Turbine

Authors

Eva-H. Dulf, Radu A. Munteanu, Clement Festila, Radu Munteanu

Institution

Technical University of Cluj-Napoca

Patent no.

Patent application OSIM no. A100985/22.11.2017

**Description
EN**

The patent proposal relates a pallet wind turbine with horizontal shaft capable to capture wind energy which it is

converted into mechanical rotational energy to train different types of electric generators. At low wind speeds it is like an equivalent 6-bladed turbine, and at high wind speeds it turns into a 3-bladed turbine. The assembly can be regarded as a 3-bladed turbine, each of blades having a variable area.

The technical problems solved by the present invention consist of:

- Increases wind energy captured at low wind speeds by apparently changing the number of blades of the turbine as the wind speed increases,
- Reduce the mechanical stresses at high wind speeds,
- Keeps a simple and inexpensive construction, specific to conventional three – blades wind turbines
- Uses a simple mechanism to modify the equivalent number of blades of the turbine.

Class no.

2

RO.29.

Title EN

Arterial puncture device for arterial blood gas sampling from radial artery and method for using the device

Authors

Bogdan Mocan from Technical University of Cluj-Napoca
Mihaela Mocan from „Iuliu Hațieganu” University of Medicine and Pharmacy of Cluj-Napoca

Institution

Technical University of Cluj-Napoca

Patent no.

Patent application OSIM no. A/00475/13.07.2017

**Description
EN**

The invention relates to a device and to the method of using the device for performing arterial puncture in order to collect a blood sample from the radial artery. The device for performing the arterial puncture in order to collect a blood sample from the radial artery allows proper immobilisation of the patient's forearm, facilitates precise identification of the radial artery position even in the case of a reduced peripheral pulse, allows visualization of the subcutaneous area of the vein plane from the area under consideration to avoid their puncture, and maintain the needle orientation at a precise angle to the central horizontal plane of the patient's forearm. The method of using the arterial puncture device to collect a blood sample from the radial artery involves performing simple and clear steps to ensure a safe positive result.

The radial artery puncture is indicated for obtaining an arterial blood sample for blood gas analysis (partial oxygen

pressure, partial pressure of carbon dioxide) and EAB (pH, standard bicarbonate concentration, base deficiency). Information is essential to characterize the severity of the disease and the effectiveness of treatment in the patient with acute, severe respiratory pathology. Arterial blood analysis also allows the measurement of carbon monoxide and methaemoglobinemia in case of suspicion of carbon monoxide intoxication.

The difficulty of carrying out the radial artery blood sampling procedure manually is very high especially for resident doctors who have no experience in completing this technique. The developed device can be used successfully by experienced doctors as well as by less experienced doctors (eg. resident doctors) and increases the efficiency of the technique. The proposed device is simple, reliable and does not require special pre-use training or strict coordination with other medical services, it also has no side effects on the patient or on the doctor performing the procedure.

This technique (radial artery puncture) is part of the training curriculum of the resident doctors regardless of the specialty followed.

Class no.

4

RO.30.

Title EN

Manufacture process of multi-structural customized implantats made by am technologies

Authors

Leordean Vasile Dănuț, Radu Sever-Adrian, Cosma Sorin-Cosmin, Cuc Stanca, Vilău Cristian, Rusu Mircea-Aurelian-Antoni

Institution

Technical University of Cluj-Napoca

Patent no.

Patent application OSIM no. A 2017 00296

**Description
EN**

The invention is related to the development of a process (technology) for manufacturing customized implants, made of biocomposite material, reinforced with metallic structures made by SLM. The obtained implants of the multi-structure type (metal / biocomposite) are individualized for a patient and can prosthesis any area of the human bone system. It is based on CT data from which to extract the 3D model of the affected area. The final shape and the resistance structure (metal reinforcement) of the future implant it will result by using the CAD + FEA programs. The manufacture consists of two stages. The first uses two AM technologies - using

SLM the metal reinforcement is made and, by SLS and Vacuum Casting is manufactured the silicone rubber mould that will form the final implant. In the second stage - the reinforcement is inserted into the silicone mould and by means of casting/injection (depending on the material recipe) the final customised implant is made.

Fields of application: Medical applications, Medicine

Class no.

4

RO.31.

Title EN

Method for automatic tuning of the PID controllers parameters

Authors

Naşcu Ioan, Dărab Pompei Cosmin, Crişan Ruben Dan, Harja Gabriel

Institution

Technical University of Cluj-Napoca

Patent no.

Patent application OSIM no. A/01004/29.11.2017

**Description
EN**

This invention relates to a method for estimating the process model parameters and PID controller auto-tuning for the aeration process control in activated sludge wastewater treatment plants. The method is intended to be applied for the design of the dissolved oxygen control system in the aeration tank. The process is connected via the SCADA system to the supervisor system. At the supervisor level, a procedure for estimating the process model parameters and PID controller auto-tuning is implemented. The new values calculated for the tuning parameters are transmitted to the PID controller.

The Proportional - Integral - Derivative (PID) controllers are the most common controllers used in industry because of their remarkable effectiveness, simplicity of implementation and broad applicability. PID parameters tuning is the key issue in the design of PID controllers and most of the tuning processes are implemented manually resulting in difficulty and time consuming. This method allows plant identification and automatic tuning of PID controller parameters. It can provides data collection from the real process and computer simulation of designed control system.

Class no.

1

RO.32.**Title EN****Stand for study of tribocorrosion****Authors**

Vermeșan Horațiu, Chira Mihail

Institution**Technical University of Cluj-Napoca****Patent no.**

Patent application OSIM no. a 2014 00606

Description**EN**

The invention consists of an experimental stand for the determination of surfaces tribocorrosion. Tribocorrosion is the result of the synergistic action of friction and corrosion. The experimental stand for the study of tribocorrosion offers technological and building simplicity. It allows precise measurement of frictional force and other tribocorrosion parameters. It allows adjustment of working parameters, positioning and fixing of electrodes for the corrosion study. The stand is made of a platform on which two mechanisms are attached: a horizontal one, which performs an alternate linear motion and a vertical one, which applies a constant load on the counterpart, made of electrically non-conductive material, in spherical contact with the sample (the working electrode). The sample is mounted in an electrochemical cell in a corrosive environment and sealed with an adhesive or gasket so that the corrosive agent does not come into contact with the lower part of the sample. Corrosion parameters are measured in the electrochemical cell with three electrodes mounted in an adjustable holder attached to the electrochemical cell.

Tribocorrosion is a form of material degradation (wear, corrosion, etc.) subjected to combined mechanical action (friction, abrasion, erosion, etc.) and corrosive caused by the environment (chemical and / or electrochemical interaction). The synergistic action of tribocorrosion factors leads to surface degradation and hence loss of material, the result being superior to that obtained by simply summing up the individual degradation processes. The patent will be useful in determinations of tribocorrosion resistance of various machine parts which are working in both corrosive and wear environment. The results are easy to understand and compare.

Class no.

5

RO.33.	
Title EN	Chemical method for preparing epitaxial films of strontium-doped lanthanum manganite La_{0.66}Sr_{0.33}MnO₃ (LSMO)
Authors	Mircea NĂSUI, Traian PETRIȘOR Jr, Ramona Bianca MOȘ, Amalia MESAROȘ, Mihai Sebastian GABOR, Lelia CIONTEA, Traian PETRIȘOR
Institution	Technical University of Cluj-Napoca
Patent no.	Patent application OSIM no. A/00098/2015
Description EN	<p>The invention relates to a chemical method for preparing epitaxial films of strontium-doped lanthanum manganite La_{0.66}Sr_{0.33}MnO₃, meant to be used in magnetic field sensors. According to the invention, the method consists in preparing a precursor solution by mixing metal sources, such as lanthanum acetylacetonates, manganese and strontium acetate which are separately dissolved in propionic acid, the resulting precursor solution being then concentrated by vacuum distillation, up to a concentration of 1...2 M, after which it is deposited by centrifugation onto SrTiO₃ monocrystalline substrates, at rotary speeds of 4000 rpm, for 60 s, the raw films being further subjected to a one-stage heat treatment, in air, at a heating rate of 5 degrees C/min, up to the temperature of 500 degrees C and a heating rate of 10 degrees C/min, up to the temperature of 1100 degrees C, they being maintained at this temperature for 2 h, after which they are cooled down to the ambient temperature at a rate of 10 degrees C/min, the resulting films exhibiting an advanced orientation degree.</p> <p>Because of the large magnetoresistance effect and strong spin polarization at the fermi level, LSMO thin film can be used in magnetoresistive devices, such as magnetic random access memory and sensors. Furthermore, the La_{0.66}Sr_{0.33}MnO₃ (LSMO) thin films are considered to be excellent conductive buffer layers for superconducting coated conductors, especially when designed as a single buffer layer.</p>
Class no.	5

RO.34.**Title EN**

Device and method for precise remote synchronization of systems for astronomical observation

Authors

Radu Dănescu

Institution

Technical University of Cluj-Napoca

Patent no.

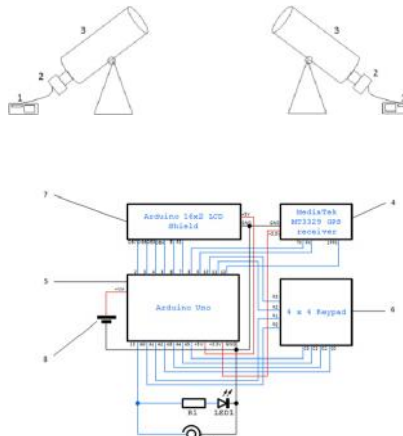
Patent application OSIM no. RO131751-A2

**Description
EN**

The invention relates to a system and a method for the remote synchronization of optical systems for sky observation, used for detecting objects on low, medium and high terrestrial orbits. The system, as claimed by the invention, comprises a releasing device (1) which consists of a two-channel GPS receiver (4), a classic one for reading global time and a very precise synchronization signal 1 PPS (Pulse Per Second), a microcontroller board (5), a matricial keyboard (6) available to the user and an LCD display screen (7), a telescope (3) provided with a photo camera (2) being connected to the device (1), in order for them to be released by the device (1) according to a previously loaded exposure software. The method, as claimed by the invention, consists of stages for preparing two devices (1) with an exposure software, for placing said devices in the places where the observations are intended to be carried out, for verifying the GPS signal and satellite synchronization, then making the devices (1) operate in the active mode, connecting the photo cameras (2) to the devices (1) and running the exposure software for capturing images from the telescopes (3).

Class no.

10



NATIONAL

RO.35.	
Title EN	The Effect of Recycled Blast Furnace Slag Waste on the Characteristics of Cement-based Mortars
Authors	Liliana Maria Nicula, Ofelia Corbu, Mihai Iliescu
Institution	Technical University of Cluj-Napoca, Faculty of Civil Engineering, Romania
Patent no.	-
Description EN	This paper focuses on a study regarding the use of waste in constructions: such as blast furnace slag from ironworks, as a by-product of the iron oxide reduction reactions by carbon monoxide resulting from coke burning.
	The slag is used in cement-based mortar mixtures under two forms: as granulated and ground slag powder under 63 µm and non-granulated slag as an 0/4 mm aggregate resulting from solid slag, processed in crushing equipment and then sorted according to the standards on mortar and concrete aggregates.
	At the global level, the necessity of reduction of non-renewable prime materials is very obvious. The use of recycled waste in constructions, in road infrastructure, such as slag waste, leads to decreasing the effect on the environment.
	The current study is in the preliminary phase of road concrete design mixture. This uses slag based waste, in order to reduce carbon print emitted during fabrication. Moreover, it reduces the consumption of prime non-renewable material, respectively of the mix-design aggregates that have been conducted.
Class no.	This paper analyzes the effect of blast furnace slag on the physical and mechanical properties of a new environmentally-friendly mortar.
	-
RO.36.	
Title EN	Mixed wooden-concrete piles: a solution for structures located near saltwater lakes
Authors	Ioana Tataru, Ofelia Corbu, Nicoleta Maria Ilieş, Ildiko Bucur
Institution	Technical University of Cluj-Napoca, Faculty of Civil Engineering
Patent no.	-

Description EN	<p>Nowadays, it is an imminent need to reduce the use of non-renewable natural resources and, at the same time, to minimize the negative impacts of waste production from the construction sector. As a result, the option of reusing and reintroducing materials in production cycles in order to form totally different products becomes more common day by day. Even if wood is a hugely capable civil engineering material, the area of untreated pile situated above ground water level is vulnerable. A proper solution for solving this problem could consist of using an already patented concrete that has in composition recycled glass aggregates and, moreover, has outstanding durability properties. This mixed piles structure can be a sustainable alternative benefiting from two commonly used materials and local resources.</p> <p>Application: structural piles, near saltwater lakes</p> <p>Advantages: long-living structure with a lifetime of minimum 100 years, eco-friendly materials, low energy consumption in manufacturing process, structural efficiency, without greenhouse gas emissions, minimum realization and maintenance cost, easy handling of materials etc.</p>
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Class no.

RO.37.	
Title EN	Sustainable mortars: New mortars containing cow dung sawdust, cow dung ash and fly ash
Authors	Houehanou Ernesto Cabral, Moga Ligia
Institution	Technical University of Cluj-Napoca
Description EN	<p>West African countries are generally facing a serious energy deficit. In this context, energy efficiency and thermal comfort through the valuation of eco-materials in buildings have become decisive factors for the improvement of the living environment and a sustainable development target. States use local materials as a development strategy and recommend their use in construction domain.</p> <p>Benin is a developing country in West Africa with a population of more than 10 million. Cow dung is a local material in Benin. Its use as building material is a known practice for the many benefits it presents. These advantages are functional, mechanical, thermal and ecological. Based on the published data, it is possible to obtain a satisfactory mechanical and thermal performance related to the use of cow dung in construction materials. Nevertheless, although cow dung is widely used in traditional constructions in Benin, the material is not scientifically characterized and not valued enough, for lack of scientifically proven results on</p>

their effectiveness and these probable advantages. Thus, the project is aimed on developing new sustainable mortars that use cow dung and fly ash. The physico-chemical, mechanical and thermal properties of the developed mortars were examined in comparison to reference mortars used in current practice. Figure 1 give the results obtained for the thermal analysis of the mortars, showing a tendency of an increased thermal performance of the developed mortars (i.e. decrease of the thermal conductivity).

The postdoc project is a “Eugen Ionescu” scholarship funded by the Francophone University Association.

Class no.

Innovative Research - 7. Buildings and Materials

RO.38.

Title EN

Carbon Dioxide Removal System from Flue Gases

Authors

Vasile Hotea, Gabriel Badescu, Juhasz Jozsef

Institution

Technical University of Cluj-Napoca, North University Center of Baia Mare

Patent no.

127080 / 2016

**Description
EN**

The patent relates to a process for the removal of carbon dioxide from flue gases. Installation according to the invention consists mainly of a centrifugal scrubber, a storage tank and preparing a solution of sodium carbonate and potassium sprayed through the nozzle of special design, a condenser for the vapor stream rich in CO₂, desorption column with the role of the solvent regenerator and a condenser where the vapor stream rich in CO₂ desorption column is condensed, dried in the steam turbine, and stored.

Class no.

1. Environment -Pollution Control



RO.39.**Title EN**

The Plant for Sulfur Dioxide and Carbon Dioxide Capture in the Flue Gases

Authors

Vasile Hotea

Institution

Technical University of Cluj-Napoca, North University Center of Baia Mare

Patent no.

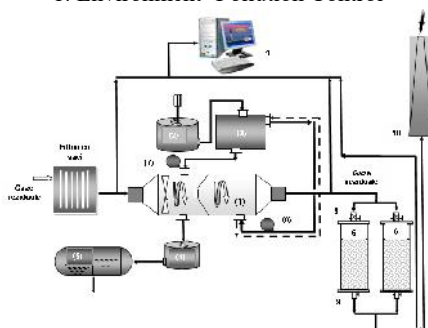
RO 125756 B1/ 2012

Description EN

The patent relates to a plant on capture of sulfur dioxide and carbon dioxide in the flue gases. According to the invention that gases is are treated in a first step with sodium carbonate solution for SO₂ absorption with chemical reaction followed by CO₂ adsorption zeolitic tuff. The plant according to the patent consists essentially of a centrifugal scrubber (1) buffer solution of Na₂CO₃ (2), filter zeolite (6) and a rotating crystal tilt (5).

Class no.

1. Environment -Pollution Control

**RO.40.****Title EN**

Installation of a Continuously Supply of Cold Materials Processed by Melting

Authors

Prof.dr.eng. Vasile Hotea

Institution

Technical University of Cluj-Napoca, North University Center of Baia Mare

Patent no.

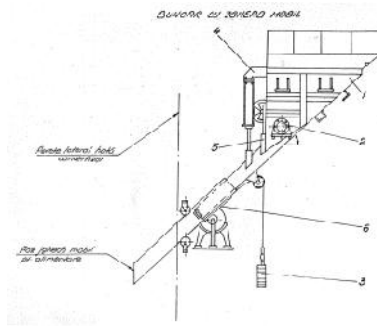
RO 122230 B1 / 2009

Description EN

The patent relates to a installation of a continuously supply of cold materials (coke, slag, funds) in the melting process in cylidrical rotary furnaces, which allows to improve the thermal regime of the melting process, reduces cycle time and environmental pollution.

Class no.

1-6

**RO.41.****Title EN**

PROCESS OF LEAD RECOVERY FROM LEAD SPENT PASTE

Authors

Prof.dr.eng. Vasile Hotea

Institution

Technical University of Cluj-Napoca, North University Center of Baia Mare

Patent no.

RO 119711 B1 / 2005

**Description
EN**

The patent relates to a process of lead recovery from used accumulators sulphated paste by treating with an alkaline solution, at weight liquid-solid ratio of 6:1 at 80 °C. The resulted solution is subjected to re-precipitation with sulphuric acid, and resulted $PbSO_4$ is dissolved in ammoniacal environment, at 60°C and at weight liquid-solid ratio of 3:1.

Class no.

1. Environment -Pollution Control
2. Mechanical Engineering - Metallurgy

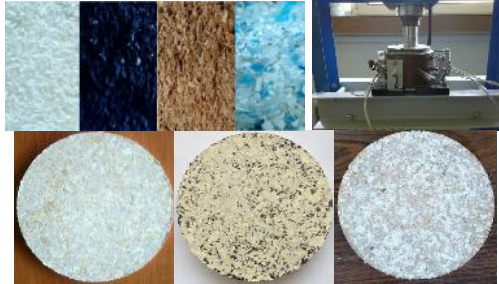


RO.42.	
Title EN	Recovery of sawdust, recycled rubber particles and textile waste by making composite materials
Authors	Ancuța-Elena Tiuc, Anca Mădălina Belțan, Ovidiu Nemeș, Horațiu Vermeșan
Institution	Technical University of Cluj-Napoca Research focuses on the use of alternative raw materials and on finding innovative solutions to reduce noise in the context of issues related to environment, is of great interest and great actuality. Negative effects of pollution intensified research on acoustic materials based on renewable resources, which can lead to viable alternatives to conventional materials for current and future applications. Composite materials with fir sawdust, used rubber granules and textile waste; Aracet (polyvinyl acetate) and hydrated lime as a binding material, were used in this research. Materials acoustic absorption coefficient was found using the impedance tube method.
Description EN	From the analysis of the experimental results, it can be observed that for the materials obtained in this research, the acoustic absorption coefficient value increased with the increase of the fir woods percentage used. The materials obtained using polyvinyl acetate as binder have better sound absorption properties than those obtained with lime-hydrated lime as binder. The presence of rubber granules in the material composition leads to an improvement in the sound absorbing properties in the 800-1600 Hz frequency range. The material obtained from 25% textiles, 75% fir wood, and Polyvinyl acetate as binder has the best acoustic absorption coefficient, of 0.97 at the frequency of 1500 Hz.
Class no.	7
RO.43.	
Title EN	Ecological method for recyclable wastes valorization
Authors	Mihai Andrei Platon, ing. Mihaela ing. Ștef, Cristiana Popa, Șl.dr.ing. Ancuța-Elena Tiuc, Conf.dr.ing. Ovidiu Nemeș
Institution	Technical University of Cluj-Napoca In this project, research is upheld for developing innovative technologies for reuse and keep, if possible, in economic chain, a material.
Description EN	The aim of this project is to obtain and test a composite

EUROINVENT 2018

material based on fiberglass, rubber, wood and plastic waste. Three mixes are studied: fiberglass with PMMA, fiberglass with PMMA and rubber granules or sawdust.

The obtained composite materials are suitable for board production, with improved features, compared with other products on the market.



Class no.

7

**“Iuliu Hațieganu” University of Medicine and Pharmacy
Cluj-Napoca**

RO.44.	
Title EN	Clinical efficacy of a mucoadhesive nanoparticulate gel based on antibiotics, anti-inflammatory drugs and anthocyanins used in the periodontal treatment
Authors	Boșca Adina Bianca ¹ , Dinte Elena ² , Ilea Aranka ³ , Muntean Dana ² , Tomuta Ioan ² , Hangan Dana ⁴ , Pârvu Alina Elena ⁵ , Miha Carmen Mihaela ¹ , Melincovici Carmen ¹ , Șovrea Alina ¹ , Constantin Anne Marie ¹ , Băbțan Anida ³ , Petrescu Nausica ³ , Câmpian Radu Septimiu ³
Institution	University of Medicine and Pharmacy „Iuliu Hațieganu” Cluj-Napoca ¹ Department of Histology, Faculty of Medicine, UMPH, Cluj-Napoca, Romania ² Department of Pharmaceutical Technology and Biopharmaceutics, Faculty of Pharmacy, UMPH, Cluj-Napoca, Romania ³ Department of Oral Rehabilitation, Oral Health and Dental Office Management, Faculty of Dental Medicine, UMPH, Cluj-Napoca, Romania ⁴ Department of Pharmacognosy, Faculty of Pharmacy, UMPH, Cluj-Napoca, Romania ⁵ Department of Physiopathology, Faculty of Medicine, UMPH, Cluj-Napoca, Romania
Description EN	<p>Periodontitis has become a major health problem due to the irreversible periodontal destructions and the association with systemic diseases. Conventional periodontal treatment implies the elimination of the periodontopathogenic microorganisms. Novel products designed for the local delivery of active pharmaceutical ingredients could be used as an adjuvant, for the enhancement of the conventional treatment.</p> <p>The main challenge in manufacturing preparations applied in periodontal pockets is to obtain the adequate mucoadhesivity (the maintenance of the drug at the site of application) and to ensure a prolonged release of the active substances.</p> <p>The aim of the research is to investigate the therapeutic effect of a nanoparticulate mucoadhesive periodontal gel, based on the mixture of thermosensitive polymers and bioadhesive polymers that ensures the prolonged release of loaded antibiotics, anti-inflammatory drugs and anthocyanins designed for the</p>

periodontal treatment. The gel contains nanostructures that increase the absorption of active principles and ensure their protection. The clinical efficacy of the novel product is assessed by the capacity to modulate the serum levels of 3NT (trinitrotyrosine), MMP-9 (Matrix Metalloproteinase-9), TNF- α (Tumor Necrosis Factor alpha) and the nitro-oxidative stress markers: TAC (total antioxidant capacity), TOS (total oxidant status) and NO (nitric oxide).

Applications. Advantages.

Topical application of nanoparticulate mucoadhesive gel directly into the periodontal pocket has several advantages. Firstly, the controlled release of the active ingredients maintains, for extended periods of time, an effective dose at the site of application. Secondly, the association of antibiotics, anti-inflammatory drugs and anthocyanins counteracts several pathogenic mechanisms implicated in periodontitis: infection, inflammation and oxidative stress. Lastly, the local application prevents the adverse effects of systemic administration of the therapeutic substances.

Class no.

Innovative research

RO.45.

Title EN

Real-time microscopy on 3D printed structures - method for diagnosis and therapeutic intervention useful in tissue engineering

Authors

Ilea Aranka¹, Boşca Adina Bianca¹, Barabás Réka², Agachi Paul-Şerban², Crişan Titus³, Crişan Septimiu³, Crişan Maria¹, Băbţan Anida Maria¹, Petrescu Nausica¹, Buhăţel Dan¹, Ionel Anca¹, Soriţău Olga⁴, Jurj Anca⁵, Câmpian Radu Septimiu¹

¹**University of Medicine and Pharmacy „Iuliu Haţieganu” Cluj-Napoca**

²**Babeş-Bolyai University**

Institution

³**Technical University of Cluj-Napoca**

⁴**Oncology Institute "Prof. Dr. Ion Chiricuta" Cluj-Napoca**

⁵**Research Center for Functional Genomic, Biomedicine and Translational Medicine Cluj-Napoca**

**Description
EN**

Tissue regeneration *in vivo* is best evidenced by histological examinations, but this involves sampling in newly formed tissues and has the disadvantage of not providing information about the dynamics of biological processes. Thus, it is necessary to implement innovative diagnostic tools in order to monitor

tissue regeneration processes by real-time microscopy, to detect the early adverse evolutions and pathological processes, and the possibility of local therapeutic intervention in early stages. The diagnosis method refers to: (1) the use an anatomic scaffold obtained by 3D printing and containing a viewing hole for observing the processes running in the tissues deepness, and (2) a device for illumination, acquisition and processing of images with optical fiber for real-time histology investigations.

(1) Acquisition of the structural deficiency by CBCT/CT/ MRI investigation and sending it as a ".stl" file to the 3D tissue bioprinter. The defect is grafted with 3D printed bionanocomposite scaffold, seeded or not with adult mesenchymal stem cells and contain: a mesh network that allows the migration of the resident stem cells from surrounding tissues, respectively those seeded on the scaffold; controlled drug delivery systems for various pharmaceutical products; viewing hole (with multiple side pockets) pointed towards to base of grafted structure.

(2) Photogrammetric analysis of form, color, composition, contrast and the others parameters, from an image or a grip of images taken from the area of interest, assessment of electrical permittivity and/or conductivity, electrical capacitance measurement using special capacitor systems and oscillating microcircuits.

Applications. Advantages.

Minimally invasive live histology allows the acquisition of continuous information in real time, thus increasing the accuracy of diagnosis, assessment of biological processes in dynamics or observing the aspects which not so far elucidated. Possibility of local administration of pharmaceutical products, at the appropriate time, titration of doses according to the results obtained in real time, in the biochemical stage of the disease, before the occurrence of the symptomatology.

This study was supported partially by the COFUND-ERA-HDHL ERANET Project, European and International Cooperation - Subprogram 3.2 - Horizon 2020, PNCDI III Program - Biomarkers for Nutrition and Health –“Innovative technological approaches for validation of salivary AGEs as novel biomarkers in evaluation of risk factors in diet-related diseases”, grant no 25/1.09.2017.

RO.46.	
Title EN	Novel Purification of Saponins by Precipitation in Demulsified Emulsion
Authors	Obasi Titus Chukwuemeka, Prof. Dr. Oprean Radu
Institution	University of Medicine and Pharmacy „Iuliu Hațieganu” Cluj-Napoca
Patent no.	OSIM/a201700270/08.05.2017
Description EN	The protective barrier system of emulsions and colloids are formed by automatic self-assembly of surfactant molecules around the dispersed droplets, for purpose of stability. Based on this, we developed a new strategy for production and purification of bioactive saponins from a multi-constituent mixture of plant extract, by systematically entrapping their molecules in emulsion's monolayer architecture, paving way for its recovery in pure and original form through demulsification process. Owing to robustness of this process, 90% purity was achieved with total recovery of 94% cumulative yield, obtained within the lowest energy, time and material costs. Our product possesses special anticancer activity.
Class no.	4 Medicine – Health Care-Cosmetics
RO.47.	
Title EN	Materials and fabrication method of fiber reinforced composite custom-made cranio-facial implants
Authors	Alexandru Horațiu Rotar, Cristina Prejmorean, Nicolae Bâlc, Mădălina Anca Lazar, Grigore Băciuț, Mărioara Moldovan, Doina Prodan, Paul Bere
Institution	Universitatea de Medicină și Farmacie “Iuliu Hațieganu”, Universitatea "Babeș-Bolyai", Universitatea Tehnică Cluj-Napoca
Patent	<i>Patent application No A 00607/2017</i>
Description EN	The object of the present invention is the elaboration of <i>novel compositions of impregnating resins</i> composed of: mixtures of (di) methacrylic monomers, polymethylmethacrylate, hydroxyapatite as a viscosity regulating element and as nanofiller with increased bioactivity and biocompatibility, Zirconium dioxide as radiopaque element and gentamicin for ensuring the antimicrobial effect and respectively of a <i>new composition of composite materials</i> based on the new impregnating resins and two-directional E glass fibers. The invention also refers to a new <i>method of fabrication-3D indirect printing</i> , of cranio-facial personalised implants from the newly developed fiber reinforced composites.
Class no.	4

University of Craiova

RO.48.

Title EN

Contributions on the Design and Optimization of a Modular-Adaptive Knee Active Orthosis

Authors

Alin Petcu, Ph.D student; Daniela Tarnita, prof. coordinator,

Institution

University of Craiova

Patent no.

-

The aim of this research consists on the design of a new modular-adaptive knee active orthosis (AKO) with reduced dimensions and weight. A set of conditions were imposed taking into account the patients' requirements in order to elaborate the design of the proposed active orthosis. The virtual prototyping was realized using SolidWorks software. Starting from existing orthosis models, was designed the virtual model of the proposed orthosis. A very important role in this study is held by SolidWorks software which is a dedicated CAD software, useful in developing new products, such as implants, prosthesis, orthosis and other devices for the rehabilitation of human movements.

Description
EN

In order to meet the current requirements, both with regard to the orthosis design and its functionality, it is necessary to respect some important conditions:

- Reduced gauge dimensions; - Modularity; - Anthropometric adaptability; - Ensuring a continuous flexion movement, without shocks or discontinuities; - Attenuation of shocks at the end of the stroke; - Safety in operation.

Besides the virtual prototyping the characteristics and the functionality of the orthosis are presented.

For future work we'll propose to use the parameterized virtual models of the orthotic device to perform changes in their shapes and dimensions in order to optimize the orthotic device and improve the range of movement and, generally, the biomechanics of the affected knee.

Class no.

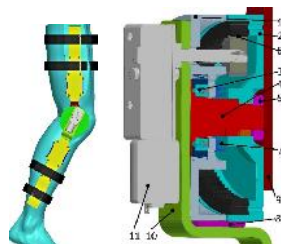


Fig.1. Virtual model of the Orthotic device

Applications: Knee active orthosis, knee rehabilitation

Advantages: Optimizing of the knee orthosis, Improving the knee rehabilitation and the knee biomechanics

„Alexandru Ioan Cuza” University of Iasi

RO.49.

Title EN	Biometric and morphologic changes of fingerprints characteristics under the influence of growth and development of the living substrate
Authors	V.Sirbu, M. Adascalitei, A. Negru, V. Moraru
Institution	“A.I. Cuza” University, Iasi, Romania
Patent	-
Description EN	Digital fingerprints are the traces of fingers on a surface and serve to identify the author of a crime. This work demonstrates the influence of the living substrate on the fingerprints and their biometric and morphological changes under the influence of growth and development. We used fingerprints taken from the leaves of different plants as Begonia sp. and Hyacinthus sp .. The fingerprints deposited on the leaves were observed during the growing period, scanned and measured. Leaves of the observed plants have different morphology and nervation, growing equal or unequal, leading to changes in the initial biometric and morphological characteristics of the fingerprints. By knowing this data, it can be appreciated how digital fingerprints have been modified as soon as necessary corrections are made from the people studying them.
Class	Innovative research

RO.50.

Title EN	Assessing sustainable development of the Romanian listed companies based on hierarchical fuzzy logic
Authors	Ioan-Bogdan ROBU ¹ , Ionut Viorel HERGHILIGIU ² , Costel ISTRATE ¹ , Marius PISLARU ²
Institution	¹ „Alexandru Ioan Cuza” University of Iasi ² „Gheorghe Asachi” Technical University of Iasi
Description EN	During the last decade, companies were encouraged by United Nations (UN) members’ governments to adopt the principles of sustainable development in their corporate governance act. The use of these principles leads companies to achieve some objectives regarding the environment protection, social equity and economic prosperity. The

purpose of this study is to analyze and assess the influence of some environmental, social and economic factors on the sustainable development that is quantified based on the ration between market value and book value of each company. The factors were selected from the literature and customized for the Romanian business context. To assess the influence of the selected factors on the sustainable development we proposed the hierarchical fuzzy logic using the following steps: firstly we normalized the proposed factors for each dimension and we established the membership function for each factor; secondly, we constructed the knowledge base rules; thirdly, we obtain the fuzzy values and in the end we perform defuzzification. In this case we obtained the distribution for the sustainable development index, based on the distribution of the proposed factors. Our research results could be useful to all stakeholders to better control the main factors' influence on the sustainable development.

Class Innovative research

RO.51.

Title EN

Assessing the Current Urban and Periurban Environmental Conditions of Iasi, City – Romania, with Implications in Conservation State for Buildings, Historical Sites and Architectural Heritage.

Authors

Vasile Pelin, Oana Rusu, Marius Mihai Cazacu, Ion Sandu, Silviu Gurlui, Irina Radinschi, Andrei Victor Sandu, Ioan Gabriel Sandu

Institution

**Alexandru Ioan Cuza University of Iasi
Gheorghe Asachi Technical University of Iasi**

**Description
EN**

The climate changes, frequently reported over the last decades, needs a continuum attention of how a series of limestone geomaterials (intensively locally used) can be affected by reacting with environmental pollution resulting the deterioration and degradation of stone built surfaces. The apparent colorimetric changes represent a preliminary evaluation of the air pollution impact on these lithic materials. Additionally, the aim of the paper is to highlight the way in which atmospheric pollution works in urban traffic intensities, compared to a series of periurban conditions in the city of Iasi - Romania, at the same period and the same weather.

RO.52.**Title EN**

Preliminary study on the evolution of *Calliphora* sp. (Diptera: Calliphoridae) used as reference in forensic entomology

Authors

Cristian MANEA (AMARIEI), Vasile SÎRBU, Ion SANDU

Institution

Alexandru Ioan Cuza University of Iasi

**Description
EN**

Necrophagous insects are indicators of corpse decay. The analyses of their development stages give us indications on the degree of decay of corpses and contribute to the determination of post-mortem interval. The differences in structure, biochemical composition and nutritive capacity of the cadaveric substratum, can impair the duration of the developmental stages and dimensions of the organisms that metamorphose. This work tackles the study of development, in laboratory conditions, of *Calliphora* sp., in correlation with different nutritive substratas (from areas of the corpse strongly affected by the incipient attack of Diptera), in order to obtain preliminary data, aiming to determine the post-mortem interval.

Key words: corpse substratum, tissue type, *Calliphora* sp., forensic entomology, metamorphosis

Class

“Gheorghe Asachi” Technical University of Iasi

RO.53.

Title EN

METHOD FOR SELECTIVE SEPARATION OF CITRIC ACID FROM FERMENTATION BROTHS

Authors

Dan Cașcaval¹, Alexandra Tucaliuc¹, Alexandra Cristina Blaga¹, Anca Irina Galaction²

Institution

¹“Gheorghe Asachi” Technical University of Iasi

²“Grigore T. Popa” University of Medicine and Pharmacy of Iasi

Patent No.

Patent RO 119629 B1/2005

Description EN

Citric acid is one of the widely used carboxylic acids, having multiple applications in chemical, pharmaceutical, food and cosmetic industries. This compound is mainly obtained through a fermentation process by *Aspergillus niger* cultivated on molasses. Due to the presence in the final broth of other carboxylic acids as secondary metabolic products, especially malic and succinic acids, the separation and purification technology of citric acid is quite complicated. Thus, the citric acid represents about 80 - 95% from the total amount of organic acids in the broth at the end of fermentation, its concentration being of 50 g/L. The rest are secondary acids, their concentration reaching 4 g/L.

The patent presents a new method for selective separation of carboxylic acids (among them the citric acid being the most important) from citric fermentation broths. The method consists on selective pertraction (extraction and transport through liquid membranes) with Amberlite LA-2 and leads to the increasing of the separation efficiency, decreasing of the required steps number and, implicitly, reducing of the separation cost.

Class no.

9

RO.54.

Title EN

METHOD FOR SELECTIVE SEPARATION OF BENZYL METHYLAMINE

Authors

Dan Cașcaval¹, Lenuța Kloetzer¹, Alexandra Cristina Blaga¹, Roxana Ilica¹, Anca-Irina Galaction²

Institution

¹“Gheorghe Asachi” Technical University of Iași

²“Grigore T. Popa” University of Medicine and Pharmacy of Iași

Patent No.

Patent request A/00701/19.09.2014

Description EN	<p>Benzylmethylamine represents a key building block used for pharmaceutical and cosmetic compounds, and also in proteomics and genomics research field. The most efficient method for benzylmethylamine production is represented by enzymatic process using transaminases which allow the production of (S) - benzylmethylamine by direct asymmetric synthesis from pro-chiral ketones or by kinetic resolution of racemic amines. The main drawback of the applied processes for separation of benzylmethylamine is that they do not allow the selective separation of benzylmethylamine from enzymatic environments due to the co-extraction of other components present in the medium.</p> <p>The purpose of the invention is to apply an original method for selective separation of benzylmethylamine by using an organic phase composed by n-heptane and 20 g/l di(2-ethylhexyl)phosphoric acid. Benzylmethylamine is further reextracted with a solution of hydrochloric acid. The yield obtained for benzylmethylamine separation from aqueous phase was 97-98.5 %, highlighting the increase of selective separation efficiency, and, implicitly, the decrease of the separation cost.</p>
Class no.	9

RO.55.

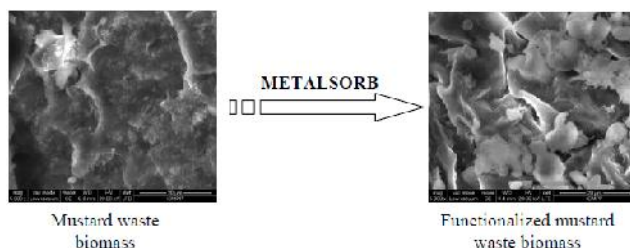
Title EN	A new ecological biosorbent based on waste biomass with applications in environmental remediation
Authors	Laura Bulgariu ¹ , Lăcrămioara Nemeş (Negrilă) ^{1,2} , Anca Mihaela Mocanu ¹ , Dumitru Bulgariu ^{3,4} , Diana Felicia Loghin ⁵
Institution	<p>¹Technical University Gheorghe Asachi of Iasi, Faculty of Chemical Engineering and Environmental Protection "Cristofor Simionescu", Iaşi, Romania</p> <p>² SC Electra-PCB Company, Iaşi, Romania</p> <p>³Al. I. Cuza University of Iaşi, Faculty of Geography and Geology, Iaşi, Romania</p> <p>⁴Romanian Academy, Filial of Iaşi, Branch of Geography, Iaşi, Romania</p> <p>⁵Petru Poni Institute of Macromolecular Chemistry, Iaşi, Romania</p>
Description EN	In order to make the biosorption process more suitable for industrial application, mustard waste biomass (a low-cost waste, resulted after oil extraction) was functionalized with METALSORB, which is a precipitation agent used in industrial

wastewater treatment, and used for the removal of some heavy metals (Pb(II), Cu(II) and Co(II) ions) from aqueous solution. The optimal experimental conditions for the functionalization of waste biomass were selected as being: a mixing ratio METALSORB: mustard waste biomass of $0.2 \text{ mL} \cdot \text{g}^{-1}$ and a temperature of 30°C . After functionalization, the biosorption capacity of obtained biosorbent has increased with 185 % for Pb(II) ions, 124 % for Cu(II) ions and 116 % for Co(II) ions, respectively, in comparison with un-functionalized biosorbent. This significantly increase of the biosorption capacity is mainly determined by the presence on its surface of new functional thiol groups, which enhances the affinity of biosorbent towards heavy metal ions from aqueous solution. The exhausted biosorbent can be easily regenerated with 0.1 M HNO_3 solution, and the retained heavy metal ions can be quantitatively recovered. The applicability of obtained functionalized biosorbent for heavy metals removal was tested using wastewater samples from a local printing circuit boards company. The quality characteristics of treated wastewater sample and some economic considerations, indicates the potential of functionalized biosorbent as a suitable alternative for industrial applications.

Acknowledgement: Financial support for the studies was provided by the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-III-P4-ID-PCE-2016-0500.

Class no.

Innovative Research



RO.56.

Title EN

Fractal design solutions for EMS integration in order to improve business performance

Authors

Ionut Viorel HERGHILIGIU¹, Luminita Mihaela LUPU¹, Ioan-Bogdan ROBU², Marius Pislaru¹

Institution

¹„Gheorghe Asachi” Technical University of Iasi

NATIONAL

² „Alexandru Ioan Cuza” University of Iasi

“Today, the environment is on the agenda of almost everyone – business, government and society at large” (Bryden A. – ISO Secretary-General). Likewise ISO 14001 Environmental management system (EMS) is the management tool that enables an organization to approach completely and effectively the sustainable development.

Description
EN

ISO 14001 EMS have a significant positive impact on the businesses economic performance. However in the literature few articles try to explain better the relationship between ISO 14001 EMS and performance. Likewise the ISO 14001 EMS literature neglected this organizational phenomenon of integration (internalization).

Consequently to substantially improve the effectiveness/ efficiency of this organizational system (EMS) a “new philosophy” must be developed - the Fractal one.

Therefore this research project proposal aims to develop an innovative theoretical framework based on the Fractal philosophy principles that can increase the dynamic quality of EMS integration (institutionalization/ absorption) in order to improve business performance.

Class no.

RO.57.

Title EN

Eco-intelligent system for environmental sustainability assessment based on soft-computing techniques integrated framework. INTEL-ECO

Authors

Marius Pîslaru, Ionuț-Viorel Herghiligiu, Ioan-Bogdan Bogdan

Institution

"Gheorghe Asachi" Technical University of Iași

Description
EN

The human behavior has a major influence over environmental degradation, and the solutions to the problems regarding climate change, pollution, etc. imply adopting a responsible attitude and establishing clear objectives and strategies aiming at raising awareness over human intervention on the environment. INTEL-ECO through the proposed research theme approaches a current issue which is a premiere at national scientific community and global scale regarding an ecosystem assessment (taking into account changes in the frequency and intensity of weather and climate events) using soft computing techniques. The projected experimental model is the end result of a collective effort of multiple interdisciplinary research activities which will encompass the systematization, the association, the analysis and the adaptation

of existing knowledge applied in various scientific areas such as computational science, biology, chemistry, engineering, environmental psychology, environmental management. As a consequence, the goal of this research is to develop an integrated framework for soft-computing techniques used to generate and evaluate ecological scenarios based on data provided by environmental bodies, in order to propose concerted actions aimed at improving ecological resilience and at maximizing the benefits provided by the environmental policies to society and economy, respecting the ecological limits of the ecosystem. The research theme originality consists in developing an integrated framework that combines the advantages provided by different computational techniques in order to develop specific solutions to support innovative policies for environmental sustainability management.

Class no.

RO.58.

Title EN

Modeling of CO₂ absorption process in activated solutions

Authors

Elisabeta HULTUANA, Gabriela CIOBANU, Igor CRETESCU, Liliana LAZAR, Ramona Elena TATARU-FARMUS, Maria HARJA*

Institution

“Gheorghe Asachi” Technical University of Iasi, Blvd. Mangeron, no. 73, 700050, Iasi, Romania

General Objectives:

- Establish the mathematical models;
- Experimental determinations to determine the data required for mathematical model;
- Experimental laboratory and pilot scale measurements for CO₂ absorption from flue gases;
- Validation of a mathematical model.

Specific objectives:

- Analyzing the absorption process;
- Study of the influence of different parameters on the absorption degree and the enhancement factor;
- Mathematical modeling of process and reactor.

**Description
EN**

Novelty and originality of research:

- New knowledge about the removal of flue gases;
- Mathematical modeling of the reactor with determination of influence of different parameters: pressure, activators, temperature, concentration of the initial solution etc.;
- Validation of the mathematical model of the reactor.

Harja M., Ciobanu G., Rusu L., Lazar L., (2018). The enhancement factor approach for chemisorption process, Env. Eng.Manag. J., 17(4).

RO.59.**Title EN**

Synthesis, characterization and photocatalytic activity of new oxidic nanostructures

Authors

Amalia Maria SESCU¹, Lidia FAVIER², Doina LUTIC³, Gabriela CIOBANU¹, Maria HARJA^{1*}

Institution

¹“Gheorghe Asachi” Technical University of Iasi, Blvd. Mangeron, no. 73, 700050, Iasi, Romania

²Ecole Nationale Supérieure de Chimie de Rennes, France

³Alexandru Ioan Cuza University of Iasi, Blvd. Carol I, No 11, 700506, Iasi, Romania

The general objectives:

- ☐ Synthesis of new photocatalysts;
- ☐ Doping of nanostructures with transition metal and characterization of synthesized materials;
- ☐ analysis of the use of new materials in processes of degradation of organic compounds;

Specific objectives:**Description
EN**

- ☐ analysis of the photocatalytic process;
- ☐ study of the influence of different parameters;
- ☐ kinetic modeling of the process.

The **novelty and originality** of the research are: optimize the synthesis conditions in order to improve the properties; making comparative photocatalysis studies on synthesized materials and TiO₂ Degusa.

Favier L., Harja M., Simion A. I., Rusu L., Kadmi Y., Pacala M L., Bouzaza A. (2016). Advanced Oxidation Process for the Removal of Chlorinated Phenols in Aqueous Suspensions. J.Env.Prot. Ecol., 17(3), 1132-1141.

Class no.**RO.60.****Title EN**

Contributions to process modeling in solid fluid systems

Authors

Loredana LITU, Gabriela CIOBANU, Olga KOTOVA*, Maria HARJA

Institution

“Gheorghe Asachi” Technical University of Iasi, Blvd. Mangeron, no. 73, 700050, Iași, Romania

*Institute of Geology Komi SCUB RAS, Syktyvkar, Russia

**Description
EN****General Objectives:**

- Study of synthesis of new fly ash flocculants;
- Modification of ash into new inorganic polymer materials;
- Characterization of the obtained materials;

- Establishing optimal transformation conditions;
- Study of the use of new materials in combined processes: flocculation-coagulation.

Specific objectives:

- analysis of the flocculation-coagulation process;
- study of the influence of different parameters;
- kinetic and mathematical modeling of the process.

Novelty and originality:

- Obtaining new knowledge on the synthesis of new ash-based materials;
- Establishing optimal parameters;
- Making comparative studies on flocculation-coagulation.

Noli F., Buema G., Misaelides P., Harja M., New materials synthesized from ash under moderate conditions for removal of toxic and radioactive metals, J. Radioanal. Nuclear Chem., 303, 3, 2303-2311, 2015.

Class no.

RO.61.

Title EN

“Mobile youth peer mentoring application to facilitate distance mentoring guidance for youth with disabilities - MyPeerMentor”

Authors

Gabriela CIOBANU¹, Maria HARJA¹, Florin Alexandru LUCA¹, Seyhan FIRAT², Bülent ELBASAN², Alper GÜZEL², Adem TEKEREK², Petya GRUDEVA³

Institution

¹„Gheorghe Asachi” Technical University, Iasi, Romania; ²Gazi University, Ankara, Turkey; ³Zgura-M Ltd., Plovdiv, Bulgaria.

Patent

The MyPeerMentor project, no. 2017-1-TR01-KA205-039752, is an European Erasmus + Strategic partnership project with partners from Turkey, Bulgaria and Romania. This project has the following aims: Developing a novel youth peer mentoring pedagogy which will be used by youth workers to train youth peer mentors to support of youth with disabilities; Developing training tools for youth mentors and youth mentees with disabilities; Developing a new mobile app (Android) for implementation of distance guidance; Provision of innovative type of guidance matching the knowledge and understanding during the mentoring process of youth with disabilities and their peer mentors guidance. The target groups of the project are: youth mentors, youth with disabilities, youth career counsellors (even on non-formal base at NGOs and students' councils).

**Description
EN**

RO.62.**Title EN****CELL –INSTRUCTIVE AZOMATERIALS****Authors**Cristina-Maria Herghilgiu^a, Irina Cârlescu, Elena-Luiza Epure^a, Norica Nichita^b, Dan Scutaru^a, Nicolae Hurduc^a**Institution**^a**“Gheorghe Asachi” Technical University of Iași, Faculty of Chemical Engineering and Environmental Protection, Romania**^b**Institute of Biochemistry of the Romanian Academy, Department of Viral Glycoproteins, Bucharest, Romania****Description
EN**

Cell instructive materials are biomaterials capable to direct control and evaluation of interactions between cells and surrounding environment. Such advanced biomaterials could have applications in tissue engineering, stem cell biology, diagnosis and other domains. The context of thoroughly understanding the cell-material crosstalk is very complex and is necessary to control and correlate a series of parameters. In these sense we developed biomaterials based on polysiloxanes modified with azo-derivates [1, 2]. Cell fate and development is controlled by changing chemical structure of azo-polymer, geometrical characteristics of the imprinted surface and also thickness of the azo-polymeric film. We have succeeded to obtain cell behavioral patterns by controlling and modifying the parameters mentioned above.

Class no.**RO.63.****Title EN****UNDERSTANDING OF PHOTOISOMERISATION
PROCESS OF AZO-POLYSILOXANES BY
MOLECULAR MODELING STUDIES****Authors**

Elena-Luiza Epure, Simona Ciobotarescu, Cristina-Maria Herghilgiu, Nicolae Hurduc

Institution**“Gheorghe Asachi” Technical University of Iași, Faculty of Chemical Engineering and Environmental Protection, Romania****Patent no.****Description
EN**

Azo-polysiloxanes are flexible macromolecules having photoresponsive properties. Trans-cis-trans isomerization of azobenzene groups, linked to the side chains of polymers, induce ample spatial re-organization of the mater. Due to this property, the mass transportation process [1 - 3] takes place with the formation of surface relief gratings (SRG) [4].

In order to have a coherent picture of how molecular assemblies are formed, we studied the mass properties of polymers by theoretical methods with Materials Studio 4.0 software. We used bead-spring models for designing the polymer molecules (molecular dynamics). The potential energy of the systems is represented as a sum of pair wise interactions between beads. Changing in single chain conformation and spatial arrangements by photoisomerization of polymers was obtained by molecular modeling.

Class no.

RO.64.

Title EN

ORTHOSIS-TYPE KNITTED PRODUCT WITH KNIT-INCORPORATED ELECTRODES FOR LIMBS REHABILITATION IN PERSONS WITH NEUROMOTOR IMPAIRMENT

Authors

Crețu Viorica; Nicoleta-Laura Macovei; *Marian-Silviu Poboroniuc*; Antonela Curteza, Maria Buzdugan; Marcela Radu; Sabin Tudor Radu, Gabriela Mirea; Tania Cernea

Institution

“Gheorghe Asachi” Technical University of Iasi/ SC Magnum SX SRL, Ro-Galu SRL

Patent no.

RO131708-A2

**Description
EN**

The invention refers to a new tubular jersey product, in a form of trousers, that embeds electrodes for electrical stimulation and aims to improve walking in stroke patients. The last novelty is that they have been already tested in clinical environment and might be ready for extensive use.

Class no.

4



RO.65.

Title EN **Myoelectric Prosthesis Prototype**
Authors Pălii Alexandru
Institution „Gheorghe Asachi” Technical University of Iasi
Faculty of Machine Manufacturing and Industrial Management
Patent no. -
Description EN The myoelectric prosthesis is controlled by the tension generated by a biochemical process by the human body. The microprocessor on the prosthesis picks up the analog signal by turning it into a servomotor control signal.
Class no. Innovative research

RO.66.

Title EN **Programming of a Stair-Climbing Robot**
Authors Todireanu Mihai Silviu, Hoșteanu Ionel
“Gheorghe Asachi” Technical University of Iași
Institution **Faculty of Machine Manufacturing and Industrial Management**
Department of Fluid Mechanics, Fluid Machinery and Fluid Power Systems
Description EN The stair-climbing robot has been realized using LEGO Mindstorms Education EV3 Core Set, and LEGO Mindstorms EV3 software has been used for programming. The robot has the main function to climb stairs, up and down, and is used to enter dangerous areas and to obtain video information using a camera.
Class no.

National Institute of Inventics Iasi
„Gheorghe Asachi” Technical University of Iasi

RO.67.**Title EN** Amplificator CMOS LNA type**Authors** Cristian Andriesei**Institution** „Gheorghe Asachi” Technical University of Iasi**Patent no.** Patent application No. A 2017 00367/13.06.2017**Description**
EN

Dual-band filtering CMOS LNA that amplifies the input signal within two different frequency bands. According to this invention, the dual-band amplifier consists of an amplifier 1 implemented with a pair of parallel NMOS transistors used to create two signal paths and biased by means of a current mirror 2, a passive notch filter 3 with two resonant frequencies being connected to the input of the current mirror to filter the signal on one path. This invention addresses portable devices, i.e. the receiver part of the RF front-end.

Class no.

2

RO.68.**Title EN****Equipment for shredding - compacting the chips and separating-collecting the coolant from machine-tool****Authors****Ana-Maria Bocăneț, Dragoș Florin Chitariu, Emilian Păduraru****Institution****„Gheorghe Asachi” Technical University of Iasi****Patent no.**

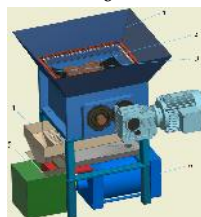
Patent application No. A 00402/21.06.2017

Description
EN

The invention refers to equipment for processing the metal chips resulting from mechanical machining and provides chips shredding, separating and collecting in two stages the coolant used during the machining process and chips compacting. According to the invention, the equipment consists of two main subassemblies: a subassembly for shredding and a chips compacting subassembly. In both parts there are provided elements for separating and collecting the lubrication-cooling liquid. The equipment uses usual resources that may be found at the workstation (electricity, compressed air).

Class no.

6



RO.69.**Title EN****Interchangeable insole cover for footwear and obtaining process****Authors****Angela Dănilă, Bogdan Sârghie, Cristina-Maria Herghiligi****Institution****„Gheorghe Asachi” Technical University of Iasi****Patent no.**

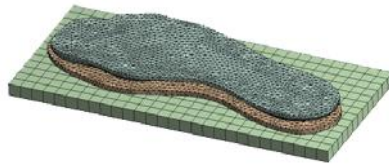
Patent application No. A/00412–2017

**Description
EN**

The invention relates to an interchangeable shoe insole and obtaining method, and addresses the leather-footwear industry. The insole is made up as layers by applying a beeswax emulsion to a 100% cotton fabric through padding – rolling - storage at room temperature process, followed by the manufacture of the blank. The purpose of the invention is to improve the emollients performance and make its application easier, by providing an insole treated with a beeswax emulsion.

Class no.

9

**RO.70.****Title EN****Fluid distributor for many liquids****Authors****Cristian-Győző Haba****Institution****„Gheorghe Asachi” Technical University of Iasi****Patent no.**

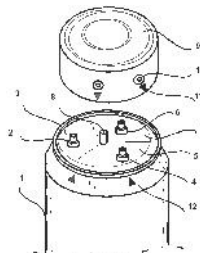
Patent application No. A/00368–2017

**Description
EN**

A fluid distributor comprising three pressure vessels, each container containing another liquid is provided with valves for controlling the liquid distribution. The three containers are embedded in a protective and fastening housing, plus a valve actuator. The drive system enables the actuation of each valve separately or in combination, thus allowing the liquid to be discharged separately or mixed as required.

Class no.

6



NATIONAL

RO.71.**Title EN** Configurable Heating system for modular radiant panels**Authors** Cristian-Győző Haba**Institution** „Gheorghe Asachi” Technical University of Iasi**Patent no.** Patent application No. A/01162/2017**Description
EN**

The invention relates to a control system for variable heating of a living room or where lucrative activities are carried out comprising radiating panels positioned by means of motors and having an interface capable of configuring the amount of radiated energy emitted and its direction, independently or in an integrated way with components and standards related to the Smart Home concept.

Class no.

2

RO.72.**Title EN** Refresh method for the weights of the analogue synapses**Authors** Mircea Hulea**Institution** „Gheorghe Asachi” Technical University of Iasi**Patent no.** Patent application No. - 2017**Description
EN**

The invention relates to a method for refreshing the weights of analogous synapses useful for the capacitive storage of the synaptic weights. The method consists in reactivating the artificial neurons at fixed time intervals. During neuronal reactivation, the load variation in the weight capacitor due to the drain current is compensated by an activation current which is opposite to the leakage current. Reactivation of neurons is determined by a single rectangular pulse generator which is directly connected without other auxiliary elements to the voltage divider that generates the equilibrium potential of artificial neurons.

Class no.

10

RO.73.**Title EN** Equipment for partial desilting of water accumulations**Authors** Mitroi Raluca, Valentin Boboc, Ion Antonescu**Institution** „Gheorghe Asachi” Technical University of Iasi

Patent no. Patent application No. *A/00403 – 21.06.2017*
 The invention relates to a mobile equipment used for partial desilting of water accumulations. According to the invention, the device comprises a pump body in which an electric motor is introduced which acts on a rotor. When it starts, the suction of a liquid flow is produced, which passes through a grill, through the suction elbow and through the pump body and is discharged through the exit nozzle, which is driven by two electric propulsion engines equipped with propulsion propellers.

Description
EN

Class no. 1

RO.74.

Title EN

Portable device for the coaxiality and the concentricity deviations control of inner cylindrical surface

Authors

Cioata Florentin, Adriana Munteanu

Institution

„Gheorghe Asachi” Technical University of Iasi

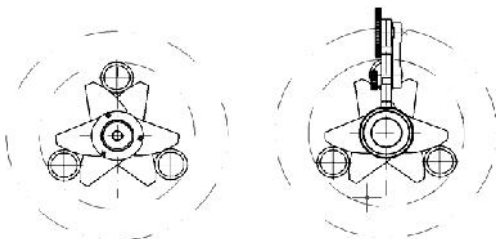
Patent no.

Patent application No. A 00404/21.06.2017

Description
EN

The device provides self-centering on the interior cylindrical surfaces. It is equipped with a self-centering mechanism with contact on cylindrical surfaces made by three calibrated rollers and the displacement in the radial direction of these calibrated rollers is achieved by means of two fixed discs and a mobile disk. It is a portable control device, all the important components for the orientation - positioning of the control part and of the indicator instrument are integrated into the body of the device. The device is of medium complexity and ensures a sufficiently large range of values for the inner surfaces, thus having a great degree of universality.

Class no. 6



RO.75.**Title EN****Highly sensitive strain gauge****Authors****Cristian Foşalău, Cristian Zet, Daniel Petrişor****Institution****„Gheorghe Asachi” Technical University of Iasi****Patent no.**

Patent application No. A/00110/17.02.2015

**Description
EN**

The invention refers to a highly sensitive strain gauge (HSSG) devoted to measure very small deformations for plane or curved surfaces, with good accuracy. Its main advantage is its high sensitivity assessed by the gauge factor, K , which is approximately 1000 times bigger than that of a conventional metallic strain gauge, namely about 2000. This makes it suitable to sense very small deformations, usually less than 1 ppm. It has a wide area of applications either for measuring direct strains or for indirectly gauging quantities like force, vibration, mechanical momentum, acceleration, etc.

Class no.

10

**RO.76.****Title EN****Smart Multimedia Wall/Window****Authors****Tudora Ana Cristina, Tudora Gabriel, Petrisor Daniel****Institution****„Gheorghe Asachi” Technical University of Iasi****Patent no.**

Patent application No. A/00351, 09.06.2017

**Description
EN**

The invention refers to a highly sensitive strain gauge (HSSG) devoted to measure very small deformations for plane or curved surfaces, with good accuracy. Its main advantage is its high sensitivity assessed by the gauge factor, K , which is approximately 1000 times bigger than that of a conventional metallic strain gauge, namely about 2000. This makes it suitable to sense very small deformations, usually less than 1 ppm. It has a wide area of applications either for measuring direct strains or for indirectly gauging quantities like force, vibration, mechanical momentum, acceleration,

etc.

Class no.

10



RO.77.

Title EN

Fixture for measuring cutting forces and torque for boring bar machining

Authors

Neculai Eugen Seghedin, Dragoş Florin Chitariu

Institution

„Gheorghe Asachi” Technical University of Iasi

Patent no.

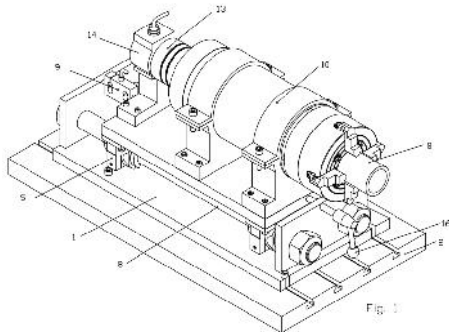
Patent application No. A/00325/25.04.2014

Description
EN

The invention refers to a fixture for measuring cutting forces and torque for boring bar machining. It consists of a base plate placed on the machine table. On this plate a series of support orientate and position two columns on which a intermediary plate glides. The intermediary plate is connected to force transducer that measures the axial cutting force. On the shaft, on the opposite side of the chuck, a torque transducers is placed, via a coupling, that measures the cutting torque

Class no.

6



**„Grigore T. Popa” University of
Medicine and Pharmacy Iași**

RO.78.**Title EN**

Overview on blood alcohol level influence on complex cervical trauma

Authors

Florentina Severin, Anisia Iuliana Alexa, Elena Cojocaru, Diana Bulgaru Iliescu, Mihail Dan Cobzeanu.

Institution

Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania.

**Description
EN**

Complex cervical trauma is an important cause of mortality and morbidity worldwide. These are a pathology with multiple epidemiological, etiopathogenic and pathophysiological elements. It is largely due to the increase of physical violence through attacks by white weapons or by shooting, followed by road accidents and suicide attempts. Alcohol is an important risk factor in the determinism and mortality of this type of trauma. We performed a retrospective study of 289 patients with complex cervical trauma, in which we tried to reveal the relationship between the blood alcohol level and the mortality of these traumas produced by various mechanisms. The results obtained show the correlation between alcohol with autolitic mechanisms in 56.3% of cases and aggression in 46.7%. Also the influence of sex and socio-economic conditions. Our results could bring new epidemiological data to improve public health policies and implicitly to reduce alcohol-related mortality on complex cervical trauma.

Class

4

RO.79.**Title EN**

Aspects of neurological syndromes at stomatognathic level and facial expression

Authors

Checherita Laura, Mihaela Carausu, Ovidiu Stamatin

Institution

Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania.

**Description
EN**

Neurological diseases are prevalent in clinical medicine, though many phisicians have problems with the diagnosis of diseases of the central nervous system and are inefficient prepared to treat neurological conditions. Neurological diseases can produce a stunning palette of symptoms and signs or destroy the patient's ability to communicate normally with the examiner.

The examination may require sufficient time and correct

diagnosis requires a thorough knowledge of the principles and also practical and teoretical relevant size of neuroanatomy, facial expression is affected on the basis of the syndrome reach in order, perioral muscles, his eyelids, forehead, manducators, language, phanyrx, and in this context mastication becomes difficult. In order to obtain the success of aesthetic and functional stomatological treatment, in mobilizable prosthesis element is necessary to a cooperation with the patient, using the specific questionnaires that can apreaciate the efficiency of the general ad local treatment of SDSS, better than in the case of a fixed prosthesis; on the other hand, the success of a mobile prosthetics is dependent on the ability of the patient to develop reflexes (neuro-muscular) necessary for the purpose of acquiring an optimal functions.

Class

4

RO.80.

Title EN

INTELLIGENT PACIFIER USED IN MONITORING PREMATURITY APNEA – IPMA

Authors

PhD Catalina Luca

Institution

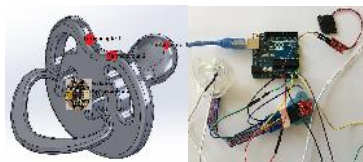
“Grigore T. Popa” University of Medicine and Pharmacy
Iasi, Faculty of Biomedical Engineering

Description
EN

In this paper we designed and developed a smart and easy-to-use system at home to monitor temperature and respiratory rate in preterm and term newborns. Because both the incidence of premature apnea is common and the sudden death rate according to the latest statistics is 2-1000 newborn newborns, there is a need to monitor the respiratory rate at home. The proposed system collects information using two temperature sensors and an accelerometer, and the data is processed at the ATmega328 microcontroller using the Arduino Platform. If the signals are not within the normal range, if the system indicates a temperature of less than 35 ° C – indicating hypothermia or a temperature greater than 38 ° C - indicating fever will sound a warning to the parent.

Class

4



RO.81.

Title EN	A preliminary raport on the use of thermography as a diagnostic tool in prematurity apnea
Authors	Luca Cătălina
Institution	“Grigore T. Popa” University of Medicine and Pharmacy Iasi
Description EN	In this project we present a preliminary raport on the use of infrared thermography as a diagnostic tool in prematurity apnea. The proposed monitoring tehnique is without direct contact with the patient that could be used in respiratory rate monitoring of premature new born babies. This contactless monitoring method it is absolute necessary because it is designed to monitor a very fragile category of patients: premature new born babies. Our biomedical signal of interests it is represented by the spontaneous breaths of the newborn. As we know, apnea is the most common problem that affects premature babies, due to insufficient development of respiratory and neurological system of premature babies. We examined 30 newborn babies with gestational age averaging 30 weeks. In this study we demonstrate that the respiratory rate of the preterm newborn can be monitored based on the analysis of temperature changes that occurs in the anterior nasal area (nostrils), even if the patient is positioned in a controlled environment like neonatal incubator.
Class	4

RO.82.

Title EN	Means of evaluation and reconstruction for hard tissue loss in maxillo-facial territory through stereolytic modeling
Authors	Ovidiu Stamatin, Victor Vlad Costan, Otilia Boisteanu, Alexandru Nemtoi, Laura Checherita
Institution	Grigore T. Popa University of Medicine and Pharmacy
Description EN	The present work is of particular importance from a technology, socio-economic or cultural point of view because, on the one hand, it proposes to optimise reconstructive techniques at the level of the face and its social reintegration after the realization of surgery with a special potential for creating facial diformity difficult to accept by the patient or society. The study will allows to find practical solutions for appropriate and accurate realization of the stereolytics models and when possible, the guides for osteotomies bone in the flap or for the insertion of implants. On the other hand, it will be difficult to transpose in a fluid volume, from fat, a "solid" volume resulting from a stereolytical modeling. A careful evaluation of the post-op

evolution of the studied cases will allow the determination of an error coefficient to be taken into account, coefficient variable and depending on the reconstructed area (removable or fixed). The elements of the originality of the study are represented by the attempt to rebuild a mandible in a patient to whom the tumor exeresis was carried out more than once. Taking into account the shape of the remaining tissues, the form of the resected mandible should be recreated so that the final form, originally materialized in a stereolytic model, is as similar as the original part that is replaces.

Class

4

RO.83.

Title EN

Comparative study regarding the effect of pre-heating on mechanical properties of some resin-based materials used for direct restoration

Authors

Stoleriu Simona, Andrian Sorin, Pancu Galina, Nica Irina, Iovan Gianina

Institution

University of Medicine and Pharmacy „Grigore T. Popa” Iași, Romania

Description
EN

The aim of the study was to evaluate the effect of pre-heating on compressive strength of three different resin-based materials used for direct restoration: a composite resin, a compomer and a giomer applied with or without pre-heating. A nanohybrid composite resin (Filtek Z 250, 3M ESPE), a compomer (Dyract eXtra, Dentsply Sirona) and a giomer (Beautifil II, Shofu Dental) were chosen for this study. Fifteen specimens of each material were obtained by placing the composite resin into moulds having 5 mm diameter and 6 mm height. Two layers of 1.5 mm were placed, each layer being polymerized for 40 s with a LED curing unit. Five samples of each material were restored using the material for filling at room temperature (control), five cavities were restored using pre-heated materials at 50°C and five cavities were restored using preheated materials at 60°C. The sample were tested to determine the compressive behavior using a universal testing machine (MTS 810 Material Test Systems, MTS System Corporation, USA) with a load cell of 100 kN and a crosshead speed of 0.5 mm/min. Two compressive parameters were recorded for the samples: peak stress (compressive strength) and compressive modulus. Pre-heating improved the compressive parameters for all three tested materials for direct restoration.

Class

4

RO.84.**Title EN****METHOD FOR SEPARATION OF ACETOPHENONE****Authors**Anca-Irina Galaction¹, Madalina Postaru¹, Alexandra Tucaliuc¹,
Alexandra Cristina Blaga², Dan Cascaval²,**Institution**¹“Grigore T. Popa” University of Medicine and Pharmacy of Iasi²“Gheorghe Asachi” Technical University of Iasi**Patent no.**

Patent demand No. A/00711/22.09.2014

**Description
EN**

Acetophenone is an aromatic ketone having important applications in chemical industry (as raw material for production of resins used in adhesives, inks, and coating manufacture), food and perfumery industries (as precursor of cherry, jasmine, almond or strawberry fragrances), pharmaceuticals production, and as reagent for various synthesis at laboratory scale. For removing acetophenone from the fermentation, enzymatic or chemical synthesis media, several methods have been tested: vacuum distillation, physical extraction, separation through membranes or hollow-fiber membranes, selective inclusion in β -cyclodextrin, and capillary electrophoresis.

This invention presents a new method for the separation of acetophenone from aqueous solutions obtained by chemical synthesis or fermentation, namely reactive extraction.

According to the invention, this method consists on the extraction of acetophenone from aqueous solution with n-heptane containing 20 g/l lauryl tri-alkyl-methylamine. Acetophenone is recovered from the obtained extract by re-extraction with a solution of sodium hydroxide. Finally, the overall efficiency of separation of acetophenone related to the initial aqueous solution is 93 to 98.5%.

Class no.

9

RO.85.**Title EN****METHOD FOR SEPARATION OF ROSMARINIC ACID BY REACTIVE EXTRACTION****Authors**Madalina Postaru¹, Lenuta Kloetzer², Anca-Irina Galaction¹, Ionela Ungureanu², Dan Cascaval²**Institution**¹“Grigore T. Popa” University of Medicine and Pharmacy of Iasi²“Gheorghe Asachi” Technical University of Iasi**Patent no.**

Patent application No. A/00222/13.02.2017

**Description
EN**

Rosmarinic acid is a member of the phenolic compounds class with biological activity, which manifests through antioxidant, astringent, anti-inflammatory, antimutagenic, anticancer, antiallergic, antibacterial, and antiviral (anti-HIV) effects. Rosmarinic acid production by biosynthesis uses cultures of *Coleus blumei*, *Salvia miltiorrhiza*, *Anchusa officinalis*, *Lavandula vera* cells, whose productivity was enhanced by simultaneous cultivation of some microorganism, namely *Pseudomonas*, *Agrobacterium rhizogenes*, or *Phytium aphanidermatum*. Currently, the separation and purification of rosmarinic acid from plant extracts, culture or enzyme media were achieved by ion exchange technique, electrodialysis, electrophoresis, physical extraction, supercritical fluid extraction, and non-facilitated pertraction.

This invention presents a new method for the separation of rosmarinic acid from aqueous solutions obtained by chemical synthesis or fermentation, namely reactive extraction, using two types of extractants: lauryl tri-alkylmethylamine (Amberlite LA-2) and di-(2-ethylhexyl) phosphoric acid (D2EHPA), dissolved in three solvents with different dielectric constants. Indifferent of the used solvent, the maximum efficiency for extraction with Amberlite LA-2 is reached at pH = 2, while for extraction with D2EHPA is reached at pH = 3. The extraction yield reached a maximum value of 98% with Amberlite LA-2 and of 96,4% for D2EHPA.

Class no.

9

RO.86.**Title EN****THE ROLE OF NEGATIVE PRESSURE WOUND TREATMENT (NPWT) IN THE TREATMENT OF SEVERE BURNS IN CHILDREN****Authors**

Belu Alina, Susanu Sidonia

Institution**“Grigore T. Popa” University of Medicine and Pharmacy Iasi, Medical Bioengineering Faculty****Description
EN**

Severe burns (IIb and III degree, large body surface) are from far one of the most traumatic injury in children. Not only the management of local lesions, but also threatment of burn shock might pose a high degree of difficulty in the severe burned child. Some particular body regions like face, hand (including fingers), feet and perineum require a special care. While IIa degree burns require only conservative management of the legions and III degree burns require indubitable surgical treatment, IIb degree burnshave a more complex assessment. Our work presents the importance of using NPWT (negative pressure wound treatment) in the treatment of pediatric burn patient. It helps avoiding infection, limits the severity of burn shock, reduces the edema under the burn legions (space three Randal) promotes graft taken, stimulates healing of IIb degree burns. Material and Methods: we evaluated 9 cases. Our study includes large body surfaceburns (10 to 40 % BS), IIa, IIb and III degrees. Results: The evolution was favorable in all patients with complete healing of IIb degreeburns, no infections, complete intake of skin grafts for III degree burns, reducing edema under burn lesions, preventing intrinsic hand muscles fibrosis in hand burns, shorteningthe hospitalization time. Conclusions: NPWT is an excellent tool in addressing pediatric patient with severeburns. It permits complete healing of IIb degree burns, complete intake of skin graft forIII degree burns, reduces the frequency of wound dressing, pain, fluid loss as well as therisk of infections. It limits the total hospitalization period and allows a much better functional and aesthetic result in the treatment of pediatric severed burned patient.

Class no.

RO.87.**Title EN****MEDICAL DEVICE FOR RECOVERY OF PATIENTS WITH LIMB DISABILITIES****Authors**

Derla Carol-Robert, Simion Mădălina-Petronela

Institution**“Grigore T. Popa” University of Medicine and Pharmacy Iasi, Medical Bioengineering Faculty****Description
EN**

The analysis of the human walk is very important, especially in the case of patients that suffer of affections leading to reduced mobility such as a stroke. The rehabilitation in such case is difficult and in many of these situations it does not lead to full restoration of the patient's mobility. Our study purposes the evaluation of the movement of the lower limb using force sensors and video cameras. Some limitations are met such as the sensitivity of the sensors, the video processing and quality of materials. We hope that this study can help improve the way physicians diagnose and treat mobility problems by providing them additional information about how a patient is walking. This method combines information of how a subject's foot makes contact with the ground and leg biomechanics during normal walking. Normal technology for this kind of devices is pretty expensive. For this reason we try to lower the cost of the equipment used as much as possible using an affordable camera, sensors and materials while maintaining the quality of the results at an above average. This will provide more popularity to the use of this method and give an alternative option to less developed places. If this current version of our device will end up helping people our next step will be perfecting it and making it more patient friendly while at the same time creating a better infrastructure.

Class no.**RO.88.****Title EN****A Telerehabilitation System Based on Internet of Things****Authors**

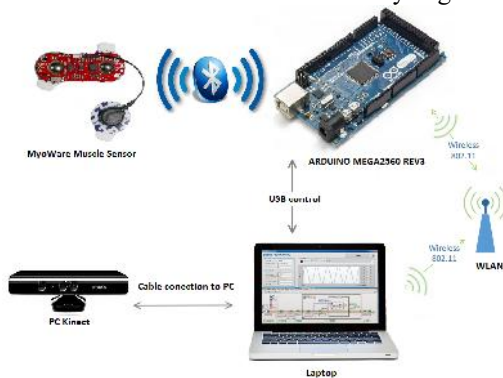
Fuior Robert, Corciovă Călin

Institution**“Grigore T. Popa” University of Medicine and Pharmacy Iasi, Medical Bioengineering Faculty****Patent no.****Description
EN**

Internet of Things (IoT) applied in healthcare system has a huge potential to improve patients' quality of life. Representing network of devices embedded with electronics and sensors, IoT enables constant monitoring of vital body functions, tracking of

physical activities of a person and aids rehabilitation physical therapy. One of the better ways the physicians are capable to certainly and quickly right to use the relevant patient information's and including the patient medical history. Through the Internet of Things, tremendously improves the quality of information and the patient care in the medical field, because internet of things offers a platform to interconnect the all the resources. In this project, we present a telerehabilitation system that uses wearable muscle sensor and a Kinect device, used as a sensor for detection and tracking of body movements, to create interactive personalized physical therapy that can be carried out at home. Experiment results of implementation validate the feasibility and effectiveness of the proposed IoT-enabled telerehabilitation system. This system developed for research and experiment purposes serves as a foundation for creating a commercial device which will be widely used in post stroke telerehabilitation and evaluation of the recovery degree.

Class no.



Components and connection of the system

RO.89.

Title EN

NEW TECHNIQUE IN THE APPLICATION OF FUNCTIONAL ELECTRICAL STIMULATION

Authors

Onu Ilie

Institution

“Grigore T. Popa” University of Medicine and Pharmacy Iasi, Medical Bioengineering Faculty

Patent no.

Description

Functional electrical stimulation (FES) is often used during

EN rehabilitation by physiotherapists to improve muscle function and increase muscle strength. Modern devices use fixed frequency protocols and adjust intensity to generate optimal force by massively recruiting neuro-motor units. The biggest drawback of FES is that after stimulation with pulse trains of 14-16 minutes it gets muscle fatigue, and the electrical activity of the stimulated muscle decreases by the phenomenon of adaptation to the electric stack, demanding the increase of the current intensity and increasing the possibility of lesion tegument by overload. The muscles have varying proportions of type 1 fiber that are stress-resistant and hard-wearing, respond well at low-incidence frequencies of 10-25 Hz and type 2 fibers that develop large forces and get tired fast have response frequencies of 70-100 Hz. FES treatment technology is a therapy based on low frequency pulses with exponential currents, but because the devices are expensive and difficult to manually adjust, therapists prefer to use electrical muscle stimulation (EMS) - which mainly uses low frequency rectangular currents - because EMS stimulators can reach a quarter of the FES's price.

The physiotherapist, in his clinical activity, considers muscle function and the type of fiber when applying EMS treatment protocols - ranging in a fairly short frequency range and pulse train sequences to have a maximum impact without exhausting the muscle.

The innovation in this regard was the generation of predefined protocols based on EMS currents for large and small muscle groups by the use of impulse trains, modulated in frequency, amplitude and duration to achieve a physiological muscle contraction, stimulating at reduced intensities several neuro-motric units, having similar results with enveloped FES currents.

“Lucian Blaga” University of Sibiu

RO.90.

Title EN	Procedure for obtaining of a compositon based on lactoferrin and bilberry extract
Authors	OANCEA Rodica Simona, DRĂGHICI Olga
Institution	"Lucian Blaga" University of Sibiu
Patent no.	Patent application No. A 00002 2017
Description EN	The invention refers to a procedure for obtaining a composition for enhancing the anthocyanins extract prepared from bilberries through the addition of lactoferrin in concentration of 0,05 and 0,10%. This procedure presents the advantage of efficient combination of lactoferrin properties with new bioactive compounds from the natural extract, with beneficial health properties. The invention has practical significance through the quality enhancement of lactoferrin and bilberry extract, and by exploitation of plants rich in antioxidant compounds, to obtain extracts with multifunctional properties with applications in nutraceutical food industry using sustainable technologies.
Class no.	3

RO.91.

Title EN	SANTÉ ROUGE , natural food product based on red sweet pepper, sugar and acetic acid"
Authors	IANCU Maria Lidia, BENEA Lidia, BENEA Daniela Debora, MAIER Alexandra Maria
Institution	"Lucian Blaga" University of Sibiu
Patent no.	Patent application No. A 00829 2016
Description EN	The invention relates to obtaining a natural composition, based red pepper preserved with diluted acetic acid and sugar, which is part of the product category that is based on the biological preservation principle of anabiosis – physio anabiosis and as osmo anabiosis conservation process. The unleavened product, with sugar, is characterized in that it has the following composition: 51.5% red pepper in vinegar, 65% sugar, 2.5% acetic acid (30% solution) is intended for human consumption. The process for obtaining the invention consists in that the raw material, atypical for this product category, is specifically prepared and then divided and subjected to heat treatment and concentration (106 °C) and then to hot packing.
Class no.	3

RO.92.

Title EN	"Food product natural, dietary from elderflowers"
Authors	IANCU Maria Lidia
Institution	"Lucian Blaga" University of Sibiu
Patent no.	Patent application No. A 00275 2018
Description EN	The invention relates to the production of a natural dietary composition, intended for human consumption, so it is of internal use, on the basis of fresh elderflowers, lemons slice with peel, erythritol and water, which is part of the category of products preserved by abiosis, obtained by assembling the solid and liquid parts in the packaging unit and which is perfected through pasteurization and maturation at least 20 days, then filter and immediately consume the fraction passing through the filter. The product is characterized by the following recipe: 2.5% fresh blooming flowers, 2.5% lemon slices, 18% erythritol, 77% water.
Class no.	3

RO.93.

Title EN	"Computer Chair with an Active Principle of Spine Relaxation"
Authors	BONDREA Ioan, ȚÎȚU Aurel Mihail, OPREAN Constantin, MĂRGINEAN Ion, MOLDOVAN Alexandru Marcel, BOGORIN-PREDESCU Adrian
Institution	"Lucian Blaga" University of Sibiu
Patent no.	Patent application No. A 2013 00825
Description EN	For those persons working long hours behind the computer, was created with the purpose of reducing the negative effects on one's health and the stressful effects of the spine's continuous compression during continuous immobilization of the human body in the actual work behind the computer and to reduce and remove the already accumulated affliction of the spine due to prolonged work previously done at the computer.
Class no.	4

RO.94.

Title EN	"C-frame"
Authors	CIOARĂ Gheorghe Romeo, DAN Ioan, ȚÎȚU Mihail Aurel, OPREAN Constantin
Institution	"Lucian Blaga" University of Sibiu
Patent no.	Patent No. RO 129636 / 29.11.2017
Description EN	The invention relates to a C-frame, with low-tension, made by casting or in welded construction, pre-tensioned, intended for equipping the presses. Deformation of a C-frame determines the inclination displacement axis of the slider and affects the machining accuracy. It is necessary to minimize the elastic deformation of the C-frame, and in particular to minimize the inclination of the press guides relative to the table plane. The pre-tensioned C-frame is designed to equip the presses to achieve higher accuracy and lower energy consumption.
Class no.	5

RO.95.

Title EN	"Cover for credit card"
Authors	SZEKELY Valentin-Gabriel, ȚÎȚU Mihail Aurel, OPREAN Constantin
Institution	"Lucian Blaga" University of Sibiu
Patent no.	Patent application No. A 2013 00017
Description EN	is assumed that there is, or may be made, an electronic device, possibly mobile, that allows for access to relevant information stored on a credit card, the unauthorized (fraudulent) money being charged, cloning or even destroying it. It is necessary to keep the credit card in a proper shelter. The cover is designed to protect passive credit card against fraudulent access to using devices (portable) specially designed.
Class no.	14

RO.96.

Title EN	"Mechanically vulcanized press"
Authors	POLLNER Cosmina Andreea, CIOARĂ Gheorghe Romeo, ȚÎȚU Aurel Mihail, OPREAN Constantin
Institution	"Lucian Blaga" University of Sibiu
Patent no.	Patent application No. A 2013 00008
Description EN	The invention relates to a mechanically vulcanized press with two screws, for vulcanization of parts of different sizes and configurations. Typically, the vulcanized presses are hydraulically operated. Specific equipment is relatively expensive and

maintenance is costly. Oil loss may occur, which negatively (adversely) affects the environment and the appearance of the workplace. The mechanically vulcanized press is simple and robust, requires minimal maintenance and is very durable. The precision of the machine is not affected by the temperature generated during the vulcanization process.

Class no.

5

RO.97.

Title EN

"Heated bench"

Authors

ȚÎȚU Aurel Mihail, OPREAN Constantin, CIOARĂ Gheorghe Romeo, IOSIF Mihail

Institution

"Lucian Blaga" University of Sibiu

Patent no.

Patent application No. A 2013 00005

Description
EN

In open space - parks, gardens, bus stations and the like - it is not always attractive to use a bench. Winter, early spring, late autumn, and anytime in the cold days would be much more attractive a heated bench. The invention proposes a heated bench for the public domain, especially for open spaces, simple and robust, built in a modular structure. The heated bench is designed for open spaces, including for the public domain.

Class no.

2

RO.98.

Title EN

"Device for aspiration hidatic cyst of liver or ovary cyst"

Authors

SABĂU Dan, SABĂU Alexandru Dan

Institution

"Lucian Blaga" University of Sibiu

Patent no.

Patent No. RO 120809 / 2004

Description
EN

The invention relates to a device for hidatic cyst of liver or ovary cyst aspiration used in laparoscopic surgery. The device is constructed from a body connected to a source of suction through a flexible tube that is inserted and is fixed axially inside a trocar between the two components is made a peripheral camera where are introduced some fixing rods of a detachable anchoring device. The device is fixed by suction on the cyst, with aspirations by peripheral camera, and also set it with some extra hooks formed at distal ends of mounting rods. A central tube is inserted through the inside trocar by sliding and connected through a flexible tube to the source of aspiration for the evacuation of cystic contents. Accidental sparkle of liquid are collected by suction and discharged by the board peripheral, outside.

Class no.

4

RO.99.

Title EN	"Procedure and device for fluidify of hidatic liver cyst"
Authors	SABĂU Dan, SABĂU Alexandru Dan
Institution	"Lucian Blaga" University of Sibiu
Patent no.	Patent No. RO 120810 / 2004
Description EN	Invention relates to a method and a device for fluidify, by mechanical content hidatic liver cyst, the invention is intended to open surgery, laparoscopic and miniinvazive. Method is to introduce into the hidatic cyst, sticks to the end of a rotary device, like a "mixer" on the edge of a rod being articulated collapsible palette. Rod device is involved in the circle at a speed of 500 ... 1000 rpm, for a period of 3 ... 5 min so that large folding performed mechanical fragmentation and flow cystic content, facilitating evacuation outside the peritoneal cavity, with a means of suction. In laparoscopic surgery, a guiding rod rotating device is fluidity with a suitable trocar. The device of fluidity consists of a rotating rod, trained in the circle by an elastic sleeve, a set of electrically actuated motoreductor. The distal end of the rotating rod is collapsible articulated a palette that, under the centrifugal forces is going at different angles achieving mechanical fragmentation and flow hidatic cyst contents.
Class no.	4

“Dunarea de Jos” University of Galati

RO.100.

Title EN	Gluten-free cake dough and manufacturing process
Authors	Istrati Daniela Ionela, Vizireanu Camelia, Crețu Alexandra Andreea, Condurache Nina Nicoleta, Pacularu-Burada Bogdan
Institution	Faculty of Food Science and Engineering, Dunarea de Jos University, Galati, Romania
Patent no.	CBI 698/06.12.2016 The present invention relates to a gluten-free cake, which may be a suitable dessert for people with gluten intolerance but can be consumed by all categories of consumers. The aim of the invention is to provide desert products for persons having gluten enteropathy (gluten intolerance) by contributing to: <ul style="list-style-type: none"> ✓ development of the Romanian market for gluten-free products for people with gluten enteropathy; ✓ manufacturing new products with the existing equipment in the food industry units; ✓ the technological transfer of the results obtained from the research at the industrial level.
Description EN	The technical problem solved by the present invention is to produce gluten-free desert products, with sensory properties (appearance, taste, smell) similar to those obtained from wheat flour, offering to people suffering from gluten-induced enteropathy, which are mostly children, to consume a dessert appropriate to the diet. The problem is solved by the fact that wheat flour is replaced by rice flour and coconut flour to produce attractive gluten-free dessert (both due to its content, appearance and presentation and packaging) with high nutritional value. The dough for gluten-free cake is composed of chocolate, eggs, butter, powdered sugar, nuts, coconut flour, rice flour, dehydrated cranberries and ammonium bicarbonate having a 400 ... 430 kcal/100 g energy value and a fiber content of 12 ... 17%.
Class no.	3



RO.101.

Title EN

Dough composition for gluten-free appetizer biscuits

Authors

Carmen Bolea, Daniela Istrati, Romulus Burluc, Camelia Vizireanu

Institution

Faculty of Food Science and Engineering, Dunarea de Jos University, Galati, Romania

Patent

A/00158/ 15.03.2017

Description
EN

Most of the bakery products are used as food matrices to incorporate various ingredients with high nutritional value. The problem solved by the present invention is the realization of a new assortment of gluten-free appetizer biscuits with high-content of bioactive compounds and sensory properties similar to those of classic appetizer biscuits, offering to gluten-intolerant people (with celiac disease) the possibility of consuming a food product suitable for their diet. All the ingredients used to manufacture these biscuits have a high content of protein, fiber, biologically active compounds that could provide several beneficial effects to human health. The composition of the dough for the free-gluten appetizer biscuits, according to the invention, is composed of: black rice flour, oat bran, chia seeds, almonds, salt, sodium bicarbonate, rice oil, water, thyme, pepper and rosemary having an energy value of 360 ... 387 kcal / 100 g and a fiber content of 9 ... 12%. This variety of biscuits can be consumed by all types of consumers, including those who have gluten intolerance.

Class no.

3

**RO.102.**

Title EN

Tincture for ameliorating menopausal symptoms and manufacturing process

Authors

Zinca Gherghina (Aldea), Vizireanu Camelia, Borda Daniela

Institution

Faculty of Food Science and Engineering, Dunarea de Jos University, Galati, Romania

Patent

CBI 697/06.12.2016

Description EN	The invention relates to the composition of a tincture used in ameliorating menopausal symptoms, such as hot flushes, sleep disorders, emotional disorders and other associated symptoms. The tincture composition is a mixture of germs powders of alfalfa (<i>Medicago sativa</i> L. - new plant), soybeans (<i>Glycine max.</i> - crop plant) and leaf sage (<i>Salvia officinalis</i> - medicinal aromatic plant), thus achieving a remedy based on endogenic plant being easily accessible for the realization of the product. The formula is unique because there are no registered patents for tinctures to relieve menopause symptoms.
Class no.	3

RO.103.

Title EN	Appetizing biscuits with sea buckthorn extract obtained by extraction with supercritical fluids and appetizing biscuits with sea buckthorn extract micro-encapsulated in whey proteins and technologies for their production
Authors	Stănciuc, N., Mihalcea, L., Râpeanu G.
Institution	Faculty of Food Science and Engineering, Dunarea de Jos University, Galati, Romania
Patent	CBI 289/2017
Description EN	The invention present a gluten-free appetizing biscuits for people with gluten intolerance but can be consumed by all categories of consumers. The invention describes two processes for the production of the added value appetizer biscuits due to the carotenoid content with free and microencapsulated sea buckthorn extract obtained by supercritical CO2 extraction. The aperitif biscuits contains whole rice flour, butter, egg yolk, white sugar, water, sodium bicarbonate and marbled with sea buckthorn, both outdoors and indoors. The new formulated appetizing biscuits have a yellow color, specific to cantaloupe, are sweet-sour, have a pleasant taste that combines the flavor of rice and sea buckthorn and are a source of carotenoids and esters.
Class no.	3

RO.104.

Title EN

Desert dairy product based on whey protein concentrate and sea buckthorn and method for making it off

Authors

Urscache, F.M., Botez, E., Stănciuc, N., Andronoiu, D.G., Nistor, O.V., Turturică, M., Râpeanu, G.

Institution

Faculty of Food Science and Engineering, Dunarea de Jos University, Galati, Romania

Patent

OSIM registration number A/00045/2017

Description
EN

The invention relates to the production of a desert dairy product based on whey protein concentrate and sea buckthorn and to the technology to making off. By applying the invention, a dairy product is obtained, which has a balanced nutritional composition due to milk proteins, whey protein concentrate and egg yolk, milk and cream lipids, and sea buckthorn carotenoids.

The dairy product based on whey protein concentrate and sea buckthorn obtained according to the invention is based on the mixing of the hot milk in which the sugar has been dissolved with an emulsion obtained from egg yolks and whey protein concentrate. Thereafter, it is held for 5 minutes at high temperature and the cream is added slowly with a fat content of 33%. Finally, dehydrated sea buckthorn fruits are added in varying proportions under continuous mixing. The product obtained is stored under refrigeration conditions.

Applications

Considering the content of bioactive compounds from the sea buckthorn and whey proteins, the bioavailability of nutritional compounds but also superior sensory qualities, this product can be consumed available for all age groups.

Class no.

3

RO.105.

Title EN

Muffins with sea buckthorn extract microencapsulated in whey protein and the technology of thereof

Authors

Urscache, F.M., Stănciuc, N., Botez, E., Andronoiu, D.G., Nistor, O.V., Dumitrașcu, L., Râpeanu, G.

Institution

Faculty of Food Science and Engineering, Dunarea de Jos University, Galati, Romania

Patent

OSIM registration number A/00509/2017.

Description
EN

The invention relates to the description of a process for obtaining added value muffins due to the content of white

sea buckthorn carotenoids with microencapsulated sea buckthorn extract in whey protein, obtained by emulsification, crosslinking, coacervation and freeze drying. Our invention is individualized by microencapsulation of biologically active compounds in sea buckthorn extract by combined techniques involving emulsification, crosslinking, coacervation and freeze drying. Whey protein isolate was used for microencapsulation with at least 90% protein content and acacia gum. Microencapsulation aimed to protect carotenoids from the degradation effects of processing conditions specific to the food industry, such as: heat, light, oxygen, pH, etc.

Applications

Considering the content of bioactive compounds from the sea buckthorn and whey proteins, the bioavailability of nutritional compounds but also superior sensory qualities, this product can be consumed available for all age groups.

Class no.

3

RO.106.

Title EN

Fabrication of Polymer/ Carbon Nanotube Filaments for 3D Printing

Authors

Nicoleta-Violeta STANCIU, Felicia STAN, Cătălin FETECĂU

Institution

Center of Excellence Polymer Processing, Dunarea de Jos University of Galati

Patent

-

Description
EN

The present research is intended to demonstrate the feasibility of polymer/CNT composites as a 3D printable filament. First, for the process design, melt rheology is investigated using capillary rheometry at various processing parameters. Then, in order to fabricate the composite as a 3D printable filament, the polymer/CNT composites are extruded with the filament extruder, and the effects of MWCNT loading and processing conditions on the quality (porosity, density and roughness) of 3D filaments are investigated. Lastly, before printing, the mechanical behavior and microstructural features of selected filaments are analyzed.

Class no.

6, 7

RO.107.

Title EN	MECHANICAL PROPERTIES OF REPROCESSED LOW DENSITY POLYETHYLENE (LDPE)/CARBON NANOTUBE COMPOSITES
Authors	<i>SANDU Ionuț - Laurențiu</i>
Institution	Center of Excellence in Polymer Processing Dunarea de Jos University of Galati / Faculty of Engineering, Department of Manufacturing Engineering
Patent	-
Description EN	The purpose of this study is to determine the mechanical properties of a recycled thermoplastic nanocomposite reprocessed by injection molding. The LDPE/MWCNT nanocomposites were initially prepared by melt-mixing with 1, 3 and 5 wt.% MWCNT, injected molded and after that recycled using an grinding machine. The mechanical properties of the LDPE/MWCNT nanocomposites were measured on the dog bone specimens reprocessed by injection molding. The mechanical properties were evaluated in terms of Young modulus, tensile strength at yield, stress at break and strain at break. The rheological properties were evaluated in term of melt flow index (MFI).
Class no.	1. Environment - Pollution Control

Ștefan cel Mare University of Suceava

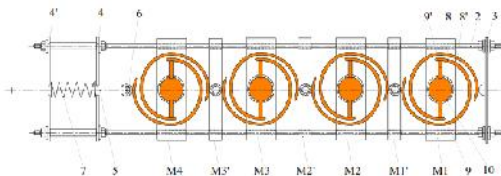
RO.108.

Title EN	System for monitoring emotional states
Authors	CENUȘĂ Mihai, MILICI Laurențiu Dan, POENAR Mihaela, PAȚA Sergiu, PENTIUC Radu, POPA Cezar, RAȚĂ Mihai
Institution	Ștefan cel Mare University of Suceava
Patent no.	Patent application No. A/00657/14.09.2017
Description EN	The invention relates to a system for monitoring emotional states based on the evaluation of electrodermal electrical resistance. The system consists of a mouse-type system that, in addition to its peripheral role, also performs the electrodermal signal acquisition via a pair of contacts, a force sensor, a signal adapter circuit and an acquisition microsystem.
Class no.	4. Medicine - Health Care - Cosmetics



RO.109.

Title EN	Solar motor
Authors	CERNOMAZU Dorel, MANDICI Leon, GRAUR Adrian, SOREA Nicolai, NIȚAN Ilie, RAȚĂ Mihai, MILICI Laurențiu-Dan, MILICI Mariana Rodica, PRODAN Cristina, ROMANIUC Ilie, BACIU Iulian
Institution	Ștefan cel Mare University of Suceava
Patent no.	Patent No. 128655B1/2017
Description EN	The invention relates to a solar motor with limited linear movement, which operates on the principle helio-thermo-mechanical conversion, which is carried out in several wax thermo-mechanical converters which interact with each other.
Class no.	2: Energy and sustainable development

**RO.110.****Title EN****Method and installation for milk handling and management****Authors**

PAȚA Sergiu, MILICI Laurențiu Dan, UNGUREANU Constantin, OLARIU Elena, POIENAR Mihaela, BOBRIC Crenguța, IRIMIA Daniela, PENTIUC Radu, POPA Cezar, RAȚA Mihai

Institution**Ștefan cel Mare University of Suceava****Patent no.**

Patent application No. A/01108/13.12.2017.

**Description
EN**

The system for the handling and management of the milk comprises a steam generator, a vacuum system, a system identifier and an installation for milking. The invention has the advantage that each container contains milk from a single animal, and prior to processing the milk, laboratory tests can be performed to check both its quality and the animal's health status.

Class no.

5: Industrial and laboratory equipments

RO.111.**Title EN****Sun tracking system****Authors**

NIȚAN Ilie, POIENAR Mihaela, MILICI Rodica-Mariana, IRIMIA Daniela, BOBRIC Crenguța-Elena, OLARIU Elena-Daniela, RAȚĂ Gabriela, PRODAN Cristina, UNGUREANU Constantin, ROMANESCU Adrian, PENTIUC Radu

Institution**Ștefan cel Mare University of Suceava****Patent no.**

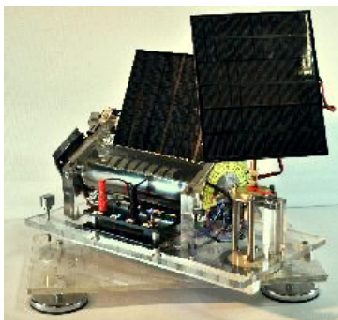
Patent Application No: A/00430/2017.

**Description
EN**

The invention relates to a Sun tracking system consisting of a solar actuator designed on the principle of helio-thermo-mechanical conversion. The Sun system orientation is carried out by means of a bimetallic thermal actuator which controls the angular displacement of a wheel mechanism through which the daily Sun's pursuit is carried out.

Class no.

2: Energy and sustainable development

**RO.112.****Title EN****Linear actuator with bimetal****Authors**

ROMANESCU Adrian-Neculai, CERNUȘCĂ Dumitru, PAȚA Sergiu, CENUȘĂ Mihai, POIENAR Mihaela, NIȚAN Ilie, POPA Cezar, MILICI Laurențiu-Dan, PENTIUC Gheorghe

Institution**Ștefan cel Mare University of Suceava****Patent no.**

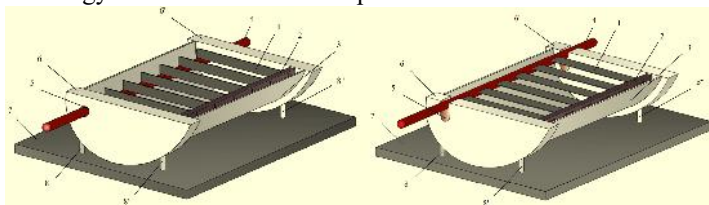
Patent application No. A/00487/2016

**Description
EN**

The linear actuator with bimetallic band according to the invention is constituted through some bimetallic lamellas that are fixed by one end in an upright position on a support, within a parabolic concentrator. As a result of the bimetallic blades summed deformation, the shaft will perform a linear movement that will actuate a particular system.

Class no.

2: Energy and sustainable development

**RO.113.****Title EN****Heliothermic actuator with bimetallic band****Authors**

ROMANESCU Adrian-Neculai, CERNUȘCĂ Dumitru, PAȚA Sergiu, CENUȘĂ Mihai, POIENAR Mihaela, OLARIU Elena-Daniela, UNGUREANU Constantin, NIȚAN Ilie, MILICI Laurențiu-Dan

Institution**“Ștefan cel Mare”University Suceava.****Patent no.**

Patent application No. A/00439/2016

Description

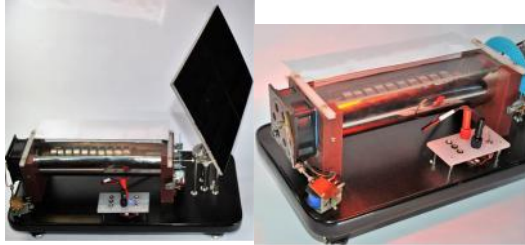
The heliothermic actuator represents a mechanical

NATIONAL

EUROINVENT 2018

EN converter made from a bimetallic band shaped in the helicoidal-cylindrical form, placed in a cylindrical-parabolic concentrator, closed with a glass cap. The assembly is placed between two caps and is joined to flexible shaft provided with a toggle joint, which enables the adjustment of the system relative to the position of the Sun.

Class no. 2: Energy and sustainable development



Regele Mihai I al Romaniei
Banat University of Agricultural Science
and Veterinary Medicine, Timisoara

RO.114.**Title EN**

AUTOMATED INSTALLATION FOR BIOGAS PRODUCTION

Authors

Dr. ing. Vintilă Teodor

Institution

Banat's University of Agricultural Science and Veterinary Medicine "King Michael I of Romania" from Timișoara

Patent no.

Patent no. 128668 B1, Published in BOPI 10/2017

Description EN

The invention represents an automated system for biogas production by anaerobic digestion of organic materials with applications in agriculture, especially on small or medium size farms. The substrate is fed by a front loader into the mixing tank, chopped and mixed with water, by a chopper-pump immersed and mobile in the tank, the suspension is pumped into the horizontal fermenter in which the anaerobic digestion and biogas production occurs. The suspension in the digester is mixed by recirculation of biogas. The whole assembly is controlled by temperature, pressure and concentration of methane sensors, connect to a PLC where is installed a dedicated software for the automatic control of processes.

Class no.

Invention Classification: 2

**RO.115.****Title EN**

Process for obtaining a pastry with stearin obtained from pork fat by dry fractionation

Authors

Rinovetz Alexandru, Alexa Ersilia, Trască Teodor Ioan, Cocan Ileana, Popescu Iuliana, Rădoi Bogdan

Institution

Banat University of Agricultural Sciences and Veterinary

	Medicine “King Michael I of Romania” from Timisoara and S.C.PROSPERO S.R.L.
Patent no	Patent application No. OSIM A/01037 / 6.12.2017
Description EN	The present invention relates to a process for fractionating the animal fat by non-invasive techniques which results in the production of nutritionally valuable lipid feedstocks with applications in the food industry. The importance lies in the need of processors in the bakery and pastry industry to replace margarine, a chemical feedstock obtained under catalytic conditions, with chemically unchanged lipid fractions. <i>Applications</i> This invention responds to the demands of consumers to move towards healthy eating.
Class no.	

RO.116.

Title EN	Procedure of obtaining vegetable protein hydrolysates as biofertilizers for organic agriculture
Authors	Dragomirescu Monica, Alexa Ersilia, Negrea Monica, Cocan Ileana, Lintia Vasile
Institution	Banat University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara and S.C.PANETONE S.R.L
Patent no.	Patent application No. A/01036 din 06.12.2017
Description EN	The work is about a procedure of obtaining a biofertilizer containing protein hydrolysates by using a proper method for organic agriculture. Different natural plants are used as source of protein. For hydrolysis of proteins some enzymes are used. The procedure uses total vegetable extracts and consequently the final product contains protein hydrolysates and also many active biological compounds produced by plants, important for plant growing (antioxidants, macro and microelements). <i>Applications</i> : Agriculture
Class no.	3. Agriculture and Food Industry

RO.117.

- Title EN** **Savory cream**
- Authors** **Dumbravă Delia Gabriela, Botau Dorica, Alexa Ersilia-Calina, Bordean Despina, Raba Diana-Nicoleta, Popa Viorica Mirela, Moldovan Camelia**
- Institution** Banat University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara
Trademark application : **No. M2018/00834** / 09.02.2018
- Description EN** The invention relates to a dietetic spreadable dessert cream, without added sugar, with carob powder, *Stevia rebaudiana* and *Momordica charantia*. The product contains no allergens and is obtained by cold technology, protecting the bioactive plants compounds. This dessert is for people with restrictions on sugar consumption, but also for those who want to eat healthy sweets.
Applications: Food industry
(max 250 words)
- Class no.** 3. Agriculture and Food Industry

RO.118.

- Title EN** ***Oenothera biennis* skin-moisturizing cream**
- Authors** **Horablaga Adina, Milovanov Cornelia, Ahmadi-Khoie Mirela, Mederle Narcisa, Morariu Sorin, Morariu Florica-Emilia, Horablaga Nicolae Marinela, Mederle Ovidiu Alexandru, Popescu Gabriela**
- Institution** Banat University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara
- Patent** Patent application No. **a 2017 00269 / 08.05.2017**
- Description EN** The invention relates to a moisturizing cream for skin, which has as ingredients, natural principles and applies locally to the skin.
According to the invention, the cream contains 90% mixture of natural oils (light of series, argan, olives, ricin, cocoa), 4% emulsifier derived from olive oil, 2% vitamin E, 2% emulsifying wax and 2% cocoa butter .
Following application of moisturizing cream, skin absorption is rapid and has no irritating effect on skin.
Applications : Treating and maintaining the skin
- Class no.**

RO.119.

Title EN	<i>Developing an innovative product from pork with dehydrated fruits filling and crust "MEAT DELICE"</i>
Authors	Raba Diana Nicoleta, Mișca Corina Dana, Bordean Despina Maria, Dumbravă Delia Gabriela, Popa Viorica Mirela, Moldovan Camelia
Institution	Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara
Patent	Trademark application No M201707842 The trademark presents an innovative prototyp which consist in a roasted pork meat product, stuffed and covered with dried fruits, obtained exclusively with raw materials from romanian production. The inovative aspect of this project is given by the association of dried fruits used for product assesoning and preserving; appling of a gentle termal treratment in order to maintain the product nutrients at their optimum quality which give an equilibrate nutritional profile to the final product consisting of high quality proteins of the pork meat, and high quality vitamins, fibers, polyphenols, and antioxidants from fruits.
Description EN	Applications : Food industry
Class no.	3

RO.120.

Title EN	BEAUTY FOR EVER
Authors	MISCA CORINA DANA, BOROZAN AURICA BREICA
Institution	Banat's University of Agricultural Science and Veterinary Medicine "King Michael I of Romania"
Patent	M2018/02124 / EFRO201800000215460 The product obtained is part of the dermato cosmetics category with beneficial effects on the epidermis through the moisturizing, emollient, regenerative, anti-acne and antiaging action. The active principles of Aristolochia clematitis and Symphytum officinale were incorporated into a vegetable oil which was subsequently thickened and stabilized to increase the viscosity of the compound. With anti-acne and moisturizing action at the same time, it prevents skin damage, gives a feeling of comfort and a shiny appearance of the face.
Description EN	
Class no.	4

RO.121.

Title EN	Shampoo composition used in the treatment of canine demodycosis dry lesions
Authors	Mederle Narcisa, Patrascu Mariana, Kumbakisaka Sylviu, Morariu Sorin, Darabus Gheorghe
Institution	Banat University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara
Patent	Patent application No. A 1046 / 07.12.2017 The invention relates to a shampoo which contains natural principles and it is applied on the body of animals suffering from dry lesions due to parasitism with <i>Demodex canis</i> . According to the invention, the shampoo contains the shampoo base consisting of anionic and nonionic surfactants, collagen hydrolyzate, NaCl as a thickening agent, solvent-distilled water and hydro-glycero-alcoholic extracts from black currant buds, walnut shoots , rose petals, cedar shoots, rye radishes. After administration, the hair and skin of the parasitic dogs are decontaminated, the skin absorption is rapid and there is no irritating effect on the parasite skin.
Description EN	
Class no.	4

RO.122.

Title EN	PROCEDEU DE CONSERVARE A ZAHAROZEI ÎN SFECLA DE ZAHĂR
Authors	De Lange Paul (NL), Dr. ing. Vintilă Teodor (RO)
Institution	Banat University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara OSIM: nr. a201600277, publicată în BOPI nr 8/2016.
Patent	ESPACENET: RO131332 (A0) – Classification: international, C13B10/00 The invention describes a process of preservation of sucrose in sugar beet, leading to an increase of the shelf life of sugar beet material, inactivation of invertase enzyme and consequently around-the-year production of sugar from sugar beet. After original treatment process and the storage period, the sugar in beet-liquid is physically separated from the treated sugar beet fragments. In next steps, the preserving agent is recovered and the sugar can be isolated via existing process steps in existing installations like water dissolving, crystallization, evaporation, either in its crystalline form or as concentrated syrup or other known ways of extracting.
Description EN	Applications Food industry, industrial biotechnology, biotechnology.
Class no.	3

RO.123.

Title EN	Biomass Prediction Model in Maize Based on Satellite Images
Authors	HERBEI Mihai, SALA Florin
Institution	Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara
Description EN	Monitoring of crops by satellite techniques is very useful in the context of precision agriculture, regarding crops management and agricultural production. The present study has evaluated the interrelationship between maize biomass production and satellite indices (NDVI and NDBR) during five development stages (BBCH code), highlighting different levels of correlation. Biomass production recorded was between $2.39 \pm 0.005 \text{ t ha}^{-1}$ (12-13 BBCH code) and $51.92 \pm 0.028 \text{ t ha}^{-1}$ (83-85 BBCH code), in relation to vegetation stages studied. Values of chlorophyll content ranged from 24.1 ± 0.25 SPAD unit (12-13 BBCH code) to 58.63 ± 0.47 SPAD unit (71-73 BBCH code), and the obtained satellite indices ranged from 0.035641 ± 0.002 and 0.320839 ± 0.002 for NDVI indices respectively 0.035095 ± 0.034 and 0.491038 ± 0.018 in the case of NDBR indices. By regression analysis it was possible to obtain predictive models of biomass in maize based on the satellite indices, in statistical accurate conditions. The most accurate prediction was possible based on NDBR index ($R^2 = 0.986$, $F = 144.23$, $p < 0.001$, $RMSE = 1.446$), then based on chlorophyll content ($R^2 = 0.834$, $F = 16.14$, $p = 0.012$, $RMSE = 6.927$) and NDVI index ($R^2 = 0.682$, $F = 3.869$, $p = 0.116$, $RMSE = 12.178$).
Class no.	

RO.124.

Title EN	Use landsat image to evaluate vegetation stage in sunflower crops
Authors	HERBEI Mihai, SALA Florin
Institution	Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara
Description EN	Remote sensing is of great interest for the study and characterization of the vegetation and of the agricultural crops, in order to monitor them and to develop predictable patterns regarding the evolution of the crops and also for the

purpose of the decision making process in real time. The main purpose of this research was the study of the sunflower crops dynamics based on spectral information obtained from satellite images. Vegetation dynamics was differently expressed by the indexes NDVI, NDBR and NDMI determined based on spectral information. NDVI has registered an ascending slope since the beginning of the vegetation period until the flowering (65 BBCH code) when the maximum value was recorded ($NDVI_{GS6} = 0.4074$). Later the distribution of this indicator recorded a descending slope until the physiological maturity. NDVI in correlation with the NIR band had lower values in the stages 12-14 BBCH code ($p < 0.01$; $R^2 = 0.642$) and 80-81 BBCH code ($p < 0.01$; $R^2 = 0.605$) and higher values at flowering stage, 65 BBCH code ($p < 0.01$; $R^2 = 0.966$), and physiological maturity, 92-97 BBCH code ($p < 0.01$; $R^2 = 0.993$; $F = 3148.2$). NDVI index has most closely correlated with vegetation phenophases and it highlighted, by the different level of correlation with the spectral information, the dynamics and variability in the sunflower crop.

Class no.

RO.125.

Title EN

Assesment of somaclonal variability in *Paulownia* sp. using RAPD markers

Authors

Petolescu Cerasela, Velicevici Giancarla, Luca Roxana, Simina Alina, Gorinoiu Gabriela, Camen Dorin, Trinc Diana, Botau Dorica

Institution

Banat's University of Agricultural Sciences and Medicine Veterinary "King Michael I from Romania", Timisora

**Description
EN**

Paulownia trees are mainly known worldwide for high growth rate, the quality of wood, biomass and flower nectar. The present communication describes *in vitro* clonal propagation of *P. tomentosa* and *P. elongata* from nodal stem fragments obtained by in vitro seeds germination in order to assess the genetic stability of regenerants obtained after five repeated subcultivation. For this purpose we used six RAPD markers: OPA02, OPA16, OPA10, OPF04, OPY20, OPA12. After each subcultivation, plant material was sampled from 10 individuals, resulting a bulk sample from which DNA was extracted. Were used molecular techniques for genetic variability detection and statistical-

mathematical methods of result processing and interpretation (Jaccard coefficient).

Following the interspecific similarity assessment, was identified a similarity between *P. tomentosa* and *P. elongata* of 74%, thus it can be said that these two species are closely related. Based on similarity coefficients, *P. tomentosa* has the highest degree of somaclonal variability, an average of 8.6% polymorphism between the mother plant and the regenerants obtained after the 3rd subcultivation (T3); 38.6% polymorphism in the case of regenerants obtained after the 4th sub-cultivation (T4); 38% in the case of regenerants obtained after the 5th subcultivation (T5), the average of the total polymorphism being 28.4%. Following the evaluation of genetic stability in *P. elongata*, somaclonal variability was identified only for the primer OPY 20, the polymorphism being 27%. The average of total polymorphism identified by the 6 primers is 3.4%.

The results obtained using RAPD primers prove the possibility of occurrence of somaclonal variability after 4-5 repeated subcultivations in the *Paulownia* species.

Class no.

RO.126.

Title EN

QUANTIFICATION OF SOME MORPHOLOGICAL AND CYTOLOGICAL ASPECTS TO *ALLIUM SATIVUM L.* UNDER THE NICKEL TOXICITY INFLUENCE

Authors

Sărac Ioan, Botau Dorica, Petrescu Irina, Madosa Emilian, Bonciu Elena, Corneanu Mihaela, Popescu Sorina

Institution

Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara

**Description
EN**

Heavy metals are among the most toxic pollutants due to their long persistence in solution. In this context, the present research aims to quantify the effect of nickel on the foliar and radicular growth of *Allium sativum L.* species, in parallel with the evaluation the cytotoxicity of this heavy metal. As an indicator of the degree of heavy metal pollution we studied the cytogenetic changes in *Allium* roots. The 50, 150, 450 ppm concentrations at different time exposure (7, 14, 21 days for macroscopic determinations), respectively 1, 3, 6% (at 24, 48, 72 hours for microscopic determinations)

compared an untreated control were used.

The obtained results suggest that the combined effect of concentration and duration of nickel treatment had a considerable and statistically assured influence on leaf growth only 7 days after application. The formation of the radicles was much lower for the treated variants, and there were also observed macroscopic differences toward the control. In addition, the strong mitodepressive effect of nickel was found, especially for the 48 and 72 hours exposed variants; in these variants, were recorded different chromosomal aberrations and their frequency was correlated with the concentration and duration of treatment. The main cytological changes were: cells with micronucleus, retarded chromosomes, expelled, picnotics chromosomes.

The results show that the nickel induces a significant mutagenic activity. Cytological observations are supported by the macroscopic findings, respectively the low number and the reduced dimensions of the radicles. Our results are serious arguments in developing methods for the prevention and control of nickel pollution.

Class no.

3

RO.127.

Title EN

Use of RAPD markers to assess the genetic diversity in *Calendula officinalis* collected from west regions of Romania

Authors

Velicevici Giancarla, Madoşa Emilian, Ciulca Adriana, Petolescu Cerasela, Mălăescu Mihaela, Camen Dorin

Institution

Banat's University of Agricultural Sciences and Medicine Veterinary "King Michael I from Romania", Timisora

**Description
EN**

The *Calendula* genus includes about 25 species. The most current and cultivated species is *C. officinalis* L. and it is used for setting green spaces, for interiors, as well as cut flowers in various floral arrangements. *Calendula* has been used for medicinal purposes since at least the 12th century, primarily as a topical application to boost the healing rate of wounds and prevent infection.

Genetic diversity of plant germplasm is the important basis of conservation biology and genetic improvement. This work aimed to analyze the genetic diversity of *Calendula officinalis* using (RAPD) markers. In order to achieve the genetic diversity of *Calendula officinalis* 15 cultivars,

collected from different locations were studied. These cultivars were fingerprinted with ten RAPD primers. Of the 10 primers used for amplification, only five were amplified, they were selected for RAPD analysis.

These primers produced 61 fragments with a mean of 7.2 polymorphic fragments per primer and a polymorphic rate with value between 37.5% in case of OPG 09 and 81.25% for oligonucleotides OPA 04.

The obtained results and information can be useful for new breeding works on *Calendula* and data on genetic diversity are most needed for management in gene banks.

Class no.

3

RO.128.

Title EN

Cultivation of maize through mulching using photo-biodegradable plastic sheets

Authors

Imbrea Florin, Pop Georgeta, Borcean Adrian, Imbrea Ilinca Merima, Botoș Lucian

Institution

Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” Timișoara

**Description
EN**

Challenges that confront farmers nowadays because of climate changes have a complex, complete character and solving them needs transgressing traditional frontiers from the perspective of their technological variant. The regime of precipitations has become increasingly chaotic, which has a major impact on the production system. The lack of water and the presence of drought periods tend to result in lower and less safe productions per ha. Because we expect negative effects of climate changes to be increasingly stronger, teachers and researchers from the Faculty of Agriculture of the Banat's University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara, Romania, in cooperation with Hybrid Corn Production, Italy, recommend maize cultivators such a technological variant. Among the applications and advantages, the results obtained with such technologies we mention the reduction of the risk of lack of moisture during sprouting, particularly during dry springs, by seeding very early (mid March); due to the area covered by a plastic sheet (86% of the area), the evaporation area is reduced to 14% and irrigation conditions reduce with 2/3 of the watering

rate; the growth rate in plants is intense, blooming is early, and we avoid both atmospheric dryness and soil dryness that have become common in July-August; we reduce the number of mechanical operations – tillage, treatment with herbicides, fertilisation during vegetation; at the same time, nitrogen fertiliser rates and the amounts of herbicide are reduced with 30% together with the reduction of the impact on the environment.

Class no.

3

RO.129.

Title EN

Bioresources in the spontaneous flora in South-Western Romania with use in phytotherapy

Authors

Imbrea Ilinca Merima, Pop Georgeta, Imbrea Florin, Neacșu Alina

Institution

Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” Timișoara

**Description
EN**

The modern therapeutics is based on plant organs, on the active principles or substances isolated from their, on semi-synthesized products isolated from plants, for which reason economic mapping of medicinal flora from certain areas is warranted. The research done in the Depression Almaj (Caras-Severin County) followed certain directions: drawing up an inventory of species with phytotherapeutic use in the area, establishing optimum harvesting areas, finding the quantity of the yield harvested, taking into account the nature protection law. The investigations carried out have identified over 250 medicinal and aromatic species, belonging to 63 botanical families, the best represented are the Lamiaceae (12%), Asteraceae (11%) and Rosaceae (9%). The researches were done using economic mapping method, based on which we determined the species of interest, the quantity of plant material which can be harvested (kg/dry matter) and also the optimal areas for harvest were mapped. Regarding the applicability of the research results, the data constitute the valuable information for the local residents of reference, which can efficiently use the natural potential, scientifically, as it is known that the large companies which are processing the medicinal plants are interested and purchase raw materials of wild flora. The products are organic so they sell at higher prices and no money was spent for the purpose of

establishing and maintaining culture as happens in traditional agriculture. Among the advantages, the methods of economic mapping stands and ensure the conservation of biodiversity and sustainable use of areas, preventing the ecological imbalances and also provides accurate information regarding the harvest places.

Class no. 3

RO.130.

Title EN **In vitro antibacterial activity of some plant essential oils from *Cupressaceae* Family**

Authors POP Georgeta, IMBREA Ilinca Merima, ALEXA Ersilia Călina, IMBREA Florin, BOTAU Dorica, DEHELEAN Cristina Adriana, DANCIU Corina

Institution **Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timișoara**

Due to the rise in popularity of bio-products and ever growing discussions on antibiotic resistant “superbugs” we found an opportunity in the antiseptic properties of plant based essential oils.

Through this study we aim to evaluate the antibacterial activity of 3 types of plant based essential oils, extracted from ornamental gymnosperms, against 5 bacterial strains using the agar disc-diffusion method:

- Gram negative: *E. coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*;
- Gram pozitiv: *Staph. epidermidis*, *Staph. aureus*.

Description EN The oils were extracted by means of hydrodistillation from the species: *Cupressus sempervirens*, *C. arizonica* and *Thuja sp.*

Cupressus sempervirens demonstrated an inhibitory effect superior to Fulconazole 25mg and similar to Chloramphenicol 30mg against the bacterial strains tested.

The other two analyzed oils expressed superior antimicrobial activity over Fluconazole, but were less effective than Chloramphenicol.

Applications:

Natural bioactive compounds can contribute to the formulation of bio-products that poses antibacterial

properties superior to those of broad-spectrum antibiotics, and studies such as this one are the basis for obtaining phytopharmaceutical products of this kind.

Advantages:

Essential oils have great potential as antimicrobial compounds against microorganisms with the advantage of being a natural product. Thus, they can be used in the treatment of infectious diseases caused by resistant microbes. These oils have also shown the highest activity against antibiotic-resistant bacteria.

Class no.

3

RO.131.

COMBATING THE OXIDATIVE STRESS EFFECT ON DNA MOLECULE WITH NATURAL ANTIOXIDANTS

Title EN

Authors

Boldura Oana-Maria, Tulcan Camelia, Baltă Cornel, Popescu Sorina

Institution

Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara

**Description
EN**

The reactive oxygen species (ROS) are oxygen radicals (superoxide, hydroxyl, peroxide) as well as non-radical oxygen derivatives (dehydrogen peroxide, singlet oxygen, peroxinitrite). The main cellular damage induced by ROS consists of alteration of macromolecules as essential proteins and breakage of DNA strands. The main characteristic of an antioxidant is its ability to trap free radicals. Ascorbic acid is the only endogenous antioxidant in plasma that can completely protect against peroxidative damage. Also, among others biological activities, the rosmarinic acid is a powerfull natural antioxidant.

In this framework, the main goal of our study was to verify the direct action of claustragenic factors such as reactive oxygen species and UV radiation on DNA molecule and also the potential antioxidant effect of two chemical compounds: vitamin C and rosmarinic acid.

DNA isolated from muscle tissue and distributed equally in samples that were added with low quantities of antioxidants. At every step of the protocol, DNA was quantified by spectrophotometry and part of the sample was analized by agarose gel electrophoresis. Samples were and incubated at

4°C for 24 h and exposed to UV radiation for 30 minutes.

From the data collected in our experiments it can be concluded that ROS and UV radiation has a strong degradable action on DNA molecule when the molecule is directly exposed.

The effect of ROS and UV radiation is combated by antioxidants, vitamin C having the best results. And also, the addition of small quantities of antioxidants prevents the degradation in time of DNA molecule.

Class no.

3

RO.132.

Title EN

MOLECULAR IDENTIFICATION OF RHIZOBIUM STRAINS IN ORDER TO PRODUCE BACTERIAL INOCULANTS

Authors

Popescu Sorina, Boldura Oana-Maria, Borozan Aurica, Sărac Ioan, Botău Dorica

Institution

Banat University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara

**Description
EN**

The use of bacterial inoculants in agriculture contributes to a considerable improvement in the biological fixation rate of atmospheric nitrogen by symbiosis of bacteria from *Rhizobium* genus with leguminous plants, which ensures efficient agriculture, high production of protein for feed and food and also leads to increasing sustainability, reducing chemical inputs and carbon footprint and pollution. Therefore, the accurate identification of the bacterial strains specific to each leguminous species it is of great interest. For this purpose we developed a procedure for genetic identification of *Rhizobium* species based on sequencing of the small subunit rRNA gene (16 S rRNA gene). For the DNA isolation four different methods have been used and the best one was selected according to the concentration and quality of the samples. Amplifying the 16S rRNA gene from the DNA samples was carried out with the following primers: F27: AGAGTT TGATCMTGGCT and F485: CAGCAGCCGGGGTAA using Green Taq master mix (Promega) in accordance with the manufacture indications. The amplified products were separated in 1.8% agarose gel electrophoresis and the DNA fragments with the expected size of 1500 bp were excised and purify with the PureLink, Quick Gel Extraction & PCR Purification Combo

Kit. For sequencing the Sanger method was used starting from the primers which generated the interest fragment. The obtained sequences were compared with the international databases (<https://blast.ncbi.nlm.nih.gov/>), therefore the accurate identification of the bacterial species being possible.

Class no. 3

RO.133.

Title EN **NATURAL ORGANIC ANTIFUNGAL PREPARATIONS (PNEA)**

Authors **Alexa Ersilia, Linția Vasile, Sumălan Renata, Poiană Mariana, Obiștioiu Diana, Negrea Monica, Pop Georgeta, Botău Dorica**

Institution Banat University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara

Description EN The project aims at obtaining, testing and patenting of natural, organic based oils or extracts from medicinal and seasoning plants, as well as from by-products derived from wine production with role in the fungal and micotoxigen control, which to replace the synthesis fungicides usually applied for the protection of plants during the growth period of plants but also during storage. The objectives of the projects refers to in vitro and in vivo testing of natural extracts in order to identify the optimal variants with maximum antifungal potential which will be subsequently incorporated into commercial preparations. The project comes as support at the economical agents request, who wants to diversify its range of products designed for organic agriculture, by obtaining some antifungal products used to control pathogen agents, especially Fusarium and Verticillium development.

Class no. 3

RO.134.

Title EN **Studies on the variability of some species in danger of reducing the area in western Romania**

Authors Madosa E., Velicevici Giancarla, Ciulca Adriana, Sasu Lavinia, Ciulca S.

Institution Banat's University of Agricultural Sciences and Veterinary medicine “King Michael I from Romania”

Timisoara, Romania

The study aimed at assessing the variability of morphological characters and the correlations between them, to a few species whose areas are in a restraining situation. The study targeted species: *Galanthus nivalis* L., *Crocus heuffelianus* L., *Scilla bifolia* L., *Erythronium dens canis* L.. In Romania, in some areas, the areas of these species are restricted due to anthropogenic activities or because of stressful conditions. The maintaining of natural populations depends heavily on individual variability. The populations with high variability are more likely to adapt to stressful conditions. The study was conducted in various areas in the west and southwest of the country, in the Arad, Timis and Mehedinti counties. The study was conducted by performing biometric measurements on the main morphological characters of the aerial and underground parts of the plants. The studied populations have medium variability for morphological characters. The greatest variability occurs for the color and size of the flowers in *Crocus heuffelianus* L., a species that presents varieties of violet, white or yellow flowers, but also for the number of flowers in the inflorescence and the flowers diameter in *Scilla bifolia* L. The dimensions of the aerial parts of the plants are influenced by the size of the bulbs, particularly by their diameter. Significant correlations exist between the dimensions of leaves and flowers. The observed variability ensures the maintenance of populations in the area under the influence of stress factors, but without negative anthropological interventions.

Description
EN

Class no.

3

RO.135.

Title EN

Leaf area constant model in optimizing foliar area measurement in plants: A case study in apple tree

Authors

SALA Florin, ARSENE Gicu-Gabriel, IORDANESCU Olimpia, BOLDEA Marius

Institution

Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara

Description
ENThe Leaf Area Constant Model (LAC Model) has made it possible to obtain the leaf area constants (K_A), specific to five apple cultivar (Generos, Pionier, Jonathan, Florina and

NATIONAL

Delicios de Voinești) by optimizing the calculations based on the analysis of 500 leaves. Based on the leaf dimensions and the leaf area constant (K_A) obtained for each apple cultivar, the foliar surfaces were computed with high precision, with statistical safety confirmed by the parameters: Minimum Error (ME), and Root Mean Squared Error (RMSE). The model can be used for different plant species in optimizing leaf area determination.

Class no.

RO.136.

Title EN

Causes and solutions for the remediation of the poor allocation of P and K to wheat crops in Romania

Authors

Florin Sala, Ciprian Rujescu, Cristian Constantinescu

Institution

Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara

**Description
EN**

The aim of the present study was to find a model to optimize phosphorus (P) and potassium (K) fertilizers doses for wheat crops. The experimental research consisted in differentiated allocation of fertilizers with N and the PK complex in order to create controlled nutrition deficits. It was conducted within the Didactic Station in Timisoara, from 2012 to 2014. Based on the yields obtained and on the associated economic elements, two scenarios were used: variation of wheat selling price and the price of fertilizers; each scenario had several variants. The study assessed the optimal dose of N and PK respectively that resulted in the maximum profit. The model employed for this purpose was a model given by the production function verified by experimental data. The results were analysed and processed with SPSS and the graphic representations with Wolfram Alpha. The study discovered that the main cause of the Romanian farmers' low interest in using PK fertilizers is the dissonance between the cost of PK fertilizers and the low market price of wheat. Given the current price of wheat - between 0.5 - 0.6 lei/ kg⁻¹, the authorities have to adopt incentive pricing for PK fertilizers in order to stimulate the use of such fertilizers by Romanian farmers. These measures will result not only in better quality and quantity of the yield, but also in medium and long-term improvement of soil fertility.

Class no.

3

RO.137.

Title EN	Scan LeafArea – A software application used in the determination of the foliar surface of plants
Authors	Robert Drienovsky, Alma L. Nicolin, Ciprian Rujescu, Florin Sala
Institution	Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara
Description EN	<p>The present study reveals the Scan LeafArea application, used in the determination of the foliar surface of plants. The leaves from three species of trees have been studied, Birch (<i>Betula pendulata</i> Roth), walnut (<i>Jugland regia</i> L.) and silver lily (<i>Tilia tomentosa</i> Moench. The Scan LeafArea application was developed in Processing Program, with codes written in Java programming language. The leaves of the birch tree had a foliar surface that ranged between 13.43 – 44.48 cm² with a mean value of 28.55±2.67 cm² by using the proposed application, and with the ImageJ software, for comparison, has obtained values between 13.25 – 44.71 cm² and a mean value of 28.59 cm². The mean difference between the two methods was -0.04 cm². In the some condition, for walnut the leaf area with Scan LeafArea was 21.92 – 114.30 cm², and with ImageJ has registered values between 21.32 - 114.32 cm², with a mean value of 65.47 cm² and the mean difference between the two methods of 0.31 cm². For the linden leaves with the Scan LeafArea application, the foliar surface ranged between 23.89 - 98.11 cm² and with ImageJ software, the foliar surface value was 23.25 - 97.94 cm², the mean difference between the program and the software being of 0.37 cm². The relationship between the foliar surface determined by the application Scan LeafArea and the one revealed by ImageJ software has been described by the first degree mathematical equations in the following statistical condition: $p < 0.001$, $R^2 = 0.999$.</p>

Class no.**RO.138.**

Title EN	Scan Sick & Healthy Leaf – A software application for the determination of the degree of the leaves attack
Authors	Robert Drienovsky, Alma L. Nicolin, Ciprian Rujescu, Florin Sala
Institution	Banat University of Agricultural Sciences and Veterinary

Description
EN

Medicine "King Michael I of Romania" from Timisoara

The present study had the purpose an IT application for determining the sick and healthy foliar surface, Scan Sick&Healty Leaf, developed in the Processing program, with code lines written in Java programming language. Based on the application, this determinate the total, healthy and sick foliar surface affected by the diseases and pests attack at apple leaves (*Dysaphis* ssp. and *Venturia inaequalis*). In the case of leaves attacked by gallmite, the total leaf surface varied between $13.57 - 32.74 \pm 1.82 \text{ cm}^2$, healthy area between $4.77 - 25.53 \pm 1.98 \text{ cm}^2$ and the attack area between $7.21 - 16.03 \pm 0.83 \text{ cm}^2$ with a percentage weight between $22.01 - 66.94 \pm 4.59\%$. In cases of *Venturia inaequalis* attack, the total foliar surface of the studied leaves oscillated between $11.31 - 39.92 \pm 3.34 \text{ cm}^2$, the healthy leaf area ranged from $8.81 - 39.28 \pm 3.44 \text{ cm}^2$ and the attack area was between $0.64 - 5.72 \pm 0.64 \text{ cm}^2$ in absolute values, respectively between $1.61 - 38.09 \pm 3.64\%$ in percentages values. The ANOVA test revealed the existence of variance in the experimental data group, under statistical safety, $F > F_{\text{crit}}$, $p < 0.001$. Analyzing the mean values for the healthy surface (12.656 cm^2) compared to that attacked by the gallmite (11.49 cm^2), a ratio of 1.10: 1 was found. And under the same conditions of healthy surface area analysis (20.96 cm^2) against the *Venturia inaequalis* attack (3.164 cm^2), a ratio of 6.62: 1 was recorded.

Class no.

3

Babes-Bolyai University, Cluj-Napoca

RO.139.

Title EN	SmartBox based on IOT for online monitoring and control of long time reaction parameters
Authors	Réka Barabás, László Barabás, Petrut Henrietta, Szabó Róbert, Dobai Gábor, Zsebenyi Barbara, Farkas Ábel, Zsebe Ákos
Institution	Babes-Bolyai University, Cluj-Napoca
Patent	-
Description EN	<p>Short description of your research.</p> <p>Applications. Advantages.</p> <p>The aim of this work was to find a simple method to control long term chemical reactions and to ensure a safe work environmental.</p> <p>To control the produce of hydroxyapatite temperature and pH sensors were used, which were connected to a small single-board computer, named Raspberry pi. The coding was made by students from department of informatics, using the Cloud platform. The app ensures the access from all devices connected to internet like laptop, smartphone, tablet or smartwatch. During the chemical reaction in the laboratory it is possible to supervise with that app the smart device, to control, to change the initial parameters.</p>
Class no.	4



RO.140.**Title EN****Obtaining process of resorcinol-formaldehyde xerogel/ceramic and carbon xerogel/ceramic composites****Authors**

Liviu Cosmin Coteș, Carmen Ioana Forț, Virginia Danciu

Institution**Babeș-Bolyai University****Patent**

A 2012 00065 /30.01.2012 (accepted as OSIM patent: 28.12.2017)

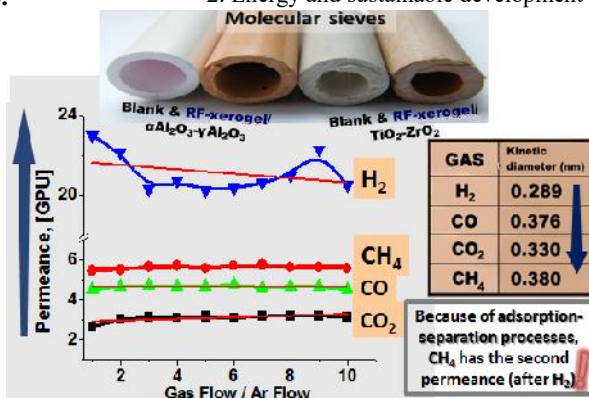
Procedure of the invention consists of the synthesis by a sol-gel method of resorcinol-formaldehyde gels into the macroporous monotubular Al_2O_3 or $\text{TiO}_2\text{-ZrO}_2$ ceramics followed by a drying and a thermal treatment in inert atmosphere (Ar or N_2 , $>500^\circ\text{C}$). The obtained “resorcinol-formaldehyde or carbon xerogels – ceramics ($\alpha\text{Al}_2\text{O}_3\text{-}\gamma\text{Al}_2\text{O}_3$ or $\text{TiO}_2\text{-ZrO}_2$)” composites are very stable and present properties for purification/separation of H_2 or/and CH_4 against other gases (CO_2 , CO , N_2 etc.). Because of the obtained open micropore structure, a combination of adsorption and separation processes that promotes a better permeance of the higher molecular size CH_4 against CO and CO_2 was performed. Practically, an adaptation of some commercial liquid-separation sieves for gases separation was obtained.

**Description
EN**

Applications in: petrochemistry, biogas production, fuel cell, etc., by separation/purification of gas as hydrogen and methane against carbon dioxide and carbon monoxide.

Class no.

2. Energy and sustainable development



RO.141.

Title EN

Chemical Exfoliation Obtaining Process of Large Area Graphene Based Materials (Graphene Oxide and Reduced Graphene Oxide)

Authors

Liviu Cosmin Cotet, Gheorghe Lucian Baia, Virginia Danciu

Institution

Babeş-Bolyai University

Patent

131216/28.02.2018

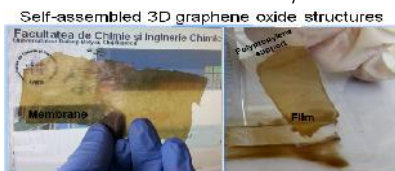
Description
EN

The invention discloses an innovative, versatile, more efficient, scalable-up process of sono-chemical oxidation of graphite that involves steps of washing / centrifugation / sonication in which a precursor graphene oxide (GO) suspension was obtained. By performing controlled isopycnic separations three different GO suspensions resulted as follow: a diluted GO suspension, an oil-like GO suspension and a paste-like GO. Each of them can be harvested and presents different valuable morphological and structural characteristics of their 2D GO nanosheets. Using specifically procedures, 3D GO films supported on various supports and free-standing 3D GO membranes (unsupported films) were obtained even by an original self-assembled process. These were performed at an air-liquid interface, *for the first time* in ambient conditions, when a stable for harvest self-assembled pellicle was formed. By applying specific reducing method, *i.e., thermal treatment*, the GO films and membranes have been converted in reduced GO materials, thus opening up new application types via their improved electrical and mechanical properties.

Applications: electronic devises (miniaturized transistors), sensors, medicine (drug delivery), energy production (transparent electrodes) and storage (supercapacitors), water desalination/purification, wafer structures, functionalized materials. Also, this approach presents interest for fundamental research and mass production of graphene materials (*Priority research field of European Union according to Horizont 2020 Project.*

Class no.

7



RO.142.**Title EN****Procedure for obtaining composites based on aerogel and noble metals with double functionality****Authors**

Gheorghe-Lucian Baia, Vasile Vlad Iancu, Virginia Danciu, Monica Baia

Institution**Babeş-Bolyai University****Patent****129023/30.08.2017**

The invention relates about two methods of obtaining aerogel composites based on titanium dioxide (TiO_2) and noble metal nanoparticles (Au, Ag) and successfully testing their dual functionality, namely the rapid detection of small amounts of a wide variety of adsorbent molecules by surface-enhanced Raman spectroscopy (SERS) and surface-enhanced resonant Raman spectroscopy (SERRS) and decomposition of pollutants from aqueous medium by photocatalysis. The highly porous composites can be deposited on a substrate (*e.g. polymer*), without changing the morphological and structural properties of the composites, and further used as a coating with double functionality, as described above. Due to the photocatalytic activity of TiO_2 the adsorbed pollutant species are decomposed activating thus the self-cleaning property of the titania surface and the porous composites can be reused in further applications.

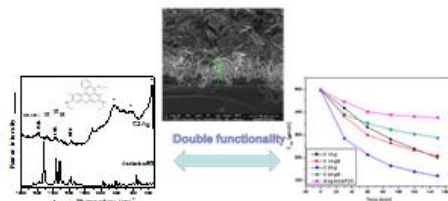
**Description
EN**

Applications: The invention can be applied both to detect small concentration (between 10^{-2} and 10^{-10} M) of pollutant species from aqueous media resulted from industry, agriculture, waste, etc., and also to degrade these pollutants in non-toxic intermediar compounds (sometimes to CO_2 and H_2O).

(max 250 words)

Class no.

1. Environment-Pollution control



NATIONAL

"Carol Davila" University Of Medicine And Pharmacy

RO.143.	
Title EN	STANDARDIZED EXTRACTS FROM <i>ANTHRISCUS SYLVESTRIS</i> - OBTAINING AND THERAPEUTIC USE
Authors	DINU-PÎRVU Cristina Elena, ANUȚA Valentina, VELESCU Bruno Ștefan, NIȚULESCU George Mihai, OLARU Octavian Tudorel, GHICA Mihaela Violeta, ORȚAN Alina, POPA Ovidiu, BĂBEANU Narcisa
Institution	"Carol Davila" University of Medicine and Pharmacy
Patent no.	Patent Application No. A00625/2017
Description EN	The invention refers to the obtaining method of a series of <i>Anthriscus sylvestris</i> dry extracts and their physical, chemical and biological characterization.
	By exploiting the spontaneous <i>Anthriscus sylvestris</i> , based on the pharmacological potential and reduced toxicity, we achieved an original approach to obtaining an anti-inflammatory resource.
	The obtaining methods used in the processes, according to the invention, lead to dried extracts of <i>Anthriscus sylvestris</i> , with a standardized total content of polyphenols (between 4.4 and 6.6 g% Gallic acid equivalents). The extracts were characterized qualitatively and quantitatively by chromatographic and spectrometric methods.
	Extracts of <i>Anthriscus sylvestris</i> showed statistically significant anti-inflammatory effect comparative to diclofenac in experimental models of acute and subacute inflammation.
	The extraction process was reproducible in term of total polyphenolic content. The main advantage of the invention is its capability to provide a pharmaceutical use of the spontaneous <i>Anthriscus sylvestris</i> and to capitalize the plant's high adaptability and ability to grow rapidly in almost any type of soil.
Class no.	4

RO.144.**Title EN****OXOVANADIUM (IV) COMPLEX COMBINATIONS WITH FLAVANONES LIGANDS, OBTAINING METHOD AND THERAPEUTIC USE****Authors**

UIVAROȘI Valentina, VELESCU Bruno Ștefan, ALDEA Victoria, NEGREȘ Simona, OLAR Mărioara Rodica

Institution

"Carol Davila" University of Medicine and Pharmacy

Patent no.

Patent No. 126184 B1/2013

**Description
EN**

The patent describes the synthesis method for obtaining oxovanadium(IV) complex combinations with flavones (hesperetine and naringenine) as ligands and its hypoglycemic activity. The compounds were structurally and biologically characterized. The results pointed out the potential application in the treatment of diabetes, due to their hypoglycemic and hypolipidemic activity in the experimental model used. After 14 day of treatment the complexes exerted hypoglycemic and hypolipidemic (Total Cholesterol, LDL-Cholesterol, triglycerides) effects, with statistical significance *versus* metformin (used as reference). The complexes normalized the serum triglyceride levels, increased the serum HDL-Cholesterol values and had no impact on serum insulin levels.

Class no.

4

RO.145.**Title EN****TOOTHPASTE WITH BEE BREAD (FERMENTED BEE POLLEN)****Authors**

IONIȚĂ Ana Corina, MITITELU Magdalena, DOGARU Elena, DINU-PÎRVU Cristina Elena

Institution

"Carol Davila" University of Medicine and Pharmacy

Patent no.

Patent No. 126742/2014

**Description
EN**

The invention refers to a toothpaste composition containing natural origin compounds, with antifungal, anti-inflammatory, immunomodulatory, healing and calming effects, intended for oral cavity hygiene. The product has a homogeneous macroscopic aspect, white-yellowish color, sweet taste, aromatic characteristic smell.

The natural origin products present in the toothpaste composition are Bee Bread (Naturally fermented bee pollen) and Clove essential oil. The bioactive components were incorporated into a base containing carboxymethyl cellulose,

NATIONAL

glycerin, propylene glycol, sodium bicarbonate, calcium carbonate, sodium lauryl sulphate and sodium metabisulfite.

The therapeutic properties of the product are due to the high content of essential amino acids, enzymes, vitamin K and oligosaccharides from the bee bread, as well as to the high content of eugenol, flavones and tannins of clover essential oil.

These bioactive components provide antimicrobial, antiseptic, anti-viral, anti-inflammatory, antioxidant, astringent, analgesic and anesthetic properties to the product, making it suitable for use in the treatment of oral mucosal disorders as well as dental pain alleviation.

The presence in toothpaste base composition of CaCO_3 supplements the intrinsic haemostatic effect of the natural products. In addition, CaCO_3 provides the toothpaste with mineralizing action, whereas NaHCO_3 acts as a teeth bleaching and abrasive agent, sodium metabisulphite has antioxidant activity, and sodium lauryl sulphate is foaming agent.

The antimicrobial and antifungal effect of the product was proved against different fungal and bacterial stains, such as *Staphylococcus aureus*, *Bacillus subtilis*, *Candida* sp., *Cryptococcus neoformans* and *Aspergillus niger*.

Class no.

4

RO.146.

Title EN

FIXING AND SEALING DEVICE FOR TENCKHOFF PERITONEAL DIALYSIS CATHETER

Authors

Cristiana DAVID^{1,2}, Ileana PERIDE^{1,2}, Dan MITOIU³, Andrei NICULAE^{1,2}, Ionel Alexandru CHECHERIȚĂ^{1,2}

Institution

¹Department of Nephrology and Dialysis, “St. John” Emergency Clinical Hospital, Bucharest; ²Clinical Department No. 3, “Carol Davila” University of Medicine and Pharmacy Bucharest; ³Department of Surgery, “St. John” Emergency Clinical Hospital, Bucharest

Patent no.

a 2014 00428; Decision no. 4/19 – 30.01.2018

Description
EN

Our invention refers to **a device used for fixing and sealing the Tenckhoff peritoneal catheter during any surgical abdominal intervention performed to a peritoneal dialysis patient.** Patients on peritoneal dialysis often require

abdominal surgery procedures; in postoperative periods they necessitate the translation to hemodialysis as renal replacement method. The device allows laparoscopic surgery and reduces to zero the risk of fluid leakage, both during surgery and postoperative period. It enables the immediately postoperative peritoneal dialysis start.

The device for **fixing and sealing the Tenckhoff peritoneal catheter, registered as Patent no.: a 2014 00428 (Decision no. 4/19 – 30.01.2018)**, is mounted around the catheter and it is composed of a suction cup with a tapered internal circular channel that can achieve negative pressure on the abdominal wall; during the laparoscopic surgery; the channel is connected to the vacuum pump which maintains negative pressure in the suction cup room; the atraumatic wall sealing is ensured by a gasket.

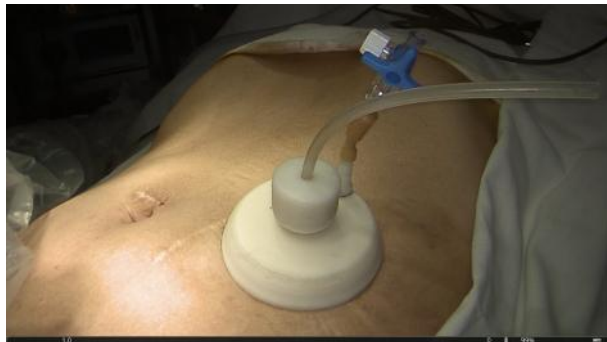
Both installation and operation are simple: after anesthesia the free-end of Tenckhoff catheter is inserted through the device that was perfectly sealed by the negative pressure produced by the specific pump; pneumoperitoneum can be created without concerning about the adverse effects of increased abdominal pressure in a peritoneal dialysis patient.

Advantages:

- **No perioperative leakage of dialysis liquid.**
- **Allows pneumoperitoneum creation without adverse effects.**
- **Prolongs the duration of peritoneal dialysis method.**
- **Cheap and easy to handle.**
- Allows repeated use.

Class no.

4



Petroleum-Gas University of Ploiesti, Ploiesti, Romania

RO.147.
Title EN**Research regarding security of control systems****Authors****Emil Pricop****Institution****Petroleum-Gas University of Ploiesti, Ploiesti, Romania****Patent no.**

-

**Description
EN**

This PhD thesis research main objective is to identify and develop robust and high-performance methods and techniques for improving the control systems security. The control systems are becoming the target of various attacks, having the purpose to disturb and interrupt correct operation especially of those systems that are key components of critical infrastructures.

There were introduced three concepts (*attacker profile*, *attacker profile score* and *system interest degree*) that are the building blocks for developing automatic methods for evaluation of systems security based on fuzzy logic.

A system for automated evaluation of profile attacker score based on attacker characteristics was designed and validated. We proposed a system that estimates the apparition probability of a given attack type considering as inputs the *degree of interest for potential attackers* and *the systems' vulnerabilities level*. The input data is obtained by using powerful methods such as vulnerability scanners, pen-testing and honeypot / honey-net data analysis. The third proposed system assesses the probability of attack success by analyzing three inputs: *attacker profile score*, *systems security vulnerabilities level* and *existing countermeasures level*.

A robust method for authenticating the industrial sensors connected in industrial networks is presented. The Modbus/TCP protocol vulnerability to "man-in-the-middle" attacks is demonstrated in a laboratory setup and an innovative scheme for securing this protocol without affecting compatibility with existing devices is proposed, tested and validated.

Also, there is proposed a complex system for precise operator identification functioning by comparing between live biometrics and data stored on a specially designed RFID card.

Class no.

„Nicolae Bălcescu” Land Forces Academy Sibiu, Romania

RO.148.

Title EN

TRACKED ROBOT FOR HUMANITARIAN DEMINING OPERATIONS

Authors

Silviu Mihai Petrișor, Ghiță Bârsan, Mihaela Simion, Ioan Virca, Dănuț Eugeniu Moșteanu

Institution

“Nicolae Bălcescu” Land Forces Academy from Sibiu, Romania

Patent

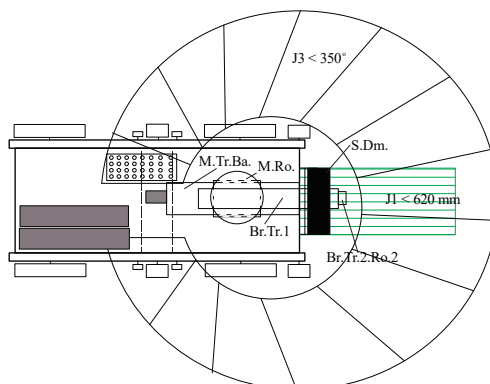
Patent application No. RO A 00562/2017

Description
EN

The tracked robot designed for humanitarian operations represents, according to the invention, a technological product belonging to the category of tracked mobile robots, capable of replacing the human element in high-risk areas for its health and life, either by avoiding accidental detonation, or by detecting and demining anti-personnel and armor-piercing minefields in countries where there were military conflicts. The robot is able to move autonomously using electric motors which take their energy by means of electric engines that take energy from solar photovoltaic cells encased in solar panels, which is provided with a storage compartment for the explosive necessary for humanitarian demining; it has a completely modularized structure, compact, easy to mount and maintain. It is made of two main organological structures: the tracked basis and the serial-modular robot of type *TRTTR* to which the translation system of detecting unexploded mines is being added, the functional product having applicability both in the military-applicable field by enriching actional flexibility within humanitarian detecting and demining operations and in the educational field, by forming high educated and specialized resources in the field of advanced military technologies.

Class no.

12



NATIONAL

University of Agricultural Sciences and Veterinary Medicine "Ion Ionescu de la Brad" Iași

RO.149.**Title EN**

PROCESS AND EQUIPMENT FOR MIXED DRYING BY CONVECTION AND HIGH FREQUENCY CURRENTS OF AGRICULTURAL PLANT SEEDS.

Authors

CĂRLESCU Petru Marian, VÎNTU Vasile, ARSENOAIA Vlad, ȚENU Ioan, ROȘCA Radu

Institution

"Ion Ionescu de la Brad" University of Agricultural Sciences and Veterinary Medicine, Iasi, Romania

Patent

Patent application No. 132274 A0/2017

Description
EN

The invention relates to a process and an equipment for mixed drying by convection and high frequency currents of agricultural plant seeds.

Convective dryers are widely used in various fields, such as drying fruits, vegetables, grain seeds, pasta, etc. Seeds of agricultural plants, which are subjected to the technological drying operation, behave differently according to the structure and their composition.

In order to improve the drying process of agricultural plants seeds in the convective driers, high frequency currents (CIF) can also be used to increase the yield and reduce the drying time. This mixed seed drying can be done at atmospheric or depression pressure.

Drying with CIF is based on transforming the energy of the alternating electromagnetic field into thermal energy by exciting polar molecules (water molecules) in the material.

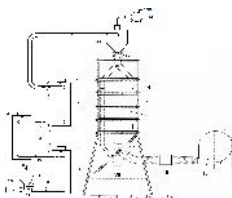
The process consists in CIF drying of the seeds in the first step, followed by their convective drying in the last step.

The purpose of the invention is to solve the uniform drying of the product both in the first step (CIF drying) and in the second step (convective drying), thus reducing the drying time and costs of the drying plant. According to the invention, the installation comprises three drying cylinders of the same diameter which are arranged vertically and connected in series with each other by means of pipes which enter and exit tangentially from the drying cylinders. One CIF generator is mounted at the top of each drying cylinder.

At the seed exit of the CIF drier, they enter the upper part of a vertical convective tower of metal construction. In the convective dryer, the seeds are uniformly dried by convection.

Class no.

3



NATIONAL

RO.150.**Title EN****METHOD AND EQUIPMENT FOR UNIFORM DRYING OF AGRICULTURAL PLANT SEEDS.****Authors**

CÂRLESCU Petru Marian, ARSENOAIA Vlad Nicolae, ȚENU Ioan, ROȘCA Radu

Institution

"Ion Ionescu de la Brad" University of Agricultural Sciences and Veterinary Medicine, Iasi, Romania

Patent

Patent application No. 132273 A2/2017

The invention relates to a process and apparatus for convective and uniform drying of agricultural plant seeds.

Convective dryers are widely used in various fields, such as drying fruits, vegetables, grain seeds, pasta, etc.

Seeds of agricultural plants, which are subjected to the technological drying operation, behave differently according to the structure and their composition. Therefore, some of them do not undergo aggressive drying conditions characterized by uneven temperatures and velocity of the drying agent when passing through the product layer to be dried.

The purpose of the invention is to solve the uniform drying/cooling of the product layer in the dryer by designing a process and apparatus to allow the flow of the fluid to be uniform.

**Description
EN**

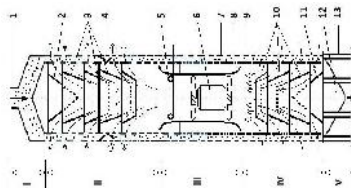
According to the invention, the process consists in uniformly distributing the drying/cooling agent throughout the product mass by creating a constant and equal speed profile in each circular section of the seed bed to be dried.

According to the invention, the apparatus is a metallic structure consisting of a concentric concentric cone with a large flat base and a deflector, and a small base having decreasing diameters in the direction of flow of the drying agent to the last cone for complete routing of the drying agent.

The number of cone trunks, the height of each, the distance between them, the diameters of the small bases, the deflector diameters are correlated with the height of the drying/cooling columns, the thickness of the drying layer and the drying velocity of the drying agent.

Class no.

3



Romanian Inventors Forum**RO.151.****Title EN** **Ecological Mouthwash****Authors** Kamel EARAR, Andrei Victor SANDU, Ion SANDU**Institution** **Romanian Inventors Forum****Patent no.** Pending/2017**Description** The invention refers to an ecological mouthwash made of 100%
EN natural ingredients. It has no side effects and can be used by pregnant woman or children.**Class no.** 4

National Institute of Materials Physics
Magurele, Romania

RO.152.

Title EN	Processing method and superconducting tape / wire in a light metal sheath with MgB2 core
Authors	Mihail BURDUSEL, Gheorghe Virgil ALDICA, Petre BADICA
Institution	National Institute of Materials Physics
Patent no.	Request no. A/00589/2017
Description EN	The invention relates to (i)- a method of processing a superconducting tape or wire with a lightweight metal sheath and a MgB2 core and to (ii)- the tape / wire thus obtained. According to the invention, the method of processing combines plastic deformation and spark plasma sintering (SPS) using an arrangement with a hexagonal boron nitride powder, h-BN, in which the wires / bands are immersed, in vacuum, being subjected a heat treatment with a heating rate of 100 ° C/min at a pressure of 95 MPa, and at a maximum temperature of 1150 °C maintained for 3 minutes.
Class no.	2

RO.153.

Title	Obtaining an photoactive structure on n-GaSb
Authors	Dr. Ghita Rodica, Dr. Negrila Constantin-Catalin, Dr. Logofatu Constantin, Drd. Mihai-Maria-Diana, Dr. Predoi Daniela, Stoicu Marius
Institution	National Institute of Materials Physics, P.O.Box MG-7, Magurele, Bucharest
Patent no.	Request no. A/00685/2017
Description EN	The present patent is related to an obtaining procedure of a <i>p-GaSb/n-GaSb</i> photoactive structure using high energy ion implantation method. The obtaining of an active device is related to a support encapsulation procedure together with the ohmic contact design dedicated to photoelectric signal extraction. Si ⁺ ion implantation at an energy E~1MeV is folowed by a RTA treatment. The photoactive structure implies the obtaining of ohmic contacts that for GaSb are a veritable technological <i>state-of-art</i> . The novelty elements of the present patent are: Si ⁺ ion implantation (an amphoter dopant in III-V compounds), the design of ohmic contacts on <i>n-GaSb</i> using PdGe system, the design of Ag/ <i>p-GaSb</i> ohmic contact –a priority for an ion implantation active structure. Light action on the photoactive structure indicates a spectral response extended on 1µm range.
Class no.	2

RO.154.**Title EN**

Magnetic material based on nanoparticles of iron nitride with ordered martensite structure and its manufacturing method

Authors

Comanescu Cezar Catalin, Palade Petru, Kuncser Andrei Cristian, Plapcianu Carmen Gabriela

Institution

National Institute of Materials Physics,

Patent

Request no. A/00686/2017

**Description
EN**

The invention describes a magnetic material consisting of ellipsoidal nanoparticles of ordered iron nitride with martensite structure and the preparation process used. These magnetic nanoparticles have at ambient temperature: magnetization at saturation 185 emu/g (in 40000 Oe), 31% remanence and 1380 Oe coercivity. Coercivity and remanence are three times higher than those of iron nanoparticles obtained in similar conditions, magnetization at saturation being comparable. The magnetization at saturation is 3 times greater than that of hexagonal ferrite nanoparticles. These nanoparticles can be applied in the field of rare earth and platinum free permanent magnets.

Class no.

6

RO.155.**Title EN**

Process for obtaining a titanium dioxide doped composite with reduced iron / nitrogen / reduced graphite oxide, with extended photocatalytic activity in the visible field

Authors

Feder Marcel, Diamandescu Lucian Constantin, Cernea Marin, Sterian Gheorghe, Dumitrescu Iuliana

Institution

National Institute of Materials Physics,

Patent no.

Request no. A/00615/2017

**Description
EN**

This invention refers to the preparation method of a nanostructured material with improved photocatalytic properties, in comparison with actually utilized materials, in the visible range of solar spectrum. The preparation method consists in two steps: the hydrothermal synthesis of iron and nitrogen doped TiO₂ and decoration of reduced graphene oxide with the hydrothermally obtained TiO₂ nanoparticles. For example, the methylene blue decomposition in visible light (Figure), is more efficient by using the obtained photocatalyst TiO₂-(Fe,N)-2% RGO in comparison with TiO₂-(Fe,N) or commercial TiO₂ (Degussa P25). The described procedure is environmentally friendly due to utilized materials and moderate thermodynamic synthesis parameters.

Class no.

1

RO.156.**Title EN****Authors****Institution****Patent no.****Ultra-low power respiration rate senso**

Besleaga Stan Cristina, Dumitru Viorel-Georgel

National Institute of Materials Physics,

Request no. A/00851/2017

Description**EN**

This invention relates to an electronic device for monitoring the respiratory rate. The sensor is based on an indium-gallium-zinc-oxide (IGZO) thin film transistor (TFT). The device detects the respiration when it is placed in the expired airflow even at a distance of few centimeters from the human face. The humid exhaled air influences the drain and gate currents of the transistor. The variation of the drain and gate currents is used for respiration rate monitoring. The IGZO transistor could be used as respiration sensor with an ultra-low (<1 nW) power consume, being very suitable for integration in wearable devices.

Class no.

4

RO.157.**Title EN****Authors****Institution****Patent no.****Process for preparing the BaCl₂:Eu²⁺ luminophore**

Mihail Secu, Corina-Elisabeta Secu

National Institute of Materials Physics,

Request no. A/00295/2017

Description**EN**

The present invention is refereeing to a new synthesis method of the BaCl₂:Eu²⁺ nanocrystalline or microcrystalline powder phosphor by using sol-gel method. In the first step is prepared the liquid sol that after aging is transformed in the xerogel and dried to obtain a powder. Then, the xerogel powder is calcinated at high temperatures for the formation of the BaCl₂:Eu²⁺ and to reach its phosphor properties. The synthesis method is relatively simple because is made ion open atmosphere at room temperature, it is assured the control of the composition and a good homogeneity of the precursors at a molecular level.

Class no.**RO.158.****Title EN****Authors****Institution****Patent no.****Ferroelectric memory structure with multiple memory states and fabrication method**

Georgia Andra Boni, Cristina Chirila, Luminita Hrib, Pintilie Ioana, Pintilie Lucian

National Institute of Materials Physics,

Pending

Description**EN**

Ferroelectric materials are an ideal candidate for RAM (random access memories) memories due to the presence of spontaneous polarization with two possible orientations that can be associated with two Boolean, 0 and 1 bits.

The present invention proposes a new variant of ferroelectric memory in which four storage states are recorded in a symmetrical epitaxial structure of ferroelectric-insulator-ferroelectric type (FIF).

Class no.

10

National Research&Development Institute for Chemistry and Petrochemistry - ICECHIM Bucharest

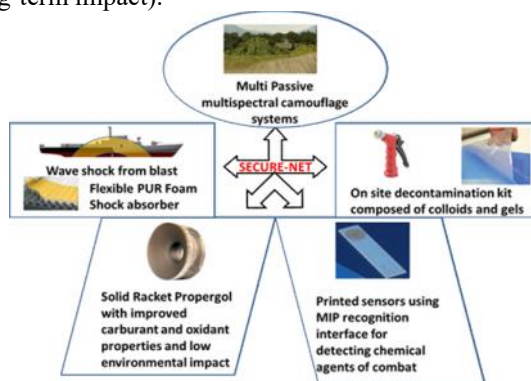
RO.159.

Title	Process for the synthesis of surfactants based on hydrolyzed proteins from collagen and detergent or cosmetic compositions containing them
Authors	Vărășteanu Dana Simona, Irina Elena Chican
Institution	The National Research & Development Institute for Chemistry and Petrochemistry – ICECHIM Bucharest
Patent no.	Patent application No. A/01061/8.12.2017
Description	The invention relates to a process for the synthesis of surfactants based on hydrolyzed proteins from collagen, using raw materials from renewable resources and avoiding the use of toxic solvents. The products have a high biodegradability and provide good skin compatibility to the detergent or cosmetic compositions containing them. Collagen hydrolyzate-based surfactants exhibit high foaming power and have a high efficiency in reducing superficial water tension at critical micellar concentration.
Class	9

RO.160.

Title	Contingency of CBRN hazards and improvement of national security resources SECURE-NET
Authors	Tanta-Verona IORDACHE, Claudiu LAZAROAIE, Traian ROTARIU, Adriana JERCA, Adi GHEBAUR, George SURDU, Irina CHICAN, Ana-Mihaela FLOREA, Valentin RADITOIU, Emeric BARTHA
Institution	Coordinator: The National Research and Development Institute for Chemistry and Petrochemistry ICECHIM Partners: Ministry of National Defense through the Scientific Research Center for CBRN Defense and Ecology, Military Technical Academy, Politehnica University of Bucharest, Organic Chemistry Centre of the Romanian Academy "C.D.Nenitescu", Scientific Research Center for the Naval Forces Constanta
Patent no.	
Description	SECURE-NET is a Complex Project designed to improve

the institutional performance of Institutions with Re-launch Capabilities in the Field of National Security. In this respect, the Complex Project proposes five research themes corresponding to five Component Projects, which aim at: (i) contingency of chemical, biochemical, radiological and nuclear (CBRN) hazards by developing new decontamination products and unique specific sensors for detecting chemical agents of combat, and (ii) improving national security by developing innovative wave shock-absorbing composites, performant solid rocket fuels and novel multispectral camouflages. This Complex Project brings together institutions with tradition, having either similar or complementary specialization, to strengthen scientific and technical competences in the field of National Security and Advanced Materials for military applications. In addition, the project facilitates the transfer of scientific knowledge between participating institutions as well as the recruitment and training of new staff. The multitude of results generated by the implementation of SECURE-NET express the potential for significant influence upon (i) the scientific community through communication and dissemination of results (as a short- and medium-term impact), and (ii) the public and private environment by promoting new research services and new transferable products / technologies to the external environment of the Consortium, particularly to the national defense industry (as a long-term impact).



Class

Contingency of CBRN hazards and improvement of national security resources SECURE-NET

RO.161.

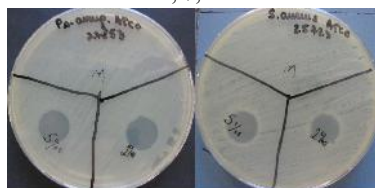
Title	LIPOSOMAL AQUEOUS DISPERSION COMPOSITIONS BASED ON MODIFIED NANOPIGMENTS AND PROCESS FOR PREPARATION
Authors	A.A.AthanasIU, <u>M.Deaconu</u> , M Cojocaru, L. Oproiu, M Ruse, C Filipescu, R. Senin
Institution	The National Institute for Research & Development in Chemistry and Petrochemistry ICECHIM, Bucharest
Patent	Patent applications: A 2017-00292/15.05.2017 The invention relates to the presentation of the pigment processing methods: phthalocyanine blue, quinacridone red and black, in the form of functionalised / modified pigments subjected to conditioning operations consisting of micro / nanodispersing, encapsulation, stabilization, for dyeing natural leather.
Description	Dispersion is carried out at the level of microparticles and nanoparticles for the pigment modified/ functionalized, obtained by chemical attachment on the surface of the pigment particles of $C_6H_4SO_3^-$ or COO^- groups (diazotation reaction) or attachment of SO_3^- and/or COO^- groups (sulfonation, sulphonation + oxidation). Encapsulation in the form of liposomes consists of: pre-liposome formation, microdispersion and pre-liposomal encapsulation of modified pigments and nanodispersion of liposome microdispersion.
Class	

RO.162.

Title	OBTAINING PROCESS FOR HIGH-IMPACT STRENGTH COMPOSITES BASED ON RECOVERED POLYPROPYLENE
Authors	Ghioca Paul-Niculae ¹ , Iancu Lorena ¹ , Spurcaci Bogdan Norocel ¹ , Grigorescu Ramona Marina ¹ , Rapa Maria ² , Cincu Cornel ³ , Pica Alexandra ³ , Gardu Radita ³ , Matei Ecaterina ⁴ , Predescu Andra Mihaela ⁴ , Predescu Cristian ⁴
Institution	¹ The National Institute of Research and Development for Chemistry and Petrochemistry – ICECHIM Bucharest, Romania; ² SC ICPAO SA Medias, Sibiu, Romania; ³ The Research Institute of Advanced Coatings, Bucharest,

Patent	<p>Romania; ⁴Politehnica University of Bucharest, Romania</p> <p>+</p> <p>The invention refers to a process for obtaining composites with maximum impact-strength based on recovered polypropylene by modifying the polyolefin with a mixture of two styrene-isoprene block copolymers. The styrene-isoprene block copolymers should exhibit different melt viscosities, one smaller and the other larger than recovered polypropylene value.</p> <p>The styrene-isoprene block copolymers blend is achieved by varying their dosage so that the mixture exhibits a melt rheological behavior as close as possible to the recovered polypropylene. This complies with the optimal melt modification criterion for incompatible polymers, leading to obtain recovered polypropylene composites with maximum impact strength. The modification by melt alloying of recovered polypropylene was made on a laboratory roll using</p>
Description	<p>a friction coefficient of 1.18 - 1.20 at a temperature of 185-190 °C for maximum 15 minutes with a mixture of two styrene-isoprene block copolymers, one with a lower melt viscosity and the other with a melt viscosity higher than recovered polypropylene in a proportion of 5 to 95% thus the block copolymer mixture exhibited a melt viscosity equal to or as close as possible therefore recovered polypropylene. The closest melt viscosity of the compound components permits optimal dispersion of the minor polymer (styrene-isoprene block-copolymers) as uniform elastic domains in the polyolefin matrix. Thus, when the composite is subjected to shocks, the destructive force is amortized more efficiently by the elastic fields by more uniform absorption and dispersion of the energy and by preventing the growth of the micro-cracks that appear in the composite material when stricken</p>
Class	1
RO.163.	<p>ANTIMICROBIAL PULVERISABLE SOLUTION FOR TREATMENT, CONSOLIDATION AND PROTECTION OF INORGANIC SURFACES OF BUILDINGS AND/OR HISTORICAL MONUMENTS</p>
Title	<p>Radu Claudiu Fierăscu, Irina Fierăscu, Adriana Moanță, Ionela Petre</p>
Authors	

Institution	The National Institute for Research & Development in Chemistry and Petrochemistry - ICECHIM
Patent	Patent application No. A00919/09.11.2017 The invention relates to an antimicrobial composition for the treatment, consolidation and protection of inorganic surfaces of buildings and / or historical monuments. Antimicrobial suspensions are obtained by milling the solid material (hydroxyapatite structure in which calcium is partly replaced by silver) followed by dispersion in isopropyl alcohol solution (70%) in varying concentrations between 1 and 5 g / L, thus obtaining a pulverisable solution. Sprayable biocide solutions have an effect on both gram-positive strains (<i>Staphylococcus aureus</i>) and gram-negative strains (<i>Pseudomonas aeruginosa</i>). For all of the examples presented, there is an increasing tendency to reduce the loss of resistance for the treated material.
Description	
Class	Applications: Health; cultural heritage protection. 4, 7, 14

**RO.164.**

Title	MORTAR WITH ANTIMICROBIAL PROPERTIES, DESIGNED FOR THE PROTECTION OF BUILDINGS AND / OR HISTORICAL MONUMENTS
Authors	Moanță Adriana ¹ , Fierăscu Radu Claudiu ² , Petre Ionela ¹ , Mohanu Ileana ¹ , Paceagiu Jenica ¹ , Fierăscu Irina ²
Institution	¹ CEPROCIM S.A./ ² The National Institute for Research & Development in Chemistry and Petrochemistry - ICECHIM
Patent	Patent application No. A00226/28.03.2018 The invention relates to an antimicrobial mortar intended for the consolidation and protection of inorganic surfaces of buildings and / or historical monuments. The antimicrobial mortar, according to the invention, consists of CEM I type cement and river sand in a ratio of 1: 3 and 2-5% of antimicrobial agent of the type hydroxyapatite,
Description	

NATIONAL

$\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$, in which the calcium was partially displaced with silver in an Ag/Ca ratio of 0.66, the mortar having a mechanical compressive strength, at 28 days, of minimum 18MPa and an anti-adherence and microbiocidal effect on both gram-positive and gram-negative strains. Applications: Health; building materials; cultural heritage protection.

Class

4, 7, 14



RO.165.

Title

MASTERBATCH FOR IMPROVING THE SCRATCH RESISTANCE OF POLYMETHYLMETHACRYLATE AND THE PROCESS FOR PRODUCING THE SAME

Authors

VULUGA Zina, ELIZETXEA Cristina, ORDONEZ Mario, COROBEA Mihai Cosmin, IORGA Michaela Doina, FLOREA Dorel

Institution

Institutul National de Cercetare Dezvoltare pentru Chimie si Petrochimie-ICECHIM

Patent

Patent application No. A/00859, 23.10.2017

Description

The invention describes a masterbatch composition composed from PMMA, polysiloxane modified with polyester and a reinforcing nanofiller chosen from a hydrophobic nanosilica and an organophylized silicate nanotube, a process for masterbatch obtaining (consisting in components mixing in a gravimetric rotating mixer and melt homogenization in a co-rotating double screw extruder), and a process for using of masterbatch in granular form which allows the obtaining of composites based on PMMA, respectively of injected parts, characterized by enhanced scratch resistance with 50-230 %, a gloss higher with 15-20 %, without decreasing with more than 10-15%, in comparison with PMMA, the elastic modulus, the strength and impact resistances. The advantage of our invention is that in the masterbatch composition components are selected

in a certain manner, mixed in a ratio and under such conditions that by blending with PMMA to produce an improvement in the scratch resistance of PMMA, while maintaining as much as possible the other properties (optical, thermal and mechanical). The masterbatch is specifically designed for PMMA and allows the production of improved polymeric composites that are used in the automotive industry as well as in other fields to obtain lighter injection moulded parts with a good optical surface appearance and high mechanical strength.

Class 8

RO.166.

Title A MATTING AGENT FOR ACRYLIC PAINT
Authors Rodica-Mariana Ion, Nelu Ion, Lorena Iancu, Liliana Stoica
Institution ICECHIM, Bucharest
Patent SC DECOBOX International SRL, Bucharest
 A001060/2017
Description The invention relates to a new matting agent for a water-soluble acrylic paint, especially a water-soluble colored matte paint and a method of preparing it, with applications in the field of architectural coatings. The invention belongs to the technical field of paints and presents an antibacterial paint based on halosite and a method of preparing and applying it. The preparation method comprises the following steps: mixing the aqueous solutions of halloysite.

Acknowledgements: This work was supported by a grant of the Romanian Ministry of Research and Innovation, CCCDI – UEFISCDI, project number PN-III-P2-2.1-CI-2017-0599/31CI/2017, within PNCDI III”.

Class 11

RO.167.

Title FILMOGENE COMPOSITE POLYMER PELLICLE FOR THE RETENTION OF PICTURAL DEGRADATION PRODUCTS AND THE PROCESS OF OBTAINING THEM
Authors Rodica-Mariana Ion, Nelu Ion, Gheorghe Nechifor, Sofia Teodorescu
Institution ICECHIM, Bucharest

NATIONAL

Patent	A 001062/2017
Description	<p>The present invention relates to a novel polymer composite for cleaning and restoration of paintings affected by the darkening of chrome yellow pigments due to a reduction of the Cr (VI) to Cr (III) in the presence of sulfate ions. Since this phenomenon is considered one of the causes that led to the original color changes several paintings belonging to famous painters, understanding the mechanism of amending of yellow chrome becomes relevant in the conservation of paintings.</p> <p><i>Acknowledgements:</i> This work was supported by a grant of the Romanian Ministry of Research and Innovation, CCCDI – UEFISCDI, project number PN-III-P2-2.1-CI-2017-0599/31CI/2017 and 51PCCDI/2018, within PNCDI III”.</p>
Class	9. Chemical and Textile Industry

RO.168.

Title	COMPOSITION AND PROCESS FOR RESTORATION OF PAINT SURFACES AFFECTED BY METAL SOAPS
Authors	Rodica-Mariana Ion
Institution	ICECHIM, Bucharest
Patent	A 00949/2017
Description	<p>The present invention relates to a composition based on hydroxyapatite synthesized in a Y-faujasit type of nanocrystalline zeolite matrix used for cleaning and restoring paintings affected by the formation of metallic soaps. The latter are the metallic salts of fatty acids which induce efflorescence, have a fluffy, powdery appearance as a surface "flower" and are usually formed by the aging of the oil used in painting. Depending on the composition of the paint, fatty acids present in the oil (palmitic, stearic and azelaic acid) can form metal carboxylates with metal ions present in pigments or other metallic painting components. The present invention provides a solution for the preparation and use of encapsulated systems in the form of hydroxyapatite-filled pouches synthesized in the Y-faujasit zeolite matrix applied to the surface of paint affected by lead</p>

- or zinc soap, favoring the retention of lead and zinc ions present in the metal soaps formed on the painting layers.
- Class** 9. Chemical and Textile Industry
- Acknowledgements:* This work was supported by a grant of the Romanian Ministry of Research and Innovation, CCCDI – UEFISCDI, project number PN-III-P2-2.1-CI-2017-0599/31CI/2017, within PNCDI III”.

RO.169.

- Title** **Development of vegetal extracts and innovative phytosynthesized nanostructured mixtures with phytotherapeutic applications to reduce biocenotic stress in horticultural crops**
- Authors** Radu Claudiu Fierascu¹, Irina Fierascu¹, Liliana Cristina Soare², Mirela Florina Calinescu³, Diana Elena Vizitiu⁴, Camelia Ungureanu⁵
- Institution** ¹INCDCP-ICECHIM/ ²University of Pitesti/ ³Research Institute for Fruit Growing Pitesti – Maracineni/ ⁴INCD for Biotechnologies in Horticulture Stefanesti Arges/ ⁵University Politehnica of Bucharest
- Description** In recent decades, the nanotechnology research area has shown a high interest in obtaining and characterizing nanomaterials through "*green chemistry*", in order to reduce or eliminate the use and generation of hazardous substances for human health and the environment. Nanoparticles with different compositions, shapes, sizes and controlled polydispersity have been developed and synthesized. Irrespective of techniques for obtaining nanoparticles, toxic substances, organic solvents or toxic reducing agents are used. As an alternative, phytosynthesis of nanomaterials is eco-friendly, easy to scale and less costly. From this perspective, the project proposes an absolutely innovative and original approach to obtaining phytosynthesized nanostructures and nanostructures (mono and bimetallic nanoparticles of silver, gold, copper, nickel, etc.) with practical applications in a field of great importance at national level: fighting the main fungal diseases that affect the vineyard culture and apple culture (two of the national cultures of particular importance).
The research project is part of the complex project “Increasing the institutional capacity of bioeconomic research for the innovative exploitation of indigenous vegetal

resources in order to obtain horticultural products with high added value” (BIOHORTINOV), contract no. 6PCCDI/2018, Project coordinator: University of Pitesti.

Applications: Innovative exploitation of local vegetal resources; nanotechnology; bio-economy.

Class

RO.170.

Title	Nanotechnology – an innovative approach with development of materials and techniques for safeguarding the cultural heritage
Authors	Irina Fierascu ¹ , Radu Claudiu Fierascu ¹ , Ioana Popitui ² , Gabriel Rustoiu ³ , Alina Ortan ⁴
Institution	¹ INCDCP-ICECHIM/ ² Museum of Dacian and Roman Civilization Deva/ ³ National Museum of the Union Alba Iulia/ ⁴ University of Agronomic Sciences and Veterinary Medicine of Bucharest
Patent	-
Description	<p>Developing under the impetus of short-term interests may be a threat to cultural heritage. Cultural heritage can have value well-being and quality of community life, can help prevent cultural globalization, support cultural diversity and positively affect economic development.</p> <p>The main objective of the project is to provide practical solutions based on new antifungal recipes, to reduce the impact of biodegradation of cultural heritage objects (especially focusing on ceramic and paper artifacts), recipes based on the use of <i>soft</i> nanomaterials, applicable in the form of xerogels or by spraying.</p> <p>The project benefits, besides the participation of two reputable units in the field of Research and Development, from the presence of two museums that characterize two major landmarks in national history: the origin of the nation and the great union of all Romanians (the Museum of Dacian and Roman Civilization - Deva, respectively National Museum of the Union Alba Iulia).</p> <p>The research project is part of the complex project “Multidisciplinary complex project for monitoring, preservation, protection and promotion of the Romanian cultural heritage” (RO-CHER), contract no. 50PCCDI/2018, Project coordinator: Romanian Space Agency.</p> <p>Applications: Cultural heritage protection; nanotechnology.</p>

RO.171.**Title**

Innovative ferrite/beta-cyclodextrin core-shell nanocomposites for removal of inorganic and organic pollutants from aqueous effluents

Authors

Sorin Marius Avramescu¹, Irina Fierascu², Radu Claudiu Fierascu², Angel Vasile Nica¹, Alina Elena Olaru¹

Institution

¹ University of Bucharest/ ² INCDCP-ICECHIM

Patent

-

Description

The adsorbents based on nanoparticles with different type of adsorption sites grafted on them can solve the majority of problems encountered when using classical adsorbents. In order to eliminate the problem related with separation step which represent the major drawback in the use of nanoparticles this project propose a new water treatment technology based on nanoadsorbents with magnetic core (ferrite) and β -cyclodextrin shell for waste water treatment loaded with inorganic (heavy metals, nitrates, etc.) and organic (pesticides, dyes, phenolic compounds, etc.) compounds. This morphology for the new magnetic adsorbents was selected with a view to exploit the benefits of slurry type adsorber and high specific surface of the nanoadsorbents. Also, in order to avoid the cumbersome step of separation, the magnetic core allows a rapid removal of nanoparticles from the aqueous solution after applying a magnetic field. The main features of these new adsorbents are: i) high adsorption capacity for a large category of pollutants; ii) high stability which allow many adsorption-desorption cycles; iii) easy to integrate in an adsorption technology and also easy to regenerate; iv) good "cost-effectiveness" in comparison to other adsorbents.

Research project: PN-III-P2-2.1-PED-2016-0251, contract: 49PED/2017

Applications: Environmental protection; nanotechnology.

Class

RO.172.

Title	Invention Title “Process for obtaining spatial formations with molecules of 20-60 atoms hybridize sp² of the fullerene type prin through electrical pulses discharges in subexcitation mode using a pyrolytic graphite cathode”
Authors	Marin Laurentiu
Institution	National Institute for Research and Development in Chemistry and Petrochemistry
Patent	Patent application No. A/00075/09.02.2018
Description	The invention relates to a process for obtaining spatial formations with molecules of 20-60 atoms hybridize sp ² of the fullerene type. Following of a treatment of a metallic surface with pulsed electric discharges in subexcitation mode using a pyrolytic graphite cathode, besides the graphite film which is the main element, a number of spatial formations, chemical molecule composed of carbon atoms, as shown in figure have been obtained.
Class	Invention Classification:14

National Institute for Research and Development in Electrical Engineering ICPE-CA Bucharest

RO.173.

Title Process for stimulating biomass and system for producing biogas

Authors Mateescu Carmen, Lingvay Iosif, Caramitu Alina Ruxandra, Tanase Nicolae, Radu Elena

Institution National Institute for Research and Development in Electrical Engineering ICPE-CA Bucharest (INC DIE ICPE-CA), Romania

Patent no. Patent application No. a 2016 00269/2016

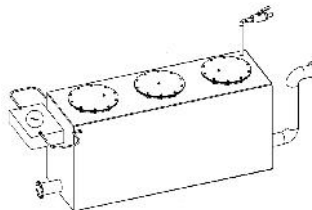
Description The invention relates both to a process for stimulating biomass in extremely low frequency electric sinusoidal field in the range of $0.5 \text{ Hz} \div 200 \text{ Hz}$ and a system for producing biogas. The system includes an anaerobic fermentation chamber made of fiberglass reinforced epoxy resin, in which two parallel planar walls have incorporated in the layer of epoxy resin polarizing electrodes that are electrically connected to the terminals of a controlled frequency electrical generator in the range $0.5 \div 200 \text{ Hz}$, capable of delivering voltages of up to 5600 V_{VV} . Between the two walls with polarizing electrodes, baffles are provided for controlling the mass transport between the chamber inlet and outlet. The fermentation chamber is provided with three inspection openings and a connection for the biogas outlet.

Advantages: Efficiency of biogas production through a selective stimulation of fermentative processes in favor of methanogenic microorganisms, in order to maximize the $\text{CH}_4 : \text{CO}_2$ ratio in biogas and reduce the retention time of the organic mass in the anaerobic fermenter, without any auxiliary energy consumption.

Applications: Organic waste and wastewaters treatment with biogas production.

Class

2



RO.174.

Title Aeration system of water passing through hydraulic turbines

Authors BUNEA Florentina, CIOCAN Gabriel Dan, NEDELCU Adrian, BUCUR Diana Maria, DUNCA Georgiana, CODESCU Sebastian

Institution National Institute for R&D in Electrical Engineering (ICPE-CA)

Patent no. a 2017 0688/20.09.2017

Description The patent is related to an aeration system for the water passing thru hydraulic turbines. The non-intrusive system is installed in the draft tube of hydraulic turbines to increase the dissolved oxygen content in the water to improve the quality of the water and facilitate the aquatic life. The air is injected via calibrated orifices, designed to maximize the dissolved oxygen transfer for an imposed air flow rate and with the minimal energy consumption for the injection. The system is automatized to consider the flow parameters and of the oxygen deficit in the water.

Class 1

**RO.175.**

Title Superconductor magnetic assembly for magnetic moments measurement

Authors Dobrin Ion, Apostol Simona Emilia, Popovici Iuliu Romeo, Dobrin Andrei, Enache Dan, Stoica Victor

Institution National Institute for R&D in Electrical Engineering ICPE-CA (INCDIE ICPE-CA)

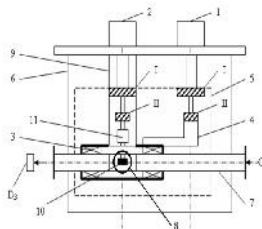
Patent no. *Registration no. A/00373/2016*
Published in BOPI in no. 11/2017

Description The superconductor magnetic assembly according to the invention is constituted of a superconducting magnet with two superconducting coils (3) which are cooled by conduction, at a temperature of 5 – 20 K by the cryocooler (1) through the thermal shunt (4) and which are protected

from thermal radiation of 300 K, by a thermal screen (5) which by coupling to the stage I of 50 K of the cryocooler (1) reduces the radiative thermal transfer; the sample (10) subjected to the measurement is thermally coupled to a cryocooler (2), for controlling its temperature, in the range of 4.2 – 300 K; the assembly is introduced in a vacuumed enclosure, cryostat (6) which has two axial channels (7, 8), which pass through the superconducting magnet and another channel (9) for introducing the sample to be measured (10) in a fixed position inside the magnetic field; by powering the superconducting coils (3) from a DC programmable power supply source with a current of $I = 0-500$ A, the magnetic field $B = 0 - 5$ T is obtained, with a uniformity of 10^{-3} in the central area of the superconducting magnet, through which the two axial channels (7, 8) pass, area used for gamma radiation or elementary particles access for their application on the study sample (10) and recording the emitted radiation by using three detectors (D3).

Class

5



RO.176.

Title

Procedure for obtaining a resorbable material of beta-tricalcium phosphate

Authors

Grigore Florentina, Velciu Georgeta, Lungu Magdalena Valentina, Tsakiris Violeta

Institution

National Institute for Research and Development in Electrical Engineering ICPE-CA Bucharest (INC DIE ICPE-CA), Romania

Patnet

Patent application No. **a 2011 00374/2011**

Description

The patent refers to a procedure for obtaining a resorbable material based on beta-tricalcium phosphate (β -TCP), of granular type, with regenerative properties, used in surgical of oral-maxillofacial and orthopaedic field, as bone

replacement material.

It is a "multi-stage" process, and consists in a first stage in the development of β -TCP nano-powders (wet method, co-precipitation). Next, from the elaborated ceramic powder is made a ceramic suspension for the impregnation of the polymeric sponge (polyurethane, PU), in order to obtain rounded ceramic granules, which are then sorted on granulometric classes. For the given application granulometric fractions of 500-1000 μ m were selected, complex characterization and biological tested (*in vitro* biocompatibility tests). Consist only of tricalcium phosphate (β -TCP) compound, with nano- and microporosity.

Advantages:

- is 100% synthetic product, no risk of disease transmission;
- *osteoconductive*: allow the development of biological bone and favourable conditions for healing;
- *bioresorbable*: is gradually replaced by newly formed bone/rapid healing;
- does not require re-operation to remove the product;
- the product does not contain substances derived from animal or human origin;
- the product is sterilized, and does not require any special storage/preservation actions.

Applications: is recommended for oral surgery and implantology, filling applications and reconstruction of bone defects: sinus lift, alveolar defects filling after extraction and after corrective osteotomies

Class 4. Medicine - Health Care - Cosmetics

RO.177.

Title	Rotary piezoelectric motor with double contact
Authors	Pislaru-Dănescu Lucian, Popa Marius, Băbutanu Corina
Institution	Alice, Chihaia Rareș Andrei, Morega Alexandru Mihail, Morega Mihaela, Fuiorea Ion, Flore Lică, Gabor Dumitrița National Institute for Research and Development in Electrical Engineering ICPE-CA Bucharest (INCDIE ICPE-CA), Romania
Patnet	Patent application No. a 2015 00874
Description	The invention relates to a double-contact rotating piezoelectric motor for use in the space industry for microactuation, mechatronics and robotics. According to the

invention, the motor comprises a stator subassembly consisting of a piezoelectric active cylinder (1) fully covered with a 35 μm silver layer, divided externally into eight sectors equal to the depth of the silver layer by eight 0, 8 mm gaps, for making a uniform circular motion, which is in double contact with the lower rotor (9) using two concentric circles, the pressure exerted on the circles being regulated by means of a mechanical assembly, a fixing device (2) of the cylinder (1), which, together with a fixed adjustment rod (3), allows the rotation of the rotor through an axial ball bearing (4) and a circular plate for fixing electric terminals (8), a rotor subassembly, consisting of the lower rotor (9) and a top rotor (10), which moves together with the stator subassembly, and a guiding device and a housing subassembly that ensures the mechanical protection of the entire motor.

Advantages: performs a circular motion with improved resolution; increased efficiency of the electronic drive control due to the adopted constructive solutions; relatively simple construction, in terms of technology; does not require an electronic drive control of great complexity, as it allows a 2%-4% deviation of the waveform frequency.

Applications: in the field of aviation, space industry for microactuation, mechatronics and robotics, for applications where the engine is not influenced by external electromagnetic fields.

Class 8. Aviation, car industry and transportation

RO.178.

Title	Procedure for obtaining magnetic nanofluid in vegetal oil
Authors	Mălăeru Teodora, Pătroi Eros Alexandru, Georgescu Gabriela, Manta Eugen, Pătroi Delia
Institution	National Institute for Research and Development in Electrical Engineering ICPE-CA Bucharest (INCDIE ICPE-CA), Romania
Patnet	Patent application No. a 2016 00619
Description	The invention refers to a procedure for obtaining a magnetic nanofluid used as insulating fluid and cooling agent on power transformers. The procedure according to the invention consists in the synthesis of Fe_3O_4 magnetic nanoparticles through hydrothermal method, sterically

stabilized by encapsulation in a polymeric hydrophobic polyethylene coating using the ultrasonic emulsification method, and then the dispersion of the nanoparticles thus synthesized in vegetal oil. The suspension having volumetric concentrations of 0.3...1.5% magnetic nanoparticles is sonicated for 4...8 hours at room temperature, resulting a magnetic fluid with a saturation magnetization of 1.85...3.08 emu/g, residual magnetization 0.72...0.90 emu/g, and coercive field 235...268 Oe.

Advantages: easy to carry out procedure; efficient control of the size and granulometric distribution of magnetic nanoparticles; eliminates the use of toxic solvents; lower energy consumption; the magnetic fluid thus obtained is almost 100% biodegradable; reduces the costs of maintenance treatments; increases the operating lifespan; increases the energetic efficiency; reduces the risk of explosion; increases the safety of the operating personnel; diminishing the environmental pollution.

Applications: as insulating fluid and cooling agent for applications in electric power equipment (power transformers).

Class

2. Energy and sustainable development

RO.179.

Title	Process for Obtaining Electrical Contacts based on Tungsten Carbide
Authors	Tsakiris Violeta, Enescu Elena, Lucaci Mariana, Lungu Magdalena Valentina, Pătroi Delia, Cîrstea Cristiana Diana, Tâlpeanu Dorinel
Institution	National Institute for Research and Development in Electrical Engineering ICPE-CA Bucharest (INCDIE ICPE-CA), Romania
Patnet	Patent application No. a 2016 00886/2016
Description	The patent refers to a process for obtaining electrical contacts based on tungsten carbide-silver (WC-Ag) undoped, respectively doped with cobalt (Co) for use in low and medium voltage vacuum switching devices. The process consists in spark plasma sintering (SPS) of WC-Ag-Co fine powder mixtures containing 58-60 wt.% WC, 40 wt.% Ag and up to 2 wt.% Co that were previously homogenized by

ball milling. After introducing composite powders into graphite die with inner diameter of mold of 20-30 mm, the SPS process was performed in vacuum, at a pressing pressure of 50 MPa, sintering temperature of 920-925°C, dwell time of up to 5 minutes and a total cycle time of up to 1 h. The resulted contact pieces yielded high density (relative density of 96.7-97.6 %), Vickers hardness of 179-208, Young modulus of 154-207 GPa, and electrical conductivity of 19.5-21.8 m/Ω·mm². The technological demonstration proved very low chopping current values (< 0.6 A) of the developed contact pieces tested in vacuum electromagnetic contactors at nominal currents ranging 200 A to 630 A.

Advantages: the process is facile and efficient due to the reduced energy consumption by shortening the processing duration of up to 1 h, allowing the manufacture of electrical contacts with fine and homogeneous microstructure, and superior physical, mechanical and functional characteristics.

Applications: electrical contacts for equipping low and medium voltage vacuum switching devices such as electromagnetic contactors

Class

2. Energy and sustainable development



RO.180.

Title

Manufacturing method for miniature gear wheels with cycloid toothing profile

Authors

ILIE Cristinel Ioan, POPA Marius, CHIRITĂ Ionel, TĂNASE Nicolae, PRIOTEASA Paula Ionela,

Institution

National Institute for Research and Development in Electrical Engineering ICPE-CA Bucharest (INC DIE ICPE-CA), Romania

Patnet

Patent application No. a 128393 -CBI 2011 00899

Description

The patent refers to a manufacturing method for obtaining miniature gear wheels with cycloid toothing profile, used in the watch-making industry and in the micromechanical mechanisms, whose dimensions do not exceed a millimeter. Through this method, we can also develop wheels with

evolving profile, or with any other profile, the method can be used to easily and without additional devices or equipment for any kind of profile described by a given profile.

Advantages:

It is possible to obtain parts with small thicknesses of up to one millimeter;

The geometry is not limited by the complexity of the curve that describes the tooth profile;

The dimensions of the parts that can be obtained can be very small, allowing for submicron details;

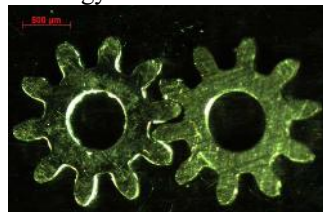
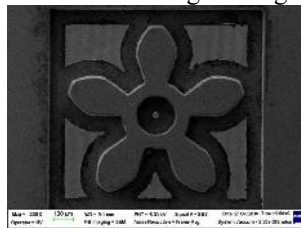
Small parts can be obtained at considerably lower costs than those obtained by conventional mechanical machining or injection molding methods.

Applications:

In the watch-making industry and in micromechanical mechanisms whose dimensions do not exceed a millimeter thickness.

Class

6. Mechanical Engineering – Metallurgy



Toothed wheels with a thickness of 200 μm and an outer diameter of 0.8 mm

RO.181.

Title

FeCo Electrically Insulated Nanopowders

Authors

Codescu Maria Mirela, Chitanu Elena, Kappel Wilhelm, Manta Eugen, Patroi Delia, Pintea Jana, Patroi Eros Alexandru, Morari Cristian

Institution

R&D National Institute for Electrical Engineering ICPE-CA (INCIE ICPE-CA), România

Patnet

Patent Application No. A 2016 01039

Description

The invention refer to (i) FeCo electrically insulated nanopowders, based on $\text{FeCo}/\text{Al}_2\text{O}_3$ nanoparticles, used on manufacturing of the rotoric sintered cores of high speed rotating machines, of different cores shapes for transformers (including planar transformers), of soft magnetic parts for power converters, microwave antennas, inductors, coils,

sensors and to (ii) method to prepare them. According to the invention, the nanopowders are constituted from magnetic composites, coated with oxide layers, FeCo/Al₂O₃ type, obtained with tailored properties, such as: magnetic structures with various molar ratios: Fe_{0.25}Co_{0.75} and Fe_{0.5}Co_{0.5}, and resistivities adjustable during the synthesis process, through proper dosage of precursors, saturation magnetisations in the range of 110 ... 213 emu/g, reaches by temperature control during the annealing. The method, according to the inventions, consists on preparation of multicomponent magnetic nanopowders, from FeCo coated with Al₂O₃ nanoparticles, prepared through chemical synthesis by sol-gel technique, using organic solvent, followed by calcination and annealing of iron and cobalt oxides in controlled atmosphere.

Class

8. Aviation, car industry and transportation



FeCo electrically insulated nanopowders

RO.182.

Title

Composite material for structural elements in space vehicles with electrostatic and ionizing radiation shielding properties

Authors

Teişanu Aristofan Alexandru, Iordoc Mihai Nicolae, Barbu Ionela Paula, Caramitu Alina Ruxandra, Mitrea Sorina Adriana, Băra Adela, Banciu Cristina Antonela

Institution

National Institute for Research and Development in Electrical Engineering ICPE-CA, Bucharest, ROMANIA (INC DIE ICPE-CA)

Patnet

Patent application No. 6/2017

Description

The composite material consists of a reinforcing structure based on carbon fiber and / or carbon fiber fabric, placed in a polymeric thermoplastic or thermorigid matrix, depending on the manufacturing technology and product destination containing heavy metals (tungsten, terbium, lead) micrometric particles (2-5 µm), uniformly dispersed, with

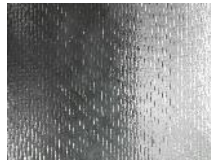
shielding properties against ionizing radiation, and plated on both sides with 45 μm thick.

Benefits:

- higher shielding properties versus ionizing radiation than current materials at the same density (1.8 - 2.1 g / cm^3);
 - excellent electromagnetic radiation shielding properties in the 350MHz - 40GHz range (attenuation > 90dB);
 - superior mechanical properties to the materials currently used (not affected by the delamination phenomenon, characteristic of materials using heavy metal sheets that alternate with reinforced polymers);
1. lower cost price

Class

12



National Institute for Research and Development in Environmental Protection - INCDPM

RO.183.**Title**

**Prefabricated elements with embedded photovoltaic cells
for plating facade and uncirculated terraced roofs**

Authors

George POTERAȘ, György DEÁK, Alina NICOLAE, Andreea
BARAITARU, Marius OLTEANU

Institution

**National Institute for Research and Development in
Environmental Protection**

Patent no.

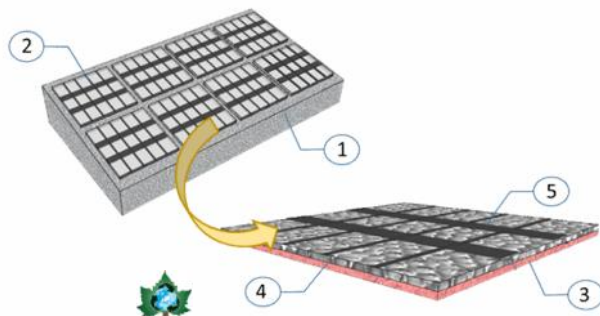
Patent Application no. A 00179/2018

Description

The invention relates to the development of plating elements for building facades which include photovoltaic cells. Thermal insulating prefabricated elements are made of mortar with aggregates obtained from recycling polystyrene waste. The PN type photovoltaic cells, which are included in these elements, are made of secondary raw materials (borosilicate thermosetting glass waste, tin and chlorine waste). By using these elements for building plating, environmental benefits are achieved: energy is obtained with zero environmental impact and waste is reduced by using it as a secondary raw material in the technological process of producing elements which include photovoltaic cells.

Class

2;7



Prefabricated elements with embedded photovoltaic cells for
plating facade and uncirculated terraced roofs

1. Prefabricated element; 2. Photovoltaic cell; 3. Thin layer of
thermosetting glass waste; 4. Thin layer of tin chloride;
5. Conductive layer

RO.184.**Title****HYDROTECHNICAL SOLUTION FOR FLOW DISTRIBUTION BETWEEN THE MAIN RIVERBED AND ITS BRANCH****Authors**

György DEÁK, Puiu Lucian GEORGESCU, George POTERAȘ, Constantin Marius RAISCHI, Marius Viorel OLTEANU, Gabriel BADEA, Gabriel CORNĂȚEANU, Gabriel CRISTEA, Alexandru CRISTEA, Felix ZAHARIA

Institution

National Institute for Research and Development in Environmental Protection

Patent no.

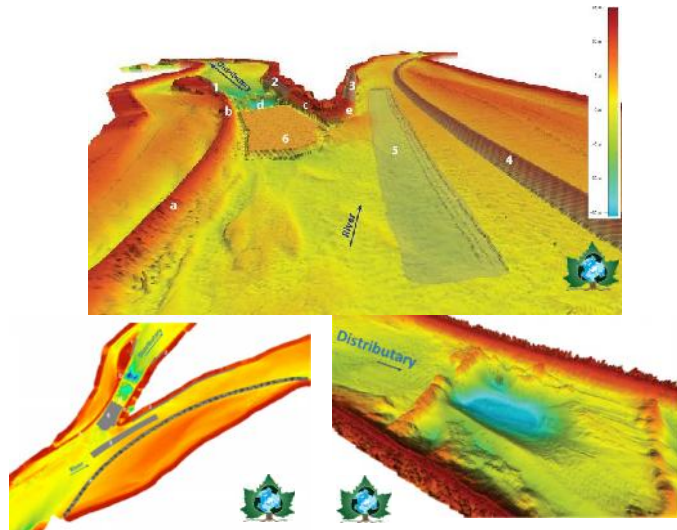
Patent Application no. A 00186/2018

Description

The invention consists in a method for water flow redistribution among a river and its distributary, in case of existence of a level difference, in order to obtain flow equalization or a river flow increase during drought periods. Accomplishment of this solution poses a minimum impact on aquatic ecosystems because i) it does not interrupt the sturgeon migration routes; ii) provides new wintering, feeding and breeding habitats; iii) reduces the risk of erosion and ensures commercial navigation during drought periods (decreasing transport costs and duration).

Class

1

**RO.185.**

NATIONAL

Title **ELECTROCHEMICAL METHOD FOR DIAGNOSIS OF ALKALI-AGGREGATE REACTIONS IN THE LABORATORY**

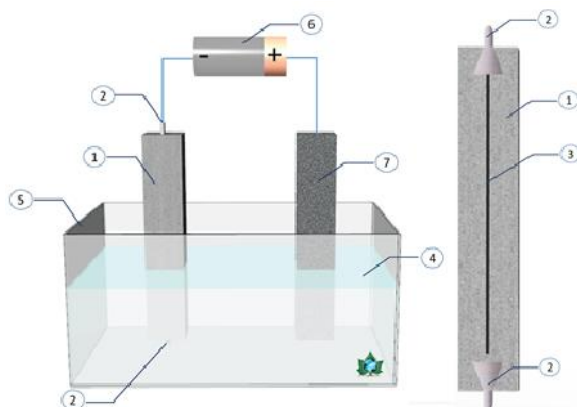
Authors George POTERAȘ, György DEÁK, Alina-Florina NICOLAE, Andreea Ioana DĂESCU, Iasmina Florina BURLACU

Institution **National Institute for Research and Development in Environmental Protection**

Patent no. Patent Application no. A 00099/2018

Description The invention consists in a preventive method used to diagnose alkali-aggregate reactions at the laboratory scale, which combines principles of the chemical method with electrochemical principles, the results being expressed similarly to expansion methods. This electrochemical method leads to a faster start of the reaction and to better expression of the reactive capacity of the tested aggregates, without any distortion of the phenomenon. Application of this method ensures the use of aggregated with low reactivity to cement alkali, in order to perform sustainable hydrotechnical structures. The electrochemical method has highlighted the existence of an unexplored reactivity potential of the aggregates.

Class 7



Electrochemical Method for Diagnosis of Alkali-Aggregate Reactions in the Laboratory

- 1. Mortar bar; 2. Stainless steel parts; 3. Metallic wire;
- 4. 1N NaCl solution; 5. Basin; 6. Continuous current source;
- 7. Graphite bar

RO.186.

Title**GLAZED TILES WITH PHOTOVOLTAIC POTENTIAL FOR ROOFS****Authors**

George POTERAȘ, György DEÁK, Andreea Georgiana BARAITARU, Marius Viorel OLTEANU, Alina-Florina NICOLAE

Institution

National Institute for Research and Development in Environmental Protection

Patent no.

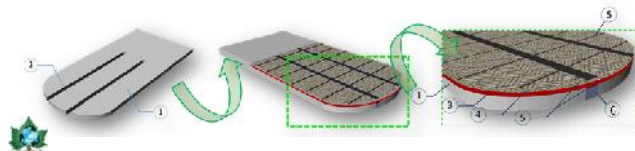
Patent Application no. A 00180/2018

Description

The invention consists in the development of ceramic tiles coated with glazes that have photovoltaic potential. The ceramic tiles are provided with longitudinal slots, on about 2/3 of their length and they are glazed with two thin layers, doped with secondary raw materials from waste recycling, which gives the tile a PN photovoltaic potential. These ceramic tiles can be used to build all types of roofs, resulting low energy conventional homes with improved landscape impact compared to classic panels. By using glazed tiles with photovoltaic potential are exploited surfaces that cannot be used for other purposes.

Class

2;7



Glazed Tiles with Photovoltaic Potential for Roofs

1. Ceramic tile; 2. Longitudinal slots; 3. Glazed layer doped with tin chloride; 4. Glazed layer doped with boron oxide; 5. Conductive layer; 6. Material with thermal and hydro insulation properties

RO.187.

Title	Research on transboundary dispersion of heavy metals occurring from mining activities within the Danube River Basin – <i>Monitoring of surface waters contaminated with heavy metals</i>
Authors	Anghel Ana-Maria, Déak György, Laslo Lucian, Ionescu Petra, Cimpoeu Cristina, Marcu Ecaterina, Irina Ciobotaru, Ivanov Alexandru, Urişescu Bogdan, Lumînăroiu Lucian, Zamfir Ştefan, Voiculeţ Cătălin, Pană Eduard
Institution	National Institute for Research and Development in Environmental Protection The mining activities have become a global concern due to the local and regional degradation of life quality, especially, by polluting the water even after the cessation of these activities. Globally, water plays an important role in sustainable development and stability. Hydropolitics must be respected and have a fundamental importance in maintaining good water quality. The instrument of European environmental legislation that focuses on understanding and ensuring sustainable water governance is the Water Framework Directive 60/2000/CE. The Romanian Danube River section is the general wastewater collector from all the countries it crosses until it flows into the Black Sea. For this reason and because the Danube is an important transportation corridor for Europe, this research study deals with chemical status assessment, with emphasis on heavy metals, of the Danube River Basin waters located on Romanian territory. The results, collected over 2017 and concentrated in a database, led to the updating of the information on the water status of the Somes Basin, the Tisza River Sub-basin and the Danube Basin in certain areas, respectively. The assessment of the water quality, based on the monitoring data, revealed the existence of critical areas on the water courses studied, where critical values were obtained for certain determined parameters. This research is part of the Nucleus National Program PN 16 04 01 02 carried out during 2017 by the INCDPM researchers regarding the transboundary dispersion of heavy metals occurring from mining activities within the Danube River Basin (www.incdpm.ro).
Description	
Class	

RO.188.

Title	Situation regarding Bala Branch - Danube upon riverbed geomorphological evolution analysis before and after hydrotechnical works
Authors	<i>DEÁK György, BADEA Gabriel, LUPEI Theodor, URIȚESCU Bogdan</i>
Institution	National Institute for Research and Development in Environmental Protection
Description	On the downstream sector of the Danube River the secondary branch called Bala is a problematic area regarding large ships transport because of the geomorphological characteristic, either due to natural or anthropic causes. Namely at low waters the main transport path moves from the Old Danube Branch though Bala Branch to Borcea Branch, increases the distance traveled to the Black Sea. The current study objective regarding its first phase is to recreate the Bala Branch course evolution across time from 1910 to present, based on historical maps interpretation, taking into account natural causes and anthropic impact of the hydro-technical works in the interest area. A detailed hydrogeomorphological analysis regarding the hydrotechnical construction evolution (before and after) at Bala Branch was conducted based on: 3D bathymetry, banks erosion and deposit, new bottom sill evolution and longitudinal and transversal velocity sections. Impact upon aquatic environment, including sturgeon migration and behavior is insignificant based on current hydrogeomorphological situation.
Class	

RO.189.

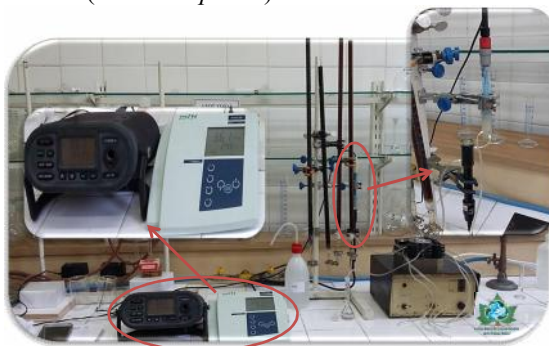
Title	Research on transboundary dispersion of heavy metals occurring from mining activities within the Danube River basin – <i>Removal of heavy metals from acid mine leachate by absorption</i>
Authors	Anghel Ana-Maria, Déak György, Poteraș George, Cimpoeu Cristina, Ivanov Alexandru, Ciobotaru Irina-Elena, Marcu Ecaterina, Boboc Mădălina Georgiana, Tudor Georgeta, Olteanu Marius, Băăritaru Andreea
Institution	National Institute for Research and Development in Environmental Protection

Mine landfills generate problems due to the leaching of heavy metals from tailings. Landfill leachate forms when water percolates through a landfill. In recent years, concerns about potentially hazardous compounds in landfill leachate have gained increasing interest and various methods have been employed for the removal of heavy metals. This research was focused on laboratory tests of the removal efficiency of several absorbents. In this purpose, ultra-activated carbon and cation exchange resins were used in the removal of heavy metals from the acid mine leachate. Preliminary tests were conducted on synthetic water with similar composition to mining acid leachate, in order to establish the optimum conditions.

The obtained data for the acid mine leachate sample revealed a removal efficiency higher than 90% for cadmium, copper, iron, manganese, nickel and zinc.

Description

This research is part of the Nucleus National Program PN 16 04 01 02 carried out during 2017 by the researchers from INCDPM regarding the transboundary dispersion of heavy metals occurring from mining activities within the Danube River Basin (www.incdpm.ro).



The plant used to carry out ion-exchange experiments to remove the heavy metal from synthetic and real solutions on cation exchange resins and/or ultra-activated carbon

Class

RO.190.

Title **Innovative technological solution for the recovery of wastewater for irrigation of energetic crops**
Authors *Tociu Carmen, Deák György, Maria Cristina, Ciobotaru Irina-Elena, Ivanov Alexandru-Anton, Marcu Ecaterina*
Institution **National Institute for Research and Development in Environmental Protection**

Description The encouragement of treatment and recycling technology as well as intelligent and sustainable management of water resources represent viable solutions as regards the concerns and actions meant for the harmonisation of modern societal necessities to ensure a vital resource. On the other hand, energetic plants have gained the interest of specialists and national authorities which support the use of biomass-based heat sources and the development of production and distribution systems for biogas at community level. The elaboration of an innovative technological solution and the execution of a modular station for wastewater treatment with high content of organic substances and nutrients resulting from livestock with the purpose of using the effluent for the irrigation of energetic crops is the main scope of our project, which is addressed to the economic environment and approaches an alternative to the conventional wastewater treatment and disposal methods. The use of this type of wastewaters in agriculture after their treatment using advanced methods (electrochemical oxidation, UV degradation, ozonization etc.) has an advantage in many areas with arid climate or critical areas threatened by desertification where the sources of water supply are scarcer and the necessity to consider any other useful source arised, in support to economic and social growth of the area.

Class

RO.191.

Title **Research on the influence of Danube River dicharge rate on the sturgeon species migration**
Authors *Bădiliță Alin Marius, Dănălache Tiberius, Zamfir Ștefan Adrian, Holban Elena, Dăescu Andreea Ioana, Fronescu Diana Simona, Boajă (Popescu) Iustina*

Institution National Institute for Research and Development in Environmental Protection

Description Ihtiofauna species are generally sensitive to changes of river flow regimes because they usually may cause fragmentation or even loss of feeding, reproduction or wintering habitats. On long time, this can eventually lead to the disappearance of species. The Danube hydrotechnical works for improving navigation during 2011-2016 led to the necessity of sturgeon species monitoring and analyzing of hydromorphological changes that may have a direct impact on the species. The results have showed that the water flow velocity is the hydrological factor with the highest influence on the species during the migrations. The water flow variation may facilitate or hamper the sturgeon migration and their habitats may be fragmented, destroyed or relocated due to the modifications of the river bed morphology. The sturgeon's response to these changes caused by the hydrotechnical works is very important for the development of preventive solutions for environmental protection and for biodiversity conservation.

Class

RO.192.

Title Research on transboundary dispersion of heavy metals occurring from mining activities within the Danube River basin – *Recovery of tailing by solidification/stabilization with cement*

Authors Anghel Ana-Maria, Déak György, Cimpoeu Cristina, Ivanov Alexandru, Ciobotaru Irina-Elena, Marcu Ecaterina, Boboc Mădălina Georgiana, Tudor Georgeta, Poteraş George, Olteanu Marius, Băraitaru Andreea

Institution National Institute for Research and Development in Environmental Protection

Description Mining activities generate large amounts of wastes containing heavy metals, which require proper disposal. Therefore, the improvement of the quality of the environmental compartments near the mining areas has become a necessity. The characteristic of mining waste was performed using X-ray fluorescence spectrometry and

physicochemical analysis. The results indicated a diverse composition of the analyzed tailings regarding the heavy metals with high concentrations of iron and manganese. Leachability tests were performed, showing that cadmium, zinc and sulfates concentrations exceed the maximum values provided by the national legislation.

The solidification/stabilization of the tailings in mortar was achieved using CEM I and CEM II cements. The results showed that the CEM I-type cement incorporates better the tailings and provides a higher mechanical resistance of the obtained mortar compared to CEM II. The leachability tests confirmed the immobilization of heavy metals in the mortar. The results of this research may be useful for the remediation of the mining area and for the minimization of the effects on the human health at local and regional level.

This research is part of the Nucleus National Program PN 16 04 01 02 carried out during 2017 by the researchers from INCDPM (www.incdpm.ro) regarding the transboundary dispersion of heavy metals occurring from mining activities within the Danube River Basin.



Class

RO.193.

Title	Designing and building integrated energy production systems by combining multiple renewable sources
Authors	<i>DEÁK György, George POTERAŞ, Monica MATEI, Gabriel BADEA</i>
Institution	National Institute for Research and Development in Environmental Protection The study includes information on building and equipping the new complex renewable energy production system in coastal areas, called CERHES, using an integrated system based on three natural sources (simultaneous) for electrical power generation: hydraulic, wind and solar, as well as the development of a production complex renewable energy in CERHES - AC flowing water.
Description	In addition, preliminary data regarding alternative energy systems and their environmental benefits as well as information on a series of hybrid systems for global electricity generation were presented. The two integrated systems CERHES and CERHES - AC developed by the INCDPM researchers have gained national and international recognition in events dedicated to scientific innovations.
Class	

RO.194.

Title	Study regarding the techniques and methods used for recycling and recovery of glass waste with special properties existing at national and international level
Authors	Trentea Alina-Maria, Mărcuş Maria-Iuliana, Dumitru Florina-Diana, Baraitaru Andreea-Georgiana
Institution	National Institute for Research and Development in Environmental Protection Glass waste results from both glass products manufacturing process and end-users. The concept of glass waste has been re-evaluated by the European Commission, thus, glass waste is considered a secondary raw material, according to EU Regulation 1179/2012. In 2014, 18.5 million tonnes of glass were generated at European Union level, from which only 123768 tonnes in Romania, being the 21 st in the European Union. Of the total quantity of glass waste, around 15.8
Description	

million tonnes were recovered in the EU in 2014, Romania's contribution being 0.75% (117502 tonnes).

A special glass waste is cathode ray tube (CRT) because it is a hazardous waste due to its heavy metal content, especially Pb, but also because it is made of three types of glass with different compositions, making it difficult to recycle.

The two major industries have been identified as having potential to use recovered CRT glass: building materials and ceramic industries.

Researchers have obtained the following products through various CRT glass waste recycling technologies: foam glass-ceramic, dense glass-ceramic, glass matrix composite and glass tiles, ceramic glazes, cement mortar and paste, concrete, cement brick and clay brick, geopolymers.

In these products CRT was used as raw material (i.e. as sand substitute), and it was mixed with various agents (foaming agents, nucleating agents etc.). The technologies used have taken into account various parameters (reaction time, temperature, weight percentage of the reducing agent, chemical properties of the glass). All these researches have highlighted the high potential for CRT glass reuse in various materials.

Class

RO.195.

Title	Monitoring of air quality in sensitive urban areas of Bucharest
Authors	<i>Natalia Raischi, Irina Ciubotaru, Eduard Pana, Catalin Voiculescu, Lucian Luminariu, Stefan Zamfir</i>
Institution	National Institute for Research and Development in Environmental Protection
Description	Daily exposure at high concentration of air pollutants could have negative impact on population health, especially on sensitive persons like children, elders or other persons with chronic disease. (Source: World Health Organization, Ambient air pollution, http://www.who.int). In urban areas like Bucharest, there is a network for air quality monitoring, but the information provided from it is not enough, in some specific cases. With data provided by the monitoring stations of the network only the air quality for the area of stations representativeness can be assessed. Considering that

a lot of sensitive objectives as schools or hospitals are placed outside of this representative areas of the monitoring stations, the main objective of the study was to assess the air quality in areas such as that of a school, placed near emission sources. The results of the study were based on data obtained during 10 days of intensive air quality monitoring in different meteorological conditions.

Class

RO.196.

Title

Research on the reduction of hazardous substances from urban wastewaters through the use of natural products

Authors

Eng. DĂESCU Andreea Ioana; ecol. HOLBAN Elena; ecol. MINCU Mariana; eng. BURLACU Iasmina-Florina

Institution

National Institute for Research and Development in Environmental Protection

Description

Within this project has been performed researches regarding the methods and technologies used in urban wastewater treatment, were identified dangerous and priority hazardous substances in terms of their presence and their classification within the limits provided by the current legislation.

Researches have been carried out in decreasing of the hazardous substances, regarding the methods and technologies used, both on nationally and internationally level, for wastewater treatment by using natural products. It was followed by the optimization of the current water treatment processes for the protection and improvement of water quality, after that were proposed solutions, technological schemes and measures for the reduction of hazardous substances in wastewater through a case study.

The research activities that underlie the work has been performed in a project which is part of Research Programme Nucleu - contract 48N/2016 (PN 16 04 03 04), financed by the Romanian Ministry of Research.

Class

RO.197.**Title****Monitoring the behavior of sturgeon juveniles produced under aquaculture conditions on the Lower Danube****Authors**

Danalache Tiberius-Marcel, Badilita Alin-Marius, Deak Gyorgy, Raischi Marius Constantin, Holban Elena, Cristea Alexandru, Fronescu Simona Diana, Zamfir Adrian Ștefan

Institution**National Institute for Research and Development in Environmental Protection****Description**

Sturgeon species are listed as some of the oldest species, adapting continuously to the various natural changes in their living environment. On the territory of Romania there were 6 sturgeons species of the genus *Acipenser* and *Huso*, but due to anthropogenic influences, it seems that two of the six sturgeon species are extinct, namely *Acipenser nudiventris* - ship sturgeon and *Acipenser sturio* - common sturgeon.

The disappearance of the two species and the registration of the others on the Red List led to the awareness that the 4 sturgeon species that are still reproducing on the Lower Danube are in a real danger of extinction, Romania thus implementing a series of measures to prohibit commercial fishing of these species and the development of sturgeon aquaculture in support of wild sturgeon species through restocking with specimens raised in aquaculture. As a result, Romania released over 430.000 sturgeon juveniles from 3 species (beluga, stellate sturgeon and russian sturgeon).

The necessity to determine the behavior and evaluate the effectiveness of the restocking program has led to the sturgeon juveniles monitoring by ultrasonic telemetry.

The results highlighted the behavior during the migration to the Black Sea of the ultrasonically tagged juveniles, which belonged to three species of sturgeon (beluga, stellate sturgeon and russian sturgeon). Therefore, their favorite routes were analyzed in the migration to the sea, the day-night migration and the distribution on the three main branches of the Danube Delta.

Class

RO.198.

Title **The development of appropriate investigation procedures/methods for structures affected by Alkali-Aggregate Reactions (AAR)**

Authors George POTERAȘ, Alina-Florina NICOLAE, Mădălina BOBOC, Eduard PANĂ, Constantin CÎRSTINOIU, Cătălin VOICULEȚ

Institution **National Institute for Research and Development in Environmental Protection**

Description Taking into account the complexity of the analysis regarding the incidence of structures affected by alkali-aggregate reactions, the main objective of this project was to present the appropriate investigation methodologies for structures affected by alkali-aggregate reactions (AAR). This research was necessary because they can be inventoried structures that present one of the special marks associated with alkali-aggregate reactions, but others may be the causes of the damage.

After reviewing the investigation procedures/methods of alkali-aggregate reactions and after analysing the influence of the expansion caused by these reactions on the concrete mechanical strength, they were estimated results regarding the diagnosis of alkali-aggregate reactions in the laboratory, by electrochemical ELCH method. This new method combines principles of the chemical method, with electrochemical principles, the results being expressed similarly to the expansion methods.

Solutions for controlling and reducing the effects of alkali-aggregate reactions were also presented within the project.

Class

RO.199.

Title **Lower Danube migration monitoring of sturgeon species by ultrasonic tagging - method and results**

Authors Elena HOLBAN, Tiberius DĂNĂLACHE, Alin Marius BĂDILITĂ, Gyorgy DEAK, Marius RAISCHI, Alexandru CRISTEA, Gabriel CORNATEANU, Marius Viorel OLTEANU, Madalina BOBOC, MATEI Monica

Institution **National Institute for Research and Development in Environmental Protection**

Description Through the experience gained in the last 7 years in studying the sturgeons migration along the Danube, the INCDDPM has developed a new method for sturgeons tagging with

ultrasonic tags, based on the manufacturer's recommendations, bringing in addition benefits which helps to a fast-postoperative recovery. Surgeons thus tagged are able to continue their migration immediately after release, and surgery does not adversely affect their behaviour. Tagging is always assisted by a veterinarian, having as innovative solutions the tube specifically designed to maintain vital functions and the tissue adhesive for closing the incision, which avoid possible postoperative infections.

Class

RO.200.

Title **Innovative technologies for renewable energy production from integrated natural sources in complex installations - TEACHERS**

Authors George POTERAȘ, György DEÁK, Alina-Florina NICOLAE, Andreea Ioana DĂESCU, Iasmina Florina BURLACU, Viorel BĂDESCU, Dănuț COCIORVA, Marius OLTEANU

Institution **National Institute for Research and Development in Environmental Protection**

Description Having as common focus the innovative developments in renewable energy, the project consortium brings together university, academic and scientific research organizations whose objectives converge towards performance improvement by supporting existing institutional research capabilities.

The project aims to optimize renewable energy production facilities and to develop functional models which will ensure electric power supply with integrated natural sources, especially in disadvantaged areas, by applying new and emerging technologies.

Within the project the complementary partnership for innovation is promoted, the members having a well-defined role within the consortium, each contributing to the significant optimization of the complex systems for renewable energy production in both coastal areas and for flowing waters, improvement of hydrogenerators, and realization of pilot models for demonstration and provision of thermal and electrical energy.

Class

RO.201.

Title	New analytical methods to evaluation emerging pollutants in aquatic environment developed by high performance techniques UHPLC and ICPMS
Authors	Mihaela Ilie, Gina Ghita, Florica Marinescu, Alexandru Ivanov, Irina Ciobotaru, Deák György, Bogdan Uritescu, Bianca Petculescu
Institution	National Institute for Research and Development in Environmental Protection (INCDPM) The project has as main objectives the development of procedures for integrated pollutant investigation at aquatic ecosystem level, especially for emerging pollutants that may present a significant risk, as well as optimizing and improving the monitoring activity and analysis methods for assessing the pollution degree of aquatic ecosystems.
Description	In the second stage of the project have been developed, tested and optimized new analytical methods to determination emerging pollutants (pharmaceuticals, elemental inorganic pollutants) in drinking water and in urban wastewater. The target analytes were identified and quantified using UHPLC Thermo Scientific Equan Max Plus TSQ Quantiva and ICPMS Nexlon 350X equipments. The study has shown that all investigated wastewater samples contained pharmaceutical chemicals from benzodiazepine class and its metabolites (table 1). Lorazepam was not detected in the analyzed samples. The detection and quantification of elemental inorganic pollutants by inductively coupled plasma mass spectrometry (ICP-MS) methods revealed the presence of elements (Al, P, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Cd, Pb, Mo, Ba) to values at µg/L and lower, in drinking water samples (fig 1). The UHPLC method yielded detection limits in the low ng/l range for both drinking water and urban wastewater, thus providing a reliable tool for monitoring of pharmaceutical products in different water matrix. The results obtained in this stage of the project represent a scientific basis for development advanced analytical methods to detection and quantification emerging pollutants in order to comply with the <i>Directive 2013/39/EU as regards priority substances in the field of water policy</i> , which provides that new hazardous substances (including pharmaceuticals) have to be monitored by each Member State starting with 2021. Member States have to carry out a <i>monitoring investigation</i> to achieve enough preliminary data at Community level regarding new hazardous substances, which form the basis of scientific research and accurate risk assessments, to determine the decisions in order to extend the list of priority substances at Community level.

RO.202.

Title	Integrated assessment of the impact generated by pollutants on aquatic ecosystems using numerical modeling with specialized software
Authors	Mihaela Ilie, Deák György, Gina Ghita, Florica Marinescu, Alexandru Ivanov, Alina Nicolae, Georgeta Tudor, Ioana Savin, Constantin Cirstinoiu, Bogdan Uritescu
Institution	National Institute for Research and Development in Environmental Protection (INCDPM) A numerical model of pollutant dispersion in rivers was developed in this, for the purpose of integrated assessment of impact on aquatic ecosystems. The following aspects were addressed: elaboration of a methodology for estimating water quality parameters in aquatic ecosystems based on mathematical modeling; developing a hydrodynamic mathematical and water quality model for the studied system; performing the numerical simulation based on the mathematical model developed that allows study of the behaviour in time of the studied area. The calibration and validation of the computing models related to the determination of hydrodynamics and the processes regarding the space-time evolution of the pollutant transport and dispersion of analyzed sector of the Danube were carried out. 1D, 2D, 3D numerical models have been developed
Description	based on the numerical solution of the three-dimensional incompressible Reynolds averaged Navier-Stokes equations invoking the assumptions of Boussinesq and of hydrostatic pressure, the following being described: the turbulent flow, sediment transport processes and pollutants' dispersion in the aquatic environment for the estimation of characteristic parameters of the pollutants' transport in the Danube River on the studied section. The state variables of the ecological model EcoLab used in this study are phytoplankton, zooplankton, detritus, nitrate, nitrite, ammonium, phosphate, and dissolved oxygen. Numerical modeling with specialized software Mike by DHI, Mike 11, Mike 21, Mike 3 and EcoLab respectively, led to the description of the variation of pollutant concentrations in time and space in order to assess the quality parameters of the Danube River. Research results can be applied to estimate the variation in physical, chemical and biological parameters in aquatic ecosystems. On the basis of research results, computing networks can be developed for other sectors of the Danube as well as for other rivers, too. Research activities will also contribute to the development and updating of national policies as well as to the implementation of <i>Water Framework Directive 2006/60/EC</i> in Romania.

RO.203.**Title****Technologies for the recovery of urban wastewater treatment sludge and municipal waste****Authors**

Chiriac Magdalena, Mărcuş Maria Iuliana, Trentea Alina Maria, Deák György, Ionescu Petra, Radu Monica Violeta

Institution**National Institute for Research and Development in Environmental Protection (INCDPM)****Description**

The projects' general objective consists in establishing viable and applicable solutions for recycling and recovery of waste that require final disposal, as well as recovery solutions for sludge from municipal wastewater treatment plants. The project aims to achieve: non-compliant landfills characterization and mapping; identifying waste recycling methods in order to avoid their disposal; urban wastewater treatment plants mapping; identifying the types of sludge resulted and the annual quantities to be recovered; establishing solutions for increasing the technical and qualitative level of waste recycling and recovery technologies. The following recovery technologies are developed within the project: a general waste recycling/valorization technology, recycling technologies by waste types: glass, plastic, non-ferrous, WEEE, a general technology for urban sludge valorization, as well as customized technological solutions by category of sludge. Also, an ecological reconstruction technology of non-compliant landfills will be tested in a demonstration/pilot scheme. One technology for the full energy recovery of waste will be performed, along with greening of soil contaminated by non-compliant landfills.

The implementation of the project aims at encouraging the private sector and promoting the access of SMEs to the results of R&D and innovation activities in order to increase the capacity to assimilate the results of the research carried out within the project; increasing the applicative research competitiveness and capitalizing their results in the economic sector of the field of municipal waste management; solving the problems related to non-compliant landfill non-conformities by the superior valorization of the waste and urban sludge.

Class

RO.204.

Title **Testing of integrated green energy generation systems in pilot and in-situ stations**
Authors *Matei Monica, Laslo Lucian*
Institution **National Institute for Research and Development in Environmental Protection**

Description The project aims to develop integrated energy production systems by combining renewable sources: solar, water and wind. In the first part of the study were described theoretic notions underlying the estimation of the energy potential of a renewable energy production system. Starting from the renewable energy sources used by the complex systems of energy generation in coastal areas and running waters, the principles underlying the operation of such systems were presented. In the second part of the study, in order to verify the functionality of the integrated systems of green energy production, two complex energy generation systems were investigated in the pilot plant and in situ. Testing of the power generation complexes in the pilot station and in-situ provided the opportunity to modify the construction elements in order to improve their performance. These tests also provide the premises for model improvement by correlating the parameters monitored in the laboratory with those recorded under real (in-situ) conditions.

Class

RO.205.

Title **Innovative technologies to reduce the negative impact of climate change on vegetable crops**
Authors *Matei Monica, Deak Gyorgy, Ciobotaru Nicu, Laslo Lucian, Boboc Madalina*
Institution **National Institute for Research and Development in Environmental Protection**

Description The main objective of the project is to reduce the negative impact of climate changes on the vegetable crops (bell peppers, bean and onion) and the improvement of the institutional performance for research-development-innovation of the consortium partners in the horticultural domain. This project targets the improvement of institutional

performance of the partners: SCDL Buzău, INMA Bucharest, INCDPM Bucharest, ICDPP Bucharest, Horting Bucharest and SCDL Bacău, which represents public research entities with tradition and possibilities for revival of the Bioeconomy domain, Agro-Alimentary subdomain. INCDPM assures the application of climate scenarios to describe present and future tendencies in vegetable sector, application of scenarios regarding the flooding risk of the agricultural terrains of interest.

Class

RO.206.

Title **Researches on the green technologies efficiency that used solar energy using the principles of sustainable development- Establishing the optimal conditions for the photovoltaic panels location**

Authors Olteanu Marius Viorel, Mițiu Mihaela Andreea, Ciobotaru Nicu, Raischi Natalia Simona, Gheorghe Petrache Ionuț

Institution **National Institute for Research and Development in Environmental Protection**

Description The performance of PV module is mainly influenced by solar insolation and ambient temperature. To achieve the highest PV yield, the local environmental parameters must be taken into account. The performance of photovoltaic modules and systems is mainly affected by the orientation and tilt angle. This paper attempts to determinate the optimal tilt angle and azimuth angle of an 100 kW photovoltaic power plant for a Bucharest region. Simulations were made with PVsyst V6.39 for south-east orientation (10^0 ; 45^0) and south-west orientation (10^0 ; 45^0), for the tilt angle the simulations were made at 10^0 , 15^0 , 37^0 , 60^0 and 90^0 . The simulation on 100 kW photovoltaic power plant has been done to study the influence of the orientation of photovoltaic panels on the amount of electricity produced each month of the year as well as on the total annual amount of electricity. Was experimentally determined by repetitive simulations in the range 30^0 - 40^0 for tilt angle and zero azimuth, optimal parameters for the position of photovoltaic panels. Was defined as the optimal position, the pair of values [zero azimuth, tilt angle 37^0] where the plant generates maximum energy in one year compared to any other set of values that defines the position of the photovoltaic panels. The tilt angle

and orientation play an important role in maximizing the solar radiation collected by a PV panel. The results of this work can be a support for private companies dealing with the location of photovoltaic parks, economic agents involved in electric energy field, etc.

Class

RO.207.

Title

Researches to support the development of the capacity to assess and mitigate the impact of climate change and other stressors on the state of forest ecosystems and vineyards

Authors

Matei Monica, Cociorva Dănuț

Institution

National Institute for Research and Development in Environmental Protection

Description

This project required a good collaboration between institutions with activity in the study of forest ecosystems and vineyards, and the mechanization of agriculture and forestry. The resulted solutions, even if they will not stop the unfavorable phenomena, will contribute to diminishing their impact in two sectors of economic activity: Forestry and Viticulture occupying almost 30% of the country's surface: 7,046,056 ha with forests and 196,000 ha with vineyards (according to the occupied areas, Romania ranks 9th in the world), sectors of economic activity that play an extremely important role in our country's economy.

Class

RO.208.

Title

Investigations regarding the development of monitoring, assessment and capitalization capacity of natural resources provided by Romanian wetlands of international importance and the Black Sea coastal area

Authors

DEÁK György, MONCEA Mihaela-Andreea, Dumitru Florina Diana, Matei Monica, Boboc Madalina, Tudor Georgeta, Uritescu Bogdan, Danalache Tiberius, Ghita Gina, Marinescu Florica

Institution

National Institute for Research and Development in Environmental Protection

Description

Considering that the wetlands represent valuable water resources, functioning as authentic natural filters for water

decontamination; and improve local air quality; it can also constitute important reserves of vegetable biomass, fish, timber, firewood, etc., being thus essential the protection of the wetlands of international importance. Another valuable resource generator is the Black Sea coastal area, as several sources of combustion gases have been recently identified on the coastline from the water line up to 3m of depth on both Mamaia and Constanta beaches.

In this context the project aims to perform in-depth investigations, necessary to develop the monitoring capacity, but also an efficient management of the natural resources provided by the Romanian wetlands. The main activities carried out within this project are:

- Analysis of EU environmental policies which aim to protect the wetlands of international importance;
- Elaboration of a pilot model for the monitoring system of Romanian wetlands of international importance based on field campaigns (sampling, remote sensing techniques, ichthyofauna monitoring) and laboratory analyses;
- Validation and practical demonstration of the pilot model in various study areas, considering the specific characteristics;
- Elaboration of a study regarding the analysis and assessment of the presence of combustion gases in the Black Sea coastal area (spatial distribution, content characterization and associated risks to the population, opportunities for the economic exploitation);
- Developing a strategy document regarding the protection and enhancement of natural resources offered by both wetlands of international importance and the Black Sea coastal area;
- Organizing national and regional debates on project outcomes.

Class

RO.209.

Title	National register regarding secondary reserves of raw materials with economic importance resulted from mining residues
Authors	<i>DEÁK György, DUMITRU Florina-Diana, MONCEA Mihaela-Andreea, MATEI Monica, RADU Monica Violeta, ANGHEL Ana-Maria, BARAITARU Andreea, URÎTESCU Bogdan, BOBOC Mădălina</i>
Institution	National Institute for Research and Development in Environmental Protection The project aims to create a national database on secondary reserves of mining waste materials, as mining residues are of interest due to their negative impact on the environment as evidenced by the formation of acid waters, pollution with heavy metals (Pb, Cu, Zn, Cd, Hg) and metalloids (As, Sb), mechanical instability phenomena, blocking of agricultural or built-up areas, modification of the landscape in areas with tourism potential. However, these residues have the potential for industrial capitalization as secondary mineral resources by recovering the useful basic elements (Au, Ag, Cu, Pb, Zn, Fe, Mn, W, Mo) for which the mines were opened or elements that have recently gain interest from the industry (Ge, In, Te, Cd, Sb), the use of gangue elements (quartz, feldspar, clay minerals) or the use of mining residues to ameliorate the solutions (eg in the case of some coal mines tailings). The project is divided into 5 stages: 1) The logistical and technical preparation of the project; 2) Updating information on European legislation in the field of secondary resources from mining waste; 3) Current situation in our country regarding the policies for the exploitation of the secondary raw material reserves; 4) Elaboration of documentation on exploitable mining tailings; 5) Elaboration of the documentation on the secondary reserves of raw materials with economic importance resulted from the mining residues; Multidisciplinary teams bringing together experts in the field of geology, materials science and engineering, chemical engineering, environmental engineering, equipment design are involved in this project, ensuring its success.
Description	
Class	

RO.210.

Title	Researches on setting up methods for abatement of hazardousness of different industrial hazardous waste, towards safe landfilling for environment and human health - <i>Researches on eco-toxicity determination of the products developed by the use of metallic oxides from electroplating sludge into decorative ceramics</i>
Authors	Mărcuş Maria Iuliana, Raischi Natalia Simona, Mîţiu Mihaela Andreea, Lungu Cornelia
Institution	National Institute for Research and Development in Environmental Protection
Description	<p>Industrial waste management imposes a clear strategy of reuse, to the detriment of landfilling. Some hazardous waste, such as electroplating sludge proves to be a great source of valuable metals. A possibility of electroplating sludge recovery consists in using of some metal hydroxides/salts extracted from sludge as pigments in ceramic industry. Coloured ceramic products can be obtained through the use of various amounts of pigments and their addition in vitreous compositions.</p> <p>This paper presents the results of the research activity in order to establish the stability and leaching potential of ceramic tiles which have been developed using glazes colored with pigments obtained by the extraction of chromium and iron metals from electroplating sludge. Emissions of toxic substances from the decoration and glaze toxicity have a great importance for hygienic and sanitary conditions of ceramic products. The results proved the compatibility of the glaze with embedded heavy metals and highlighted a chemical stability of solidified glaze. Valuable metals recovery from electroplating sludge and their use in ceramic industry is a technical economically viable solution. Metal recovery is performed by using chemical reagents commonly used in industrial wastewater and the process does not require an expensive installation. The process lead to a decrease of useful substances losses through recovery of metal hydroxides/salts from sludge, simultaneously with a significant reduction of hazardous sludge quantities. Potential beneficiaries: companies involved in waste industry and management; designers in technologies and industrial waste treatment facilities; companies involved in the building materials industry (e.g. ceramics, glass).</p>

RO.211.

Title	Researches regarding the possibility of using various types of wastes with / without hazardous substances, in inorganic binders. - <i>Durability of binder materials obtained by using different types of wastes, with / without hazardous substances</i>
Authors	<i>MONCEA Mihaela-Andreea, DUMITRU Florina-Diana, BOBOC Mădălina Georgiana, BARAITARU Andreea-Georgiana, DEÁK György</i>
Institution	National Institute for Research and Development in Environmental Protection
Description	<p>The main objective of the project was to investigate the resistance over time (durability) of binder materials containing hydraulic active powder (ceramic brick powder) by substituting 20% of Portland cement compared to standard samples with 100% Portland cement. The development of prefabricated materials from traditional inorganic binders that include a wide range of hazardous / non-hazardous waste requires, in addition to obtaining materials with properties comparable to traditional materials, the determination of their performance through durability tests, considering that materials with low durability involve frequent maintenance actions and even full replacement, operations that entail additional costs. Therefore, in this study, the durability of the obtained mortars was assessed through compression tests and structural characterization by X-ray diffraction and scanning electron microscopy.</p> <p>All samples were maintained under the same conditions: curing for 28 days on water and up to 360 days in the laboratory atmosphere ($T = 20 \pm 2$ °C). Later the mortar samples were tested for frost-cleft (40 freeze-thaw cycles). The compression tests of the samples showed that the resistance over time is stable, the mechanical resistance after 40 freeze-thaw cycles being only slightly reduced compared to the samples maintained up to 360 days.</p>
Class	

RO.212.

Title Researches regarding the possibility of using various types of wastes with / without hazardous substances, in inorganic binders - *Development of prefabricated elements from binder materials obtained by using waste, with / without dangerous substances*

Authors MĂRCUȘ Iuliana, DUMITRU Florina-Diana, MONCEA Mihaela-Andreea, BARAITARU Andreea-Georgiana, BURLACU Iasmina, DEÁK György

Institution National Institute for Research and Development in Environmental Protection

Description This study aims to investigate the chemical attack of a binder material with a 20% hydraulic active powder substitution (ceramic brick powder) and a water / binder ratio of 0.45. Additionally, considering the potential applications of prefabricated binder materials incorporating different types of wastes, with / without hazardous substances, the impact of the aggressive environment on the prefabricated elements should be determined, as the chemical attack may affect their integrity. In this research, the evaluation of materials' behavior under the chemical attack was carried out by compression tests and microstructural characterization. The obtained samples were maintained under the same conditions: curing for 28 days on water and maintaining 1, 7 and 14 days in sulphate and acid media. The samples maintained up to 14 days in both sulphate and acid media showed a decrease of ~ 24% and ~ 15% compared to the value obtained after 28 days of hydration, indicating that the mixtures containing ceramic powder behave well in corrosive environments. This method is in accordance with the EU regulations regarding the integrated waste management as it contributes to the decrease of waste with / without dangerous substances by using them for new applications. The results of this study highlighted the possibility of using brick waste in applications such as adhesives and floor beaumontage, due to their resistance in both acidic and sulphate media. Therefore, the possible end-users are the companies from the building materials industry.

Class

RO.213.

Title **Developing of various ecological composite materials by using secondary row materials. - *Microstructural particularities of the complex ecological composite materials highlighted by scanning electron microscopy***

Authors *DUMITRU Florina-Diana, MONCEA Mihaela-Andreea, BARAITARU Andreea Georgiana, BURLACU Iasmina Florina, DÁK György*

Institution **National Institute for Research and Development in Environmental Protection**

The project refers to the structural and compositional characterization of various ecological materials such as cement based materials with nano-SiO₂ content, brought into the system as Portland cement substitute, as well as geopolymers with 10% of waste glass content.

Description In order to study the microstructural particularities of cement based materials, cement pastes were prepared with 0.7 % nano-SiO₂ content and different water / binder ratio of 0.45 respectively 0.5, cured in closed vial up to 360 days in normal conditions ($T=20 \pm 2^{\circ}\text{C}$). The X-ray patterns of the cement samples revealed compounds such as ettringite, portlandite ($\text{Ca}(\text{OH})_2$) as well as both dicalcium silicate (C_2S) and tricalcium silicate (C_3S). This chemical compounds were confirmed also by scanning electron microscopy (SEM) analyses.

The geopolymers binders were prepared by using methacholine and 10% of glass waste, obtained by fine grinding of laboratory glassware, broken or out of use. The alkaline activation was performed by using a NaOH 12 M solution with a liquid / solid ratio of 0.45 and a binder / aggregate ratio of 1/2. The XRD patterns highlighted a preponderant gelled structure which determine over time a certain degree of structuring. However, after the first 24 hours of hardening on the XRD patterns were identified chemical compounds such as: sodalite ($\text{Al}_6\text{Cl}_2\text{Na}_8\text{O}_{24}\text{Si}_6$), thermonatrite ($\text{Na}_2\text{CO}_3\cdot\text{H}_2\text{O}$) as well as quartz from the metakaolin composition. The SEM micrographs showed sub-micron sized geopolymer phases formed during the polymerization reaction, namely zeolites formations of cabasite type.

RO.214.

Title	<p>Developing of various ecological composite materials by using secondary row materials. - <i>Assessment of stability and durability over time in different storage conditions of the ash-based compositions resulted from sludge co-incineration</i></p>
Authors	<p><i>DUMITRU Florina-Diana, MONCEA Mihaela-Andreea BARAITARU Andreea Georgiana, BURLACU Iasmina Florina, DEÁK György</i></p>
Institution	<p>National Institute for Research and Development in Environmental Protection</p>
Description	<p>The project aims to assess different binder compositions, based on ashes resulted from sludge co-incineration, by determining the stability and durability over time, in different storage condition. For this purpose, ecological composite materials with waste glass were obtained (metakaolin geopolymers with 10% of waste glass) and mechanically tested to determine the compression resistances after 35 freeze-thaw cycles. A part of the geopolymer binders were previously thermal treated at 600°C. In order to explain their behavior x-ray (XRD) and scanning electron microscope (SEM) analyses were performed on binder pastes with identical composition.</p> <p>The effect of thermal treatment on mechanical resistance is positive in terms of compressive strength especially for geopolymers with 10% glass waste due to the increasing Si / Al ratio, enabling the formation of Si – O – Si bonds. To establish their practical utility these porous structures, previously thermally treated, were tested for repeated cycles of freeze-thaw. The results revealed that the geopolymer with 10% glass waste had lower resistances. This behavior could be explained by the glass addition which enriched the internal network of pores with oxygen.</p> <p>The XRD analyses highlighted a preponderant gelled structure. However, after the first 24 hours of hardening, on the XRD patterns were identified chemical compounds such as: sodalite ($\text{Al}_6\text{Cl}_{12}\text{Na}_8\text{O}_{24}\text{Si}_6$), thermonatrite ($\text{Na}_2\text{CO}_3\cdot\text{H}_2\text{O}$) as well as quartz from the metakaolin composition. The SEM micrographs clearly showed the geopolymers pore structures (air bubbles trapped inside the structure) as well as the presence of phases formed during the polymerization reaction besides the partially reacted metakaolyn.</p>
Class	

RO.215.

Title	Development of nanomaterials with applicability in environmental protection - <i>Development of nanomaterials with applicability in environmental protection by using the hydrothermal method</i>
Authors	MONCEA Mihaela-Andreea, DUMITRU Florina-Diana BARAITARU Andreea Georgiana, OLTEANU Marius DEÁK György
Institution	National Institute for Research and Development in Environmental Protection
Description	<p>The project aims to develop nanomaterials for applications in environmental protection using the hydrothermal method. For this purpose ZnO nanoparticles were obtained by hydrothermal synthesis being further characterized by x-ray diffraction (XRD) in order to determine its purity degree and scanning electron microscopy (SEM) coupled with energy dispersive spectrometry (EDS) to investigate its microstructure and chemical composition. There have been elaborated three recipes by varying both the concentration of the alkaline solution and the pH in order to obtain a high crystallinity degree of ZnO nanoparticles. The chemical precursors were zinc acetate dehydrate, methilic alcohol and NaOH solution of 0.2 – 0.5M added up to a pH value of 10-11. After the synthesis process, the ZnO nanoparticles were washed with ethanol and dried in oven at 60°C.</p> <p>The XRD patterns performed on the resulted white powders highlighted the presence of ZnO with Wurtzite hexagonal structure, displaying a high crystallinity degree due to the presence of sharp peaks with higher intensities for the samples with 0.3 respectively 0.2 M. Thus an important role in obtaining an ordered structure is played by the pH of the precursor solution.</p> <p>These results were confirmed also by the SEM analyses. The SEM images of nano-ZnO powder, obtained with NaOH 0.5M solution, underline the presence of some agglomerated hexagonal crystals of nanometric dimensions. For the ZnO powder obtained with 0.3 respectively 0.2 M of NaOH solution the hexagonal crystals are well grown in the form of tubes and the inner of tubes were measured in rage of nanometers.</p>
Class	

RO.216.

Title	Development of nanomaterials with applicability in environmental protection - <i>Nanomaterials synthesized by pyrolysis with applicability in environmental protection</i>
Authors	<i>MONCEA Mihaela-Andreea, DUMITRU Florina-Diana, OLTEANU Marius-Viorel, BARAITARU Andreea-Georgiana, DEÁK György</i>
Institution	National Institute for Research and Development in Environmental Protection
Description	<p>The nanomaterials synthesis technique through pyrolysis is one of the most important tools for processing advanced materials, through a simple and rapid process of temperature decomposition of the aerosols, for the continuous synthesis of nanoparticles with adjustable dimensions, with a uniform particle size distribution as well as a high crystallinity. The main objective of the present study was to perform preliminary research on the pyrolysis synthesis method, characterize the synthesized nanoparticles, and also to validate their applicability in the field of environmental protection by subsequent testing of the heavy metals retention efficiency from wastewater.</p> <p>The synthesis of SiO₂ nanoparticles was carried out by using 2 recipes and the obtained nanomaterials were afterwards characterized by X-ray diffraction and scanning electron microscopy (SEM).</p> <p>SEM analyses indicated a hexagonal structure of the SiO₂ particles, developed in cylindrical, filamentous form, while the X-ray diffraction showed a high degree of crystallinity of the nanometric powders due to the presence of the corresponding diffraction planes (100, 110 and 200).</p> <p>In order to determine the applicability of SiO₂ nanopowders in the field of environmental protection, cleaning tests of a laboratory synthesized water were carried out by initially adding different concentrations of heavy metals (Cu, Ni, Pb, Zn) in a water with a basic pH (about 8). The retention efficiencies of the two types of nanomaterials were ~100% for Pb and Zn, ~87% for Cu, while for Ni the retention efficiency was found to be lower (<50%).</p>
Class	

RO.217.

Title	Development of nanomaterials with applicability in environmental protection - <i>Methods for improving the properties of nanomaterials with applicability in environmental protection</i>
Authors	MONCEA Mihaela-Andreea, DUMITRU Florina-Diana BARAITARU Andreea Georgiana, OLTEANU Marius DEÁK György
Institution	National Institute for Research and Development in Environmental Protection
Description	<p>The project refers to nanosilica based materials, specifically mesoporous silica, for whom the heavy metals retention properties were improved by using nano-TiO₂ and nano-ZnO. During the project two different synthesis methods of the nanocomposites materials were investigated: the direct synthesis from solution, in which all the chemical precursors were added in solution and the indirect method where the mesoporous silica powder, nano-TiO₂ and nano-ZnO were obtained separately and mixed subsequently during the thermal treatment.</p> <p>The precursor solutions contain tetraethyl ortosilicate (TEOS), pluronic acid, hydrochloric acid and zinc acetate. The obtained product was washed with distilled water and ethanol, dried and thermal treated at 550°C.</p> <p>The x-ray diffraction analyses, performed at small angles, showed the presence of hexagonal structure of mesoporous silica confirmed by the appearance of two small intensity peaks at $2\theta = 1-2$ degree and one of higher intensity at $2\theta = 0.8 - 0.9$ degree. These data being in good correlation with the literature data.</p> <p>The SEM images of the etalon sample presented crystalized structures in shape of long filamentous micelles gowned unidirectional, a specific structure for mesoporous silica. The influence of the nano-ZnO and nano-TiO₂ is not significant in terms of microstructure modifications, thus the SEM images of the nano composites materials highlighted the same filamentous crystals where homogenously dispersed nano - ZnO and nano -TiO₂ particles can be found.</p>
Class	

RO.218.**Title****Integrated and Sustainable Processes for Environmental Clean-up, Wastewater Reuse and Waste Valorization – SUSTENVPRO****Authors***DEÁK György¹, TEODOSIU Carmen², DUMITRU Florina-Diana¹***Institution**¹**National Institute for Research and Development in Environmental Protection (INCDPM)**²**"Gheorghe Asachi" Technical University of Iași (TUIASI)**

The main objective of the complex project was to increase institutional performance in the Environmental field, through an integrative approach which supports/develops the existent research competencies, endorsing transfer capacities of results with applicative and innovative potential.

The main research directions:

- Development and validation of an innovative method oriented to the analysis, prevention and correction of environmental risks associated with the presence of priority pollutants in various water matrices;
- Development of efficient innovative water treatment processes and advanced wastewater treatment in order to eliminate priority organic and inorganic pollutants (heavy metals);
- Development of new innovative materials with properties designed according to the characteristics of the priority pollutants;
- Salvaging materials from organic (biomass) and inorganic waste (metallic waste) in innovative purification processes;
- Sustainability assessment at process level (water treatment / cleaning) as well as product level (use of synthesized innovative materials and waste) through Life Cycle Assessment.

**Description
Class**

National Institute For Chemical-Pharmaceutical Research&Development –ICCF Bucharest

RO.219.
Title

New compounds with quinolone structure with antimicrobial activity and process for preparing the same

Authors

Pintilie Lucia, Nita Sultana

Institution

**National Institute For Chemical-Pharmaceutical
Research&Development –ICCF Bucharest**

Patent no.

RO129981

Description

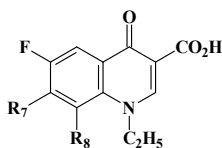
The invention relates to derivatives with quinolone structure with antimicrobial activity and to a process for preparing the same. The claimed derivatives have the formula I, wherein R is 3-methyl-piperidinyl, piperidinyl, pyrrolidinyl, 3-methyl-piperazinyl or 3-methyl-4-acetyl-piperazinyl and R is a hydrogen or a chlorine. The claimed process consists in successive stages of protecting the piperazine nitrogen atom of the quinolone derivative wherein R is 3-methyl-piperazinyl and R is hydrogen, and the hydrolysis, in concentrated hydrochloric acid, of the quinolone derivative wherein the R is 4-acetyl-3-methyl-piperazinyl and R is a chlorine. New quinolone derivatives are employed in the treatment of infections caused by gram-positive and gram-negative pathogenic germs.

Applications

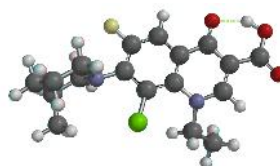
- Research and Development;
- Manufacture of chemicals and chemical products;
- Manufacture of basic pharmaceutical products and pharmaceutical preparations;
- Human health activities.

Class

4



I: General Formula
New quinolones
compounds



II:FPQ 30

Minimum Inhibitory Concentration ($\mu\text{g/ml}$)		
<i>E. coli</i> ATCC 25922	<i>St.aureus</i> ATCC 6538	<i>Ps.aer.</i> ATCC 9027
0.32	< 0.125	1.28

RO.220.

Title

New 6,8-dichloroquinolones with antimicrobial activity and process for preparing the same

Authors

Pintilie Lucia, Nita Sultana

Institution

National Institute For Chemical-Pharmaceutical Research&Development –ICCF Bucharest

Patent no.

RO129982

Description

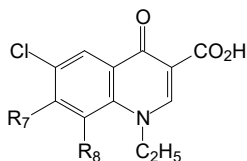
The invention relates to 6,8-dichloro-quinoline derivatives with antimicrobial activity and to a process for preparing the same. The present invention extends the range of the compounds with antimicrobial activity to the novel compounds corresponding to general formula I: wherein R_7 = 3-methyl-piperidinyl, 4-methyl-piperidinyl, piperidinyl, pyrrolidinyl, morpholinyl, R_8 = hydrogen, chlorine. From the synthesized compounds, the compound **6CIPQ 28** (II) shows the best antibacterial activity against *E. coli* ATCC 25922 (MIC 1.28 $\mu\text{g/ml}$) and against *S.aureus* ATCC 29223 (MIC 1.28 $\mu\text{g/ml}$). 6,8-Dichloro-quinolone derivatives being employed in the treatment of infections caused by gram-positive and gram-negative pathogenic germs.

Applications

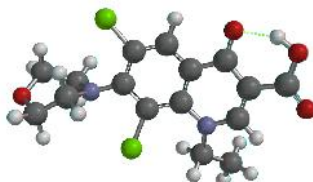
- Research and Development;
- Manufacture of chemicals and chemical products;
- Manufacture of basic pharmaceutical products and pharmaceutical preparations;
- Human health activities.

Class

4



I: General Formula
New 6,8-dichloroquinolones



II: 6CIPQ 28

RO.221.

Title

Polyesteric prostaglandin analogues

Authors

Constantin Tanase, F. G. Cocu, C. Draghici, M. T. Caproiu, C. Negut

Institution

National Institute for Chemical-Pharmaceutical Research and Development - ICCF Bucharest

Patent no.

RO No. 131616/2017

The invention refers to polyacylated prostaglandin analogues with better transport of the active substances through the cell wall.

The prostaglandin analogues of the $F_{2\alpha}$ serie, as esters or amides (for ex. of the most known compounds: *Cloprostenol*, *Latanoprost*, *Bimatoprost*, *Travoprost*, *Fluprostenol*, etc. used for pregnancy of the farm animals, reducing of ocular pressure, dermal treatment) are acylated at the 9 α , 11 α and 15 α -hydroxyl groups (**IIa**); diols and amide-alcohols are also acylated at the hydroxyl groups of esteric or amide group (**IIb**) at C₁.

The polyacylated prostaglandin analogues *are prodrugs with more active and more quantitative penetration through the cell wall* than the starting compounds; inside the cell these prodrugs are enzymatically hydrolyzed for a while to the active substances, *increasing the biological action of the active compounds*.

Description

Applications:**1. Of the active substances:**

- In **pharmaceutical industry** for:

- the reducing of the ocular pressure (treatment of glaucom and other related diseases),
- dermal treatment in patients with hypotrichosis,
- control of pregnancy in farm animals

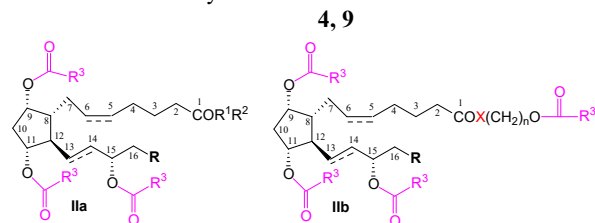
- In **cosmetic industry** for:

- for increasing the length, thickness and darkness of eyelashes in patients with hypotrichosis

2. Of the synthesis process for:

- manufacture of active substances, used in pharmaceutical and cosmetic industry

Class



The general formulas of polyester prostaglandin analogues

RO.222.

Title**Procedure for obtaining a serine protease inhibitor from callus cultures induced by *Linum usitatissimum*****Authors**

Eremia Mihaela Carmen, Lupescu Irina, Rosu Ana, Tcacenco Luminita, Spiridon Maria, Savoiu Gabriela

Institution**National Institute for Chemical-Pharmaceutical Research & Development, ICCF Bucharest****Patent no.**

RO128629 / 29.11.2017

Description

The invention relates to a process for obtaining a serine protease inhibitor from cell biomass of *Linum usitatissimum*. The biological material formed from cell cultures using as a source of explants is sterilized, using as culture medium Murashige-Skoog basal medium. Periodic transitions on fresh culture media are performed at 3-week intervals, all aseptic measures being taken to prevent accidental contamination with microorganisms. The somatic explants obtained are processed according to the procedure developed and applied for *Linum usitatissimum* seeds to isolate the protease inhibitor, by delipidation with acetone, extraction with 0.1M acetate buffer pH 5, fractionated precipitation with ethanol. A protein precipitate with a specific protease inhibitor activity of 3,129 UI / mg protein is obtained. Purification of the serine protease inhibitor is accomplished by affinity chromatography on immobilized trypsin. Protein solution in 0.05M phosphate buffer pH 7.5 is applied for the specific binding of the inhibitor to the column filled with immobilized trypsin, the column being previously equilibrated with 0.05M phosphate buffer, pH 7.5. The unbound proteins are washed with the same buffer. The serine protease inhibitor is desorbed by elution with phosphate buffer pH7.5 with a concentration gradient (0-0.3M) in equal volumes, resulting a serine protease inhibitor with a specific activity of 9,681UI / mg of protein.

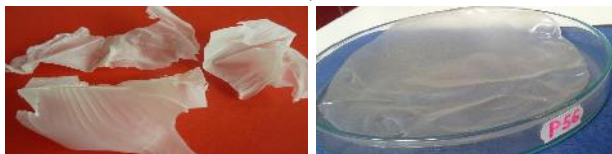
Application: Serine protease inhibitors can be used in medicine to develop specific drugs against proteases involved in asthma-associated inflammatory reactions and allergies by inhibiting tryptase, as well as in diseases caused by other protease-inhibitor imbalances.

Class

4

RO.223.

Title	Procedure for obtaining biodegradable microbial polymers
Authors	Maria Cercel, Mihaela-Carmen Eremia, Irina Lupescu, Cornea Petruta, Misu Moscovici, Gabriela Savoiu, Maria Spiridon, Angela Cojanu
Institution	National Institute for Chemical-Pharmaceutical Research & Development - ICCF Bucharest
Patent no.	RO125102-A8 /30.07.2014
Description	<p>The invention relates to a procedure of obtaining polyhydroxyalkanoates (PHAs) by biosynthesis, using a strain of <i>Ralstonia eutropha</i> DSM 545. The process for producing PHAs is carried out with the aid of the microorganism <i>Ralstonia eutropha</i> DSM 545 which is first prepared as a vegetative inoculum by cultivation on a culture medium containing: 1.5 g% glucose, 0.075 g% ammonium sulfate, 0.39 g disodium phosphate, 0.15 g monopotassium phosphate, 0.02 g% magnesium sulphate, 0.002 g calcium chloride, 0.005 g% ammonium citrate and iron, 0.41 ml% microelement solution and 0.2 g calcium carbonate, and then cultivated on the same culture medium for biosynthesis. Both the vegetative phase and the biosynthesis are performed at a temperature of 30 ... 34 ° C, at an initial pH of between 6.8 and 7, under aeration conditions, by 220 rpm agitation on a rotary shaker with an eccentricity of 2 cm. After 48 hours of cultivation resulted a biomass amount of 5.7 to 11.3 g / L, a PHAs concentration between 4.71 and 8.6 g / L, as well as a PHB content on dry biomass ranging from 76.19 to 92%.</p> <p>Application:</p> <ul style="list-style-type: none"> - materials for total biodegradable packaging, replacing materials of synthetic polymers - medical: osteosynthetic material, to stimulate bone restoration, vehicle of drug transport and delivery, active component used as a preparation for implants
Class	1,4



National Institute for Research-Development for Non-ferrous and Rare Metals – IMNR

RO.224.

Title

Three-dimensional structures based on hydroxyapatite and polyurethane diol obtained through 3D printing technology

Authors

Popescu Laura Madalina, Piticescu Roxana Mioara, Motoc Adrian Mihail, Voinea Liliana Mary, Gradinaru (Istrate) Sinziana Luminita, Ulieru Dumitru, Topor Alexandru

Institution

National Research and Development Institute for Non-ferrous and Rare Metals – IMNR

Patent no.

Patent application No. 17020409.3 – 1455 / 2017

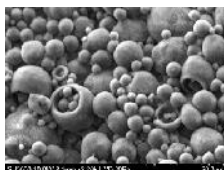
Description

The present invention relates to the production of three-dimensional structures made by the 3D printing method, with the 3D BioScaffolder equipment at room temperature, having the shape of a cube with 2 cm side. The 3D structures of the present invention are obtained from: hybrid powder based on hydroxyapatite and polyurethane diol synthesized by the hydrothermal process at a pressure $p = 1000$ bar and temperature $t = 100$ °C, in a weight ratio of 4: 1, in the form of spherical particles having a diameter of 0.5-8 μm ; Mowiflex solution 20% and Baymedix FD 103 solution 57%. The 3D structures thus obtained can be used for the fabrication of ocular implants with interconnected porosity required for their vascularization. The technical problem solved by the present invention relates to the provision of hybrid nanostructured powders based on hydroxyapatite (HAp) and polyurethane-diol, which have a homogeneous chemical structure (hydroxyapatite in the hybrid structure respects the specific molar ratio Ca: P = 1.67 of HAp in the bone mineral structure) and controlled morphology (spherical particles, which ensure the processing of high viscosity pastes without clogging the 3D print nozzles). The incorporation of the polyurethane during synthesis and spray drying aids the extrusion of the paste and the formation of a rigid 3D structure with the required hardness for medical application (ocular implant fixed with titanium screws).

The figure below shows an example of SEM micrograph of a hybrid powder based on hydroxyapatite and polyurethane-diol having a 4: 1 weight ratio.

Class

4



NATIONAL

RO.225.

Title Hydrothermal process for the synthesis of nanostructured La doped barium strontium titanate for gas sensor applications

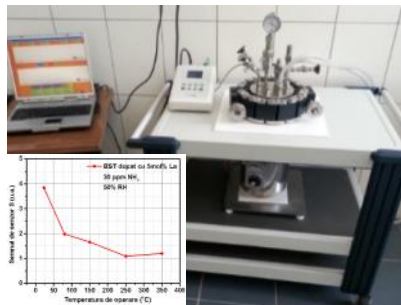
Authors Piticescu Roxana Mioara, Ciobota (Rusti) Cristina Florentina, Stoiciu Maria, Stanoiu Adelina, Simion Cristian Eugen

Institution National Research and Development Institute for Non-ferrous and Rare Metals – IMNR

Patent no. National Institute of Materials Physics (INCDFM) Patent application no. A/00794/27.10.2014

Description The invention relates to a hydrothermal process for obtaining a nanostructured powder for applications in the field of gas sensors, in particular for ammonia detection, which may affect the safety and health of personnel working in various industrial processes.

Class 1, 12



RO.226.

Title

In-situ hydrothermal-electrochemical process for obtaining nanostructured thin films from cobalt-doped titanium dioxide

Authors

Piticescu Radu-Robert, Ruști Cristina Florentina, Piticescu Roxana Mioara, Popescu Laura Mădălina

Institution

National Research and Development Institute for Non-ferrous and Rare Metals – IMNR

Patent no.

129568 / 30.08.2017 (OSIM)

Description

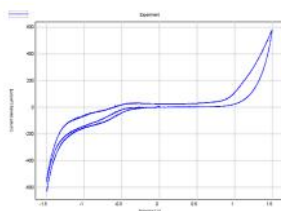
A hydrothermal-electrochemical process by cyclic voltammetry for in-situ deposition of cobalt-doped titania nanostructured thin films with anatase structure was proposed. A stable suspension resulting from Ti-oxychloride and Co acetate in potassium hydroxide solution at pH>9 in the presence of ethanol and sodium salt of polyacrylic acid is treated in a hydrothermal-electrochemical system at low temperatures 160-220°C for 1...10 min. The working electrode is washed with water and dried at 105°C. A continuous adherent nanostructured thin film of Co-doped TiO₂ with anatase structure is formed.

According to the invention, the hydrothermal-electrochemical deposition process allows for the synthesis of the precursor and the deposition of the film in situ, in a single step, at low temperatures with low material consumption, obtaining nanocrystalline titanium dioxide films with anatase structure doped with 0.5 ... 10% cobalt (weight percent), homogeneously distributed over the entire surface of the film.

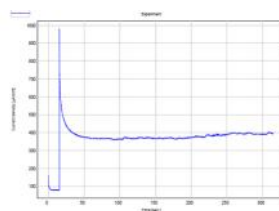
Obtaining of titanium dioxide films with anatase structure doped with 0.5 ... 10% cobalt (weight percent) was made in a Teflon vessel of stainless steel autoclave endowed with 3 electrodes: working electrode on which the titanium substrate was fixed for electrodeposition; counter electrode made of platinum coated niobium, and the reference electrode made up of a capillary tube of Teflon in which the silver electrode / silver chloride is present. The titanium electrode was coated on one of the faces with an epoxy resin to make the deposition on a single face of the substrate.

Class

14 – Spintronics



Potential Cyclic Voltammetry (25 mV/s)



Chrono Amperometry (900 – 1300 mV)

NATIONAL

RO.227.

Title	Process for oxidizing metal sulphides within concentrates of non-ferrous and noble metals
Authors	Velea Teodor, Predica Vasile, Gherghe Sandica Liliana
Institution	National Research and Development Institute for Non-ferrous and Rare Metals – IMNR
Patent	RO 128298 A2
Description	The oxidizing process of the metals sulphides from nonferrous and noble metals concentrates (concentrates of lead, copper, zinc, copper-nickel, zinc-lead, complex low content metal concentrates, golden pyrite concentrates) has the following technological steps: 1) mechanical activation of sulphides concentrates, by advanced milling in wet media, in an attritor or mill; 2) oxidizing of metals sulphides from activated concentrates, in aqueous media, in air presence, at moderate temperature and pressure, using calcium carbonate or calcium hydroxide or calcium oxide or iron residue, under mixing. The oxidized concentrate and the solutions resulted are further process for metals obtaining.
Class	6

RO.228.

Title	Synthesis method of Sn-Ni alloy thin films for anodes used in Lithium-ion batteries
Authors	Soare Maria-Laura, Burada Marian, Constantin Ionut, Olaru Mihai Tudor, Sobetskii Arcadii, Capota Petre, Lupu Andreea-Nicoleta, Dragut Dumitru Valentin
Institution	National Research & Development Institute for Non-Ferrous and Rare Metals – IMNR
Patent	Patent application No. A/01059/2017
Description	The invention consists in a Sn-Ni alloy thin film synthesis method for the design of Lithium-ion battery anodes. This method involves a single stage and consists in electron beam vacuum evaporation of the precursor metals and physical vapour co-deposition on a metal substrate such as copper, stainless steel, etc. (as current collectors of Lithium-ion batteries).
Class	6

National Institute for Laser, Plasma & Radiation Physics INFLPR

RO.229.**Title**

CLADDING HEAD WITH IN SITU SYNTHESIS OF NP BY LASER

Authors

MIHAILESCU N. ION, POPOVICI ERNEST, RISTOSCU CARMEN-GEORGETA, HAPENCIUC CLAUDIU, MIHAILESCU CRISTIAN, BADICEANU MARIA, GAVRILA-FIORESCU CARMEN-LAVINIA

Institution

INFLPR - NATIONAL INSTITUTE FOR LASERS, PLASMA AND RADIATION PHYSICS

Patent

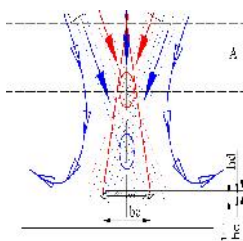
A 00943/16.11.2017

Description

Invention of the deposition head with in-situ laser synthesis makes it possible to develop a new advanced surface coating technology using the high-power laser beam to increase the reliability and performance of the materials. The invention allows for: low dilution deposits; fully layered coat; short processing time that minimizes the spread of heat and heat impact and ensures maximum purity and performance for deposition; improves wear, strength and corrosion performance of components; reduce maintenance costs, etc. LC with NP have no defects such as cracks or porosity, as opposed to coatings produced by coating only with micrometric powders. This is due to the fact that NP, due to the special physical properties conferred by dimensionality in the nano field, prevents the propagation of defects in the coating. The in situ nanoparticle-CDS synthesis head is a coaxial head with a batch of powdered powders, preferably with at least six injectors. The invention solves at the same time a particular problem by eliminating the storage and keeping of NP by in situ synthesis. NPs require special storage and keeping measures due to their unstable state due to nm dimensionality, over time they tend to clutter and change physical and dimensional characteristics.

Class

5, 8



RO.230.**Title****INSTALLATION FOR SYNTHESIS OF
PHOTOCATHALITIC COMPOSITES WITH
HETEROJONCTIONS BY LASER PIROLYSIS****Authors**POPOVICI ERNEST,
GAVRILA-FIORESCU CARMEN-LAVINIA
DUTU ELENA**Institution****INFLPR - NATIONAL INSTITUTE FOR LASERS,
PLASMA AND RADIATION PHYSICS****Patent no.****A 00667/8.09.2017****Description**

The invention relates to a synthesis installation intended to synthesis by laser pyrolysis photocatalytic composites, heterojunctions is the interface that occurs between two regions of dissimilar crystalline semiconductors, based on TiO₂-iron oxide iron junction from liquid precursors. Two precursors, with differentiated physical properties, are processed TTIP as a source of TiO₂ and Fe (CO)₅ or Fe (C₅O₅)₂ as the source of iron oxide in the initial liquid aggregation state. The materials processed in the synthesis zone are in the state of gas aggregation after processing of precursors precursor / liquid precursors, in two evaporators, at temperatures exceeding boiling temperatures, the processing accomplished completely eliminates the phase transformations of the precursors and the thermal influence on the chemical process in the reaction zone, the NP / NS purity with chemically derived heterojunctions is the dimensional control is ensured by parameters such as pressure, residence time, temperature, product cooling, time, space and energy characteristics of the beam through a control and monitoring interface with industrial characteristics. Introduces in the field of NP / NS synthesis the achievements obtained in the field of liquid precursor processing and separation of physical phase transformations from the synthesis zone, spatially determined by the area between the injector and the collector, and which is crossed by the laser beam. Upstream of the injector, the liquid precursor is vaporized in the gas phase in two vaporizers with the air heat transfer medium caused by the overheating of the boiling temperature by a convective method, liquid precursors used: TTIP, Fe (CO)₅, Fe (C₅O₅)₂. A wide range of intellectual property rights in the field is used. Temperature control is direct in real time in the gas flow. Recovery of NP / NS powders is done through the parallel filter system both electrostatically and mechanically. Electrostatic filters allow dimensional sorting of powders, making a narrowing of the dispersion band. A system of control and monitoring of systems and processes with real-time reactions ensures the level of automation at the industrial level.

Class

5, 8

NATIONAL

RO.231.

Title

HIGH VOLTAGE DISCHARGE A-K ELECTRODE ASSEMBLY FOR COFOR HIGH POWER LASER WITH TRANSVERSE CIRCULATION OF GASES - GT-1200

Authors

BARBUT ANCA DANIELA, NICULESCU ANA-MARIA, POPOVICI ERNEST, MORJAN ION, ALEXANDRESCU RODICA, VOICU ION, GAVRILĂ FLORESCU CARMEN LAVINIA, MORJAN IULIANA, LUCULESCU ROMEO CĂTĂLIN, DUMITRACHE FLORIAN, SANDU ION, FLEACA CLAUDIU TEODOR, SCĂRIȘOREANU GINA MONICA, DUȚU ELENA

Institution

INFLPR - NATIONAL INSTITUTE FOR LASERS, PLASMA AND RADIATION PHYSICS

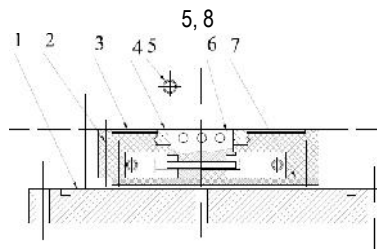
Patent no.

RO127702

Description

The invention relates to a high voltage discharge electrode assembly for COhigh power lasers with transverse circulation of gases. According to the invention, the electrode assembly comprises a support plate (1) whereon there are mounted : two anode plates (2) and a cathode assembly (5) wherein the plates (2) are made up of a non-porous material which is stiff and good electrical insulator and they are partitioned so that thirty anodes can be mounted on each plate (2), the anodes being connected in crossed series by means of some resilient elements and wherein the cathode (5) has a construction which eliminates the mechanical stresses generated by the high temperatures, inside the assembly there circulating a cooling fluid with an average temperature of 25°C, the thus formed assembly being provided with a cover (7) which ensures the mechanical protection and the electrical insulation against the environment.

Class



NATIONAL

RO.232.

Title	PRELAM - ADVANCED TECHNOLOGY-BASED COATINGS USING HIGH POWER LASER BEAM TO INCREASE THE RELIABILITY AND PERFORMANCE OF MATERIALS
Authors	ION N. MIHAILESCU, PROJECT DIRECTOR CARMEN RISTOSCU, MARIUS OPRAN, HAPENCIUC CLAUDIU, MIHAI OANE, GIANINA POPESCU-PELIN, UNGUREANU IRINA, CRISTIAN MIHAILESCU, ERNEST POPOVICI, ANTON IONITA, MARIA BADICEANU
Institution	INFLPR - NATIONAL INSTITUTE FOR LASERS, PLASMA AND RADIATION PHYSICS
Patent no.	135/23.09.2016
Description	<p>This project is devoted to the increase of reliability and overall performance of materials by functional coatings. The main focus is on repairing and recuperation of surfaces subject to wear due to work cycle. New top laser technologies will be developed for industrial applications. On key advantage is low cost due to optimum choice of available laser systems for welding, cutting and synthesis. Injection laser cladding is a surface treatment technology, resulting in high quality coatings. The main objective is to reduce wear and corrosion and improve the impact resistance properties of surface by a protective layer of material with superior properties. A carrier gas is used to shape the flow of powder sprayed under high power laser beam during scanning the deposition surface. Melt zone extends to a depth in accordance with the thickness generated by a singular pass over substrate. The process is additive and several subsequent irradiations could be applied onto the same area. The research is organized in two steps:</p> <ol style="list-style-type: none"> 1. Optimization of process parameters to get the desired geometry and the necessary metallographic structure. 2. The evaluation of new addition of powder material, to reach alloy compatibility with the base one, to reduce the powder consumption. The heat affected zone is low. Rapid solidification, diluting powder material improves control along the entire length of the penetration depth for high quality repairing and production of smart structures. What we suggest is conventional methods to renovate welding affected by wear of components in various stages.

RO.233.

Title**ENERGY - EFFICIENT DECONTAMINATION BY UV & COLD PLASMA USING METAMATERIALS**

ION N. MIHAILESCU, Project Co-Director, RO
 CARMEN RISTOSCU, CLAUDIU HAPENCIUC, IRINA
 UNGUREANU, CRISTI MIHAILESCU, GIANINA POPESCU-
 PELIN, ERNEST POPOVICI,

Authors

NICOLAE A. ENACHI, Project Co-Director, MD
 NICOALE ENAKI, TATIANA PISLARI, MARINA TURCAN,
 SERGIU BIZGAN, ANDREI NISTREANU, NELLU CIOBANU,
 ELENA STARODUB

Institution

**INFLPR - NATIONAL INSTITUTE FOR LASERS, PLASMA
 AND RADIATION PHYSICS – RO**

Project

**IFA - INSTITUTE OF APPLIED PHYSICS - MD
 NATO SfP – 984890**

The main purpose of this Project is decontamination of polluted/infected surfaces and/or liquids by interaction with metamaterials or thin films produced by pulsed laser technologies and cold (non-equilibrium) plasma.

1. The preparation of the new classes of metamaterials like photonic crystals with good contact surfaces penetrated by evanescent UV radiation.

2. The evaluation of the efficiency of the decontamination rate of non-offensive bacteria and viruses with same biological resistance as offensive microorganisms.

The main focus with this project is to synthesize superlayers of metamaterials with strong antibiofilm- microbial action. This work is justified by the limits of new antibiotics in annihilating microbe colonies, in particular in form of films. Our idea was to apply metamaterials under UV radiation as a very competitive challenge for antibiofilm-microbial action. The choice was for thin layers, as synthesized by advanced pulse laser deposition technologies.

Description

This contract represents the first demonstration of the theoretical concept that evanescent waves acting around quartz granules in a circulating contaminated translucent liquid when submitted to UV-C irradiation exhibit efficient antimicrobial action against bacteria and fungi. Moreover, UV-C transparent metamaterials introduced in semi- or non-transparent/translucent polluted liquids can boost the decontamination rate. We made a series of estimations of the decontamination rate of this type of metamaterials vs. ordered metamaterials consisting of spherical elements. Experiments have convincingly demonstrated that both quartz and glass metamaterials can effectively annihilate Coliform (including *Escherichia coli*) or *Enterococcus* bacteria, as well as yeast and Kombucha cultures. This convincingly demonstrates the key role of the quartz metamaterial for liquid decontamination under UV-C irradiation.

One expects a large increase of the observed effects when passing from simple lamps to laser irradiation, i.e. from incoherent to coherent light sources. Also, a significant improvement is expected when using optical fibers for evanescent waves generation instead, or in parallel with, quartz granules.

National Institute of Research and Development in Mechatronics and Measurement Technique (INCDMTM)

RO.234.

Title

Mecahatronic-mixmechatronic system for 4D control in laboratory and industry

Authors

Gheorghe I. GHEORGHE, Iulian ILIE, Anghel CONSTANTIN

Institution

National Institute of Research and Development in Mechatronics and Measurement Technique

Patent no.

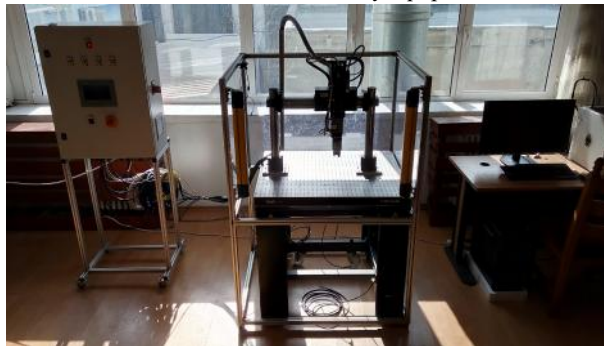
Patent application No. 01166 /2017

Description

Mecahatronic-mixmechatronic system for 4D control in laboratory and industry using the remote control and telemonitoring by connecting to the cyber space. The system is composed of three axes, a rotation and a griper unit, providing a 4D moving. The system comprises a sensor for measuring, mounted on the griper axis. The system is mounted on a antivibration table, ensuring the quality of the measurement.

Class

5 - Industrial and laboratory equipments



RO.235.**Title****Double hexapod robotic system with extended operation space****Authors**

Mihai MĂRGĂRITESCU

Institution**National Institute of Research and Development in Mechatronics and Measurement Technique****Patent no.**

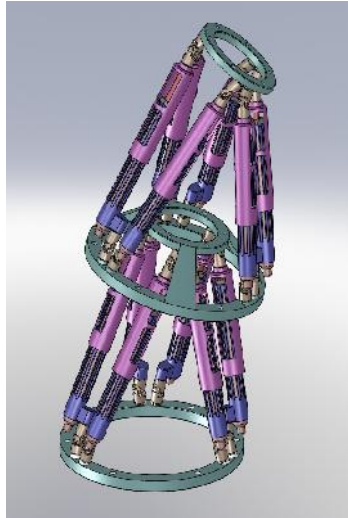
Patent application No. 00112 /2018

Description

The invention relates to a double hexapod robotic positioning system consisting of two overlapped hexapods, also known as Gough-Stewart platforms, and is an improvement of the invention 125589/2016. Hexapodes are positioning systems with six degrees of freedom, positioning and orientation of the final element by coordinated change in the length of the six struts, and are characterized by high precision and rigidity, but have the disadvantage of a relatively limited operating space. Double hexapod positioning systems are parallel-serial kinematic robotic systems, also called hybrid systems, and combine to some extent the benefits of serial and parallel systems.

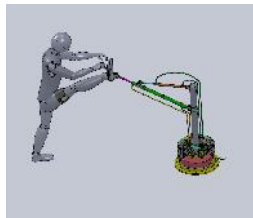
Class

5 - Industrial and laboratory equipments



RO.236.

Title	Device for development of neuro-muscular control / dynamic and static equilibrium, strength and endurance of inferior limbs and mobility of coxo-femoral joints, of athletes
Authors	BADEA Cristian Radu
Institution	National Institute of Research and Development in Mechatronics and Measurement Technique
Patent no.	Patent application No. 00889 /2017
Description	<p>This invention allows the elimination of the human factor-induced deficiencies, in order to execute certain exercises in the correct manner, safe and symmetrical for both feet, by means of the following functions:</p> <ul style="list-style-type: none"> - "developing neuro-muscular control / dynamic balance, strength and endurance of inferior limbs" - simulates the action by which one of the athlete's legs (called the "executing" athlete) is pulled, pushed, raised and / or lowered by a partner in order to unbalance the "executing", forcing him to learn and / or develop his / her dynamic balance, to develop the strength and endurance of the lower limbs muscles, in that the "executing" athlete is bound to move within one foot in this exercise; - "developing the mobility of the coxo-femoral joints" - simulates the execution with the help of a partner, or by supporting one feet on a high prop, the exercises called "front split" and "side split"; - "development of the static equilibrium" - allows performing the static equilibrium action after the suspended foot is released from the supporting element, the athlete being placed in the "front split" position, in the "side split" position, or in an intermediate position.
Class	4 – Medicine – Health Care - Cosmetics



Institute of Chemistry Timisoara of Romanian Academy

RO.237.

Title**NEW PLANT GROWTH REGULATORS FOR A SUSTAINABLE AGRICULTURE****Authors**

Manuela CRIȘAN¹, Mihaela PETRIC¹, Paulina BOUROȘ²,
Alessandra FORNI³, Massimo MAFFEI⁴, Yurii
CHUMAKOV^{2,5}, Dorica BOTĂU⁶, Florin BODNĂRESCU⁶,
Radu SUMĂLAN⁶

Institution

¹Institute of Chemistry Timisoara of Romanian Academy, 24 Mihai
Viteazul Bld., 300223 Timisoara, Romania; ²Institute of Applied
Physics, Academiei Street 5, Chisinau, MD - 2028, Republic of
Moldova; ³ISTM-CNR, INSTM RU, via Golgi 19, 20133 Milano,
Italy; ⁴Department of Life Sciences and Systems Biology, Plant
Physiology Unit, University of Turin, Via Quarello 11 A, 10135
Torino, Italy; ⁵Gebze Institute of Technology, Cayirova, 41400
Kocaeli, Turkey; ⁶Banat's University of Agriculture Science and
Veterinary Medicine from Timisoara, Faculty of Horticulture and
Forestry, Calea Aradului, nr. 119, 300645, Timisoara, Romania

Description

The discovery of safe and inexpensive plant growth regulators (PGR) for a sustainable agriculture is a present necessity and must be considered a priority worldwide. European agricultural statistics show that vegetables play a vital role on food front (the yield being 4 to 10 times more than cereals) and are cheapest sources of natural foods. This research project provides new compounds with dual biological activity, based on non-toxic components or natural metabolites as alternative to classical plant growth regulators in order to improve vegetable production. Thus, different substituted benzoic acids and ethanolamine, which occur naturally as important metabolites in various physiological processes in plants, were used as precursors for obtaining new PRG compounds. By this project, we linked experimental research (plant tests conducted both in laboratory and greenhouse) to theoretical research (docking experiments on auxin receptor) for evaluating the bioactivity of new compounds firstly on the model plant *Arabidopsis thaliana* ecotype Col 0 and then translated to commercial vegetables, such as tomato (*Solanum lycopersicum* L.) and cucumber (*Cucumis sativus* L.).

Advantages: The compound ethanolammonium *p*-aminobenzoate (EA-*p*ABA) was found to be more potent and effective in comparison with natural auxin indole-3-acetic acid (AIA) in promoting root formation at concentrations equal or higher than 0.1 mM. It is non-toxic to the plant physiology and easy to obtain in laboratory at low cost, which may have a positive impact on the agricultural economics.

Applications: Results of this study can be applied in producing new PGRs for a sustainable agriculture.

RO.238.

Title	DEVELOPMENT OF ENVIRONMENTAL FRIENDLY CORROSION INHIBITORS FOR IRON IN NaCl SOLUTION
Authors	Manuela CRIȘAN ¹ , Nicoleta PLEȘU ¹ , Mihaela PETRIC ¹ , Gabriela VLASE ² , Titus VLASE ² , Yurii CHUMAKOV ^{3,4} , Paulina BOUROȘ ⁴ , Victor KRAVTSOV ⁴ , Lilia CROITOR ⁴
Institution	¹ Institute of Chemistry Timisoara of Romanian Academy, 24 Mihai Viteazul Bld., 300223 Timisoara, Romania; ² West University of Timisoara, Research Center: Thermal Analysis in Environmental Problems, Pestalozzi Street 16, Timisoara, RO-300115, Romania; ³ Gebze Institute of Technology, Cayirova, 41400 Kocaeli, Turkey; ⁴ Institute of Applied Physics, Academiei Street 5, Chisinau, MD - 2028, Republic of Moldova
Description	Corrosion control of iron using inhibitors is of technical and economical importance. Taking into account the strict international laws imposed on the market of corrosion inhibitors, the discovery and development of new innovative corrosion inhibitors, environmental friendly and cost-competitive is a necessity at global level. The present research focuses on the synthesis, structural analysis, thermal characterization and investigation of anti-corrosive properties of ethylethanolammonium 4-nitrobenzoate (EEA4NB) for iron in 3% NaCl solution, using electrochemical impedance spectroscopy (EIS). The experimental results conducted at 1, 2.5 and 5 mM concentrations at 25°C revealed a higher surface coverage of electrode and a decrease of corrosion currents in the presence of EEA4NB. The increase of EEA4NB concentration conducts to the decrease of corrosion current and corrosion rate. The EIS results exhibited good corrosion inhibition of EEA4NB on iron electrode surface in saline solution, especially at 5×10^{-3} mol.L ⁻¹ . EEA4NB adsorbs on iron surface obeying Langmuir isotherm. Electrochemical corrosion measurements show corrosion inhibitor efficiency of EEA4NB for iron in 3% NaCl solution higher than 92% and a decrease of corrosion current and corrosion rate as a result of adsorption of EEA4NB molecules at the metal/solution interface. The quantum chemical calculations are in accordance with the experimental data, helping in understanding the mechanism of inhibitor action, their adsorption patterns and the inhibitor-metal surface interface. <u>Applications:</u> This research is an important tool for the development of new corrosion inhibitors with environmental friendly properties for iron in NaCl solution.

RO.239.

Title	NEW AGGREGATION-INDUCED EMISSION PHOSPHOROUS CLATHRATES AS PROMISING SENSING SYSTEMS FOR SELECTIVE DETECTION OF VOLATILE ORGANIC COMPOUNDS
Authors	Mihaela Petric ¹ , Manuela Crisan ¹ , Elena Cariati ^{2,3} , Alessandra Forni ³ , Daniele Marinotto ³ , Stefania Righetto ^{2,3} , Paulina Bourosh ⁴ , Victor Kravtsov ⁴ , Lilia Croitor ⁴
Institution	¹ Institute of Chemistry Timisoara of Romanian Academy, 24 Mihai Viteazul Boulevard, Timisoara, 300223, Romania; ² Department of Chemistry, Università degli Studi di Milano and INSTM RU, via Golgi 19, 20133 Milano, Italy; ³ ISTM-CNR, INSTM RU, via Golgi 19, 20133 Milano, Italy; ⁴ Institute of Applied Physics, Academiei Street 5, Chisinau, MD - 2028, Republic of Moldova
Description	<p>The interest for fluorescent compounds which allow selective solvent detection has recently increased in materials science. Clathrates, known as host-guest systems, are very promising compounds in this field. Our project developed new bis(iminophosphorane)ethane clathrates fluorescent in solid state, that have selective organic solvent-inclusion ability. One guest-free, five isomorphous 2:1 bis(iminophosphorane)ethane clathrates with water, ethanol, ethanol/acetonitrile, tetrahydrofuran and acetone, and 1:1 toluene solvate have been synthesized and structurally characterized by X-ray diffraction. Crystallographic data revealed a clear difference between the host molecules with non-aromatic solvent guests which crystallized in monoclinic $C2/c$ space group and solvent molecules occupy the cavities with $82\text{--}115\text{\AA}^3$ volume, comparatively with toluene solvate which showed a triclinic $P-1$ space group and $\sim 230\text{\AA}^3$ cavity. The photoluminescent properties of the guest-free and solvent-inclusion clathrates of bis(iminophosphorane)ethane have been investigated in solution and solid-state. Measurements at 300K revealed that these compounds are non-emissive in solution, while in solid state they become strong fluorescent emitters (quantum yields up to 17%), suggesting aggregation-induced emission (AIE) behavior. Decreasing temperature to 77K, both fluorescence and weak phosphorescence have been observed in both solution (τ up to 163ms) and solid state (τ up to 1.27s).</p> <p><u>Applications. Advantages:</u> These photoluminescent features are promising for the construction of devices for selective volatile organic compound sensing exploiting the different cavity size of the various clathrates. New clathrates offer stability and fluorescence in solid state at 300K. These results can conduct to the development of new AIE candidates for fluorescent sensory materials based on phosphorous clathrates.</p>

National Research & Development Institute for Welding and Material Testing - ISIM Timisoara

RO.240.

Title Force measuring system for industrial equipment
Authors Dorin Dehelean, Radu Cojocaru, Victor Verbițchi
Institution National R&D Institute for Welding and Material Testing – ISIM Timisoara
Patent no. RO 123608 B1 / 30.06.2014

The force measuring system for industrial equipment is characterized in that it uses a Hall transducer for the magnetic field intensity of certain magnetic circuit gaps of a deformable element, respectively it uses a capacitive transducer for certain interspaces of a deformable element, so that the signals given by these transducers are measured with specific devices having a specified accuracy class, and the calibration of the entire force measuring system is based on the proportion relationships between the electrical signals - deformation - force.

Description

The application of the invention relates to measuring static forces, in order to control, program, verify, monitor and archive the operating parameters of industrial equipment. In particular, the invention applies to positioning and actuating systems, which develop forces of 2 - 20 kN, for mechanized and automated friction welding equipment, with or without computer-based control.

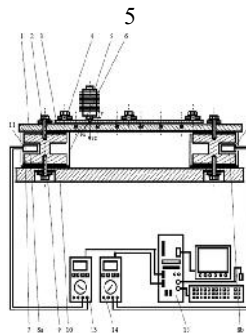
Class

Figure 1.
Force measuring system for industrial equipment

RO.241.**Title**

Method for ultrasonic welding of parts with spatial configuration of joining zones

Authors

Nicușor-Alin Sirbu

Institution

National R&D Institute for Welding and Material Testing – ISIM Timisoara

Patent no.

a 2017 00666

Description

The invention refers to a method for welding which is applicable to the necessary sonotrodes for ultrasonic welding of parts with spatial configuration of joining zones.

The sonotrodes made using this method, according to the invention, are composed from an equalizer block which is mechanically coupled with a certain number of pins through the means on threaded connectors.

Class

6



**National Institute for Research and Development in
Constructions, Urbanism and Sustainable Spatial
Development URBAN-INCERC, Bucharest, Romania**

RO.242.	
Title EN	Thermal solar collector integrated in the roof cover
Authors	Constantin MIRON, Adrian Alexandru CIOBANU, Monica Cherecheș, Aurelia Bradu
Institution	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development “URBAN-INCERC” Iasi Branch
Description EN	<p>The development of constructive means for buildings, requires the development of innovative products, with a polyfunctional role, which also use the renewable energy resources. The research is about a complex way of certifying an innovative, dual role roofing element and solar thermal heat recovery, integrated perfectly into the roof structure.</p> <p><i>Applications:</i> Intelligent use of renewable energy resources to increase energy efficiency in buildings according to the 2020 Strategy.</p> <p><i>Advantages:</i> Single-product design of two functions, solar collector and roof coverings</p> <p><i>Acknowledgments:</i> This research is performed within the frame of the scientific and research project “<i>Development of complex systems for energy, climate and seismic certification of constructions, installations and means of capitalizing on sustainable materials / energy resources, renewable / recyclable</i>”, PN 18 35.03.02, Contract No. 46 N/2018.</p> <p>The authors would like to acknowledge the financial support provided by Ministry of Research and Innovation, Romania.</p>
Class no.	

RO.243.	
Title EN	Assessment of the quality of steel reinforcement from the reinforced concrete elements through non-destructive tests
Authors	Florin - Radu HARIGA, Andrei DUȚĂ
Institution	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development “URBAN INCERC” Iasi Branch,
Description EN	In situ investigation used to determine the location and diameter of the reinforcement through electromagnetic measuring method.

RO.244.	
Title EN	Performance evaluation of natural thermal-insulation materials composed of renewable resources
Authors	Monica CHERECHEȘ, Alina COBZARU, Adrian CIOBANU, Constantin MIRON, Ionel PUSCASU, Aurelia BRADU
Institution	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development “URBAN-INCERC” Iasi Branch The concept of sustainable development is often linked to problems on a worldwide scale, such as global warming or the gradual exhaustion of resources. As alternative, thermal-insulation materials composed of renewable resources have a valuable benefit for a healthy and comfortable habitat (moisture and thermal management). Current scientific research aimed to use local agro resources (sawdust, hemp and straw) to develop new insulating materials from renewable resources with comparable building physics and mechanical properties to commonly used insulations materials.
Description EN	<i>Applications:</i> The thermal-insulation materials and solutions with sawdust, hemp and straw are used to increase energy efficiency in buildings according to the 2020 Strategy. <i>Advantages:</i> Owing to the development of technology, we can say that thermal insulation made from natural fibers in the near future may become a good alternative to other materials commonly used such as mineral wool, polystyrene or polyurethane. <i>Acknowledgments:</i> This study was performed within the frame of the scientific and research project “Natural materials from renewable / recyclable resources for constructions Nearly Zero Energy and Nearly Zero Emission in 2020s Romania”, PN 16 10.03.03, Contract No. 9.N/2016. The authors would like to acknowledge the financial support provided by Ministry of Research and Innovation, Romania.

Class no.

RO.245.	
Title EN	RESILIENT STEEL FRAME ASSEMBLED BY POST-TENSIONING WITH INNOVATIVE CONNECTIONS
Authors	Mircea PĂSTRĂV
Institution	N.I.R.D. URBAN-INCERC, Cluj-Napoca Branch
Description EN	<p>The proposed innovative resilient structure combines the use of prestressing steel members with new detailing of the column-beam connections.</p> <p>The main characteristics are:</p> <ul style="list-style-type: none"> - use of prestressing for assembling of the steel structure in horizontal plan; - special features of the prestressing technology having the following characteristics: <ul style="list-style-type: none"> ○ the positioning of the strands in the gravity center of the beams; ○ the limited tensioning force applied in tendons; ○ the unbond prestressing with respect to the beams spans; ○ the deflection points of the prestressed tendons are located at the interfaces of the column-beam connections. - use of a completely different type of beam-column connection, "dual joint", having special features as within the interfaces there are two types of assembly organs, the former screws and nuts and the latter the prestressed strands which pass through the connections; - concrete slabs do not participate at the structural response to the lateral forces. <p>Thus, the seismic response of the innovative structure is essentially different from the classical steel ones, as the plastic areas are designed to be located at the column-beams interfaces, instead of the ends of the horizontal members where the deformations concentrate and thus the beams are expected to have mainly rigid body displacements.</p> <p>This innovative design has advantages compared to the classical structures because the horizontal members have practically no remanent deformation, the damages are directed in pre-set areas and the damaged parts are only the screws which are replaced after the event.</p>
Class no.	

RO.246.**Title EN**

RESEARCH FOR THE OPTIMUM VALORIZING OF MINERAL ADDITIONS (INDUSTRIAL BYPRODUCTS OR WASTES) IN INNOVATIVE CEMENTITIOUS MATERIALS FOR REZILIENT STRUCTURES

Authors

Henriette SZILAGYI, Cornelia BAERĂ, Adrian LĂZĂRESCU, Andreea HEGYI

Institution

N.I.R.D. URBAN-INCERC, Cluj-Napoca Branch

It was scientifically proven along time that using mineral additions (powder or slurry materials) as additives in cement based composites can bring significant improvement to their physical, mechanical or durability performance. Most of the industrial branches (energetic, metallurgy, for limestone, granite etc., processing, mining and quarry) are major providers of mineral industrial byproducts or waste materials (limestone powders or slurries, slags, fly ash or silica fume) that could be properly evaluated and valorized by the means of reuse and/or recycle principles and specific methodologies and consequently, reintegrated in the circuit of live infrastructure.

**Description
EN**

The aim of this study is to identify a fast and optimized nowadays algorithm for proper and faster valorization of various types of mineral additions, produced and provided by Romanian specific industrial sources. Consequently this approach would improve Romania's further economical social and industrial development in accordance to the principles of *Circular Economy*, strongly demanded by internal and external factors: ecological aspects and rational management of resources, adherence to European Union space and common goals, development of new and innovative building materials which could be easily optimized and tailored to specific and particular necessities by controlled and validated design methods.

Proper identification of all relevant sources of mineral additions present on Romanian territory, evaluation of their basic, relevant characteristics and identifying their general or particular potential for specific purposes and building materials, represent the main directory lines of this complex scientific demarche, involving complex interferences: research, industry, economic, political and social media.

Class no.

RO.247.**Title EN**

RESEARCH REGARDING THE POTENTIAL USE OF ROMANIAN POWER PLANTS DERIVED FLY ASH IN GEOPOLYMER BINDERS – EXPERIMENTAL RESULTS

Authors

Adrian LĂZĂRESCU, Henriette SZILAGYI, Adrian IOANI, Cornelia BAERĂ

Institution

N.I.R.D. URBAN-INCERC, Cluj-Napoca Branch

**Description
EN**

Geopolymer cement is a new type of cement, created by activating an amorphous alumino-silicate material by means of an alkali chemical compound. What makes the Geopolymer cement particular is that its structure can be complete Portland Cement (OPC) free and still have similar mechanical properties like OPC. Geopolymers have been successfully used to produce concrete binders, but only recently this area of research experienced an increased development once it was proven that the CO₂ footprint of these new binders is significantly lower than of OPCs. The production of geopolymer materials is based on a mixture of Fly Ash (FA) and a certain type of alkaline liquid, which determines partial dissolving of FA particles and consequently a new arrangement of them, resulting an alumino-silicate gel, which hardens in the presence of heat and represents the geopolymer cement. Certain mechanical properties of this material can be achieved only when its components have a specific chemical composition, therefore, every study performed on Geopolymer Cement depends consistently of the available, local raw material source.

The low-calcium fly ash (FA) used in the current study was obtained from a Romanian power plant and the alkaline activator was combination between Na₂SiO₃ and NaOH solutions. Different ratios of Na₂SiO₃/NaOH solution were prepared for three different NaOH solution concentrations (8M, 10M and 12M).

The aim of this study is to present the experimental results obtained on fly ash-based geopolymer paste using Romanian local raw materials and to analyze the parameters influencing the mechanical properties of Geopolymer Cement.

Class no.

RO.248.

Title EN	Kaolin, an Additive to Rise the Thermal Insulation Properties and to Lower the Price of a Coating
Authors	Irina Popa, Alexandrina Mureșanu, Cristian Petcu
Institution	NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN CONSTRUCTIONS, URBANISM AND SUSTAINABLE SPATIAL DEVELOPMENT URBAN-INCERC
Description EN	<p>This experimental research studies the possibility that kaolin to be used as an additive in order to lower the price of an acrylic compound with ceramic microspheres, a product relatively expensive for the actual Romanian market. This type of coating is already known for its thermal insulation properties, in spite of the low thickness (about 1 mm) obtained after applying a 2-3 layered system. Specific laboratory experimental tests revealed that the use of kaolin as an additive generated a new product having not only a higher adherence to the underlying surface but also a lower thermal conductivity than that of the initial product. Applicable in multilayered systems on steel, concrete, masonry or plasterboard surfaces, the new type of heat insulating coating is more efficient and cheaper, by means of the proportions of the basic materials (acrylic product with microspheres, kaolin). The research indicates another way to exploit natural Romanian resources of kaolin, being also the basis for new studies on other types of construction products.</p>
Class no.	

RO.249.

Title EN	Integrated planning and design for safe and comfortable living
Authors	Vasile MEIȚĂ, Alexandru-Ionuț PETRIȘOR,
Institution	National Institute for Research and Development in Constructions, Urbanism and Sustainable Spatial Development URBAN-INCERC, Bucharest, Romania
Description EN	<p>The research of the human habitat is a complex multidisciplinary area, involving spatial planning (urban and territorial), architecture and civil engineering, but also social, economic, and environmental sciences. Its aim is to ensure the safety and comfort of living. NIRD URBAN-INCERC, the only Romanian national institute dealing with the</p>

research of the human habitat, has developed along an over half-century experience of research a vision of its research areas. The vision emphasizes the role of joint synergies and multi-scale approaches in achieving the societal goals of the research of the human habitat. A key feature of this vision is the need for merging research, testing and planning instead of separating them. Research can use testing and planning as a source of inspiration, while planning and testing must be research-driven and evidence-based. The resulting consequence is the development of horizontal research areas; for example, “safety” includes earthquake and structural engineering, spatial planning research in relationship to the protection against natural and technological hazards, civil engineering research related to the behavior of buildings and construction elements at extreme temperatures, and the science of materials applied to fire and earthquakes, while “comfort” embeds urban planning research on the functioning of cities (traffic, climate, well being etc.), civil engineering research on climate change, material science of finishing and coating, and acoustic research on noise protection and indoor acoustic quality. The outputs consist not only of scientific articles and improved products for the market, but also into societal outputs, including the development of public policies.

Class no.

RO.250.

Title EN

Acoustic characteristics of office types of human professional activities made in civil buildings and human psychoacoustics perception.

Authors

**Marta Cristina ZAHARIA, Ioana Mihaela ALEXE
NIRD URBAN-INCERC, Branch INCERC Bucharest,
*INCERC Laboratory of Research and testing for
Energy Performance of Buildings, Building Systems and
Building Acoustics***

Institution

**Description
EN**

In Romania, studies on the psychoacoustics domain, specific for buildings with office types of human activities, were conducted during 2017, in project PN 16-10.03.01, Phase 4, concluded with MCI - ANCSI.

We have carried out studies and analyses on the basis of psychoacoustic perception of noise for human subjects, which is very subjective.

We have selected for studies various types of human, typical, representative, specific, professional human activities that may be sources of noise for building users, activities carried out in civil buildings with different destinations were chosen for study and research, in order to be able define, from a multicriterial and graphical point of view, the acoustic characteristics (their spectra and noise levels).

Here we describe the tests we made to determine noise generated by specific professional activities, like: office, telephone, documentary, various activities, etc., carried out in offices in the administrative (office-laboratory) building. Noise was received in the premises of the building.

The results of the acoustic measurements were presented, - for each of the measurement situations considered, respectively measurement situations in situ, corresponding to 9 (nine) projects specific to the measured noise sources - in multicriterial and graphical form of acoustic characteristics (spectra and noise levels).

Conclusion: In acoustics regulation for offices building design, we must take in to consideration also to specify that the construction elements of the building must be designed by taken into account the noise spectra of specific offices activities developed in the building and the subjective psychoacoustics perception of humans.

Class no.

RO.251.

Title EN	SIMULATION OF THE PROPAGATION OF COMPARTMENT FIRES ON THE FACADES OF BUILDINGS
Authors	<i>Adrian SIMION*</i> , <i>Horatiu DRAGNE*</i> , <i>Daniela STOICA*</i> , <i>Ion ANGHEL**</i>
Institution	*National Institute of Research and Development in Urban Construction and Sustainable Territorial Development URBAN-INCERC ***"Alexandru Ioan Cuza" Fire Department Academy Bucharest
Description EN	By simulating a fire, it is intended to reproduce - in a simplified and artificial way - the phenomenon of burning. The team of researchers from the Laboratory INCERC of testing and research for safety fire from INCDC URBAN-INCERC Bucharest, have simulated this phenomenon,

following which they studied the development and propagation of a compartment fire on the facade of a building. Fire simulation was performed using the Pyrosim modeling program and consisted of: developing a geometric model in accordance with the BS 8414 standard, implementing a fire scenario in the program and running the program itself. For this purpose, an efficient computing system was used so that the results obtained were as close as possible to the experimental measurements.

Class no.

RO.252.

Title EN

Cost analyze of buildings and special constructions based on price index developments in the construction activity for the second quarter of 2017

Authors

Silviu LAMBRACHE

Institution

NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN CONSTRUCTIONS, URBANISM AND SUSTAINABLE SPATIAL DEVELOPMENT URBAN-INCERC

**Description
EN**

Cost evolution study in the construction sector is achieved by determining the cost indices based on estimates of construction works comprising buildings and special constructions, created under execution projects and technological solutions.

Building subgroups are presented as a structure of the main costs of constructions works. Periodically, the constructions works weights on the structure it changes as a result of market price developments of materials, labor and various categories of services (rental machinery, transport).

Input price index quantifies the changes occurring on prices and tariffs paid by the contractor for input elements (materials, labor, equipment and transportation). On the basis of this index we can identify the elements of the construction activity that influence the cost of the execution by price developments to suppliers and services rates.

The study of price trends in construction sector for member states in the European Union is an old and constant concern in most of the reports presented by Eurostat, the UN Economic Commission for Europe and Euroconstruct Conferences

RO.253.**Title EN****INNOVATIVE MASONRY ELEMENTS WITH THERMAL PERFORMANCE****Authors**

Claudiu-Lucian MATEI

Institution**NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN CONSTRUCTIONS, URBANISM AND SUSTAINABLE SPATIAL DEVELOPMENT URBAN-INCERC****Description
EN**

The paper refers to an experimental program aimed at evaluating the characteristics of masonry, with the objective of developing an innovative system for masonry, destined to be used for facades and envelopes. The purpose of program was to develop new masonry elements with good performance at thermal transmittance and good behavior at noise, fire and durability. Technical and economic feasibility of the masonry prototype systems was validated by experimental tests, according to European standards. The strategy for the development of the products is to assure walls requirements and design parameters for masonry elements, according to the constructions traditions and environmental conditions. The masonry elements were designed in accordance with the requests of the seismic code-Eurocode 8 and the National Annex P100-1:2013 for structural role, and also in concordance with the thermal characteristics for increasing safety and quality of life. The masonry elements are made of three layers: two non-structural coating thermal insulation and ceramic protection and structural layer. The design of the structural layer was made according to the requirements for seismic zones in terms of geometry and material characteristics. The exterior layers are not taken into calculation for the design phase, all strength is determined by tests, in relationship with the structural layer. The research program is developed with the aim of attaining the main characteristics of masonry which are necessary for analysis and engineering practice in seismic areas. The new technology work was analyzed and validated by using the prototype masonry elements. The result of the program aims to integrate new materials, techniques and methodologies in the construction practice in order to increase the quality of life in seismic areas.

Class no.

NATIONAL

512

RO.254.	
Title EN	PRACTICAL TOOLS TO REUSE CONSTRUCTION WASTES IN ENGINEERING AND ENVIRONMENTAL APPLICATIONS FOR CONSERVATION OF NATURAL RESOURCES
Authors	Cornelia-Florentina DOBRESCU, Elena-Andreea CĂLĂRAȘU
Institution	NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN CONSTRUCTIONS, URBANISM AND SUSTAINABLE SPATIAL DEVELOPMENT URBAN-INCERC
Description EN	According to the globally sustainable trend line of eco-innovative technologies or building materials, the necessity of experimental applications dealing with recycling and use of construction waste in geotechnical works has been addressed in various research studies. The experimental tests were based on the inclusion of engineering techniques for analyzing the effects of construction waste and ecological binders in soil admixtures on structure performances in terms of strength parameters resulted from California Bearing Ratio (CBR). The results revealed a significant increase of CBR values and thus it was demonstrated the efficiency of waste and ecological products to gain performant structures. The applicability of a flexible and sustainable methodology will lead to the development of alternative materials and technological tools with environmental benefits to be used in design or execution of road layers.
Class no.	
RO.255.	
Title EN	THE DEVELOPMENT OF A SYSTEM FOR INSTRUMENTAL DETECTION OF STRUCTURAL DAMAGE CAUSED BY STRONG SEISMIC MOTIONS
Authors	Claudiu-Sorin DRAGOMIR, Daniela DOBRE, Iolanda- Gabriela CRAIFALEANU, Emil-Sever GEORGESCU
Institution	National Institute for Research and Development in

Construction, Urban Planning and Sustainable Spatial Development “URBAN-INCERC”

The main objective of the research is to develop and implement an integrated system for the structural health monitoring (SHM) of buildings. In this respect, the evolution of the dynamic parameters characterizing the building/buildings is done by comparing the values obtained under normal microseismic agitation and under the impact of strong shaking, to check the relationship between the visible damage and the state/ dynamic characteristics of the structure.

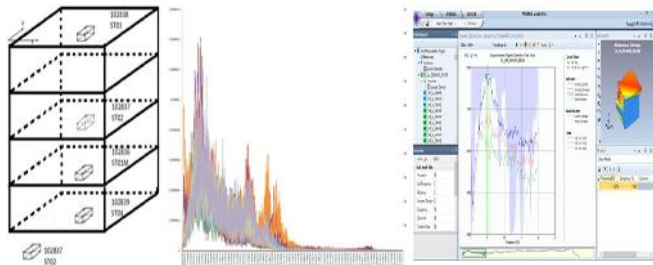
For the damage detection ARTeMIS software will be use. The ARTeMIS methods for damage detection are robust to the natural change of a structure's dynamic behavior due to the changes of ambient conditions and can be set up to not reacting on such changes.

Description EN

Currently, the National Network for Monitoring and Protection of Built Environment of NIRD URBAN-INCERC has 56 seismic/digital accelerometer stations, on buildings and free-field, as well as mobile stations for SHM studies.

As a result of this research, building owners and local authorities will be aware of the need and benefit of implementing such a monitoring system for a large number of buildings, thus benefiting from a rapid assessment of buildings health in a major seismic event. This will avoid blockages that will be inherent in the current situation in the visual rapid assessment of building damage according to the Methodology for post-earthquake emergency investigation of safety of buildings and framework solutions of intervention, ME003/2007. This type of monitoring represent an intelligent specialization and leads to sustainable development through the protection of buildings and their occupants.

Class no.



An example of structural health monitoring

RO.256.**Title EN****THERMAL INSULATION MATERIALS
SUITABLE FOR CIRCULAR ECONOMY****Authors****Cristian PETCU, Vasilica VASILE, Alina DIMA,
Mihaela ION, Melania CRUCEANU****Institution****NATIONAL INSTITUTE FOR RESEARCH AND
DEVELOPMENT IN CONSTRUCTIONS, URBANISM
AND SUSTAINABLE SPATIAL DEVELOPMENT
URBAN-INCERC****Description
EN**

At the EU level is a genuine concern for the revision of the legislation in order to promote energy efficiency and circular economy and to minimize the amount of waste. The transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, is an essential contribution to the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy. Currently, there are extensively used common insulation materials such as petrochemical foams or inorganic fibrous materials, while products with better thermodynamic properties are still characterized by prohibitive prices for the construction industry. The result is an increased consumption of insulation materials, which has the potential to translate into problems in materials post-utilization and due to the embedded energy in these products. In this context, ecological solutions consisting of materials whose life cycle includes a small amount of energy are becoming increasingly popular from buildings construction point of view: (a) the raw material is cheap and in large quantities; (b) have low thermal conductivity; (c) are from a renewable source; (d) do not break down easily; (e) reducing waste is a common goal of EU circular economy. The paper presents an analysis of thermal insulating products suitable for circular economy and their thermophysical properties, the purpose being to inform the internal market, in order to increase the present level of technical knowledge and technologies used to facilitate in Romania the implementation of buildings with high energy efficiency.

Class no.**Innovative Research****RO.257.****Title EN****WOOL-BASED INNOVATIVE THERMAL
INSULATION PRODUCT FOR NEARLY ZERO
ENERGY BUILDINGS****Authors****Vasile MEIȚĂ*, Cezar BULACU**, Cristian PETCU*,
Vasilica VASILE*, Marta-Cristina ZAHARIA***

NATIONAL

Institution *NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN CONSTRUCTIONS, URBANISM AND SUSTAINABLE SPATIAL DEVELOPMENT URBAN-INCERC

**S.C. MINET S.A.

Description
EN

Energy Performance of Buildings Directive (EPBD republished, 2010/31/EU) and Energy Efficiency Directive (2012/27/EU) constitute the primary legislation of the EU with regard to reducing energy consumption in buildings and the related release of greenhouse gases. In accordance with the requirements of the directive EPBD recast, after 31 December 2018 new buildings occupied and owned by public authorities are nearly zero-energy buildings (nZEB), and this requirement applies to all new buildings from 2021. NZEB are by definitions buildings with very high energy performance, with the remaining energy demand being covered to a very significant extent by energy from renewable sources (including energy produced on-site). Regarding the building envelope, this approach implies an increased consumption of insulation building materials, therefore potential problems with materials post-utilization and the embedded energy in these products. The common insulating solutions, using plastic foams or mineral / glass wool, could have a negative impact on the environment by either the post-use products or the material's embedded energy. In this context, ecological solutions integrating national natural resources as wool should be used as thermal insulation building materials. This paper presents the thermophysical, acoustic and mechanical characteristics of an innovative product integrating low quality wool which cannot be used by other industries. This approach could boost the Romanian competitiveness, create new business opportunities and innovative, more efficient ways of producing and consuming, generate local jobs at all skills levels for social integration and cohesion.

Class no.

RO.258.	
Title EN	The influence of environmental factors on the mechanical characteristics of wood elements and steel reinforcing elements efficiently embedded in structures of safe-operated constructions
Authors	Aurelian GRUIN, Anamaria FEIER, Felicia ENACHE, Cornelia BAERA, Avram JURCA,
Institution	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development “URBAN-INCERC” Timisoara Branch
Description EN	<p>Climate change through the two modes of evolution: continuous, slow moving (temperature, humidity, acidic aquatic environment, etc.) or abrupt abnormalities constitutes a real danger to the safety and stability of buildings by producing effects not only on the assembly but also and the elements embedded therein.</p> <p>The research program aims to develop documentation and substantiation studies through experimental tests to highlight the influence of the environmental factors in the behavior of wood and steel elements embedded in construction.</p> <p>The experimental program evaluated the behavior of massiv and GLT wood elements at high temperature diets + 30°C...+40°C, respectively the behavior of welded steel elements at temperatures of -40°C.</p>
RO.259.	
Title EN	UAV solutions for the protection and management of Cultural Heritage
Authors	Antonio TACHE, Oana POPESCU, Monica TACHE, Cristina IVANA
Institution	National Institute for Research and Development in Constructions, Urbanism and Sustainable Spatial Development “URBAN-INCERC”
Description EN	<p>According to the general recommendations, the preservation of cultural heritage requires the harmonization and updating of both the general theory and the methodology for scientific research, preservation, restoration and dissemination. UAV systems equipped with a digital camera have become one of the most promising techniques in recent years, becoming useful tools for data collection. These devices allow the acquisition of high resolution images, at different incidence angles. This study aimed to create a high-precision three-dimensional model by using an UAV system to document and simulate the virtual reconstruction of the Halmyris Fortress.</p>

Military Equipment and Technologies Research Agency

RO.260.

Title EN	THE MONITORING DEVICE (DPM)
Authors	Alexei Adrian, Ciobanu Ionuț, Dumitru Marin, Mazăre Camelia.
Institution	Military Equipment and Technologies Research Agency The Monitoring Device (DPM) is designed to determine, analyze, and monitor the parameters of an aircraft platform. This device consists of 4 modules (block):
Description EN	<ul style="list-style-type: none"> • sensors; • data acquisition and processing; • data storage / transfer; • food <p>The sensor module is intended for the acquisition of platform position, velocity, altitude and orientation data, a practical global positioning device that determines the geographic position, platform height and speed. The module consists of:</p> <ul style="list-style-type: none"> - inertial measurement unit, to determine the attitude of the platform, consisting of an accelerometer that determines accelerations of up to 16 G with a resolution of 13 bits;
Class no.	10

RO.261.

Title EN	UAV SYSTEM FOR SURVEILLANCE ULTRA – 20 MULTIROL
Authors	Alexei Adrian, Drăguș Liviu, Țigleanu Laura, Dumitru Marin, Gherghina Ion, Năciou Nicolae
Institution	Military Equipment and Technologies Research Agency The system is intended/ designed for:
Description EN	<ul style="list-style-type: none"> ➤ training through real shooting , with various types of weapons, in simulating threats conditions of unmanned aerial platforms, cruise missiles or low speed piloted aircraft; ➤ real-time tactical field video surveillance. <p>Sistem structure:</p> <ul style="list-style-type: none"> • ULTRA-20 V1 aerial platform; • Ground Control Station – GCS; • Ground Data Terminal – GDT; • Launching ramp.

Physical characteristics:

- wing span: 3255 mm;
- length: 2555 mm;
- structure weight: 11.5 Kg;
- MTOW : 25 Kg

Piloting features:

- autonomous flight on scheduled paths;
 - up to 200 waypoint for mission programming;
- in case of radio link interruption, the aerial platform automatically returns to the starting/launching point.

Class no.**RO.262.****Title EN**

**AUTO TRACKING ANTENNA SYSTEM BASED ON
GPS POSITIONING COORDONATES UTILISED FOR
UAV (UNMANNED AERIAL VEHICLE)**

Authors

Alexei Adrian, Stanciu Florin, Gherghina Ion, Năciou Nicolae

Institution

Military Equipment and Technologies Research Agency

**Description
EN**

1. The system establish wireless communication with aerial platform.
 2. Locates in NRT THE GPS position.
 3. Efficiently filtrates all the electromagnetic-spectrum
 4. Establish by predictor-corrector mathematical methods next coordination geographical.
 5. Selects the optimum communication channel
- Command auto tracking movement as to have optimum signal

Class no.

National Research And Development Institute For Industrial Ecology (ECOIND)

RO.263.**Title EN**

**A CONTINUOUS PROCESS FOR SEPARATION OF
VEGETABLE OILS USING THE PRINCIPLES OF
ACTIVE MEMBRANE BIOREACTORS**

Authors

**Batrinescu Gheorghe¹, Cuciureanu Adriana¹, Popa
Ovidiu², Babeanu Narcisa Elena²**

*¹National Research and Development Institute for Industrial
Ecology, Bucharest, Romania*

Institution

*²University of Agronomic Science and Veterinary Medicine of
Bucharest*

National Research and Development Institute for Industrial
Ecology – patent holder

Patent

RO 131223 A0/2016

The invention relates to provides a process for the continuous
separation of the active principles (e. g. Squalene) from plant oils
with a series of two membrane bioreactors. One of them is an
enzymatic membrane bioreactor.

Different type vegetable oils: olive oil, oil obtained from seeds of
Amaranthus, or other vegetable oils having a content of at least 1%
active principles, are enzymatically hydrolyzed and then introduced
into the first enzymatic membrane bioreactor (module ultrafiltration
having tangential flow with hydrophilic membrane affinity –
polysulfone polyaniline composite membranes).

To this enzymatic membrane bioreactor is separated a rich fraction
with glycerin and unsaponifiable materials and a fraction
concentrated in saponified materials and active principles -
subansamble A.

**Description
EN**

The concentrate mixed with a selective solvent (hexane) are led in
the second membrane bioreactor (similar the first module but using
hydrophobic membrane affinity - polytetrafluoroethylene) -
subansamble B. This results fraction containing mainly active
principles which are purified by distillation and saponified
materials.

The advantages of the invention relates to:

- be obtained a preparation rich in active principles with high purity
- optimally harness the raw material by using enzyme
- the minimum waste results can be used as raw materials in other
processes answering environmental protection requirements on the
"circular economy"

Class no.

RO.264.

Title EN

Process and installation for recovery and valuation of all materials resulting from integral processing to wastes of catalysts of COSORB type

Authors

Strimbeanu Nicolae Marin¹, Demetrovici Laurentiu Amos Tadeus¹, Lazarovici Marcel¹, Costisor Otilia², Cseh Liliana², Szerb Elisabeta Ildyko², Pascu Luoana Florentina³, Andres Ladislau³, Masu Smaranda³

Institution

¹SC Pro Air Clean Ecologic SA Timisoara

² Institutul de Chimie Timisoara al Academiei Romane

³ Institutul National de Cercetare Dezvoltare pentru Ecologie Industriala Bucuresti – Suc. Timisoara

Patent

Patent no. A/00366/24.05.2016

The invention relates an advanced recovery process of useful products (toluene and metallic copper) from dangerous waste of COSORB catalyst, concomitantly with the production of a new composite inorganic coagulant, consisting of ferric and aluminum chloride in the mixture.

The claimed process fully solves the problem of the detoxification of a hazardous waste for the environment at the same time as the total recovery, in industrially exploitable forms, of each component existing in COSORB.

The catalyst is a bimetallic complex of the type:



where: - M_I - metal of group IB, most often Cu (I)

- M_{II} - Al(III)

- X-ion halogen, currently, Cl-

- ALB – alkyl benzene derived, usually toluene

Description
EN

Due to the high amount of metals as well as the organic solvent, the spent catalyst is a very dangerous waste that can not be eliminated by established processes or stored in treatment cells because it causes a significant pollution. In addition, by hydrolysis of complex chloride upon contact with the atmosphere, it releases gaseous hydrochloric acid which is environmentally harmful, corrosive to materials, but also with high toxicity to humans.

Authors proposes for patenting a procedure for detoxification of waste of COSORB-type exhausted catalysts, with concomitant economic results recovering the organic solvent to a purity that makes it suitable for reintroduction into the industrial circuit, of the Group I-B metal as an element at a purity of over 95%, as well as aluminum in the form of a dicomponent coagulant (Fe and Al), usable in wastewater treatment.

Class no.

1

National Institute for Research and Development in Microtechnologies (IMT-Bucharest)

RO.265.**Title** **Humidity sensor****Authors** Bogdan-Catalin Serban, Octavian Buiu, Cornel Cobianu, Ionescu Octavian, Dragos Varsescu**Institution** Proprietor: National Institute for Research and Development in Microtechnologies (IMT-Bucharest), 077190, Voluntari (RO)**Patent no.** Invention No. A01078, 11-12-2017, OSIM, ROMANIA

Description

The invention is related to design and manufacturing processes for new chemiresistive humidity sensors using conductive polyaniline-Kollidon® SR nanofibers as sensing layer. The humidity sensor includes a dielectric substrate, a first electrode and a second electrode disposed above a substrate and a sensing layer. Synthesis of conducting polyanilines (Fig. 1) is performed by doping emeraldine with $\text{H}_2\text{PO}_3\text{-PEG5K-COOH}$ ($M_w = 5000$) and poly(vinyl phosphonic acid-co-acrylic acid). The dielectric substrate can be formed from plastic such as polycarbonate. The electrodes (aluminum, copper, and chromium) can be deposited onto the surface of the dielectric substrate by employing different methods, such as sputtering and direct printing. The synthesized nanocomposite is deposited onto to interdigitated electrodes through electrospinning technique. The sensing layer described in this invention exhibit outstanding properties: $\text{H}_2\text{PO}_3\text{-PEG5K-COOH}$ and poly (vinylphosphonic acid-co-acrylic acid) contain acidic groups and can protonate imine nitrogen atoms in the emeraldine structure to form stable conductive polyanilines; Both act as polydopants, are thermally stable and do not pose any risk to the environment; Due to the large size counter-ion, polyanilines doped with $\text{H}_2\text{PO}_3\text{-PEG5K-COOH}$ and poly (vinylphosphonic acid-co-acrylic acid) are less susceptible to the dedoping; $\text{H}_2\text{PO}_3\text{-PEG5K-COOH}$ and poly (vinylphosphonic acid-co-acrylic acid) improve the mechanical properties and processability of polyanilines; Kollidon® SR is hygroscopic, improves the mechanical and film properties of doped polyaniline. The conductive nanocomposite based sensing layers were investigated by applying a voltage between the two electrodes and measuring the electrical current flowing through the sensitive layer at various levels of humidity.

Class

4

RO.266.**Title****Chemiresistive humidity sensor****Authors**

Bogdan-Catalin Serban, Octavian Buiu, Cornel Cobianu, Ionescu Octavian, Dragos Varsescu

Institution

Proprietor: National Institute for Research and Development in Microtechnologies (IMT-Bucharest), 077190, Voluntari (RO)

Patent no.

Invention No. A01079, 11-12-2017, OSIM, ROMANIA

Description

The invention relates to the design and manufacturing process for a new chemiresistive humidity sensor using conductive polyaniline-polyvinylpyrrolidone nanofibers as sensing layer. The RH sensor includes a dielectric substrate, a first electrode and a second electrode disposed above a dielectric substrate and the sensing layer. The electrodes (aluminum, copper, and chromium) can be deposited onto the surface of the dielectric substrate by using different methods, such as sputtering and direct printing. Synthesis of conducting polyanilines is performed through doping of emeraldine with Calmagite (Fig. 1) and sulfonated polyethylene glycol (PEG-SO₃H). The synthesized nanocomposite is deposited onto to interdigitated electrodes through electrospinning technique. These sensing layers exhibit some important advantages: Calmagite contains sulphonic groups that are strong acids according to the Bronsted-Lowry theory and can protonate imine nitrogen atoms in the emeraldine structure with the formation of stable conductive polyaniline; Due to the large size counter-ion, the polyanilines doped with Calmagite and PEG-SO₃H and are less susceptible to the de-doping; Due to aromatic skeleton, Calmagite interacts with emeraldine through the π - π stacking interaction, resulting in a more stable structure; Polyvinylpyrrolidone is hygroscopic, improves the mechanical and film properties of polyaniline; The synthesis of PEG-SO₃H is facile, from versatile precursors; PANIs are polymers with good environmental stability, low cost and mature fabrication process. The conductive nanocomposite based sensing layer were investigated by applying a voltage between the two electrodes and measuring the electrical current flowing through the sensitive layer at various levels of humidity.

Class

1

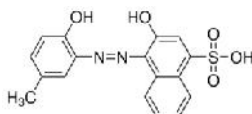


Fig. 1 – The structure of Calmagite

HONEYWELL ROMANIA SRL

RO.267.

Title

Relative humidity sensor and method of forming relative humidity sensor

Authors

Bogdan-Catalin Serban, Viorel-Georgel Dumitru, Octavian Buiu, Mihai Brezeanu

Institution

Proprietor: Honeywell International Inc. Morris Plains, NJ 07950 (US)

Patent no.

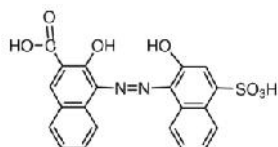
EP 3 150 999 B1 Date of publication and mention of the grant of the patent: 13.12.2017 Bulletin 2017/50

Description

A RH chemiresistor sensor is disclosed in this invention. The sensor includes a first electrode, a second electrode disposed above a dielectric substrate and a sensitive layer disposed above the electrodes. The sensing layer is calconcarboxylic acid (Fig.1) doped polyaniline. The dielectric substrate can be formed from PET, polycarbonate, glass, composite materials, etc. The first and second electrodes can be made from aluminum, copper, and chromium/aluminum, among others. In order to synthesize the calconcarboxylic acid doped polyaniline polymer, the polyaniline (e.g., emeraldine base) can be doped by protonation of imine nitrogen atom with sulfonic groups, which are found in calconcarboxylic acid. The synthesis of calconcarboxylic acid doped polyaniline can be performed by mechanically mixing the emeraldine and the calconcarboxylic acid for 15 minutes to 60 minutes. The mixture can then be heated to increase the doping level. The calconcarboxylic acid doped polyaniline is dissolved in DMF and deposited via drop casting onto the electrodes. The humidity detection capability of the sensing layer is investigated by applying a voltage between the two electrodes and measuring the electrical current flowing through the sensitive layer at various levels of humidity. The calconcarboxylic acid doped polyaniline polymer absorbs water and the changed geometry of the polymer increases the charge transfer across the polymer chain. The response of the RH sensor to changes in relative humidity is very fast, the current through the humidity sensor changes almost simultaneously after the relative humidity changes.

Class

9



The structure of calconcarboxylic acid

RO.268.**Title****Relative humidity sensor and method****Authors**

Bogdan-Catalin Serban, Cornel P. Cobianu, Mihai Brezeanu, Octavian Buiu, Cazimir Gabriel Bostan, Alisa Stratulat

Institution

Proprietor: Honeywell International Inc., Morris Plains, NJ 07950 (US)

Patent no.

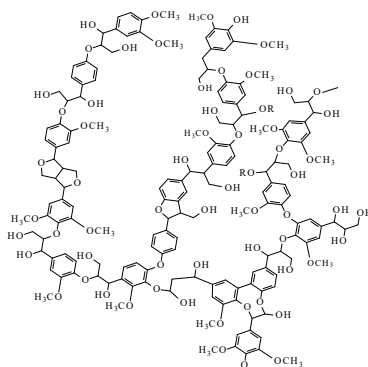
EP3078964B1 Date of publication and mention of the grant of the patent: 24.05.2017 Bulletin 2017/21

Description

Capacitive sensors are viable solution for RH detection due to their highly linear response. Their most common drawback is the fact that they exhibit hysteresis. Previous approaches aimed to solve this issue by incorporating hydrophobic carbon black within the polymer, which forms the sensing layer. However, carbon black is not fully dispersible in polymer matrices. The present disclosure introduces an RH capacitive sensor employing a sensitive layer based on polyimide and a hydrophobic filler. The sensor includes a first electrode, a second electrode disposed above a dielectric substrate, a sensitive layer, and a dust protection layer disposed above the sensitive layer. The sensitive layer is formed from a composition including a polyimide, i.e. P84®, Matrimid® 5218, Kapton®, Upilex® R and an organic hydrophobic filler, such as lignin (Fig.1) with different molecular weight, or an inorganic hydrophobic filler, such as talc. The lignin can have an average molecular weight ranging from 500 g/mol to 1000 g/mol. The composition can include about 0.5% weight lignin based on a total weight of the composition (wt/wt %). Talc nanoparticles ($\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$) have a dimension in the range 1 nm to 100 nm. The composition can include about 0.25% weight talc nanoparticles based on a total weight of the composition (wt/wt %).

Class

3



The structure of lignin

RO.269.**Title****Sensing layer for oxygen detection****Authors**

Bogdan-Catalin Serban, Cornel P. Cobianu, Mihai Brezeanu, Viorel Avramescu, Octavian Buiu, Dumitru Viorel-Georgel, Mihai Mihaila, Cazimir Gabriel Bostan

Institution

Proprietor: Honeywell Romania S.R.L., 014459 Bucharest (RO)

Patent no.

European Granted Patent EP 2 848 927 B1, Date of publication and mention of the grant of the patent: 09.09.2015, Bulletin 2015/37

Description

Oxygen sensors are widely employed in aerospace, domestic and industrial boilers, automotive exhaust systems. In previous attempts, sensing layers for chemiresistive oxygen detection were synthesized from metal oxides which were mixed in the appropriate stoichiometry and then calcinated in air at high temperatures (e.g., 1200°C). Thus, high thermal budget is required for their synthesis. The sensing structures of the present disclosure employ a novel nanocomposite-sensing layer synthesized from solution by sol-gel-like technologies. The structure of the chemiresistor for oxygen detection in this invention a substrate and nanocomposite layer positioned on the top of the substrate. The substrate can be either silicon/silicon dioxide, the silicon/silicon oxynitride, silicon dioxide/silicon nitride or ceramics such as alumina and zirconia. The substrate can have a thickness from 5 mm to about 1 mm. The nanocomposite layer can include a plurality of carbon nanotubes (single-walled, multi-walled), fullerene C60 (Fig. 1), fullerene C70, nanobuds, carbon nanofibers, and metal oxides particles such as strontium titanate (STO), strontium titanate ferrate (STFO), indium oxide (In₂O₃). Sensing composition can be prepared by sonicating a mixture including carbon nanostructures (e.g. 5 - 10 % w/w CNTs) and a plurality of p type metal-oxide particles (90-95 % w/w) in an ultrasonical bath for 6 to 48 hours. Ultrasonic frequencies within a range of about 24KHz to about 26 KHz can be applied during the above-mentioned period.

Class

8

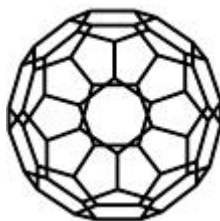


Fig. 1 – The structure of fullerene C60

SC HOFIGAL EXPORT -IMPORT SA

RO.270.

Title	Phytotherapeutic product with anti-acne properties and the process through which it is obtained
Authors	Bordei Natalița, Alexandru Georgeta, Ivopol Gabriel-Călin, Tamaș Viorica, Manea Ștefan
Institution	Hofigal Export-Import SA
Patent no.	a 00246/2018
Description	<p>The current invention refers to a naturally occurring phytotherapeutic product in the form of a homogeneous emulsion with anti-acne and antioxidant properties for topical use as well as to the process for its preparation.</p> <p>The role of this product is to prevent the development of acne, to help reduce the lesions and scars caused by acne, to reduce inflammatory processes and to stimulate the healing process of the skin. The goal of this invention is the creation of a product that is rich in natural active principles and provides a balanced correlation between the anti-acneic properties and the physical, psychological and emotional needs of the human body.</p>
Class	4

RO.271.

Title	Phytotherapeutic natural products with solvolytic properties designed to improve liver and kidney functions and production process
Authors	Alexandru Georgeta, Neagu Mihaela, Crișan Iuliana, Suciu Alexandru, , Tamaș Viorica, Manea Ștefan
Institution	Hofigal Export-Import SA
Patent no.	a 00247/2018
Description	<p>The present invention refers to the production of natural phytotherapeutic products with solvolytic properties intended to improve the kidneys and hepatobiliary pathways functions and a process of their preparation in the form of soft gelatin capsules. The goal of this invention is to provide non-destructive and non-invasive products that are specific for the effective prevention and / or treatment of urinary and hepatobiliary infections as well as the dissolution or elimination of renal / biliary calculi</p>
Class	4

RO.272.

Title	The process of increasing the production of bioactive compounds in nutraceutical crops
Authors	Manea Stefan, Negru Georgeta, Vlasceanu Gabriela Antoaneta, Ionescu Daniela, Popescu Mariana, Oancea Florin, Sesan Tatiana Eugenia, Jecu Maria-Luiza, Oancea Anca
Institution	Hofigal Export-Import SA
Patent no.	a 201500930
Description	The present invention relates to a process for increasing the content of bioactive compounds with a beneficial effect on human health and the level of crop harvest of crops grown by application of treatments with products that release soluble silicon. The scope of the invention is to establish a process for the application of products which gradually release ortho-silicic acid into the soil, detailing the mode of administration, the optimal time of application and the maximum efficacy doses for increasing the content of the bioactive compounds with a beneficial effect on human health, and the level of crop harvests of cultivated nutraceuticals.
Class	3

RO.273.

Title	Phytherapeutic natural product for bladder and renal urinary tract
Authors	Manea Stefan, Cristina-Mihaela Luntraru, Viorica Tamas, Gabriela Rizea
Institution	Hofigal Export-Import SA
Patent no.	A 2016 00769
Description	Natural product with important sanogenic effects in bladder and renal urinary tract infections due to the phytochemical complex, with antiseptic, anti-inflammatory, analgesic, antioxidant and calming properties as well as immunostimulants. It is obtained by a multi-stage complex technology using some high-concentration plant extracts in phytherapeutic compounds that provide the above-mentioned properties and efficacy in treating and ameliorating bladder and kidney damage
Class	4

S.C. BIOTEHNOS S.A.

RO.274.

Title

Topical drug-based prototype that combines the properties of innovative zeolite-chitosan-based materials with active plant compounds, for applications in chronic wounds and acne vulgaris.

Authors

Laura Olariu^{1,3}, Emilia Buse¹, Brindusa Dumitriu¹, Bogdan Purcareanu^{1,2}, Dan Eduard Mihaescu²

Institution

1. S.C. Biotehnos S.A., Otopeni, Ilfov, Romania
2. Faculty of Applied Chemistry and Material Science, Politehnica University of Bucharest, Romania
3. Academy of Romanian Scientists - associate member, Bucharest, Romania

Description

We design the research focused on a prototype for two topical medications / medical devices that combine the properties of innovative materials based on zeolite and chitosan with vegetal active principles. The prototype components are obtained by advanced validated technologies. The biological active compounds resulted from vegetal ecological raw materials are standardized in: triterpenes, polysaccharides, polyphenols, phenolic compounds and flavonoids, function of the plant species: *Salvia officinalis*, *Calendula officinalis*, *Matricariae chamomilae*, *Mentha spicata*, *Hippophae rhamnoides*. The coupling of active principles with the zeolite matrix, the encapsulation of the zeolite – biocompound complex in chitosan and the recharging of the newly formed complex with active principles are achieved through innovative technologies, providing a sustained active load of slow-delivery ingredients for the therapy of chronic wounds and acne vulgaris.

The *in vitro* profile of toxicity and specific action was defined on specific experimental models and reveals the following:
 - the single mesoporous materials, as well as those with extracts loaded on the zeolite-chitosan matrix, do not have cytotoxic effect on fibroblasts and keratinocytes (HaCaT and HS27 cell lines);
 - the active compounds of the plant extracts incorporated in mesoporous materials exhibits selective but complementary dermo-epidermal regenerative effects proved at cellular and molecular level.

The complexity of the technological, analytical, cellular and molecular biology studies, with projection in pharmaceutical product innovation, directs this research to optimized therapeutic solutions for wounds and anti-acne treatment, with superior quality / price and efficacy / toxicity ratios.

This study was sustained by Romanian Research Authority, contract 49 PTE/2016.

RO.275.

Title New cellular and molecular effects, relevant for osteoarthicular pathology, proved for an Romanian original product on specific, predictive, “in vitro” systems

Authors Laura Olariu^{1,2}, Emilia Buse¹, Brindusa Dumitriu¹, Luiza Mariana Craciun¹, Sorin-Valeriu Draga-Coleta¹, Raluca Papacoea³

Institution 2. S.C. Biotechnos S.A., Otopeni, Ilfov, Romania
3. Academy of Romanian Scientists - associate member, Bucharest, Romania
4. University of Medicine and Pharmacy “Carol Davila” Bucharest

Description Chondrocytes produce and maintain the extracellular matrix of cartilage (collagen, proteoglycans, etc.) and are the main actors in joints homeostasis, managing the right balance between synthesis and decline of intra and inter cellular components. Primary cultures are the most objective “in vitro” models, but their physiology quickly declines after few passages. We design our research on HCH (PromoCell HumanChondrocytes), a cell line available from knee and hip joint cartilage tissue, which passed rigid quality control tests and are reliable for study small changes of metabolic processes or gene expression relevant for osteoarthritic pathology. The fish extract, active substance of Alflutop, amplify the DNA synthesis in basal states (unstimulated conditions), also as protection against IL-1 β induced degradation. Experiments performed at molecular level show architectural matrix restoration induced by the fish extract, through collagen regeneration by activation of SOX9 and COL2A1 genes, and inhibition of MMP13 gene expression. The biological product stimulates the α 2 and α 5 integrines expressions, maintaining and reconsolidating condrocytes – collagen type II bounds and condrocytes – fibronectine respectively.
The efficacy screening on this valuable biological system reveals new cellular and molecular effects for the original Romanian drug Alflutop.

Class

4

SC DFR Systems SRL

RO.276.

Title	Mobile Artificial Support Used in Wastewater Treatment
Institution	Ioana Corina Moga, Gabriel Petrescu
Authors	DFR SYSTEMS SRL
Patent no.	Patent application No. CBI A/01052/07.12.2017
Description	The invention relates to a mobile artificial support, used in wastewater treatment plants for biofilm fixation and development. The mobile artificial support is made of plastics with a close-to-water density of 0.97 - 0.98 gr / cm ³ . The special shape is realized from an octagonal tube with an internal complex structure where the biofilm fixes and develops.
Class	Applications: biological wastewater treatment processes 1. Environment – Pollution Control



RO.277.

Title	Exploiting fungi potential for recalcitrant compounds removal from cellulosic wastewaters – FUNCELL
Authors	Ioana Corina Moga, Gabriel Petrescu, Gualtiero Mori, Ovidiu Iordache, Elena Andolfi, Giulio Munz, Simona Di Gregorio
Institution	DFR Systems SRL Consorzio CuoioDepur SpA The National R&D Institute for Textiles and Leather Opus automazione spa University of Florence
Description	FUNCELL consists is the development of an innovative mycobased tertiary treatment for tannery and papermill wastewaters efficient in removing tannins and absorbable organic halogen (AOX), not depleted by consolidated bacterialbased processes. The costs of treatments for m ³ of wastewaters will be reduced and qualitative improvements in the treatment of wastewater are envisaged. FUNCELL is based both on modern processes for biological

treatment (Moving Bed Biofilm Reactor, MBBR) and on biological nonconventional processes catalyzed by fungi [WhiteRotFungi (WRF) and Ascomycota (ASC)]. An innovative carrier, based on polyethylene supports, will be developed for optimizing the fungal biomass growth in system where bacteria are competitive. A pilot of an innovative MBBR designed for fungi will be set up and tested. An innovative approach to monitor and automatize the reactor, based on a specifically designed differential respirometer, will be constructed. The TRL 6 level will be reached. FUNCELL's objective is the 15-20% reduction of the investments in wastewater treatment plants, compared to actual technologies, comprising anaerobic treatments dedicated to the depletion of AOX.

RO.278.**Title**

Cost-effective biological wastewater treatment - CEBIOTREAT

Authors

Gabriel Petrescu, Ioana Corina Moga, Octavian Dontu, Nicolae Baran, Ahmet Isitman

DFR Systems SRL

Institution

**Universitatea Politehnica din Bucuresti
Arges Aritma Makina LTD. ŞTI.**

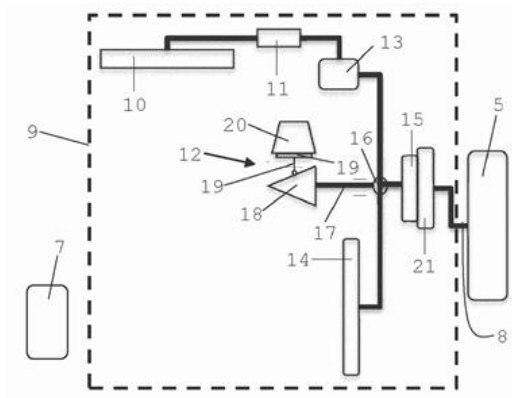
Description

The main objective is to deliver a solution capable of achieving great energy savings in WWTPs with minimum costs. A new type of aeration system based on diffusers with high endurance and reliability made from corrosion resistant metals will be developed. Several fine bubble diffusers (with 0.3 0.5 mm apertures) will be realised with an unconventional method (electroerosion) and tested in laboratory conditions. After this stage, the best aeration system will be tested in situ in 4 WWTPs (in Romania and Turkey) and the efficiency of the dissolved oxygen mass transfer will be determined. The new type of diffuser will be tested in 2 Conventional Activated Sludge (CAS) WWTP and in 2 WWTP that has implemented the Moving Bed Biofilm Reactor (MBBR) technology. An ultrasound system will be mounted, on each aeration system, to prevent diffusers clogging. Is expected a reduction of aeration energy consumption by at least 40% for MBBR WWTPs and by at least 20% for CAS WWTPs. Furthermore, a new shape and material will be proposed for the realization of biofilm carriers to increase the biological treatment efficiency.

CONTINENTAL AUTOMOTIVE ROMANIA SRL

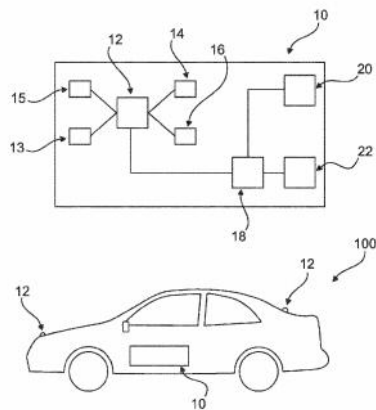
RO.279.**Title** Energy storing and delivering device for a car**Authors** Murgoci, Dragos**Institution** Continental Automotive GmbH**Patent no.** EP3308990 A1**Description**

The invention relates to an energy storing and delivering device (9) for a car. The device (9) comprises an elastic energy storing and delivering system (12), a magnetic-electric energy storing and delivering system (13), an inertial energy storing and delivering system (14) and coupling means (15). The coupling means (15) are adapted for coupling a driving shaft (8) of the car with at least one of the elastic system (12), the magnetic-electric system (13) and the inertial system (14) depending on a speed of the car in such a way that kinetic energy of the car can be stored by the respective coupled system (12, 13 and/or 14) and that kinetic energy of the respective coupled system (12, 13 and/or 14) can be delivered to the driving shaft (8) of the car.

Class

RO.280.**Title** Heat protection device for a vehicle**Authors** Dr. Homutescu, Adrian**Institution** Continental Automotive GmbH**Patent no.** EP3279017 A1**Description**

A heat protection device (10) for a parked vehicle (100) is provided. The heat protection device (10) comprises a sensor arrangement (12) with a first temperature sensor (14) and a second temperature sensor (16), and a control device (18). The control device (18) is configured to determine a temperature difference between a first temperature value and a second temperature value, wherein the control device (18) is further configured to determine a displacement maneuver for displacing the parked vehicle (100) in order to reduce the determined temperature difference.

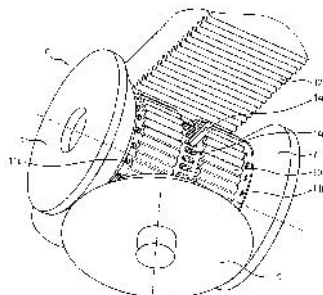
Class

RO.282.**Title** System for recovering energy by braking in a vehicle**Authors** Dr. Homutescu, Adrian**Institution** Continental Automotive GmbH**Patent no.** DE 102015221552 A1**Description**

The invention relates to a system (1) for recovering energy by braking in a vehicle. The system (1) has a spring unit with a spring battery, a spring valve and a spring house. Furthermore, the system (1) with a gear • coupling (6) with an axle wheel (7) which can be brought rigidly to a vehicle axle, so that the axle wheel (7) can be driven by the vehicle axle, a flywheel (8), coaxial with the axle wheel (7), a ratchet wheel (9) which connects the axle wheel (7) and the flywheel (8) such that the flywheel (8) rotates in a direction opposite to the axle wheel (7), a drive wheel (10) which in a first state can be connected to the axle wheel (7) via an end-side two-sided clutch (11 r, 11 p) or in a second state via the front-side two-sided clutch (11 r, 11 p) can be connected to the flywheel (8), or can be separated in a third state from the axle wheel (7) and the flywheel (8),

- A rack (12) which connects the drive wheel (10) via the spring slider (4) with the spring battery (3), wherein a rotational movement of the drive wheel (10) leads to a rotational movement of the rack (12) and vice versa, and

- A gear connection device (13), comprising at least one locking part (14r, 14m) for locking and unlocking a • rotational movement of the drive wheel (10).

Class

NATIONAL

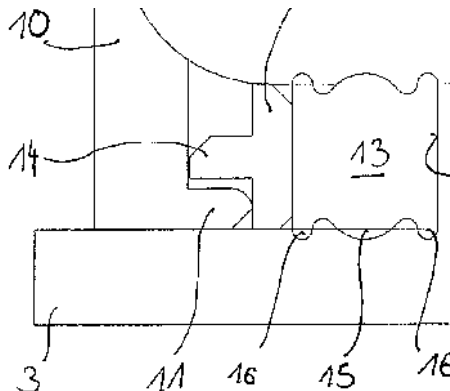
RO.283.

Title Hydraulic unit
Authors Luca Dragos, Popa George
Institution Continental Teves AG & Co
Patent no. DE 102016209541 A1

Description

In order to achieve a good sealing effect between a motor house (4) and a pump house (3), a sealing frame (9) is provided which consists of a plastic support ring (12) and a sealing ring (13) consists of silicone.

The pump house has a shoulder (23) delimited by a peripheral wall (23) which is offset from a flange surface (21) on which a flange (5) of the engine compartment (4) is placed. During assembly of the electric motor (1), the sealing ring (13), which was previously held on the motor house (4), is placed on this shoulder (22), so that the sealing ring (13) is mounted on three sides, just behind the flange (5). , bounded and held by the shoulder (22) and the circumferential wall (23). This minimizes shearing movements on the sealing ring (13), so that a better durability is given.

Class

ELECTROPUTERE VFU PASCANI SA

RO.284.

Title

Redesign and Reconstruction of double deck passenger coaches, with the new series: 26/84/36-16

Institution

Electroputere VFU Pascani SA

The 26-26 series passenger coaches have been manufactured starting with the 80's, by VEB Waggonbau Goerlitz, Germany. Romania had imported more than 200 coaches of this type, with the purpose to use them on short distances, due to the big transport capacity, being double deck type. In Europe, railway vehicles reconstruction is wide spread, due to some important benefits:

- the costs are lower than for the acquisition of new vehicles;
- resources consumption economy and environment impact – in order to reuse the metal for new constructed vehicles, it must be melted, casted and worked again;
- from the analysis made on the donor vehicles, it has been concluded that the metal structure allows another 15-20 years of operation if overhauled;
- the new exterior and interior is in tone with the latest designs;
- the modernization of the vehicle is done with the purpose to respect the latest safety, security and comfort norms.

Description

In order to reconstruct the 26-26 series passenger coaches, Electroputere VFU Pascani SA uses the concept „Redesign and Reconstruct”, based on which will result a 70-80% new vehicle. The new equipment includes: HVAC (Heating, ventilation, and air conditioning), comfortable seats with tables, led lightening, windows with low light entrance, automatic doors, video surveillance cameras, modernized bogies and braking system. Electroputere VFU Pascani SA had provided reconstruction services, for more than 165 coaches and it is working on another batch of 17, for the national operator SNTFC CFR CALATORI.



RO.285.**Title****Intelligent rolling system, for general and technological land transport equipment****Institution****Electroputere VFU Pascani SA
INMA Bucharest****Patent no.****-**

Purpose of this proposed project is to develop an Intelligent rolling system, for general and technological land transport equipment.

The technical challenge, project novelty is the measurement and continuous monitoring of the transported load and its correlation with adequate air pressure in the tires that equip these systems.

Description

Necessity to make such a system lies in the practical reality according to which large varieties of the transported products is high taking into account their different specific weights, situation which calls for an adjustment of tire air pressure accordingly with the transported load value.



NEW NCR RECICLARE SRL

RO.286.

Title Alveolar blocks produced from cement-based concrete and granulated recycled glass
Authors *Gabriel PIRGARIU; Ioan RADULESCU; Ofelia CORBU*
Institution NEW NCR RECICLARE SRL ; TECHNICAL UNIVERSITY of CLUJ-NAPOCA
Patent no. TECHNICAL AGREEMENT 016-02/361-2018

The alveolar blocks produced from cement-based concrete and granulated recycled glass are used to create walls for the delimitation and partitioning of paddock sectors for storage of aggregates by size, according to standards.

Description Dimensions:
 - Width: 500 ± 1.5 mm
 - Height: 500 ± 1.5 mm
 - Length: 1000 ± 1.5 mm

The weight of an alveolar block is approx. 525 kg. The strength class of the concrete from which the blocks are made is C16/20. The cement-based concrete and recycled glass block wall is made by dry masonry system without bonding mortar.

Class

1/7



RO.287.**Title****Ecological paving blocks with aggregates from recycled glass waste****Authors*****Ofelia CORBU; Gabriel PIRGARIU; Ioan RADULESCU*****Institution****NEW NCR RECICLARE SRL;
TECHNICAL UNIVERSITY of CLUJ-NAPOCA****Patent no.****-**

The ecological paving blocks are made with recycled glass in the form of aggregates that replace natural aggregates. Obtained by vibropressing of a semi-dry concrete in special moulds, in a single layer.

Applications

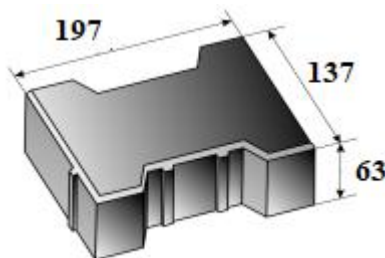
Paving sidewalks, inner courtyards, pedestrian alleyways, storage spaces.

Description

Advantages

- saving or reducing the use of non-renewable natural aggregates in the concrete composition, by replacing them with recycled glass waste;
- achieving an environmentally friendly product with sustainability features (Resistance to climatic factors action);
- Firefly effect on artificial light.

Dimensions 197x137x63



Compressor Pump Industrial SRL

RO.288.

Title	Reciprocating compressor cylinder with inclined heads ends
Authors	Prodan Marian
Institution	Compressor Pump Industrial SRL
Description	The solution include a special design of horizontal compressor cylinder with inclined piston ends able to provide free lifting of the piston and rod during compression stroke compensating the piston and rod weight and decreasing friction force between piston and cylinder liner. On the market it is a single patent available for horizontal cylinder with floating piston on a gas cushion belonging to Howden Thomassen Compressor USA.
Class	5

RO.289.

Title	Electrolytic and ecological water treatment solution with metallic ion generator for drinking water - removing scale and preventing corrosion in water system
Authors	Prodan Marian
Institution	Compressor Pump Industrial SRL
Description	<p>The equipment respects the simple and natural principle of natural electrolysis of water in the presence of metallic anode chemical elements, with natural and electrical physical and chemical properties for mineralized waters.</p> <p>The equipment is a metal zinc alloy electrodes equipment made from a dielectric support, specially shaped for minimal hydraulic loss and efficient electrical insulation.</p> <p>The immersion of electrodes in the water leads to the natural occurrence of the galvanic phenomenon, for metallic ions, which naturally came in the water from the natural potential difference of up to 1V in the electrolytic cell.</p> <p>The metallic ions inhibit carbonate crystallization and grow process for new scale and dissolve the existing one, maintaining the parameters of the drinking water within the legal limits.</p>
Class	1

Arexman Construct SRL

RO.290.

Title **REGENESIS – earthquake protection and health regeneration**
Authors Mircea MANOLESCU
Institution **Arexman Construct SRL**
Patent -

Description

REGENESIS is an individual shelter able to protect and sustain user's life in case of earthquake and other disasters and to regenerate user's health in all the other cases. Designed to be carried through any standard interior door, in already constructed buildings. The shell has anti-blast and bulletproof properties, making this shelter able to protect the user in case of war and terrorist attack. **Searching for a business partner: office@seisme.ro**

REGENESIS can stand alone or be integrated in the house's furniture or in any inner space.

The reduced size of REGENESIS gives the possibility to introduce it in any room, even after the house is build. It can be used for protecting the life and integrity of the user in several dangerous situations such as earthquake, war or hurricane. It protects woman and children in case of house violation by any hostile intruder, even in case of armed attack.

In case of earthquake REGENESIS saves the user's life and sustains it until the rescue teams arrive. The rescue teams can work quicker without the danger of harming the survivors while rescuing them.

The survivors can be located exactly under the debris due to an electronic beacon.

Two or more shelters can be joined together to host and save the whole family regardless of the number or age of the persons. A specially designed shelter can be used also by disabled persons.

In normal life REGENESIS is able to **improve user's health** by offering shelter against the electromagnetic smog and discharge of the negative potential of the body to the ground. It is also able to help the user to regenerate the immunity system and cure a range of health problems using specific external palliatives issued from new alternative medicine research.

Class

12



Searching for a business partner: office@seisme.ro

NATIONAL

Individual Inventors

Claudia MUNTEAN

RO.291.

Title

The Art Collectors / the first Romanian Art Game

Authors

Claudia Muntean (Cultural Educator)

Patent

-

This art game was conceived in order to promote the national cultural heritage and contains two sets of cards:

The 1st set: 50 cards with art-related questions and answers;

The 2nd one: 25 painting-cards (the art gallery/reproductions of art works signed by our famous painters: Th. Aman, Nicolae Grigorescu, Luchian, Andreescu, Gh. Petrașcu, Arthur G. Verona, N. Dărăscu, Vermont, N. Tonitza etc.).

The game aims to:

- stimulate young people's interest in discovering and appreciating their national artists within a European context (impressionism);
- generate the ability to recognize to whom belongs a certain work of art and to identify some common elements that are present in some given paintings;
- develop critical and creative thinking.

Description

There are three different versions (1. My Art Collection! / 2. Find the common item! /3. Can you recognize the artist/the art work?) in which the game could be played (the details of each version are mentioned within the rules). Some activities suggestions are included as well.

Applications:

- Formal & non-formal educational activities - basically, the painting cards can be used in teaching literature, philosophy, music, history or any another field that can be related to art.
- The game is already used within creative writing and personal development workshops, as tool for exploring our cultural identity or other themes such as: Places & Spaces/ Art & Identity/ Art & Society etc.

Class

13

RO.292.**Title** **The Rare Letters Collectors****Authors** Claudia Muntean**Patent** -

This game aims to introduce our youth to a national cultural symbol, MIHAI EMINESCU, by exposing them to certain significant periods of his life, his passions, his great cultural work and some of his most famous writings.

This game consists of 2 sets of cards:

The 1st set made of 38 question cards (each representing a question and its answer) related to Eminescu's life and literary work + 1 special card*.

The 2nd set, consisting of five letters, three of which written by Eminescu and the other two addressed to him, fragmented in 20 cards (each letter fragmented in four cards).

Description

According to the game rules, the first player who succeeds in putting back together one full letter (4 cards of the second set) is declared the winner. To earn a card from the second set, the player should:

- answer correctly two questions from the first set;
- or fulfill the task mentioned on the special card of the first set.

Activities suggestions included.

Applications:

The Rare Letters Collectors can be used within any type of literary activity meant to bring closer the youth and their mother language.

Class

13

Ion CRISTESCU**RO.293.****Title****MODULAR PLANT FOR CONVERSION
CELLULOSE BIOMASS TO HYDROCARBONATED
FUEL C4....C10.****Authors**

Ion Cristescu, Narciza Georgeta Cristescu, Adrian Gheorghe Cristescu

Patent

RO 123660-B1/2017

The invention refers to a chemical catalytic reactor for conversion cellulose biomass to hydrocarbonated fuel C4...C10 through catalytic heterogeneous hydrolyser reactor for conversion cellulose biomass to glucose(G) anhydrous liquid, homogeneous catalytic conversion reactor(E) for conversion glucose(G) to ethanol and heterogeneous catalytic reactor for conversion ethanol to hydrocarbonated C4...C10.

Description

Applications: this invention its application in chemical industry manufacturing synthetic fuel for engines (biofuel).

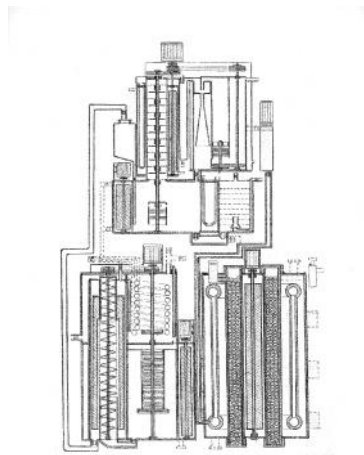
Ethanol is synthetic fuel from cellulose biomass generated on base natural phofotosynthesis.

Other mater for installation is cellulose wastle(straw,cobs) and organic house hold waste.

This invention reduction emissions in air using ecological fuel.

The advantage for invention is small size dimension of installation what may be assembled into all PECO stations reducing costs packing,transport and supply.

9



Radu MUNTEANU

RO.294.

Title Ultrasonic channel of communication

Authors Munteanu Radu

Institution Inbox Marketing

Description My reserch name is ultrasonic communications channel and is using an ultrasonic 40 khz sensor with an modulator at the transmission and an ultrasonic sensor and an amplitude demodulator at the reception.

Filip PANAIT**RO.295.****Title****ELECTRICAL ENERGY STORAGE AND TRANSFER
SYSTEM BASED ON ARTIFICIAL BLOOD****Authors****PANAIT FILIP**

The invention refers to an electrical energy storage and transfer system based on artificial blood. The invention has an artificial red blood cell as a basic unit, which allows the fast storage of electrical energy as well as its efficient transport to ultimate consumers through an integrated transfer system. The invention also relates to an electrical energy recharging station for these artificial red blood cells. The transfer system ensures the distribution of electrical energy, from artificial red blood cells to ultimate consumers, through a capillary system through which the artificial blood flows.

Description**Applications**

1. In the automotive industry, as a source of energy for electric motors;
2. In the renewable energy industry, for storing large amounts of renewable energy in tanks.
3. To ensure the energy autonomy for housing.

In the aviation industry, to ensure electric propulsion for planes.

Vasile LUPU**RO.296.****Title EN****Device with remote start for lower and upper limbs after vascular accidents****Authors**

LUPU VASILE, LUPU IULIANA BEATRICE

Patent no.

A/00539/02.08.2017

**Description
EN**

The invention relates to a controlled starting device which moves the lower or upper limbs having the following advantages: low costs for realization, can be used by the person affected in bed without being subjected to great physical effort. The device can be performed on different sizes, shapes. It does not require special maintenance, the operation being made simple by the person concerned. It does not require a large and specialized work force, the device is not polluting, can be easily transported and installed. It consists of a transformer powered by a socket an electric motor that converts the current from 220 V to 12 V, a 12 V motor on which a arm with a glove or shoe (pedal) is placed, all fixed to a metal frame.

Class no.

4

„Gheorghe Asachi” Technical University of Iasi

RO.297.

Title EN	New smart materials with application in medicine and environmental protection
Authors	Olga KOTOVA ¹ , Maria HARJA ^{2*} , Maarten A.T.M. BROEKMANS ³ , Consuelo GÓMEZ de CASTRO ⁴
Institution	¹ Institute of Geology Komi SCUB RAS, Syktyvkar, Russia ² “Gheorghe Asachi” Technical University of Iasi, Blvd. Mangeron, no. 73, 700050, Iași, Romania ³ Geological Survey of Norway (NGU), Norway ⁴ Complutense University of Madrid, Faculty of Chemical, Av. Séneca, 2, 28040 Madrid, Spain
Description EN	<p>General Objectives:</p> <ul style="list-style-type: none"> ▶ Study of synthesis of new materials from raw minerals; ▶ Transformation of minerals into new smart inorganic materials; ▶ Characterization of the obtained materials; ▶ Study of the application of new materials in different domains: medicine, nanoceramics, wastewater treatment, etc. <p>Specific objectives:</p> <ul style="list-style-type: none"> ○ analysis of the nanomaterials synthesis; ○ study of the influence of different parameters; <p>Novelty and originality:</p> <ul style="list-style-type: none"> ● Obtaining new knowledge on the synthesis of new smart nanomaterials; ■ Establishing optimal parameters for obtaining materials with imposed properties.



PALATUL COPILOR

B-dul Carol I, nr. 2 Iași
ROMANIA
Tel/Fax: +40.232.410802

THE PALACE OF CHILDREN, IAȘI

"The Palace of children is an educational institution which deals specific instructive- educational activities outside school classes, where children complete their knowledge and go thoroughly into some domains, develop skills according to their calling and options and where their spare time may be organized in educational programs. These free activities may be attended, according to their own choice by children under the school-age, elementary school children, middle school, vocational school and high school students as well as children coming from orphanages, irrespective of nationality, sex and religion, according to their interest, skills and preferences." (Excerpt from the Regulations of organisation and functioning of Clubs and Palaces of Children)

Founded in 1953 under the denomination of the House of Pioneers with only seven clubs, the present Palace of Children has undergone dramatic changes as far as the number of clubs and their diversity is concerned.

Nowadays the Palace of Children functions with sixty clubs focused on cultural, artistic, technical, practical, scientific, sportive and touristic domains. They appeal to the 76.154 children in kindergardens, elementary schools, middle schools, vocational schools and high schools in Iași.

The institution owns the apparatus and materials necessary for the good working of the clubs. At present, the Palace of Children has connections with similar institutions in 12 countries on 3 continents.



PALATUL COPIILOR

B-dul Carol I, nr. 2 Iași
ROMANIA
Tel/Fax: +40.232.410802

PALATUL COPIILOR, IAȘI

"Palatul Copiilor este o instituție de învățământ în care se desfășoară activități instructiv-educative specifice, în afara cursurilor școlare, prin care se aprofundează și se completează cunoștințe, se dezvoltă aptitudini potrivit vocației și opțiunilor copiilor, se organizează petrecerea timpului liber prin programe educative.

La activități pot participa în mod gratuit și la libera alegere, copii preșcolari și elevi din ciclul primar, gimnazial, profesional, liceal și din casele de copii, fara deosebire de naționalitate, sex și religie, corespunzător intereselor, aptitudinilor și preferințelor lor."

(Extras din Regulamentul de organizare și funcționare a cluburilor și palatelor copiilor)

Înființat în anul 1953, sub denumirea de Casa Pionierilor, având un număr de 7 cercuri, actualul Palat al Copiilor a cunoscut o dinamica puternică în ceea ce privește numărul de cercuri și diversitatea lor.

În prezent la Palatul Copiilor funcționează un număr de 60 de cercuri cu profile din domeniile cultural-artistice, tehnico-științifice, tehnico-aplicative și sportiv-turistice. Acestea se adresează celor 76,154 de copii din grădinițe, școli primare, gimnaziale, profesionale și liceale din municipiul Iași.

Activitățile sunt conduse de o echipa de cadre didactice calificată și specializată pentru activitățile de timp liber, formată din profesori, ingineri, maiștri coregrafi și antrenori.

Unitatea este dotată cu aparatură și materialele necesare unei bune desfășurări a activității specifice din cercuri. În prezent, Palatul Copiilor întreține legături cu unități de profil similar din 12 țări, de pe 3 continente.

THE PALACE OF CHILDREN, IAȘI

1. DRIVE “J.R.” MAȘINA INTELIGENTĂ
Josanu Rareș cl a X a
Prof. Pantelimonescu Remus
2. APLICAȚII LEGO-EV3 REZOLVARE CUB RUBIK
Popa Bogdan cl a VI a
Prof. Pantelimonescu Remus
3. SISTEM INTELIGENT DE AUTOMATIZARE A CASEI
Bejenaru Ștefan cl a IX a
Anghel Ioana cl a IX a
Prof. Pantelimonescu Remus
4. GENERATOR EOLIAN CU FLUX AXIAL
Bejenaru Ștefan cl a IX a
Anghel Ioana cl a IX a
Popescu Irina cl. a VII a
Prof. Pantelimonescu Remus
Prof. Colbu Gheorghe
5. SAT DE VACANȚĂ
Comșa Karina cl – I a
Prof. Colbu Gheorghe
6. COMPLEX SPORTIV
Motoc Smaranda cl. a X a
Artene Andrei cl. a IX a
Prof. Colbu Gheorghe
Prof. Ursachi Mihaela

7. AEROMODEL ELECTRIC

Tiezzi Vlad cl. a VI a
Prof. Matei Doru

8. PLATFORMA ARDUINO UTILIZATĂ ÎN DESENUL TEHNIC

Chiriță Raluca cl. a XII a
Prof. Chiriță Daniel

9. TRICICLU CU GEOMETRIE SI CENTRU DE GREUTATE VARIABIL

Stamate Rareș Constantin cl. a V a
Prof. Chiriță Daniel

10. NAVA ECOLOGICA

Mihailă Matei cl. a IX a
Ungureanu Rusu Alexia cl. a V a
Prof. Stratulat Mihai,
Pof. Sandu Carmen

11. HÂRTIA RECICLATĂ PLANTABILĂ

Adriana Elena Dragan cl. a XII a
Prof. dr.Gabriela Andrei

12. ECONOMIA CIRCULARĂ-DE LA IDEE LA AFACERE

Crina Costandache cl. a X a
Prof. dr. Gabriela Andrei

13. COMPOZIȚII

Bîrleanu Ioana cl. a VI a
Stoica Amalia cl. a V a
Epure Ionela cl. a VII a
Prof. Colbu Eugen Liceul „Oltea Doamna” Suceava

14. COMPOZIȚII

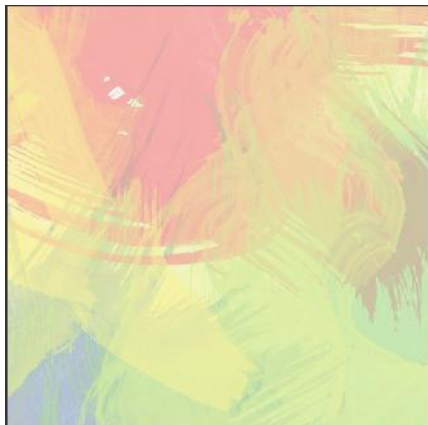
Grosu Ștefania cl. a IV a
Anton Ana-Maria cl. a V a
Pantiru Iustina cl. a VI a
Prof. Toma Mădălina Palatul Copiilor Iași

15. COMPOZIȚII

Artene Andrei cl. a IX a
Motoc Saranda cl. a X a
Prof. Colbu Gheorghe Palatul Copiilor Iași

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Romanian Fine Arts Union



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George Enescu
Iași



UNAGE

Euroinvent 2018



Curatori:
Conf. univ. dr. **Cristian Ungureanu**
dr. **Mirela Ștefănescu**

Coordonator Euroinvent:
sef lucrari dr. ing. **Andrei Victor Sandu**

Artiștii participanți:

Jeno Bartos, Zamfira Birzu, Smaranda Bostan, Ilie Bostan, Cornelia Brustureanu,
Silviu Buraga, Cezarina Calotian, Simion Cristea, Adrian Crișmaru, Bogdan Gavrilan,
Florin Grigoras, Miruna Haseșean, Modesta Lupascu, Ecaterina Marghidan,
Ana Maria Negară, Dragoș Pătrașcu, Ioan Pricop, Florin Pânzaru, Monica Pop,
Tiberiu Pop, Valentin Sava, Atena Elena Simionescu, Magda Sficlea, Adrian Stoleriu,
Andreea Stoleriu, Mircea Ștefănescu, Mihai Tarași, Constantin Tofan, Cristian Ungureanu

10 - 31 Mai 2018

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P R E F A Ț Ă

Brandul EUROINVENT, susținut de Forumul Inventatorilor Români și de Europe Direct Iași, reprezintă un proiect modern, care a permis în ultimii opt ani realizarea unei manifestări complexe, cu multiple ținte, adresându-se tuturor creatorilor de bunuri materiale și spirirtuale (inventatori, universitari, cercetători științifici, artiști etc.). S-a dorit acest lucru, pentru a atrage atenția guvernanților asupra faptului că inventica este un segment al creativității naționale, care asemănător artei și științei, trebuie să fie subvenționată de stat, iar brevetarea să fie gratuită. Mai mult, proprietatea intelectuală și cea industrială să fie protejate prin legi diferite, să nu mai existe sistemul de re-brevetare a invențiilor, ci doar cel de transfer tehnologic, sub formă de Patent (licența de aplicare).

O invenție, o dată brevetată, trebuie să rămână în portofoliul inventatorului și în zestrea unei națiuni sub forma unui brevet, respectiv patent din fondul personal sau public (Fondul Național de Invenții), de unde la cerere să fie transferată ca licență de aplicare în baza unui contract, prin Oficiul de Stat pentru Invenții și Mărci (OSIM). Juridic, pentru a proteja inventatorul este preferat sistemul de re-patentare și nu cel de re-brevetare.

Această sărbătoare a științei, tehnicii și artei românești, organizată sub sigla „Zilele Europei la Iași”, se desfășoară prin implicarea tuturor actorilor și vectorilor sociali: studenți, cadre didactice universitare, cercetători, artiști, mass media, mediul de afaceri, autorități etc. Un aport deosebit în aceste manifestări îl au cele cinci universități de prestigiu ale Iașului, care s-au remarcat prin performanță și tradiție de-a lungul istoriei lor, fiind recunoscute atât în țară, cât și în străinătate ca principalii actori în cercetarea românească.

Implicarea celor cinci universități în toate edițiile de până acum a condus la formarea și dezvoltarea de lideri ai creativității în domeniile lor de specializare.

Prin aceste manifestări se dorește o participare activă, printr-o bună conlucrare și dialog între inventatori, studenți, specialiști din diverse domenii, artiști, mediul academic și cel industrial.

EUROINVENT înseamnă un eveniment complex alcătuit din: Salonul European de Invenții și Cercetare Științifică, Salonul de Carte și Salonul de Artă, un rol important avându-l Workshop-ul denumit „Cercetarea tehnico-științifică în contextul contemporan european”, unde se dezbate teme actuale de cercetare și aspecte moderne ale celor trei tipuri de proprietate: intelectuală, industrială și culturală, având în vedere printre altele, stimularea actului de creație și protecția dreptului de autor. În ultimii trei ani acest workshop s-a alăturat componentei principale a EUROINVENT-ului, cunoscut sub titlul: Conferința Internațională de Cercetări Inovative (ICIR – International Conference for Innovative Research).

Cu ocazia zilelor dedicate inventatorilor sau instituțiilor de cercetare și de învățământ din țările participante la această manifestare, se vor prezenta sistemele actuale de transfer tehnologic, dinamica brevetării și alte aspecte privind ingineria creativității, respectiv rezultatele deosebite obținute de către școlile lor de invenție în formarea tinerilor inventatori.

La actuala ediție, vizitatorii celor trei saloane vor putea vota invențiile, temele de cercetare, cărțile și operele de artă pe care le consideră meritorii, pentru cele mai apreciate, acordându-se și un premiu de popularitate din partea publicului.

Volumul de față cuprinde un număr de 19 lucrări, selectate de un grup de referenți, în acord cu evenimentele care vor fi marcate la a 10-a ediție a EUROINVENT: 100 ani de la întregirea României, 15 ani de la fondarea Asociației Forumul Inventatorilor Români (FIR), Anul Internațional al Patrimoniului Cultural și 50 de ani de înființarea Federației Internaționale a Asociațiilor Inventatorilor (IFIA), la care FIR este membru plin (full member). Sub genericul „Cercetarea românească în conext european”, lucrările au fost grupate pe următoarele secțiuni: Știința Conservării Bunurilor de Patrimoniu Cultural și Natural, Științe Conex, Invenție și Istoria Neamului Românesc. Au fost acceptate lucrări în limba română și engleză, cu o bibliografie recentă și selectivă.

Prof.univ.emerit dr. Ion SANDU,
Președinte de Onoare al Forumului Inventatorilor Români

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