

RAPORT INFORMATIV

Adresat	Directorului PRELAM-135
Privind promovarea PRELAM la	INVENTICA 2018*
	06.2018
Caracter	Public

* AL XXII-LEA SALON INTERNATIONAL AL INVENTIILOR SI CERCETARII "INVENTICA 2018" - 27.06.2018-29.06.2018,
Iasi, Romania, Lost Steps Hall, Technical University "Gheorghe Asachi" of Iasi, Bd. Carol I, no. 11 A



**DR. ING.
POPOVICI ERNEST**

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PREAMBUL

Evidentiez importanta contributie a echipei GEA / CIVITTA la reusita pentru INFLPR a evenimentului, vezi si anexele grafice.

Profesionalismul, expertiza si experienta GEA / CIVITTA au asigurat succesul INFLPR – PRELAM la acest eveniment si nu in ultimul rand activitatea comuna in colaborarile anterioare.

Printre altele evidentiez organizarea in ansamblu si sub aspect **logistic si publicitar**:

Invitatie din partea directorului de proiect pentru a vizita standul INFLPR si a participa la WORKSHOP,
Prof. Dr. I.N. Mihailescu

Invitatie oficiala INFLPR Iasi.pdf

Lista participantilor la WSH – INFLPR – PRELAM, INVENTICA – Iasi, 28_06_2018

Lista participantii INFLPR Iasi 28_06_2018.pdf

**INSTITUTUL NATIONAL PENTRU FIZICA LASERILOR,
PLASMEI SI RADIATIEI - INFLPR
WORKSHOP - PREZENTARE TEHNOLOGIE**

**Noi tehnologii avansate de acoperire a suprafetelor
folosind fascicul laser de mare putere**

Invitatie workshop Iasi PRELAM.pdf

- prezentare PRELAM
- cerinte specializate
- aplicatii industriale
- discutii

Materiale grafice si video

PREZENTARE INVENTICA -2018

The 22nd International Exhibition of Inventics “ **INVENTICA 2018** ”, 27.06.18–29.06.18 Iasi, Romania. Lost Steps Hall, Technical University “Gheorghe Asachi” of Iasi, Bd. Carol I, no. 11 A, Romania, Patents, patent application and innovation, research and development projects can participate at the exhibition, Technical University “Gheorghe Asachi” of Iasi and National Institute of Inventions Iasi (INI).

SCOPUL EXPOZIȚIEI / SALONULUI

- » Diseminarea rezultatelor cercetărilor;
- » Parteneriate, acorduri;
- » Crearea și dezvoltarea de noi idei de cercetare;
- » Transfer de tehnologie;
- » Implementare / punere în aplicare
- » Brevete, cereri de brevete
- » Inovare,
- » Proiecte de cercetare și dezvoltare.

PROGRAM

Locatia	Sala pasilor pierduti, Iasi	
Program		
Sosire participanti		
Instalare in standuri	26.06.2018	16.00 -20.00 -Amenajare standuri
Deschidere	27.06.2018	08.00 - 10.00 -Amenajare standuri 09.30 - 10.00 - Primire participanti 10.00 - 11.30 - Festivitate de deschidere - Aula Universitatii Tehnice „Gheorghe Asachi” din Iasi 11.30 - 12.00 - Pauza 12.00 - 13.00 - Lansare de carte 13.00 - 15.00 - Pauza 15.00 - 17.00 - Workshop 18.00 - 20.00 - Eveniment <i>omagial</i>
	28.06.2018	09.00 - 12.00 - Jurizare 12.00 - 14.00 - Pauza 14.00 - 18.00 - Jurizare 16:00 - 18:00 - Workshop - Promovarea rezultatelor proiectului " Noi tehnologii avansate de acoperire a suprafetelor folosind fascicul laser de mare putere in vederea cresterii fiabilitatii si a performantelor materialelor (PRELAM)", Institutul National pentru Fizica Laserilor, Plasmei si Radiatiei, Magurele, INFLPR, Biblioteca Universitatii Tehnice „Gheorghe Asachi”, din Iasi/ Amfiteatrul P2. 19.00 - 22.00 - Masa festiva Restaurant Dragon
Ceremonia de Premiere	29.06.2018	10.00- 11.00 - Eliberare standuri 11.00 - 12.00 - FESTIVITATE DE PREMIERE

PREZENTAREA PRELAM SI DPI AFERENTE

In cadrul PRELAM sunt utilizate DPI - drepturi de proprietate intelectuala dupa cum urmeaza:

- a) pre-existenta prezentului contract, dar elaborate de INFLPR,
- b) rezultata din activitatea aferenta contractului PRELAM, si care fac parte din obiectivele contractului si / sau a contractelor subsidiare,
- c) rezultata din activitatea aferenta contractului, dar care nu fac parte din obiectivele contractului dar care sunt rezultate a activitatilor contractului, respectiv a contractelor subsidiare.

In cadrul salonului la standul INFLPR au fost prezentate proiectul PRELAM si DPI functie de stadiul de examinare a DPI:

1

Participant name (University, Research Institute, Company)	INFLPR - NATIONAL INSTITUTE FOR LASERS, PLASMA AND RADIATION PHYSICS
Patent/ patent application title	CAP DE DEPUNERE CU SINTEZA IN SITU DE NP CU LASER CLADDING HEAD WITH IN SITU SYNTHESIS OF NP BY LASER

Authors Mihalescu N. Ion, Popovici Ernest, Ristoscu Carmen-Georgeta, Hapenciuc Claudiu, Mihalescu Cristian, Badiceanu Maria, Gavrilă-Florescu Carmen-Lavinia
A00943/16.11.2017

Patent/ patent application number

Patent/ patent application description (romanian), max. 100 words
 Capul de depunere cu sinteza in situ de NP cu laser – CDS, este un cap coaxial cu alimentarea de pulberi discontinua, de preferat cu minim sase injectoare. Inventia rezolva in acelasi timp inca o problema deosebita prin eliminarea stocarii si depozitarii NP prin sinteza in situ.

Patent/ patent application description (english), max. 100 words
 The in situ nanoparticle synthesis head -CDS, is a coaxial head with discontinuously powder feeding, preferably with at least six injectors. By in situ synthesis the invention solves at the same time a particular problem by eliminating the storage and the stocking of NP.

Patent/ patent application domain
 8, 9 ,25

Contact person name/ surname
 POPOVICI ERNEST

PH
 +40746100122

E-mail
 popovici05@yahoo.co.uk

Address
 ATOMISTILOR 409, P.O. Box: MG-36, cod 077125, BUCHAREST
 ROMANIA
 Tel: +4021 457 44 89, Fax: +4021 457 42 43

2

Participant name (University, Research Institute, Company)
INFLPR - NATIONAL INSTITUTE FOR LASERS, PLASMA AND RADIATION PHYSICS

Patent/ patent application title
INSTALATIE DE SINTEZA A COMPOZITELOR FOTOCATALITICE CU HETEROJONCTIUNI PRIN PIROLIZA LASER
INSTALLATION FOR SYNTHESIS OF PHOTOCATHALITIC COMPOSITES WITH HETEROJUNCTIONS BY LASER PIROLYSIS

Authors Ernest Popovici, Carmen Lavinia Gavrilă Florescu, Dutu Elena
A00943/16.11.2017

Patent/ patent application number

Patent/ patent application description (romanian), max. 100 words
 Inventia reprezinta o instalatie de sinteza a compozitelor fotocatalitice cu heterojonctiuni TiO2-oxid de fier prin piroliza laser cu precursori lichizi. Introduce in domeniul sintezelor de NP/NS realizarile obtinute in domeniul procesarii precursorilor lichizi si separarea

 printr-o metoda convectiva. Precursorii lichizi utilizati: TTIP, Fe(CO)5, Fe(C5O5).

Patent/ patent application description (english), max. 100 words
 The invention is a synthesis installation of photocatalytic composites, with TiO2-iron oxide junction, by laser pyrolysis of liquid precursors . Introduces in the field of NP / NS synthesis the achievements obtained in the field of liquid precursor processing and

 by a convective method. Liquid precursors used: TTIP, Fe (CO) 5, Fe (C5O5).

Patent/ patent application domain
 8, 9 ,25

Contact person name/ surname
 POPOVICI ERNEST

PH
 +40746100122

E-mail
 popovici05@yahoo.co.uk

Address
 ATOMISTILOR 409, P.O. Box: MG-36, cod 077125, BUCHAREST
 ROMANIA
 Tel: +4021 457 44 89, Fax: +4021 457 42 43

3

Participant name (University, Research Institute, Company) **INFLPR - NATIONAL INSTITUTE FOR LASERS, PLASMA AND RADIATION PHYSICS**

Patent/ patent application title **SISTEM FLEXIBIL DE DEPUNERE DE MATERIALE CU LASER FLEXIBLE SYSTEM FOR LASER DEPOSITION OF MATERIALS**

Authors **Ion N. Mihailescu, Carmen-Georgeta Ristoscu, Cristian Mihailescu, Claudiu Hapenciuc, Maria Badiceanu, Carmen Lavinia Gavrilă Florescu, Ernest Popovici**

Patent/ patent application number **A00123_01.03.2017**

Patent/ patent application description (romanian), max. 100 words **Instalatia flexibila de depunere de materiale cu laser LC permite imbunatatirea diferitelor proprietati ale pieselor procesate. Tehnologia suprafetelor este performanta datorita alierii materialelor de depunere cu NP/NS optimizate si personalizate.**

Patent/ patent application description (english), **The flexible LC laser deposition facility allows the various properties of the processed parts to be improved. Surface technology is performance due to the alloying of optimized and personalized NP / NS deposition materials.**

Patent/ patent application domain **8, 9 ,25**

Contact person name/ surname **POPOVICI ERNEST**

PH **+40746100122**

E-mail **popovici05@yahoo.co.uk**

Address **ATOMISTILOR 409, P.O. Box: MG-36, cod 077125, BUCHAREST ROMANIA**
Tel: +4021 457 44 89, Fax: +4021 457 42 43

4

Participant name (University, Research Institute, Company) **INFLPR - NATIONAL INSTITUTE FOR LASERS, PLASMA AND RADIATION PHYSICS**

Patent/ patent application title **METODA DE SINTEZA DE NANOPARTICULE / NANOSTRUCTURI DE TiO2 PRIN PIROLIZA CU LASER CU CO2**

Authors **Carmen Lavinia Gavrilă Florescu, Ernest Popovici, Morjan Ion, Diamandescu Lucian Constantin, Raditoiu Valentin, Raditoiu Alina, Wagner Luminita Eugenia, Badoi Anca Daniela, Miron Dan,**

Patent/ patent application number **RO131631**

Patent/ patent application description (romanian), **Inventia se refera la un procedeu de obtinere a dioxidului de titan prin piroliza laser, pentru aplicatii in fotocataliza. Procedeu conform inventiei consta in procesarea termica**

Patent/ patent application description (english), **The invention relates to a process for preparing titanium dioxide by laser pyrolysis, for applications in photocatalysis. According to the invention, the process comprises the surface of at least 50 m/g for photocatalytic applications in the size range of up to 30 nm.**

Patent/ patent application domain **8, 9 ,25**

Contact person name/ surname **POPOVICI ERNEST**

PH **+40746100122**

E-mail **popovici05@yahoo.co.uk**

Address ATOMISTILOR 409, P.O. Box: MG-36, cod 077125, BUCHAREST
ROMANIA
Tel: +4021 457 44 89, Fax: +4021 457 42 43

5

Participant name INFLPR - **NATIONAL INSTITUTE FOR LASERS, PLASMA AND RADIATION**
(University, Research **PHYSICS**
Institute, Company)

Patent/ patent ANSAMBLU DE ELECTROZI A-K DE DESCARCARE DE INALTA TENSIUNE
application title PENTRU LASERII DE MARE PUTERE CU CO2 CU CIRCULATIA TRANSVERSALA A
GAZELOR GT-1200

Authors Barbut Anca Daniela, Niculescu Ana-Maria, Popovici Ernest, Morjan Ion, Alexandrescu
Rodica, Voicu Ion, Gavrilă Florescu Carmen Lavinia, Mmorjan Iuliana, Luculescu Romeo
Cătălin, Dumitrache Florian, Sandu Ion, Fleaca Claudiu Teodor, Scărișoreanu Gina
Monica, Duțu Elena

Patent/ patent **RO 127702**
application number

Patent/ patent Inventia se refera la un ansamblu de electrozi de descarcare de inalta tensiune, pentru
application description laseri de mare putere cu CO2, cu circulatie transversala a gazelor. Ansamblul de electrozi,
(romanian), conform inventiei. este alcatuit dintr-o placa suport (1), pe care sunt montate: doua placi
.....
capac (7) ce asigura protectie mecanica si izolatie electrica fala de mediul inconjurator.
The invention relates to a high voltage discharge electrode assembly for COhigh power
Patent/ patent lasers with transverse circulation of gases. According to the invention, the electrode
application description assembly comprises a support plate (1) whereon there are mounted : two anode plates
(english),
.....
ensures the mechanical protection and the electrical insulation against the environment.
8, 9 ,25

Patent/ patent
application domain

Contact person name/ POPOVICI ERNEST
surname

PH +40746100122

E-mail popovici05@yahoo.co.uk

Address ATOMISTILOR 409, P.O. Box: MG-36, cod 077125, BUCHAREST
ROMANIA
Tel: +4021 457 44 89, Fax: +4021 457 42 43

WORKSHOP – PRELAM

Material grafic	PPTX	#_00-0517-R0.pptx
	VID	PRELAM-2016-R1.mp4
		^^CPC-TiO2-1-94_2014-19052015_28.05.15.mp4
		CPC-2-94_2014-TiO2-30102015_07.11.15.avi
		TESTE LASER GT1200-VID_20150709.mp4
		^CLEANPHOTOCOAT-ZnO-01'15-94_2014-PN-II-PT-PCCA-2013-4-0864_27.06.15.avi

OFF

Prezentarea metodei PRELAM-IR.docx

REZULTATE

MEDALII DE AUR	5
MEDALII DE ARGINT	CUPA/TM-
DIPLOME	6
WSH	

PREZENTA INFLPR IN IMAGINI



INSTITUTUL NATIONAL PENTRU FIZICA LASERILOR, PLASMEI SI RADIATIEI MĂGURELE

National Institute for Laser, Plasma and Radiation Physics
409 Atomistilor Str., PO Box 78, Bucharest, Romania

"Vitreous potassium-phosphate fertilizers and method for preparing the same"

registered at OSIM at 16.11.2015, with no. A/01169/2011, national deposit no. a 2011 D1159
Authors:
Bogdan Alexandru Sava, Lucica Boroica, Mihai Sava, Mihai Elisa
*e-mail: boroica_lucica@yahoo.com, savabogdanalexandru@yahoo.com

The invention relates to vitreous phosphate fertilizers for agriculture and to the process for their preparation, characterized in that they are used without, with or without combinations based on other vitreous phosphates with a glass addition of boron, iron, zinc, molybdenum, magnesium oxides and very small amounts of calcium, copper and/or cobalt for their glass addition properties. These rare materials are gradually added, aimed to essential nutrients of this type, that management of microelemental nutrition in the soil will have impact on subsequent steps in the feeding strategies of the nutrient of the nutrient, mostly because and 20% - 30% after which they are subjected to the rapid cooling in water or molten glass, drying, grinding, and use, serving to glass crystals to the type of culture for which they will be used and to the best time of sowing.

The technical problem underlying the invention consists in the production of vitreous phosphate fertilizers with microelements which dissolve slowly in solution of water, which are rapidly converted into the soil from the waste of glass and which maintain their activity for several months providing excellent results with positive effects on feeding microelemental nutrition.

Fig. 1. Glass crystal with NO2 glass. Fig. 2. Glass crystal with NO2 glass. Fig. 3. For Boron, zinc, nickel with NO2 glass.

The phosphate-vitreous fertilizer has significant help in its composition phosphorus oxide, potassium oxide and calcium oxide, vitreous ferrite, boron oxides, iron oxide, molybdenum, magnesium and calcium oxides, copper and/or cobalt. The vitreous ferrite has the following composition: by 10% phosphate oxide, P2O5, 1- 30% potassium oxide, K2O, 2- 10% magnesium oxide, MgO, three percent other oxides from 5 to 30% calcium oxide, CaO, by weight. The K2O, 2- 10% magnesium oxide, MgO, three percent other oxides from 5 to 30% calcium oxide, CaO, by weight. The K2O, 2- 10% potassium oxide, K2O, 1- 30% molybdenum oxide, MoO3, 0.1- 3% copper oxide, CuO, 0.1- 1% calcium oxide, CaO. The process for preparing the phosphate-vitreous fertilizer has the following steps: a) composition of the raw material; b) melting and casting of the material in a suitable furnace or with molten or molten cast, at temperatures of 900 - 1100°C, with the introduction of a molten microelemental nutrient; c) for the production of phosphate-vitreous material, which is rapidly cooled in water or molten glass, drying and/or grinding the obtained frits at granules of 0.1 - 3 mm; d) drying, packing and vitreous granules obtained in a dry vitreous glass bags.

It is evident that the present invention will be useful in the agricultural field, especially in the case of glass and vitreous phosphate fertilizers, which are rapidly converted into the soil from the waste of glass and which maintain their activity for several months providing excellent results with positive effects on feeding microelemental nutrition.

Fig. 1. The melting temperature curve, temperature increasing process according to the type of glass, boron and iron oxide for NO2 glass.

Fig. 2. Boron, zinc, nickel, NO2 glass, according to the process of the molten, non-phosphate glass obtained according to the method of the core glass.

Fig. 3. The added boron, zinc, nickel, NO2 glass, according to the process of the molten, non-phosphate glass obtained according to the method of the core glass.

The invention can be applied industrially to obtain glasses for forestry vitreous or high quality microelemental fertilizers, as well as to any other applications regarding materials with microelemental properties, the product according to the invention being obtained with low energy consumption and price, as well as mechanical, thermal and chemical resistance improvement over classical phosphate glasses.

Financial support UEFISCDI Executive Utility for Promoting of Higher Education, Research and Innovation, Romania, in the frame of PNL 53-10-2019 project and Core Program

INSTITUTUL NATIONAL PENTRU FIZICA LASERILOR PLASMEI SI RADIATIEI
National Institute for Laser, Plasma and Radiation Physics, 409 Atomistilor Str., Bucharest, Romania

PRELAM
No. Contract: 13523/09/2018

FLEXIBLE SYSTEM FOR LASER DEPOSITION OF MATERIALS

Metoda prezenta are la dispozitie tehnici de depunere a materialului in laser

Descrierea prezenta este la dispozitie de utilizare la INVENTICA-2018-R4

Fig. 1. Schema sistemului de depunere a materialului in laser

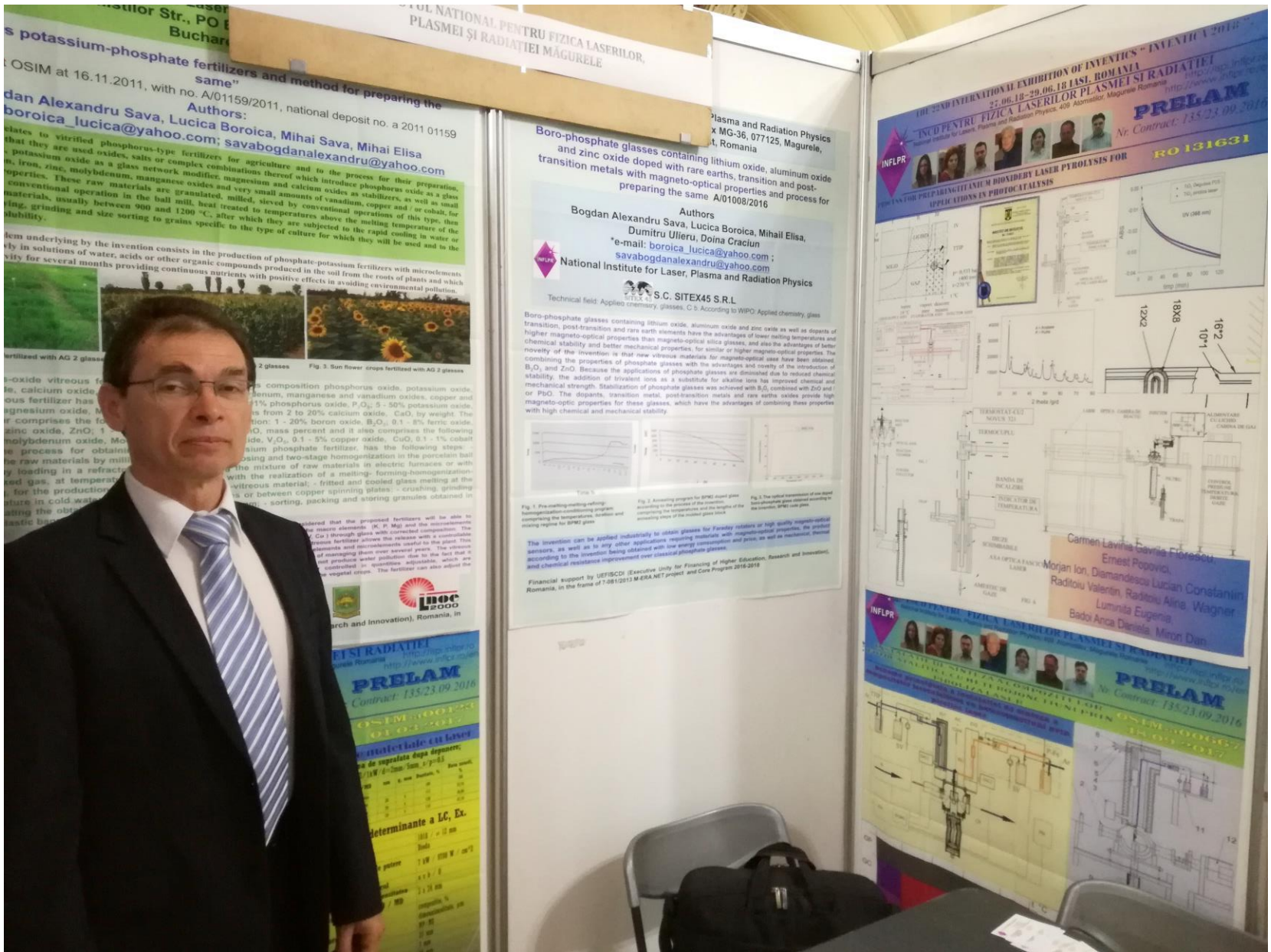
Elementele determinante a LC, Ex.

Tip laser	Putere	Tip material	Tip aplicator
CO2	100-200 W	Metale	Tip aplicator
Fiber	10-100 W	Metale	Tip aplicator
Excimer	10-100 W	Metale	Tip aplicator
Excimer	10-100 W	Metale	Tip aplicator

Elementele determinante a LC, Ex.

Tip aplicator	Tip material	Tip aplicator	Tip aplicator
Tip aplicator	Metale	Tip aplicator	Tip aplicator
Tip aplicator	Metale	Tip aplicator	Tip aplicator
Tip aplicator	Metale	Tip aplicator	Tip aplicator
Tip aplicator	Metale	Tip aplicator	Tip aplicator

Metoda prezenta este la dispozitie de utilizare la INVENTICA-2018-R4



...s potassium-phosphate fertilizers and method for preparing the same" OSIM at 16.11.2011, with no. A/01159/2011, national deposit no. a 2011 01159

Authors:
 Bogdan Alexandru Sava, Lucica Boroica, Mihai Sava, Mihai Elisa
 Email: borica_lucica@yahoo.com; savabogdanalexandru@yahoo.com

... relates to vitrified phosphorus-type fertilizers for agriculture and in the process for their preparation, that they are used oxides, salts or complex combinations thereof which introduce phosphorus oxide as a glass network modifier, magnesium and calcium oxides as stabilizers, as well as small amounts of iron, zinc, molybdenum, manganese oxides and very small amounts of vanadium, copper and/or cobalt; these materials, usually between 900 and 1200 °C, after which they are subjected to the rapid cooling in water or oil, grinding and size sorting to grains specific to the type of culture for which they will be used and to the stability.

... tem underlying by the invention consists in the production of phosphate-potassium fertilizers with microelements in solutions of water, acids or other organic compounds produced in the soil from the roots of plants and which is very for several months providing continuous nutrients with positive effects in avoiding environmental pollution.

... fertilized with AG 2 glasses

... composition phosphorus oxide, potassium oxide, boron, manganese and vanadium oxides, copper and zinc oxide, P₂O₅ 5 - 50%, potassium oxide K₂O 2 to 20% calcium oxide, CaO by weight. The composition: 1 - 20% boron oxide, B₂O₃, 0.1 - 8% ferric oxide, Fe₂O₃, mass percent and it also comprises the following oxides, V₂O₅, 0.1 - 5% copper oxide, CuO, 0.1 - 1% cobaltium phosphate fertilizer, has the following steps: 1. Homogenization of the raw materials in the porcelain ball mill; 2. Two-stage homogenization of the mixture of raw materials in electric furnaces or with the realization of a melting; 3. Forming-homogenization of the vitreous material; 4. Fritted and cooled glass melting; 5. Grinding of the fritted and cooled glass melting; 6. Screening or between copper spinning plates; 7. Grinding; 8. Screening, packing and storing granules obtained in this way.

... considered that the proposed fertilizers will be able to provide plants with the necessary elements (K, P, Mg and other elements) through glass with corrected composition. The proposed fertilizers allow the release with a controlled rate of nutrients and microelements useful to the plant. This is achieved by the process of manufacturing the raw materials by milling and loading in a refractory container, at temperature, with the realization of a melting, forming-homogenization of the vitreous material, fritted and cooled glass melting, grinding of the fritted and cooled glass melting, screening or between copper spinning plates; 7. Grinding; 8. Screening, packing and storing granules obtained in this way.

... INOC 2000 (Research and Innovation), Romania, in

... PRELAM Contract: 135.23.09.2016

... determinanta EG, Ex.

... Plasma and Radiation Physics
 MG-36, 077125, Magurele,
 Romania

Boro-phosphate glasses containing lithium oxide, aluminum oxide and zinc oxide doped with rare earths, transition and post-transition metals with magneto-optical properties and process for preparing the same A/01008/2016

Authors
 Bogdan Alexandru Sava, Lucica Boroica, Mihai Elisa,
 Dumitru Uliteru, Doina Craiciu
 Email: borica_lucica@yahoo.com ;
 savabogdanalexandru@yahoo.com

National Institute for Laser, Plasma and Radiation Physics

Technical field: Applied chemistry, glasses. C.B. According to WIPO: Applied chemistry, glass

Boro-phosphate glasses containing lithium oxide, aluminum oxide and zinc oxide as well as dopants of higher magneto-optical properties than magneto-optical silico glasses, and also the advantages of better chemical stability and better mechanical properties, for similar or higher magneto-optical properties. The novelty of the invention is that rare vitreous materials for magneto-optical uses have been obtained with B₂O₃ and ZnO. Because the applications of phosphate glasses are diminished due to reduced chemical stability, the addition of divalent ions as a substitute for alkaline ions has improved chemical and mechanical strength. Stabilization of phosphate glasses was achieved with B₂O₃ combined with ZnO and/or PbO. The dopants, transition metal, post-transition metals and rare earths oxides provide high magneto-optic properties for these glasses, which have the advantages of combining these properties with high chemical and mechanical stability.

Fig. 1. Pre-melting-melting-homogenization-conditioning program, comprising the temperature, duration and mixing regime for BPOE glass

Fig. 2. Assembly program for BPOE mixed glass according to the process of the invention, comprising the temperature and the weight of the resulting slices of the melted glass sheet

Fig. 3. The optical transmission of one sheet of BPOE mixed glass obtained according to the invention

The invention can be applied industrially to obtain glasses for Faraday rotator or high quality magneto-optical sensors, as well as to any other applications requiring moderate magneto-optical properties, the product according to the invention being obtained with low energy consumption and price, as well as low cost.

Financial support by UEFISCDI Executive Unity for Financing of Higher Education, Research and Innovation, Romania, in the frame of 7.0612013 M-ERA.NET project and Core Program 2016-2018

THE 25th INTERNATIONAL EXHIBITION OF INVENTICS "INVENTICA 2018"
 27.06.18-29.06.18 IASI, ROMANIA
 INSTITUTUL NAȚIONAL DE FIZICĂ LASERILOR PLASMEI ȘI RADIAȚIEI MAGURELE
 INFLPR
 PRELAM
 No. Contract: 135.23.09.2016
 RO 131631

Carmen Lavina Davila Florescu
 Ernest Popovici
 Morjan Ion, Diamandescu Lucian Constantin
 Radtciu Valentin, Radtciu Alina, Wagner Luminita Eugenia
 Badoi Anca Daniela, Miran Dan

Fig. 1. TEMERATIZAREA NOVELTII
 Fig. 2. BANDA DE INCALZIRE
 Fig. 3. TRECEREA IN TEMPERATURA
 Fig. 4. DEZ-SEMINEABILA
 Fig. 5. ASA UTILA LA LASER
 Fig. 6. AMBIENTUL DE GAZE
 Fig. 7. ALIMENTARE
 Fig. 8. CURBURA DE GAZE

Fig. 1. Optical transmission of one sheet of BPOE mixed glass obtained according to the invention

Fig. 2. Assembly program for BPOE mixed glass according to the process of the invention, comprising the temperature and the weight of the resulting slices of the melted glass sheet

Fig. 3. The optical transmission of one sheet of BPOE mixed glass obtained according to the invention

Fig. 4. TEMERATIZAREA NOVELTII

Fig. 5. ASA UTILA LA LASER

Fig. 6. AMBIENTUL DE GAZE

Fig. 7. ALIMENTARE

Fig. 8. CURBURA DE GAZE



Universitatea Tehnică
"Gheorghe Asachi" din Iași



Institutul Național
de Inventică, Iași

Diploma

GOLD MEDAL INVENTICA 2018

Offered to Mr / Ms

National Institute for Laser,
Plasma and Radiation Physics Magurele

FLEXIBLE SYSTEM FOR LASER DEPOSITION OF MATERIALS

ION N. MIHAILESCU, CARMEN-GEORGETA RISTOSCU,
CRISTIAN MIHAILESCU, CLAUDIU HAPENCIUC,
MARIA BADICEANU,
CARMEN LAVINIA GAVRILA FLORESCU, ERNEST POPOVICI

in recognition of high scientific contribution
and loyalty to the XXII-th International Salon of Research,
Innovation and Technological Transfer

INVENTICA 2018

Iasi, Romania,
27 - 29 June 2018



MANAGER
NATIONAL INSTITUTE OF INVENTICS
Prof. Neculai SEGHDIN PhD



Universitatea Tehnică
"Gheorghe Asachi" din Iași



Institutul Național
de Inventică, Iași

Diploma

GOLD MEDAL INVENTICA 2018

Offered to Mr / Ms

National Institute for Laser,
Plasma and Radiation Physics Magurele

**ANSAMBLU DE ELECTROZI A-K DE DESCARCARE DE INALTA
TENSIUNE PENTRU LASERII DE MARE PUTERE CUCO2
CU CIRCULATIA TRANSVERSALA A GAZELOR GT-1200**

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

in recognition of high scientific contribution
and loyalty to the XXII-th International Salon of Research,
Innovation and Technological Transfer

INVENTICA 2018

Iasi, Romania,
27 - 29 June 2018



MANAGER
NATIONAL INSTITUTE OF INVENTICS
Prof. Neculai SEGHEDEIN PhD



Universitatea Tehnică
"Gheorghe Asachi" din Iași



Institutul Național
de Inventică, Iași

Diploma

GOLD MEDAL

INVENTICA 2018

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National Institute for Laser,
Plasma and Radiation Physics Magurele

**INSTALLATION FOR SYNTHESIS OF PHOTOCATHALITIC
COMPOSITES WITH HETEROJUNCTIONS BY LASER PIROLYSIS**

ERNEST POPOVICI,
CARMEN LAVINIA GAVRILA FLORESCU, DUTU ELENA

in recognition of high scientific contribution
and loyalty to the XXII-th International Salon of Research,
Innovation and Technological Transfer

INVENTICA 2018

Iasi, Romania,
27 - 29 June 2018



MANAGER
NATIONAL INSTITUTE OF INVENTICS
Prof. Neculai SEGHEDEIN PhD



Universitatea Tehnică
"Gheorghe Asachi" din Iași



Institutul Național
de Inventică, Iași

Diploma

GOLD MEDAL

INVENTICA 2018

Offered to Mr / Ms

National Institute for Laser,
Plasma and Radiation Physics Magurele

CLADDING HEAD WITH IN SITU SYNTHESIS OF NP BY LASER

MIHAILESCU N. ION, POPOVICI ERNEST,
RISTOSCU CARMEN-GEORGETA,
HAPENCIUC CLAUDIU, MIHAILESCU CRISTIAN,
BADICEANU MARIA, GAVRILA-FIORESCU CARMEN-LAVINIA

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INSTITUTUL NAȚIONAL DE CERCETARE
DEZVOLTARE PENTRU MECATRONICĂ
ȘI TEHNICA MĂSURĂRII - București



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PENTRU DOMENIUL SPECIALIZAT
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DIPLOMA DE EXCELENȚĂ & TROFEUL GROUP MECHATRON (INCNMTM & CRTTC & CLUSTER STRATEGIC - MECHATREC & APROMECA)

se acordă

D-lui/D-nei ION N. MIHĂILESCU, CARMEN- GEORGETA RISTOSCU, CRISTIAN MIHĂILESCU, CLAUDIU HAPENCIUC, MARIA BABICEANU, CARMEN LAVINIA, GABRIELA FLORESCU, ERNEST POPOVICI, SISTEM FLEXIBIL DE DEPURARE DE MATERIALE CU LASER "IN FIZICA LASERILOR PULSEI SI RADIATIEI - PANGURELE, CLASA A

cu ocazia

« SALONULI INTERNȚIONAL DE
INVENȚII ȘI INOVAȚII
" TRAIAN VUIA "
Timișoara ediția a III - a »

13 ÷ 15 Iunie 2018

PRESEDINTE C.A.

&

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