Nanotehnologia in Romania: studiu prospectiv

Raport faza a II-a



Anexa 2.1 Exemple de cautare avansata in bazele de date NANOPROSPECT

NANOPROSPECT databases

- Advanced Search form -

click here for an example to see how the search is done

	lotal number of records in database: 2841
	carbon nanotube
Keywords	☐ thick this box to search for the exact expresion entered above
	□ Organizations [36]
	☑ Groups active in nanotechnologies [157]
	☐ Specialists active in nanotechnologies [590]
	☐ Infrastructures [26]
	Partnerships [41]
	□ Equipments [352]
	☑ Projects (relevant for nanotechnologies) [309]
	Type of project
	☐ National [233] ☑ International [76]
	Fields of application
	□ Fundamental research [75] □ Nano tools [20] □ Nanoelectronics and photonics [61] □ Bio-nanosystems [52] □ Chemical and related industries [9] □ Nuclear technology [1] □ Energy technology [23] □ Processing industry [33] □ Transport technology [4] □ Environment [20] □ Toxicology [6] □ Ancient and historical systems [0] □ Security and safety [5]
	☐ Published patents relevant to nanotechnologies [87]
	☐ Scientific papers related to nanotechnology published in periodicals (journals) [1103]
	□ Products [31]
	☐ Technologies [19]
	☐ Courses related to nanotechnologies [17]
	☐ Books related to nanotechnologies [73]
	Search



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Contact [...]

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ORGANIZATIONS - Identification data

Organization full name

Name of the organization (in Romanian)

Acronym in English (if

Acronym (original, in Romanian)

Type of organization Non-juridic person (explain, if this is the

Domain of activity

(official text)

case)

National Institute for Research and Development for Microtechnologies

Institutul National de Cercetare Dezvoltare pentru Microtehnologie

IMT-Bucharest

IMT-Bucuresti

National Institute for R&D (institution of public interest)

National Institute's main activity according to HG 998/2006:

- A. Research and Development activities in the Micro-
- 1. In the National Research, Development and Innovation Plan:
- a) Advanced research in the microsystems domain, such as: experimental investigations, modeling and simulation, architectures of computational intelligence, biologicalinspired systems, biotechnical systems, nanotechnologies including materials, technologies and specific microstructures:
- b) Cooperation in fundamental research from physics, chemistry and biology using micro-system techniques;
- c) Pre-competitive and applicative research in the microengineering domain, such as: micro-mechanics, microoptical, micro opto-electro-mechanic systems etc;
- d) Technological development in the micro-fabrication domain, with applications in electronics, electrical engineering, optics, fine mechanics, spatial and nuclear technology, biotechnologies etc;
- e) Applicative research with pre-competitive character in microtechnologies and micro-systems;
- f) Experimental modeling, testing and homologation stand, experimental equipment for product characterization and fabrication in the activity domain, demonstrative stands;
- g) Studies and applicative research development for the reorganization, retechnologization and modernization of certain branches and activity sectors and also some economic companies in the field;
- h) Strategy development, diagnose and foresight studies concerning science and technology development in its main activity field;
- i) Standardization, metrology and quality certification;
- 2. Other activities in scientific research and technological development:
- a) Applicative research and/or technological development for solving specific problems in its activity domain;
- b) Cooperation in the physics, chemistry and biology fundamental research:
- 3. Scientific research activities, technological and innovative plan development for branch and coreprograms achievement;
- 4. Research-development activities within the International Research, Development and Innovation programs.
- B. Activities adjacent to the research and development

technologies domain (Romanian code CAEN 7310)

activities, carried out in the main activity domain, with the approval from the coordinator, and, if necessary, with the approval of the qualified institutions, including:

- a) Taking part in the elaboration of the strategy of the domain (Romanian code CAEN 7310);
- b)Technical assistance, consulting, scientific and technological services provided (including the access to the informational technology) to economic entities and to any interested beneficiary (Romanian code CAEN 7420)
- c) Cooperation in organizing technical assistance and technological transfer activities for medium and small enterprises (Romanian code CAEN 7420)
- d) Organizing the International Semiconductor Conference (CAS) and other National and International scientific manifestations, periodically or occasionally (Romanian code CAEN 9112)
- e) Testing products to be certified (Romanian code CAEN 7430)
- f) Editing technical and scientific publications (Romanian code CAEN 2211)
- C. Professional training and specialization in the activity domain (Romanian code CAEN 8042):
- 1. Organizing specialized intensive courses and training courses in the National Institute's activity domain for the personnel (permanent or temporary transferred) as well as for other participants in this country or abroad;
- 2. Cooperation and organizing multi-disciplinary courses at a Post-Universitary level in certified schools
- 3. Doctorate activities organized according to the current legislation.
- D. Designing and fabricating unique devices and small scale series (Romanian code CAEN 3210) $_{\mbox{\footnotesize ART.}}$ 5

Within its main activity, the National Institute is able to collaborate in some research and development activities concerning strategic domains and national defense or can develop other adjacent activities, with the coordinator's approval.

Department for scientific and technological research (Scientific Director:Dr. Raluca Muller)

The Department for scientific and technological research is composed of 4 centers, grouping 10 R&D laboratories in micro- and nanotechnologies:

1. MIMOMEMS: European Research Centre of Excellence "Micro- and nanosystems for radiofrequency and photonics"-Coordinator: Dr. Alexandru Muller;

L3-Micromachined structures, microwave circuits and devices Laboratory;

L4-Micro and Nano-Photonics Laboratory;

2.CNT-IMT: "Centre of Nanotechnologies" (under the aegis of the Romanian Academy) -Coordinator: Prof. Dan Dascalu:

Relevance for nanotechnologies

L1 - Laboratory of nanobiotechnologies;

L6- Laboratory for characterization and structuring at the "nano" scale;

L9 - Laboratory of molecular nanobiotechnology

3. CINTECH: "Research centre for integration of technologies" (micro-nano-biotechnologies) -Coordinator: Dr. Mircea Dragoman;

L2-Laboratory of microsystems in biomedical and environment applications;

L8-Laboratory for ambiental technologies; L10-Micro- and nanofludics Laboratory;

4. CENASIC: R&D centre for nanotechnologies and carbon, Coordinator: Dr.

Radu Popa; L5- Simulation, Modeling and Computer Aided Design Laboratory

L7- Reliability Laboratory

Name of the legal representative

Surname of the legal

DASCALU

Dan

Prof.

representative

E-mail of the legal representative

dan[dot]dascalu[at]imt[dot]ro

> Phone number +40-21-269.07.70 (organisation) Fax number +40-21-269.07.72 (organisation)

Organization web page www.imt.ro

126A, Erou lancu Nicolae street, 077190, Bucharest, ROMANIA Office address (main

Postal address (P.O. Box, Code etc.), if different from the

above.

PO-BOX 38-160, 023573 Bucharest, ROMANIA



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Groups active in nanotechnologies

ORGANIZATION: Institutul National de Cercetare-Dezvoltare pentru Fizica Laserilor, Plasmei si Radiatiei

Group name Photonic processing of advanced materials

Group type (type of entity specific to the respective organization)

Lasers Departament

Postal address/location of the group, if different from organization

MG-16, Magurele

Nature and field of activity

Laser processing of advanced materials

i) studies regarding the generation and characterization of

metallic and ceramic nanoparticles by laser ablation, in gaseous atmosphere or in liquid; ii) nanostructuring by laser direct writing and two photon polymerization; iii) laser induced forward transfer of nanometer sized pixel thicknesses (LIFT), iv) manufacturing of nanotubes from organic-metallic Short description of competences and compounds; v) matrix assisted pulsed laser evaporation skills of the group, as related to (MAPLE) and pulsed laser deposition (PLD) of nanoparticle nanoscience and and nanometric sized structures; vi) deposition and nanotechnology characterization of nanometer size heterostructures functional properties by radio-frequency assisted pulsed laser (RF-PLD); nanostructure and nanoparticle characterization by atomic force microscopy, x-ray diffraction,

and spectro-ellipsometry.

First name of the contact person (group coordinator)

Maria

Surname (family name) of the contact person

Dinescu

Contact person official function

CS I Prof.

Title

Contact person e-

mail

dinescum[at]nipne[dot]ro

Contact person phone

0214574414

Available fax

0214574467

Web page (if any)

http://ppam.inflpr.ro



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Specialists active in nanotechnologies

ORGANIZATION: Institutul National de Cercetare-Dezvoltare pentru Metale

Neferoase si Rare

R&D GROUP: Nanostructured Materials Laboratory

Specialist first Roxana Mioara

Specialist

Piticescu surname (family name)

Specialist

function CSI

(position)

Title Dr. Specialist birth

year

Specialist e-

mail

roxana[at]imnr[dot]ro

Specialist 0040213522046 phone

Specialist fax 0040213522048

Specialist background

studies (speciality,

university, year)

University POLITEHNICA Bucharest, Faculty of Industrial Chemistry, Organic Chemical Technology Department, 1983

Specialist scientific

degree (Ph. PhD in the field of Applied Physical-Chemistry and Electrochemistry, D.) (speciality, University POLITEHNICA Bucharest, 1997

university, year) Is the

specialist supervising Ph. D. studies?

Yes

Is the specialist teaching at

Yes

University?

Professional Career and Experience:

- Diplomat engineer - Research Institute for rubber and Plastics, Bucharest (1983-1985); Diplomat engineer - Institute for Oncology Bucharest (1985-1987); Institute for Inorganic Chemistry and Non-ferrous Metals-IAMN Bucharest (06/1990- scientific researcher); Institute for Non-ferrous and Rare Metals SA (09/1995- scientific researcher 3, 07/2000- scientific researcher 1); 01.2005-present National R&D Institute for Nonferrous and Rare Metals, 2006- 2009 National R&D Institute for Nonferrous and Rare Metals, 2000- 2009
National R&D Institute for Nonferrous and Rare Metals, head of
Nanostructured Materials Laboratory; 2010- present National R&D
Institute for Nonferrous and Rare Metals, Scientific Director
- Director of R&D national projects (Matnantech, CEEX, PN2Parteneriate); project director Phare TTQM 1135 (2000), responsible
from IMNR in Thematic network G5RT-CT-2001-05024 Polar

Electroceramics (2001-2007); responsible from IMNR in G5ST-CT-2002-50358 CRAFT -"METMICOATED" (2003-2005); project participant FP5-GRD 3-2001-60007 Micromaking (2002-2004), FP 6-

> NMP2-CT 2006-026467 Manudirect (2006-2010), FP7-NMP 2008-Large 228814 Supersonic (2009-2013); Scientific responsible of several national projects. Member in the Management Committee for the following actions COST D30 (2004-2007), 525 (2004) and TD0802 (2009-2012). Scientific Responsible of bilateral projects Romania-Greece (2005-2006) and Romania-China (2006-2008; 2009-2010)

- Member in European Technological Platform of Nanomedicine (2007-present)
- Romanian expert in COST DC_MPNS Materials, Physical and Nanosciences 2010- present
- Member of Romanian Association of New Materials (founding member), Romanian and European Ceramic Society, Romanian and European Society for Biomaterials

Specialization and qualification:

March 2011 "Trainer for trainers course" certified by National Council for Professional Forming of Adults; November 2008- Post-graduate course: Design and Management of European Projects, UPB and the Chamber of Commerce of Bucharest; March 2008- Course concerning the Management of European projects, All Consulting, Bucharest; 21-24.11.2006; Course concerning the quality management system "SREN-ISO/CEI 17025:2005, Romanian Standardization Association, Bucharest, Romania ; November 2004-January 2005, NATO fellowship, CNRS/PROMES, Odeillo, France; 1999-2004: working stages in the field of nanomaterials synthesis and characterisation at Politecnico di Torino-Italy, ICMAB Barcelona-Spain, CNRS/PROMES Odeillo, France

Research Interest: Chemical synthesis (hydrothermal) nanostructured powders; Nanostructured films by electrochemical deposition and spin-coating; Synthesis of hybrid nano-bio - material at high pressures and low temperatures; Obtaining nanostructured composite materials; Hybrid nanomaterials characterisation by UV-VIS and FT-IR spectroscopy; Thermodynamic calculations using HSC Chemistry 6.0 software

Main Achievements: 2 books, 51 papers, one Romanian patent and one Romanian patent request on nanobiomaterials

Brief CV



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Equipments

ORGANIZATION: Institutul National de Cercetare Dezvoltare pentru Fizica

Materialelor

R&D GROUP: Surface and interface physics, X-ray spectroscopy

SPECIALIST: Cristian Mihail Teodorescu

Equipment name (in

full) and code of the

Short description

X-ray absorption fine structure spectrometer

SEM, FIB, TEM, XRD - beam characterization Type of equipment

> This setup allows recording of X-ray absorption spectra (XAS, XANES, EXAFS, NEXAFS) by using a laboratory setup. Such measurements usually require synchrotron radiation, but the laboratory setup in NIMP allows similar performances as a third generation synchrotron in about 5 times more measurement time. This is the first such setup ever installed in Europe. To our knowledge, a second similar setup is about to be installed

X-ray source with microfocus and 300 W of total power. The maximum acceleration voltage is 40 kV. The setup was delivered with a complete set of monochromators, anodes and filaments. It allows recording in reasonable time of the following

Main technical

spectra, even for diluted samples: - X-ray absorption structure (XAS);

characteristics - extended X-ray absorption fine structure (EXAFS)

- near-edge X-ray absorption fine structure (NEXAFS);

- X-ray absorption near-edge spectroscopy (XANES).

The measurements may be performed both in transmission and fluorescence mode, therefore the setup is well suited for thin layers, interfaces and heterostructures

Equipment value (orientative price, in

Euro), not

300 000

mandatory

Manufacturer name

and address (country)

Rigaku Corporation

4-14-4, Sendagaya, Shibuya-Ku, Tokyo 151-0051, JAPAN

Year of fabrication

Date of installation (month, year)

february 2011

- diluted samples;

Fields of utilisation

- catalysis and photocatalysis;

- amorphous materials; - interfaces and heterostructures.

Contact person (in charge with equipment in this

organization) first name

Cristian Mihail

Contact person surname (family name)

Teodorescu

Title

Contact person e-

Dr.

teodorescu[at]infim[dot]ro

Contact person phone Available fax

+40213690170 +40213690177

mail

Dedicated web page presenting the www.infim.ro equipment (if any)



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Infrastructures

ORGANIZATION: Institutul National de Cercetare Dezvoltare pentru Microtehnologie

SPECIALIST: Dan DASCALU

Infrastructure name Center for Micro-Nanofabrication

Infrastructure acronym

IMT-MINAFAB

Infrastructure entity

Centre of services

Is this infrastructure a legal person?

No

Infrastructure status (acreditation, ISO certified, etc.)

Certified ISO 9001-2008

Infrastructure objectives (specify)

- represents an advanced technological interface of IMT-Bucharest for national and international collaborations, cooperation or services dedicated to industry

- plans to become an essential platform of interaction in nanoscience and nanotechnologies in a future national network for knowledge and technology transfer

IMT-MINAFAB is a state of the art facility for interdisciplinary research in nanotechnologies, operating since September 2008.

The center offers complete technological flows: HPC and CAD tools, mask shop sector, nano-bio fabrication, analysis and characterization, reliability tests.

- Class 1,000 clean room (220 sqm effective) for the mask shop and the most demanding technological processes.
- Class 100,000 "grey area" clean room (200 sqm effective), mostly for advanced characterization equipments.
- Class 10,000 clean room (120 sqm effective) for thin films by CVD techniques, dry-etching, RTP, etc. (to become operational)
- Advanced laboratories for Rapid Prototyping, Reliability testing, and High-power computing.

 Mattheward Residual Control of Mattheward Residual Contro

Mostly relevant equipments in IMT-MINAFAB:

Brief description (including a short list of relevant equipments, if necessary)

- Nanolithography: Electron beam lithography and nanoengineering workstation e_Line (Raith, Germany); Dip Pen Nanolithography Writer NSCRIPTOR (NanoInk, USA)
- Photolithography: Laser lithography system DWL 66 fs (Heidelberg Instruments Mikrotechnik, Germany); Double Side Mask Aligner MA6/BA6 (Suss MicroTec, Germany)
- Physical depositions: Electron Beam Evaporation an DC sputtering system AUTO 500 (BOC Edwards, UK)
- Chemical depositions: PECVD LPX-CVD, with LDS module (STS, UK)
- Dry etching: ICP-RIE (Oxford Instruments, UK)
- Beam characterization: FEG-SEM Nova NanoSEM 630 (FEI Company, USA); X-ray Diffraction System (triple axis rotating anode) SmartLab (Rigaku, Japan)
- Scanned Probe characterization: NSOM Witec alpha 300S (Witec, Germany); Nanomechanical characterization Nano Indenter G200 (Agilent, USA); Scanning Electrochemical Microscope ElProScan (HEKA, Germany)
- Nano-bio: Micro-Nano Plotter OmniGrid (Genomic Solutions Ltd., UK); Nanoparticle analyzer DelsaNano (Beckman Coulter, USA)
- Spectrometry: HR Raman LabRAM HR 800 (HORIBA Jobin Yvon, Japan)

Location

Contact Person: Dr. Radu Popa, radu[dot]popa[at]imt[dot]ro; IMT-Bucharest - 126A Erou Iancu Nicolae, Bucharest 077190

Is this infrastructure part of a network? No Please explain

Contact person first name Dan

Contact person

Contact person

official function

surname (family DASCALU

name)

CEO and President of the Board

Title Prof.

Contact person e-

dan[dot]dascalu[at]imt[dot]ro

Contact person phone

+40-21-269.07.70

Available fax +40-21-269.07.72

Dedicated web www.imt.ro/MINAFAB;

page (if any) http://www.imt.ro/MINAFAB/description.htm



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Partnerships

ORGANIZATION: Institutul National de Cercetare-Dezvoltare pentru Metale

Neferoase si Rare

R&D GROUP: Nanostructured Materials Laboratory

SPECIALIST: Radu Robert Piticescu

Level of partnership

Partnership / affiliation name

Partnership acronym

Partnership description including type of document (agreement etc.). Note: a frameworktype agreement (not a contract with a well defined objective)

Partner / main partner or partners (specify details)

Contact person (in charge with partnership in this organization) first name

Contact person (in charge with partnership in this organization) **surname** (family name)

Contact person official function

Contact person e-mail Contact person phone

Available fax

Dedicated web page (if any)

Organization

Association NANOfutures

NANOFUTURES

European initiative sustainable development Nanotechnologies

Coordinator: Paolo Matteazzi,

CSGI Italy

Secretary: Thomas Zadrozny

Radu Robert

Piticescu

associate member

rpiticescu[at]imnr[dot]ro 0040213522046

0040213522045 www.nanofutures.eu



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Projects (relevant for nanotechnologies)

ORGANIZATION: Institutul National de Cercetare-Dezvoltare pentru Fizica

Laserilor, Plasmei si Radiatiei

R&D GROUP: Laser - Surface - Plasma Interactions Laboratory

SPECIALIST: Ion Mihailescu

carbon-hydroxyapatite Project name

nanocomposites on metallic bases

applied in medicine

Project acronym Type of project International

Financing body ΕU

Programme name MNT ERA-Net Starting date (month/year) January 2009 Ending date (month/year) December 2009

> To produce a successful biomaterial which will survive in the body for a long

time, the materials need to

be developed specifically for clinical Short description (abstract)

applicatio ns. The primary requirements

are biocompatibility, that

is the material is not toxic and has appropriate mechanical properties in

terms of stiffness and strength.

Fields of application Bio-nanosystems biomedicine

Budget (in Euro), not mandatory 185.000 RON for Romanian part

Beneficiary (if different from financing body) EU

Coordinator (only for international projects, for NATIONAL projects the coordinator is the organization introducing the project)

Technical University of Lodz

Military University of Technology (MUT) **Partners** Warsaw

First name of the contact person (project

coordinator, etc.)

Surname (family name) of the contact person (project coordinator, etc.)

Contact person responsability in this

project

Mihailescu

project manager of the Romanian part

Title

Contact person e-mail ion[dot]mihailescu[at]inflpr[dot]ro

0040214574491 Contact person phone 0040214574491 Contact person fax

Web page presenting the project (if any)



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Scientific papers related to nanotechnology published in periodicals (journals)

ORGANIZATION: Institutul National de Cercetare Dezvoltare pentru Microtehnologie

R&D GROUP: CENASIC - R&D centre for nanotechnologies and carbon -based

SPECIALIST: Monica Veca

Scientific paper title

Metallic Single-Walled Carbon Nanotubes for Conductive

Publication / Journal name

Journal of the American Chemical Society.

ISI rated Yes Publication / Journal year

2008

Publication / Journal number

130

Publication / Journal initial

page no.

1415

Abstract

Publication /

Journal final page 1419

no.

Wang, W.

First author Wang, W.; Fernando, K. A. S.; Lin, Y.; Meziani, M. J.; Veca, L. M.;

All authors Cao, L.; Zhang, P.; Kimani, M. M.; Sun, Y.-P.

> This article reports an unambiguous demonstration that bulkseparated metallic single-walled carbon nanotubes offer superior performance (consistently and substantially better than the as-

> produced nanotube sample) in conductive composites with poly(3hexylthiophene) and also in transparent conductive coatings based on PEDOT:PSS. The results serve as a validation on the widely held view that the carbon nanotubes are competitive in various technologies currently dominated by conductive inorganic materials (such as indium tin oxide).

Why is this paper

relevant, e.g. number of citations (excluding selfcitations)

no. of citations - 36



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Books related to nanotechnologies

ORGANIZATION: Universitatea POLITEHNICA din Bucuresti

R&D GROUP: Center of Surface Science and Nanotechnology

SPECIALIST: Marius Enachescu

Adsorption of P, S, As, Se, and Sb on metals, Title of the book

alloys and semiconductors

List of authors (use the full name of specialists from your

organisation)

Editors

M. Enachescu and M. Salmeron

"Physics of Covered Solid Surfaces", editor H. P.

Bonzel;

Landolt-Börnstein Series on Numerical Data and Functional Relationships in

Technology, Vol. III/42/A3, pp. 2-61

Springer-Verlag Berlin Heidelberg New York -

Germany, May 2003; (ISBN 3-540-44341-X)

Publishing house Springer-Verlag Berlin Heidelberg New York

Year first printing, reprinting,

other editions

2003 60

Total number of pages

Short description (e.g. abstract) Surface Science issues

Available in electronic form?

Explain

Contact person for furher

Marius ENACHESCU, marius[dot]enachescu[at]

questions