	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	1 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
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FOAIA DE GARDA

RAPORT INFORMATIV

Privind promovarea
DPI – INFLPR / PRELAM

INVENTICA 2018*


07.2019

Caracter Public

* AL XXIII-LEA SALON INTERNATIONAL AL INVENTIILOR SI CERCETARII
"INVENTICA 2019" - 26.06.2019-28.06.2019, Iasi, Romania, Lost Steps Hall,
Technical University "Gheorghe Asachi" of Iasi, Bd. Carol I, no. 11 A


DATA 31.07.2019. EXEMPLAR NR. SEMNATURA

ELABORAT DR. ING. POPOVICI ERNEST

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	2 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

CUPRINS

FOAIA DE GARDA	1
CUPRINS	2
1. PREZENTARE INVENTICA -2019	3
2. SCOPUL EXPOZIȚIEI / SALONULUI	3
3. PARTICIPARE - INFLPR	3
3.0 DELEGATIA INFLPR	4
3.1 HYBRID METHOD OF RECOVERY AND / OR CREATION OF COMPONENTS BY LASER CLADDING ALLIED WITH NANOPARTICLES	4
3.2 HYBRID INSTALLATION OF RECOVERY AND / OR CREATION OF COMPONENTS BY LASER CLADDING ALLIED WITH NANOPARTICLES	6
3.3 COAXIAL CONTINUES DEPOSITION HEAD WITH IN SITU SYNTHESIS OF NP	7
3.4 MULTIVALENT INSTALLATION FOR CLADDING WITH LASER OF FUNCTIONAL LAYERS ON DISC BRAKE	8
3.5 Physical immobilization procedure for AChE enzyme within Polyethyleimine polymeric membrane for enhanced active elements within chemical/gas sensors applications	9
3.6 Process for obtaining nanoparticles in a liquid through laser ablation	10
3.7 Procedure for obtaining nanoporous multilayer SnO2/Co3O4 thin films for the detection of ammonia, using laser methods	11
3.8 Procedure for laser microtexturing of a sliding bearing	12
3.9 Thermal treatment procedure of oxide thin films for photovoltaic cell electrodes	13
4. PREZENTA INFLPR	14
4.1 PREZENTARE ZIARUL DE IASI	14
5. STANDUL INFLPR	15
6. PREMII SI REZULTATE	18

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	3 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

1. PREZENTARE INVENTICA -2019

The 23rd International Exhibition of Inventions “ **INVENTICA 2019** ”, 26.06.2019-28.06.2019 Iasi, Romania. Lost Steps Hall, Technical University “Gheorghe Asachi” of Iași, 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 Iași and National Institute of Inventions Iași (INI).




2. 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.



3. PARTICIPARE - INFLPR

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	4 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

3.0 DELEGATIA INFLPR



3.1 HYBRID METHOD OF RECOVERY AND / OR CREATION OF COMPONENTS BY LASER CLADDING ALLIED WITH NANOPARTICLES

Registration Form *The 23rd International Exhibition of Inventions*
"INVENTICA 2019" Iași, România


Patent/ patent application registration deadline: 31.05.2019.

Please transmit the registration form to: inventica.salon@tuiasi.ro

1

Participant name (University,
 Research Institute, Company)
 Patent/ patent application title

**NATIONAL INSTITUTE FOR LASER, PLASMA AND RADIATION
 PHYSICS - INFLPR**
 HYBRID METHOD OF RECOVERY AND / OR CREATION OF
 COMPONENTS BY LASER CLADDING ALLIED WITH NANOPARTICLES

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	5 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

Authors

Popovici Ernest, Mihailescu N. Ion, Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Necsoiu Teodor, Popovici Ioan Razvan,

Patent/ patent application number
Patent/ patent application
description (romanian), max. 100
words

Iliescu Mihaela, Vladareanu Luige, Stanciu Elena Manuela

OSIM A 00845 26.10.2018

Inventia, metoda hibrid de recuperare si / sau de creare cu depunere laser de componente cu aliere cu nanoparticule integreaza un sistem LC – depunere cu laser rational / optimizat, din punct de vedere tehnic, intr-un sistem interdisciplinar complementar preexistent, care devine prin noua functie mai eficient economic. Gama de componente recuperate prin procesarea hibrid este cuprins intre recuperarea de piese unicate si pana la recuperarea de piese uzate in cantitati mari, rezultate din exploatarea de flote de vehicule de transport, identificate in procesele de reparatii capitale a masinilor unelte, etc. Pe aceasta cale este integrata LC si nanotehnologia in conditii tehnico – financiare justificate in industrie. Metoda de procesare hibrid de recuperare si / sau de creare cu depunere laser de componente reprezinta o succesiune logica de etape, faze, pasi, definite prin: a) ordinea de desfasurare; b) conditii initiale; c) parametri, d) conditii tehnice de desfasurare si / sau mijloace tehnice utilizate; e) conditii tehnice de control si / sau calitate, etc. integrate intr-un sistem tehnologic preexistent sub aspect de facilitati si experienta in domeniile interdisciplinare implicate. Metoda, procesarea hibrid consta dintr-o activitate tehnologica de natura mecanica, fizica, chimica, de transfer de energie care are ca efect obtinerea sau modificarea unui produs. Metoda este caracterizata prin etape de operare bine definite.

Patent/ patent application
description (english), max. 100
words

The invention, the hybrid method of recovering and / or creating by laser cladding components by nanoparticle alloying , integrates an LC rational / technically optimized laser cladding system in a pre-existing complementary interdisciplinary system, that becomes through the new configuration, more efficient economic function. The range of components recovered through hybrid processing is comprised of the recovery of unique parts and the recovery of large quantities of used parts resulting from the operation of fleets of transport vehicles, identified in the capital repairing of machine tools, etc. In this way LC and nanotechnology are integrated in technical and financial conditions justified in industry. The hybrid method of recovery and / or creation with laser deposition of components represents a logical succession of phases, steps, defined by: a) the order of the deployment; b) initial conditions; c) parameters, d) technical development conditions and / or technical means used; e) technical conditions of control and / or quality, etc. integrated into a pre-existing technology system in terms of facilities and experience in the interdisciplinary fields involved. The method, hybrid processing consists of a technological activity of a mechanical, physical, chemical, energy transfer which has the effect of obtaining or modifying a product. The method is characterized by well-defined operation steps.

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	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	6 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

3.2 HYBRID INSTALLATION OF RECOVERY AND / OR CREATION OF COMPONENTS BY LASER CLADDING ALLIED WITH NANOPARTICLES

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Patent/ patent application registration deadline: 31.05.2019.

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2

Participant name (University, Research Institute, Company)	NATIONAL INSTITUTE FOR LASER, PLASMA AND RADIATION PHYSICS - INFLPR
Patent/ patent application title	HYBRID INSTALLATION OF RECOVERY AND / OR CREATION OF COMPONENTS BY LASER CLADDING ALLIED WITH NANOPARTICLES
Authors	Popovici Ernest, Mihailescu N. Ion, Carmen-Georgeta Ristoscu, Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Gavrilă-Florescu Carmen-Lavinia, Necsoiu Teodor, Popovici Ioan Razvan, Diana Chioibas, Andrei Popescu
Patent/ patent application number	OSIM A / 00081 / 11.02.2019
Patent/ patent application description (romanian), max. 100 words	Instalatia hibrid de recuperare si / sau de creare cu depunere laser de componente cu alierea cu NP – nanoparticule constituie solutia tehnica a problemei de integrare a LC si a nanotehnologiei in conditii tehnico – financiare justificate in industrie cu participare de componente noi de prima dotare, de schimb omologate de producator si de reparare. Instalatia asigura obtinerea de componente finite prin procesul hibrid de recuperare si / sau de creare cu depunere laser de componente, prin integrare a LC si a nanotehnologiei in conditii tehnico / financiare eficiente in industrie. LC hibrid imbunatateste rezistenta la uzura, la coroziune ale unor componente sau ansamble. Pentru aceasta procedura LC este compact, adaptiv si modular. Poate fi folosit cu lasere cu transportul fasciculului cu fibra, cu mediu activ solid / fibra, disc, dioda, etc. Domeniile de aplicare sunt reparatii / realizare de componente in industria de automobile, aviatica, de aparare, etc. Instalatia se configureaza, in conformitate cu schema principiala de configurare a instalatiei hibrid de recuperare si / sau de creare cu depunere laser de componente cu aliere cu NP, vezi Fig. 1. si cu diagramele de configurare Fig. 1 si respectiv Fig. 3. Cu capabilitatea de individualizare / personalizare, specific criteriilor initiale ale beneficiarului si / sau cu perspectiva de dezvoltare in viitor. instalatia este modulara si se configureaza cu module comerciale.
Patent/ patent application description (english), max. 100 words	Hybrid installation of recovery and / or creation of components by laser cladding allied with nanoparticles is the technical solution of the problem of integration of LC and nanotechnology in technical and financial conditions justified in industry, with the participation of new parts manufacturers, refurbished parts manufacturers approved for replacement and repair. The installation ensures the obtaining of finite components through the hybrid recovery and / or laser-based creation process by integrating LC and nanotechnology into efficient technical / financial conditions in the industry. LC hybrid system improves the wear / corrosion resistance of components or assemblies. For this LC procedure is compact, adaptive and modular. Can be used with fiber-transferred laser beam, with solid active media / fiber, disk, diode, etc. Areas of application are repairs / made of components in automotive, aviation, defense, etc. industry. The installation is configured

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	7 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

according to the main configuration scheme of the installation of hybrid recovery and / or laser-based creation of NP alloyed components, see Fig. 1. and configuration diagrams Fig. 1 and Fig. 3. The installation has customization capabilities, specific to the beneficiary's initial criteria and / or with prospects for future development. The installation is modular and is configured with commercial modules.

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3.3 COAXIAL CONTINUES DEPOSITION HEAD WITH IN SITU SYNTHESIS OF NP

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3

Participant name (University,
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Patent/ patent application title

**NATIONAL INSTITUTE FOR LASER, PLASMA AND RADIATION
PHYSICS - INFLPR
COAXIAL CONTINUES DEPOSITION HEAD WITH IN SITU SYNTHESIS
OF NP**

Authors

Popovici Ernest, Mihailescu N. Ion, Carmen-Georgeta Ristoscu, Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Gavrilă-Florescu Carmen-Lavinia, Necsoiu Teodor, Popovici Ioan Razvan, Diana Chioibas, Andrei Popescu


Patent/ patent application number
Patent/ patent application
description (romanian), max. 100
words

OSIM A / 000126 / 26.02.2019

Inventia cap de depunere coaxial continua cu sinteza in situ de NP cu laser face posibila realizarea unei noi tehnologii avansate de acoperire a suprafetelor folosind fascicul laser de mare putere in vederea cresterii fiabilitatii si a performantelor materialelor. Inventia permite utilizarea pentru capul de depunere a sistemului coaxial continua de sinteza in situ de NP, exemplificat cu nano SiC. Se obtin depuneri cu dilutie redusa; strat depus complet si precis; timp de procesare scurt ce minimizeaza raspandirea caldurii si a impactului termic si asigura puritate si performante maxime pentru depunere; imbunatatate performanta la uzura, rezistenta si coroziune a componentelor; reduce costurile de intretinere, etc. Capul de depunere coaxial continua combinat cu sinteza in situ de NP permite o mai larga banda de aliere si o ajustare mai usoara a parametrilor precursorilor si a debitului de NP sintetizat. LC cu NP nu au defecte cum ar fi fisuri sau porozitate, spre deosebire de acoperirile produse prin acoperire numai cu pulberi micrometrice. Acest fapt se datoreaza faptului ca NP, datorita proprietatilor deosebite fizice conferite de dimensionalitatea in domeniul nano impiedica propagarea defectelor in acoperire. Capul de depunere cu sinteza in situ de NP cu laser – CDS, este un cap coaxial continua cu alimentarea continua, cu doua canale circulare continue. Inventia asigura izolarea zonei de sinteza de NP.

Patent/ patent application
description (english), max. 100
words

The invention continues coaxial deposition head with in situ laser synthesis of NP enables the development of a new advanced surface coating technology using the high-power laser beam to increase the reliability and

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	8 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

performance of the materials. The invention allows the use of the coaxial continuous head system to use in situ synthesis of NP, exemplified by nano SiC. Low-dilution depositions are obtained; the layers fully and precisely deposited; short processing time that minimizes the spread of heat and heat impact and ensures maximum purity and performance for the cladded layer; improves wear, strength and corrosion performance of components; reduce maintenance costs, etc. Coaxial continuous deposition head combined with in situ synthesis of NP allows a wider alloy band and easier adjustment of precursor parameters and synthesized NP flow. 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 imparted by the nano dimensionality, prevents the propagation of defects in the coating. The in situ nanoparticle-CDS synthesis head is a coaxial continuous feed head with two continuous circular channels. The invention provides isolation of the NP synthesis region.

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3.4 MULTIVALENT INSTALLATION FOR CLADDING WITH LASER OF FUNCTIONAL LAYERS ON DISC BRAKE

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4

Participant name (University,
Research Institute, Company)
Patent/ patent application title

**NATIONAL INSTITUTE FOR LASER, PLASMA AND RADIATION
PHYSICS - INFLPR
MULTIVALENT INSTALLATION FOR CLADDING WITH LASER OF
FUNCTIONAL LAYERS ON DISC BRAKE**


Authors

Popovici Ernest, Mihailescu N. Ion, Carmen-Georgeta Ristoscu, Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Gavrilă-Florescu Carmen-Lavinia, Necsoiu Teodor, Popovici Ioan Razvan, Diana Chioibas, Andrei Popescu

Patent/ patent application number
Patent/ patent application
description (romanian), max. 100
words

OSIM A / 00276 / 10.05.2019

Inventia instalatie multivalenta de depunere cu laser de straturi functionale pe discurile de frana face posibila realizarea / aplicarea unei noi tehnologii avansate de acoperire a suprafetelor active a discurilor de frana cu si / sau fara ventilare folosind fascicul laser de mare putere in vederea cresterii fiabilitatii si a performantelor materialelor precum si satisfacerea proprietatilor functionale in conditii mai bune fara utilizarea unor tehnologii / materiale costisitoare. Inventia permite utilizarea unui cap de depunere coaxial continua / discontinua cu sinteza in situ de NP, exemplificat cu nano SiC. Inventia permite realizarea unui control parametral in timp real a principalelor parametri a procesului de depunere cu laser. Se asigura un control eficient a temperaturii procesului de depunere. Sunt folosite particularitatile constructive ale discurilor de frana, care pot fi ventilate sau neventilate cu constructia aspiratiei mediului de racire / incalzire din exterior sau din interior.

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	9 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

Patent/ patent application
description (english), max. 100
words

Inventia asigura realizarii de depuneri pe discurile de franta cu continutul de C in limite foarte largi. Facilitatea de realizare a depunerii este din punct de vedere economic accesibil datorita utilizarii a sistemului modular cu utilizarea de module cu performante tehnice ridicate. Materialul depus poate fi calitativ realizat intr-o maniera multistrat. Depunerea compusa dintr-un strat cu material care asigura o legatura metalurgica de buna calitate cu materialul de baza si elimina defectele cum ar fi porii sau microfisuri, si straturi multiple din materialul care asigura caracteristicile functionale superioare ale discului de frana. Instalatia elimina una din cauzele majore ale neutilizarii recuperarii discurilor de frana, cu uzuri in limite admisibile, prin adaptabilitatea foarte usoara la limitele dimensionale a diferitelor constructori precum si a materialelor utilizate in gama otelurilor si fontelor.

The invention installation of the multivalent laser coating of functional layers on the brake discs makes it possible to implement / apply a new advanced technology to cover the active surfaces of the brake discs with and / or without ventilation using the high power laser beam in order to increase the reliability and the performance of materials as well as satisfying functional properties in better conditions without the use of costly technologies / materials. The invention allows the use of a continuous / discontinuous coaxial deposition head with in situ NP synthesis, exemplified by nano SiC. The invention allows to perform a real-time parameter control of the main parameters of the laser deposition process. Ensure effective temperature control of the deposition process. The constructional features of the brake discs, which can be ventilated or not ventilated with the aspiration of the cooling / heating medium from the outside or inside, are used. The invention provides deposition of cast iron discs with C content within very wide limits. The depositing facility is economically accessible due to the use of the modular system with the use of modules with high technical performance. The deposited material can be qualitatively achieved in a multilayered manner. Composition consisting of a layer of material that provides a good metallurgical bond with the base material and eliminates defects such as pores or microstrip, and multiple layers of material that provide the superior functional characteristics of the brake disk. The installation eliminates one of the major causes of not using the recovery of used brake discs, with wear within acceptable tolerances, with very easy adaptability to the dimensional limits of different constructors as well as materials used in the range of steels and cast iron.

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3.5 Physical immobilization procedure for AChE enzyme within Polyethyleimine polymeric membrane for enhanced active elements within chemical/gas sensors applications

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	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	10 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

5


Participant name (University, Research Institute, Company)	National Institute For Lasers, Plasma And Radiation Physics
Patent/ patent application title	Physical immobilization procedure for AChE enzyme within Polyethyleneimine polymeric membrane for enhanced active elements within chemical/gas sensors applications
Authors	Dinca V., Viespe C., Scarisoreanu N.D., Brajnicov S., Bonciu A., Ion V., Dinescu M.
Patent/ patent application number	A/00817
Patent/ patent application description (romanian), max. 100 words	Inventia se refera la un procedeu de imobilizare fizica al enzimei Acetilcolinesteraza-AChE intr-un strat polimeric de Polietilenimina-PEI pentru obtinerea unei membrana active cu raspuns imbunatatit la testarea cu Dimetilmetilfosfonat-DMMP. Procedul imobilizarii enzimei consta in utilizarea evaporarii laser si a unui sistem de tinta dubla AChE-PEI, unde un fascicul laser este scanat controlat pe suprafata tinte pentru a evapora cei doi compusi in cadrul aceleiasi depuneri. Au fost obtinute membrane compozite PEI-AChE depuse pe senzori SAW si testate cu DMMP. Procedul poate fi aplicat pentru imobilizarea de compusi biologici activi in membrane polimerice cu aplicatii in ingineria tisulara, biosenzori, senzori chimici.
Patent/ patent application description (english), max. 100 words	The invention relates to a physical immobilization process of the Acetylcholinesterase-AChE enzyme in a polyethyleneimine-PEI polymer layer for obtaining a composite membrane with improved response to the Dimethyl methylphosphonate-DMMP. The enzyme immobilization process consists in using laser evaporation and an AChE-PEI double target system, where the laser beam is scanned on the surface of the target to evaporate the two compounds within the same deposit. PEI-AChE composite membranes deposited on SAW sensors and DMMP-tested were obtained. The process can be applied for the immobilization of biologically active compounds in polymeric membranes with applications in tissue engineering, biosensors, chemical sensors.
Patent/ patent application domain	Security, gas detection
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3.6 Process for obtaining nanoparticles in a liquid through laser ablation

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Patent/ patent application registration deadline: 31.05.2019.

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	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	11 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0


6

Participant name (University, Research Institute, Company)	National Institute for Laser, Plasma & Radiation Physics (INFLPR)
Patent/ patent application title	Process for obtaining nanoparticles in a liquid through laser ablation
Authors	Urzica Iuliana, Udrea Cristian, Bojan Mihaela, Apostol Ileana si Damian Victor.
Patent/ patent application number	A/00074
Patent/ patent application description (romanian), max. 100 words	Scopul inventiei este proiectarea si realizarea unui site inovator flexibil, adaptiv si cu costuri scazute pentru producerea cu laser de nanoparticule in scopul de a depasi limitarile altor metode de productie din punctul de vedere al controlului procesului si al puritatii particulelor. Cu ajutorul acestui procedeu se pot obtine suspensii de nanoparticule din materiale diferite cu diferite dimensiuni ale particulelor, ajungand chiar sub o sută de nanometri. Acest procedeu are avantajul ca acestea sunt stocate in mediul lichid si mai mult asigura puritatea si stabilitatea nanoparticulelor astfel obtinute.
Patent/ patent application description (english), max. 100 words	The purpose of the invention is to design and develop a flexible, adaptive and cost-effective system for innovative nanoparticle laser production, in order to overcome the limitations of other production methods from the point of view of process control and particle purity. With this process, nanoparticle suspensions can be obtained from different materials with different particle sizes, reaching even less than one hundred nanometers. This process has the advantage that they are stored in a liquid and further ensures the purity and stability of the nanoparticles thus obtained.
Patent/ patent application domain	Optics
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3.7 Procedure for obtaining nanoporous multilayer SnO₂/Co₃O₄ thin films for the detection of ammonia, using laser methods

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Patent/ patent application registration deadline: 31.05.2019.

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	12 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

Please transmit the registration form to: inventica.salon@tuiasi.ro

7

Participant Name (University, Research Institute, Company)	National Institute For Lasers, Plasma And Radiation Physics
Patent/ patent application title	Procedure for obtaining nanoporous multilayer SnO ₂ /Co ₃ O ₄ thin films for the detection of ammonia, using laser methods
Authors	Cristian Viespe, Dana Maria Miu, Izabela Constantinoiu
Patent/ patent application number	A/00035
Patent/ patent application description (romanian), max. 100 words	The invention refers to a procedure for obtaining, using laser methods, of nanoporous multilayer SnO ₂ /Co ₃ O ₄ thin films, applicable as sensitive films for Surface Acoustic Wave Sensors, for the detection of ammonia. As a result of the procedure for obtaining the film, the sensors have improved sensitivity, selectivity, response and recovery times, for the detection of ammonia. The multilayer structure combines selectivity to ammonia, due to Co ₃ O ₄ with high sensitivity, due to SnO ₂ . The structure also combines the mass and acoustoelectrical effect of Surface Acoustic Wave Sensors
Patent/ patent application description (english), max. 100 words	The invention refers to a procedure for obtaining, using laser methods, of nanoporous multilayer SnO ₂ /Co ₃ O ₄ thin films, applicable as sensitive films for Surface Acoustic Wave Sensors, for the detection of ammonia. As a result of the procedure for obtaining the film, the sensors have improved sensitivity, selectivity, response and recovery times, for the detection of ammonia. The multilayer structure combines selectivity to ammonia, due to Co ₃ O ₄ with high sensitivity, due to SnO ₂ . The structure also combines the mass and acoustoelectrical effect of Surface Acoustic Wave Sensors.
Patent/ patent application domain	Security
Contact person name/ surname	Cristian Viespe
Phone	021 4574027
E-mail	cristian.viespe@inflpr.ro
Address	Str Atomistilor, no 409, Magurele, Ilfov, Romania

3.8 Procedure for laser microtexturing of a sliding bearing


Registration Form *The 23rd International Exhibition of Inventions*
"INVENTICA 2019" Iași, România

Patent/ patent application registration deadline: 31.05.2019.

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8

Participant name (University, Research Institute, Company)	National Institute For Lasers, Plasma And Radiation Physics
Patent/ patent application title	Procedure for laser microtexturing of a sliding bearing

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	13 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

Authors

Gheorghe Cristian, Olteanu Petre, Stan Cristian
Giorgian, Cristian Viespe, Miu Dana Maria, Nicolae
Ionut, Predescu Adrian, Marian Victor Gabriel, Stoica
Nicolae Alexandru

Patent/ patent application number

A/00164

Patent/ patent application description (romanian), max.
100 words

Inventia se refera la un procedeu de microtexturare, cu laser de picosecunde, a unui lagar cu alunecare aflat in componenta utilajelor pentru constructii, pentru imbunatatirea proprietatilor sale tribologice. In urma procedeuului de microtexturare, lagarul cu alunecare are o fiabilitate crescuta prin rezistenta superioara la uzura. Prin procedeu se obtine o retea de micro-cavitati cilindrice pe suprafata piesei, formand o geometrie de texturare optimizata, care imbunatatesta proprietatile tribologice ale lagarului cu alunecare. Procedeu asigura o precizie si o viteza de prelucrare ridicata a piesei de simetrie cilindrica, cu masa si suprafata relativ mari.

Patent/ patent application description (english), max.
100 words

The invention refers to a microtexturing procedure, using a picosecond laser, of a sliding bearing, part of construction equipment, in order to improve its tribological properties. As a result of the microtexturing procedure, the sliding bearing has increased reliability due to better wear properties. The procedure produces a network of cylindrical micro-cavities on the surface of the mechanical part. This network forms an optimized texturing geometry, which improves the tribological properties of the sliding bearing. The procedure ensures a high precision and speed of processing for mechanical parts having a cylindrical symmetry, which have a relatively large mass and surface.

Patent/ patent application domain

construction machinery

Contact person name/ surname

Cristian Viespe

Phone

021 4574027

E-mail

cristian.viespe@inflpr.ro

Address

Str Atomistilor, no 409, Magurele, Ilfov, Romania

3.9 Thermal treatment procedure of oxide thin films for photovoltaic cell electrodes


Registration Form **The 23rd International Exhibition of Inventions**

"INVENTICA 2019" Iași, România

Patent/ patent application registration deadline: 31.05.2019.

Please transmit the registration form to: **inventica.salon@tuiasi.ro**

9	
Participant name (University, Research Institute, Company)	National Institute For Lasers, Plasma And Radiation Physics
Patent/ patent application title	Thermal treatment procedure of oxide thin films for photovoltaic cell electrodes
Authors	Petronela Garoi, Cristian Viespe, Florin Garoi, Crăciun Valentin

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	14 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

Patent/ patent application number	RO-BOPI 5/2018, Nr. 130768B1
Patent/ patent application description (romanian), max. 100 words	Invenția se referă la un procedeu de tratament termic, aplicat filmelor oxidice (ITO, SnO2) depuse pe substrat flexibil (kapton). Procedeu constă în încălzirea straturilor oxidice în atmosferă deschisă, la o temperatură de 400 °C (5°C /min), menținute timp de 30 de minute, răcite cu 3°C /min până la 350 °C, unde sunt menținute timp de 120 minute și apoi sunt răcite cu 5°C /min, până la temperatura camerei. Procedeu se poate aplica, pentru a obține electrozi de contact transparenți conductivi flexibili, cu calitate optoelectronică îmbunătățite, pentru a fi integrați în crearea de celule fotovoltaice.
Patent/ patent application description (english), max. 100 words	The invention refers to a heat treatment procedure applied to ITO and SnO2 thin films. The procedure consists in heating the oxide films in an open atmosphere at a temperature of 400 °C (with a rate of 5 °C/min) for 30 minutes, then they are cooled to 350 °C (with a rate of 3 °C/min), where they are maintained for 120 minutes and, finally cooled again to room temperature (with a rate of 5 °C/min). This process can be applied to obtain flexible conductive and transparent electrodes with improved optoelectronic qualities, to be integrated into realization of photovoltaic cells.
Patent/ patent application domain	Solar photocells
Contact person name/ surname	Cristian Viespe
Phone	021 4574027
E-mail	cristian.viespe@inflpr.ro
Address	Str Atomistilor, no 409, Magurele, Ilfov, Romania

4. PREZENTA INFLPR

4.1 PREZENTARE ZIARUL DE IASI

În perioada 26-28 iunie 2019, la Iasi, România, a avut loc ediția a XXII-a a Expoziției Internaționale „Inventica 2019”. Institutul nostru, reprezentat de dr. Petronela Garoi și dr. Iuliana Urzică, a participat cu 11 lucrări înalt protejate cu brevete de invenție, apreciate de către membrii juriului Expoziției.

<https://www.ziaruldeiasi.ro/stiri/zeci-de-inventii-prezentate-la-iasi-la-expozitia-internationala-a-inventica-2019a--223221.html>




[Ziarul de Iasi](#) > [EDUCATIE](#)

Zeci de invenții prezentate la Iași la Expoziția Internațională „Inventica 2019“

28.06.2019


AUTOR: [Andrei MIHAJ](#)

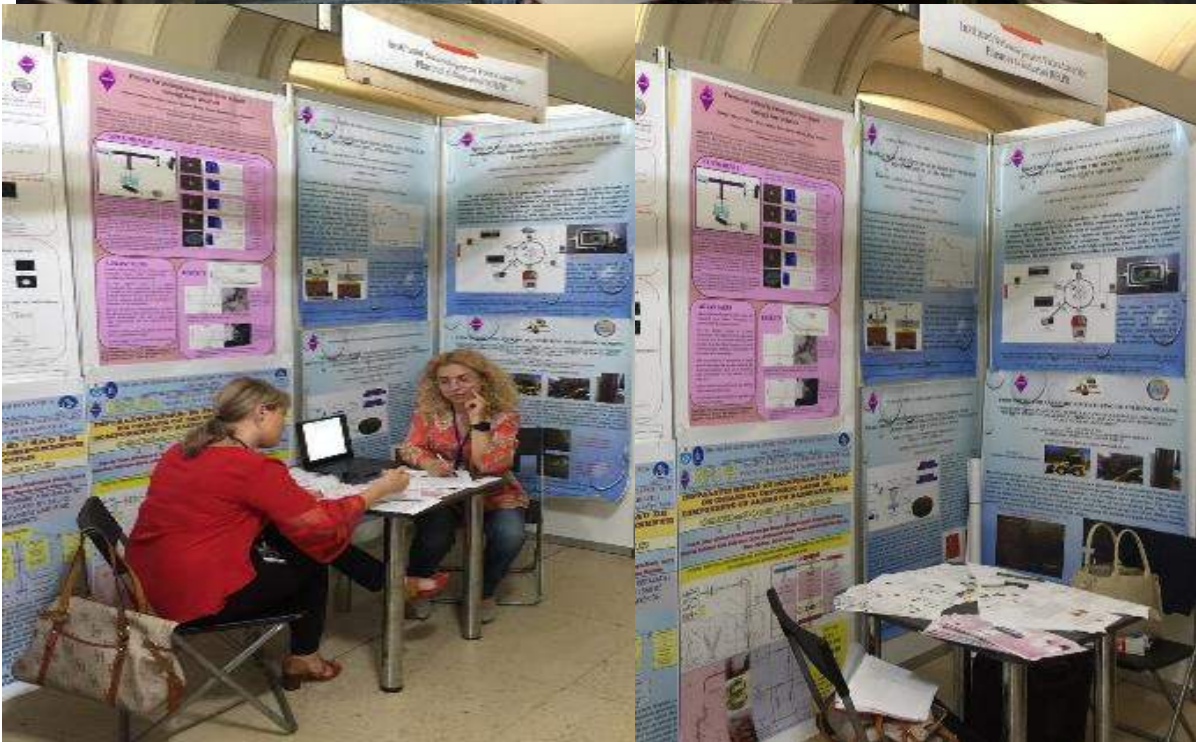
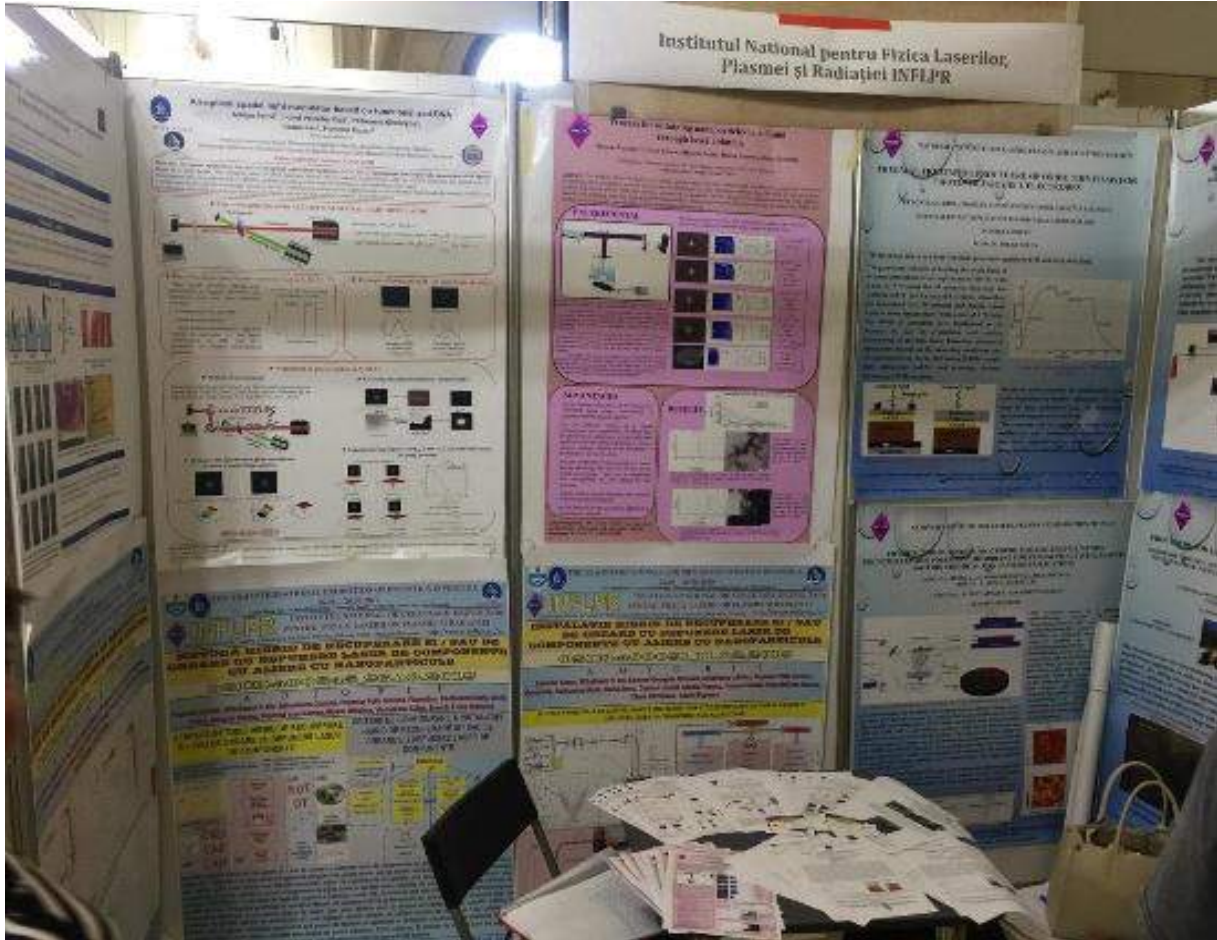
	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	15 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0


”Zeci de invenții au fost prezentate la Iași la Expoziția Internațională „Inventica 2019” organizată în Sala Pașilor Pierduți din Copou de către Institutul Național de Inventică de la Universitatea Tehnică „Gheorghe Asachi” din Iași (TUIASI). Evenimentul a debutat miercuri, pe 26 iunie. Deschiderea expoziției a avut loc miercuri, de la ora 11.00, în Aula Magna „Carmen Sylva” a TUIASI, la eveniment participând zeci de profesori, studenți și cercetători, atât din rândul comunității academice a Politehniciei ieșene, cât și de la universități și institute de profil din țară și din străinătate. Jurizarea invențiilor a avut loc în cursul zilelor de 26-27 iunie, rezultatele au fost anunțate în data de 28 iunie.” *Ziarul de Iasi, 28.06.201*

5. STANDUL INFLPR




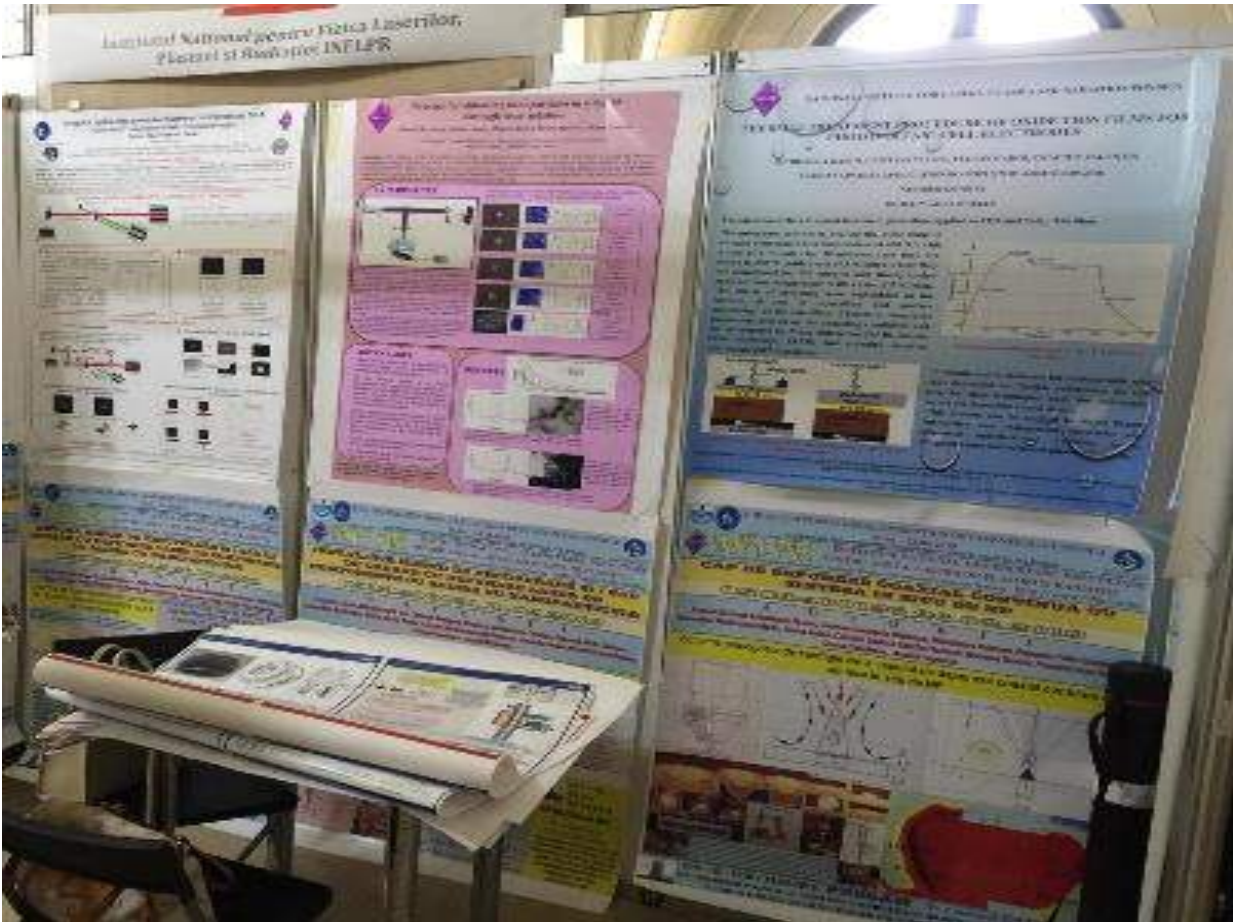
	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	16 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0



	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	17 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0




	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	18 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0




6. PREMII SI REZULTATE

Delegatia institutiei noastre a primit 16 diplome: de onoare, de excelenta, de creație și 12 medalii: de aur si de inventică.


	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	19 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0



Pentru atingerea excelenței în inovare prin dedicare și dorința consistentă de a împinge granițele a ceea ce se poate obține prin știință și tehnologie, **INSTITUTUL NATIONAL PENTRU FIZICA LASERILOR, PLASMEI SI RADIATIEI** a primit **MEDALIA DE AUR si DIPLOMA PENTRU INVENTIE** conferita de **UNIVERSITATEA POLITEHNICA BUCURESTI**, și înmănată de Prof. Dr. Ing. **AUGUSTIN SEMENESCU**.

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	20 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0



	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	21 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

UNIVERSITATEA TEHNICA A MOLDOVEI din CHISINAU a apreciat înalt, realizările cercetătorilor noștri, decernând **MEDALIA DE AUR** a acestei universități autorilor: **Iuliana Urzica, Udrea Cristian, Mihaela Bojan, Apostol Ileana, Damian Victor** pentru prezentarea excelența a materialelor inovationale valorificare in practica: *"Process for obtaining nanoparticles in a liquid through laser ablation"*



Petronela Garoi, Cristian Viespe, Florin Garoi, Craciun Valentin pentru prezentarea excelența a materialelor inovationale valorificare in practica: *"Thermal Treatment Procedure of Oxide Thin Films for Photovoltaic Cell Electrodes"*


Juriul Expoziției Internaționale „Inventica 2019” a apreciat lucrările individuale ale cercetătorilor INFLPR-ști cu:



2 diplome și medalii de aur,

1 diploma de onoare și medalia Inventica 2019,

6 diplome de excelență și medalii Inventica 2019,

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	22 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

3 diplome de creație și medalii Inventica 2019,

2 diplome din partea Agentiei Nationale pentru Sanatate Publica- Republica Moldova

1 diplomă și premiu inovației.

Participanții la Salon au apreciat rezultatele remarcabile ale cercetătorilor INFLPR, acordând **PREMIU INOVATIEI**, conferit de **UNIVERSITATEA POLITEHNICA BUCURESTI**

autorilor:

- Popovici Ernest, Mihailescu N. Ion, Popovici Ernest, Mihailescu N. Ion, Carmen-Georgeta Ristoscu, Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Gavrilă-Florescu Carmen-Lavinia, Necsoiu Teodor, Popovici Ioan Razvan, Diana Chioibasus, Andrei Popescu

lucrării:

"Multivalent instalation for cluading with laser of functional layers on disk brake"

Premiile Juriului Expoziției Internaționale „Inventica 2019” și ale instituțiilor participante s-au distribuit următoarelor brevete de invenții:


- THERMAL TREATMENT PROCEDURE OF OXIDE THIN FILMS FOR PHOTOVOLTAIC CELL ELECTRODES, autori: Petronela Garoi, Cristian Viespe, Florin Garoi, Crăciun Valentin - **diplome și medalii de aur; diplomă pentru prezentare excelentă; medalia Inventica 2019 și diploma de excelență.**

- PROCESS FOR OBTAINING NANOPARTICLES IN A LIQUID THROUGH LASER ABLATION, autori: Urzica Iuliana, Udrea Cristian, Bojan Mihaela, Apostol Ileana și Damian Victor. - **diplome și medalii de aur; diplomă pentru prezentare excelentă; medalia Inventica 2019 și diploma de creație.**

- PROCEDURE FOR OBTAINING NANOPOROUS MULTILAYER SNO₂/CO₃O₄ THIN FILMS FOR THE DETECTION OF AMMONIA, USING LASER METHODS, autori: Cristian Viespe, Dana Maria Miu, Izabela Constantinoiu. – **diplomă și medalie de aur; medalia Inventica 2019 și diploma de creație.**

- MULTIVALENT INSTALLATION FOR CLADDING WITH LASER OF FUNCTIONAL LAYERS ON DISC BRAKE, autori: Popovici Ernest, Mihailescu N. Ion, Carmen-Georgeta Ristoscu Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Gavrilă-Florescu Carmen-Lavinia, Necsoiu Teodor, Popovici Ioan Razvan, Diana Chioibasus, Andrei Popescu - - **diplomă și premiu inovației; medalia Inventica 2019 și diploma de onoare.**

- ALL- OPTICAL SPATIAL LIGHT MODUATOR BASED ON FUNCTIONALIZED DNA, autori: Petris Adrian, Vlad Ionel Valentin, Gheorghe Petronela, Rau Ileana, Kajzar Francois –

	RAPORT INFORMATIV	^^_IR-INVENTICA-19-R0	PAGINA	23 / 23
	CTR	SS-INFLPR-OPTO_D1 / 6810/14.03.2018	COD DOC.	IR
	SMIS / CTR	Cod 106093 / CTR_135 / 23.09.2016	DATA	31.07.2019
	ACTIVITATE	CONF / INFLPR	REVIZIA	R0

diplomă și medalie de aur; medalia Inventica 2019 și diploma de excelență.

- PHYSICAL IMOBILIZATION PROCEDURE FOR ACHE ENZYME WITHIN POLYETHYLEIMINE POLYMERIC MEMBRANE FOR ENHANCED ACTIVE ELEMENTS WITHIN CHEMICAL/GAS SENSORS APPLICATIONS,

autori: Dinca V., Viespe C., Scarisoreanu N.D., Brajnicov S., Bonciu A., Ion V., Dinescu M.

medalia Inventica 2019 și diploma de excelență.

- COAXIAL CONTINUES DEPOSITION HEAD WITH IN SITU SYNTHESIS OF NP,

autori: Popovici Ernest, Mihailescu N. Ion, Carmen-Georgeta Ristoscu, Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Gavrilă-Florescu Carmen-Lavinia, Necsoiu Teodor, Popovici Ioan Razvan, Diana Chioibas, Andrei Popescu –

medalia Inventica 2019 și diploma de excelență.

- HYBRID METHOD OF RECOVERY AND / OR CREATION OF COMPONENTS BY LASER CLADDING ALLIED WITH NANOPARTICLES,

autori: Popovici Ernest, Mihailescu N. Ion, Carmen-Georgeta Ristoscu, Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Necsoiu Teodor, Popovici Ioan Razvan, Iliescu Mihaiela, Vladareanu Luige, Stanciu Elena Manuela –

medalia Inventica 2019 și diploma de excelență.

- HYBRID INSTALLATION OF RECOVERY AND / OR CREATION OF COMPONENTS BY LASER CLADDING ALLIED WITH NANOPARTICLES,

autori: Popovici Ernest, Mihailescu N. Ion, Mihailescu Cristian, Popescu-Pelin Gianina Florentina, Badiceanu Maria, Ionita Anton, Gavrilă-Florescu Carmen-Lavinia, Necsoiu Teodor, Popovici Ioan Razvan, Diana Chioibas, Andrei Popescu -

medalia Inventica 2019 și diploma de excelență.

- PROCEDURE FOR LASER MICROTTEXTURING OF A SLIDING BEARING,

autori: Gheorghe Cristian, Olteanu Petre, Stan Cristian Giorgian, Cristian Viespe, Miu Dana Maria, Nicolae Ionut, Predescu Adrian, Marian Victor Gabriel, Stoica Nicolae Alexandru –

medalia Inventica 2019 și diploma de creație.