



9th INTERNATIONAL WORKSHOP OF MATERIALS PHYSICS

14 - 16 May 2024
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Magurele, Romania

National Institute of Materials Physics



Oteteleşanu Hall

THE PROGRAM

of the 9th edition of the

International Workshop of Materials Physics

14 May, 2024

INVITED ORAL PRESENTATIONS

08:15	Registration – Oteteleşanu Hall
08:45	Official opening – Lucian PINTILIE, Scientific Director of NIMP
Session 1: Chairman – Alexander KUHN	
09:00	Ifty AHMED Faculty of Engineering, University of Nottingham, United Kingdom Developing bioactive glasses and glass-ceramics for biomedical applications
09:30	Szilard FEJER SC PROVITAM SRL, Romania Research and development at a private healthcare institution: Challenges and opportunities
10:00	Raul-Augustin MITRAN “Ilie Murgulescu” Institute of Physical Chemistry of the Romanian Academy, Romania Synthesis and characterization of <i>trans</i>-Resveratrol cocrystals
10:30	Coffee Break
10:45	Rabah BOUKHERROUB Institut d'Electronique, de Microélectronique et de Nanotechnologie (IEMN), France Heat-induced controlled transdermal drug delivery for diabetes management
11:15	Felix SIMA Centre for Advanced Laser Technologies – CETAL, Romania National Institute for Laser, Plasma and Radiation Physics – INFLPR, Romania Biochips with tailored volume shapes fabricated by ultrafast laser processing for cancer research
11:45	Anton FICAI National University of Science and Technology POLITEHNICA Bucharest, Romania COLL/HA composite materials as drug-delivery systems in bone tissue engineering
12:15	José M.F. FERREIRA

	Łukasiewicz Research Network – Institute of Microelectronics and Photonics, Warsaw, Poland; University of Aveiro, Portugal Design, development and characterisation of smart synthetic bone graft materials for advanced therapies
12:45	Lunch
Session 2: Chairman – Rabah BOUKHERROUB	
14:00	Rasa PAULIUKAITE Centre for Physical Sciences and Technology, Vilnius, Lithuania Evolution of electrochemical sensors from macro to nano
14:30	Camelia BALA Department of Analytical Chemistry, University of Bucharest, Romania Surface modification for label-free sensing
15:00	Alexander KUHN Institute of Molecular Science, University Bordeaux, France Wireless Electrochemistry: From advanced materials to (bio)electroanalysis and enantioselective synthesis
15:30	Cecilia CRISTEA “Iuliu Hațieganu” University of Medicine and Pharmacy, Romania Development of innovative nano-systems for the targeted treatment of cancer
16:00	Coffee Break
16:15	Posters Session
17:15	Visit to NIMP’s facilities, followed by Conference Dinner (20:00)

14 May, 2024

POSTER PRESENTATION SESSION

P1	<i>PCL electrospun fibers as a new biocompatible platform for ion detection</i> Anca ALDEA¹, Melania ONEA^{1,2}, Daniela OPREA^{1,2}, Daniel CRISAN¹, Caroline SANZ¹ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² Faculty of Physics, University of Bucharest, 077125 Magurele, Romania
P2	<i>Graphene electronic devices for sensing applications</i> Mariana Mihaela APOSTOL^{1,2}, Elena MATEI¹, Victor DICULESCU¹, Ionuț ENCULESCU¹, Issam BOUKHOUBZA¹ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² Faculty of Chemical Engineering and Biotechnologies, National University of Science and Technology POLITEHNICA Bucharest, 011061 Bucharest, Romania
P3	<i>Shape memory polymer nanofibres functionalized with PEDOT:PSS and Au nanoparticles for soft robotics applications</i> Mihaela BEREGOI¹, Denisa CĂLIN², Adrian ENACHE¹, Ana Maria IGNAT^{1,3}, Ionuț ENCULESCU¹ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² Faculty of Medical Engineering, National University of Science and Technology POLITEHNICA Bucharest, 011061 Bucharest, Romania ³ Faculty of Physics, University of Bucharest, 077125 Magurele, Romania
P4	<i>Paper-based electrochemical device integrated with conductive submicron polymeric fibers and 3D printed channels</i> Daciana BOTTA^{1,2}, Mihaela BEREGOI¹, Alexandru EVANGHELIDIS¹, Elena MATEI¹, Ionuț ENCULESCU¹, Victor DICULESCU¹ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² REOROM Laboratory, National University of Science and Technology POLITEHNICA Bucharest, 060042 Bucharest, Romania
P5	<i>The effect of fullerene layer on the aggregates formation in amyloid beta Langmuir-Blodgett films</i> Carmen BREAZU¹, Oana RAȘOGA¹, Marcela SOCOL¹, Paul GANEA¹, Teddy TITE¹, Elena MATEI¹, Florin STĂNCULESCU², Anca STĂNCULESCU¹ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² Faculty of Physics, University of Bucharest, 077125 Magurele, Romania
P6	<i>Soft actuators based on polydimethylsiloxane and electrospun fiber networks</i> Mihaela-Cristina BUNEA, Mihaela BEREGOI, Alexandru EVANGHELIDIS, Andrei GALATANU, Ionuț ENCULESCU National Institute of Materials Physics, 077125 Magurele, Romania
P7	<i>Nanohybrid composites of the type TiO₂/single-walled carbon nanohorns for the Amoxicillin photodegradation</i> Radu CERCEL^{1,2}, Andreea ANDRONE¹, Cristina-Ștefania FLORICA¹, Adam LORINCZI¹, Constantin SERBSCHI³, Mihaela BAIBARAC¹ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² Faculty of Physics, University of Bucharest, 077125 Magurele, Romania ³ S.C. Bioelectronic S.R.L., 100028 Ploiesti, Romania
P8	<i>Spectroscopic studies concerning degradation of Losartan Potassium</i>

	<p>Mădălina CHIVU^{1,2}, Mirela PARASCHIV^{1,2}, Ion SMARANDA¹, Irina ZGURĂ¹, Paul GANEA¹, Bogdan CHIRICUȚĂ³, Mihaela BAIBARAC¹</p> <p>¹National Institute of Materials Physics, 077125 Magurele, Romania ²Faculty of Physics, University of Bucharest, 077125 Magurele, Romania ³S.C. Apel Laser S.R.L., 077135 Mogosoia, Romania</p>
P9	<p><i>BT-based piezoceramics substituted with therapeutic cations</i> Marius Cristian CIOANGHER¹, Liviu NEDELCU¹, George E. STAN¹, Luminita AMARANDE¹, Corneliu Florin MICLEA¹, Adrian-Claudiu POPA¹, Lucia Nicoleta LEONAT¹, Cristina BESLEAGA¹, Cezar Dragos GEAMBASU¹, Vasilica TOMA¹, Irina Sorina GHITA¹, Robert Catalin CIOCOIU², Constantin MARIN³</p> <p>¹National Institute of Materials Physics, 077125 Magurele, Romania ²Department of Metallic Materials Science, National University of Science and Technology POLITEHNICA Bucharest, 060042 Bucharest, Romania ³“Emil Racoviță” Institute of Speleology of the Romanian Academy, 050711 Bucharest, Romania</p>
P10	<p><i>Yttrium barium copper nano oxide synthesis for biomedical utilization</i> Rania DAHA¹, Manel BOULOU DENINE^{2,3}, Katia DJENADI⁴, Stefano BELLUCCI⁵</p> <p>¹École Nationale Supérieure des Mines et de la Métallurgie (ENSMM)-Amar Laskri, L3M, Chainz, 23000 Annaba, Algeria ²Mohamed-Cherif Messaadia University, 41000 Souk Ahras, Algeria ³LPR, Laboratory, University Badji Mokhtar, 23000 Annaba, Algeria ⁴Laboratoire de Biochimie Appliquée, Département des Sciences Alimentaires, Faculté des Sciences de la Nature et de la Vie, Université de Bejaia, 06000 Bejaia, Algeria ⁵INFN-Laboratori Nazionali di Frascati, 00044 Frascati, Italy</p>
P11	<p><i>Photodegradation of aspirin and atorvastatin calcium revealed by photoluminescence studies</i> Monica DĂESCU¹, Miruna IOȚA¹, Alina C. ION², Constantin SERBSCHI³, Mihaela BAIBARAC¹, Mădălina OPRICĂ¹, Szilard FEJER⁴</p> <p>¹National Institute of Materials Physics, 077125 Magurele, Romania ²Faculty of Chemical Engineering and Biotechnologies, National University of Science and Technology POLITEHNICA Bucharest, 011061 Bucharest, Romania ³S.C. Bioelectronic S.R.L., 100028 Ploiesti, Romania ⁴Pro-Vitam Ltd., 520032 Sfântu Gheorghe, Romania</p>
P12	<p><i>Electrospun fibrillary scaffold for electrochemical cell biomarkers detection</i> Adrian ENACHE¹, Mihaela BEREGOI¹, Daniela OPREA^{1,2}, Mihaela Cristina BUNEA¹, Monica ENCULESCU¹</p> <p>¹National Institute of Materials Physics, 077125 Magurele, Romania ²Faculty of Physics, University of Bucharest, 077125 Magurele, Romania</p>
P13	<p><i>Electron beam synthesis of iron oxide nanoparticles for biomedical applications</i> Nicursor IACOB¹, Cezar COMANESCU¹, Gabriela CRACIUN², Andrei C. KUNC SER², Cristian RADU¹, Petru PALADE¹, Elena MANAILA², Gabriel SCHINTEIE¹, Daniel IGHIGEANU², Victor KUNC SER¹</p> <p>¹National Institute of Materials Physics, 077125 Magurele, Romania ²National Institute for Laser, Plasma and Radiation Physics, 077125 Magurele, Romania</p>
P14	<p><i>A computational perspective on the fundamental aspects of magnetic hyperthermia</i> Andrei C. KUNC SER¹, Cristian RADU^{1,2}, Ioana D. KUNC SER¹</p> <p>¹National Institute of Materials Physics, 077125 Magurele, Romania ²Faculty of Physics, University of Bucharest, 077125 Magurele, Romania</p>

P15	<p>Reliable evaluation of drug loading degree of Fe oxide nanoparticles by combined Mössbauer Spectroscopy and Magnetometry Victor KUNCSE¹, Petru PALADE¹, Gabriel SCHINTEIE¹, Cezar COMANESCU¹, Nicusor IACOB¹, Luiza-Izabela TODERASCU², Gabriel SOCOL² ¹National Institute of Materials Physics, 077125 Magurele, Romania ²National Institute for Laser, Plasma and Radiation Physics, 077125 Magurele, Romania</p>
P16	<p>Cytotoxicity and biotransformation of Cerium Oxide-Iron Oxide platform in cells cultures and murine model Valentin-Adrian MARALOIU¹, Catalina MIHALCEA^{1,2}, Cristian RADU^{1,2}, Yuliia SHLAPA³, Anatolii BELOUS³, Aida SELARU⁴, Sorina DINESCU⁴, Cosmin MUSTACIOSU⁵ ¹National Institute of Materials Physics, 077125 Magurele, Romania ²Faculty of Physics, University of Bucharest, 077125 Magurele, Romania ³V.I. Vernadsky Institute of General & Inorganic Chemistry of the NAS of Ukraine, 03142 Kiev, Ukraine ⁴Department of Biochemistry and Molecular Biology, University of Bucharest, 050095 Bucharest, Romania ⁵Horia Hulubei National Institute for Physics and Nuclear Engineering, 077125 Magurele, Romania</p>
P17	<p>Optical evidence of photodegradation of azathioprine under UV irradiation in an oxygen atmosphere Andreea NILĂ¹, Ion SMARANDA¹, Corina-Mihaela MANTA², Dumitru SAMOHVALOV², Daniel GHERCA², Mihaela BAIBARAC¹ ¹National Institute of Materials Physics, 077125 Magurele, Romania ²S.C. Sara Pharm Solutions S.R.L., 050122 Bucharest, Romania</p>
P18	<p>Antioxidant properties assessment of spring greens used in traditional Romanian green salad Daniela OPREA^{1,2}, Daniel CRISAN¹, Adrian ENACHE¹ ¹National Institute of Materials Physics, 077125 Magurele, Romania ²Faculty of Physics, University of Bucharest, 077125 Magurele, Romania</p>
P19	<p>Photoactive and magnetoactive nanocomposites for biomedical applications Traian POPESCU¹, Ioana D. KUNCSE¹, Valentin-Adrian MARALOIU¹, Monica ILAȘ¹, Arpad Mihai ROSTAȘ^{1,2}, Alexandra-Corina IACOBAN¹, Nicușor IACOB¹, Christien Oktaviani MATEI³, Tudor SAVOPOL³, Mihaela G. MOISESCU³ ¹National Institute of Materials Physics, 077125 Magurele, Romania ²National Institute of Isotopic and Molecular Technologies, 400293 Cluj-Napoca, Romania ³Department of Biophysics and Cellular Biotechnology, Carol Davila University of Medicine and Pharmacy, 050474 Bucharest, Romania</p>
P20	<p>Preparation, analysis, and antibacterial properties of magnesium doped hydroxyapatite suspensions Daniela PREDOI, Simona Liliana ICONARU, Steluta Carmen CIOBANU, George E. STAN National Institute of Materials Physics, 077125 Magurele, Romania</p>
P21	<p>Evaluation of shape anisotropy in nanoparticles for magnetic hyperthermia Cristian RADU^{1,2}, Ioana D. KUNCSE¹, Andrei C. KUNCSE¹ ¹National Institute of Materials Physics, 077125 Magurele, Romania ²Faculty of Physics, University of Bucharest, 077125 Magurele, Romania</p>
P22	<p>Controlling the shape and particle size distributions of magnetic nanoparticles prepared by thermal decomposition of organometallic compounds Gabriel SCHINTEIE, Andrei C. KUNCSE¹, Nicusor IACOB, Cezar COMANESCU, Victor KUNCSE¹ National Institute of Materials Physics, 077125 Magurele, Romania</p>
P23	<p>MgB₂-based materials for biomedical applications Any-Cristina SERGENTU^{1,2}, Petre BADICA¹</p>

	¹ National Institute of Materials Physics, 077125, Magurele, Romania ² National University of Science and Technology POLITEHNICA Bucharest, 060042 Bucharest, Romania
P24	<i>Effects of pH and UV radiation on the optical properties of folic acid in phosphate buffer solutions</i> Ion SMARANDA¹, Andreea NILA¹, Mihaela BAIBARAC¹, Constantin SERBSCHI² ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² S.C. Bioelectronic S.R.L., 100028 Ploiesti, Romania
P25	<i>Ferromagnetic shape memory ribbons as potential active elements in stent-type medical devices</i> Mihaela SOFRONIE¹, Felicia TOLEA¹, Bogdan POPESCU¹, Mugurel TOLEA¹, Mihaela VALEANU¹, Alexandrina NAN², Alexander BUNGE², Rodica TURCU², Alexandru CHIRIAC³ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² National Institute for Research and Development of Isotopic and Molecular Technologies, 400293 Cluj-Napoca, Romania ³ University of Medicine and Pharmacy Grigore T. Popa, 700115 Iasi, Romania
P26	<i>Copper & Gallium co-substituted bioactive glasses: Path towards durable dental implant coatings</i> George E. STAN¹, Teddy TITE¹, Adrian-Claudiu POPA¹, Maria-Iuliana CHIRICA¹, Cristina BESLEAGA¹, George LUNGU¹, Irina ZGURA¹, Catalin NEGRILA¹, Daniel CRISTEA², Cristiana TANASE³, José M.F. FERREIRA⁴ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² Transilvania University of Brasov, 500068 Brasov, Romania ³ “Victor Babeş” National Institute of Pathology, 050096 Bucharest, Romania ⁴ CICECO—Aveiro Institute of Materials, Department of Materials and Ceramics Engineering, University of Aveiro, 3810-193 Aveiro, Portugal
P27	<i>The potential applications of the polyaniline/carbon nanoparticles composites in the azathioprine detection</i> Adelina UDRESCU, Mihaela BAIBARAC, N'Ghaya TOULBE, Elena MATEI National Institute of Materials Physics, 077125 Magurele, Romania
P28	<i>Composites based on reduced graphene oxide for medical applications</i> Mirela VĂDUVA, Mihaela BAIBARAC National Institute of Materials Physics, 077125 Magurele, Romania
P29	<i>Composites based on biogenic Silver, Gold, Silver Chloride and Zinc Oxide Structures as green multifunctional platforms for biomedical applications</i> Irina ZGURA¹, Monica ENCULESCU¹, Valentin-Adrian MARALOIU¹, Cosmin ISTRATE¹, Raluca NEGREA¹, Liviu NEDELCU¹, Nicoleta BADEA², Camelia UNGUREANU², Marcela-Elisabeta BARBINTA-PATRASCU³, Mihaela BACALUM⁴ ¹ National Institute of Materials Physics, 077125 Magurele, Romania ² Faculty of Chemical Engineering and Biotechnologies, National University of Science and Technology POLITEHNICA Bucharest, 011061 Bucharest, Romania ³ Faculty of Physics, University of Bucharest, 077125 Magurele, Romania ⁴ Department of Life and Environmental Physics, Horia Hulubei National Institute for Physics and Nuclear Engineering, 077125 Magurele, Romania
P30	<i>Nanostructured human serum albumin as drug delivery carrier to cancer cells</i> Claudia. G. CHILOM¹, Sorina IFTIMIE¹, Adriana E. BALAN¹, Teodor A. ENACHE², Daniela OPREA^{1,2}, Monica ENCULESCU² ¹ Faculty of Physics, University of Bucharest, 077125 Magurele, Romania ² National Institute of Materials Physics, 077125 Magurele, Romania

15 May, 2024

INVITED ORAL PRESENTATIONS

Session 3: Chairman – José M.F. FERREIRA	
09:00	Fabiana ARDUINI Department of Chemical Science and Technologies, University of Rome “Tor Vergata”, Italy Paper-based printed electrochemical (bio)sensors as smart and sustainable point-of-care devices
09:30	Antonia PAJARES VICENTE Department of Mechanical, Energy and Materials Engineering, University of Extremadura, Spain Improving the mechanical performance of bioceramic scaffolds for biomedical applications
10:00	Pedro MIRANDA GONZÁLEZ Department of Mechanical, Energy and Materials Engineering, University of Extremadura, Spain Leveraging the high resolution of digital light processing in the additive manufacturing of high-performance composites for biomedical applications
10:30	Mihaela MOISESCU Department of Biophysics and Cellular Biotechnology, Faculty of Medicine, University of Medicine and Pharmacy „Carol Davila”, Romania Nano-biomaterials’ interactions with cells: Challenges and opportunities
11:00	Coffee Break
11:15	Lucian BAIÁ Faculty of Physics, Babes-Bolyai University, Romania Composites based on biopolymers-bioactive glasses/glass-ceramics containing Cu and Au for tissue engineering applications
11:45	Jeroen VAN DEN BEUCKEN Radboud University Medical Centre, Netherlands Steering biological processes to stimulate bone formation
12:15	Daniela-Cristina BERGER National University of Science and Technology POLITEHNICA Bucharest, Romania Biocomposites based on functionalised mesoporous silica
12:45	Lunch
Session 4: Chairman – Jeroen VAN DEN BEUCKEN	
14:00	Stefano BELLUCCI INFN—Laboratori Nazionali di Frascati, Italy Nanomaterials for health science applications
14:30	Monica BAIÁ Faculty of Physics, Babes-Bolyai University, Romania Raman and SERS investigations on pharmaceuticals
15:00	Josef JAMPÍLEK – on-line presentation Faculty of Science, Palacky University in Olomouc, Czech Republic

	Drug delivery nanosystems for modern targeted therapy
15:30	Coffee Break
16:00	Simion AȘTILEAN Faculty of Physics, Babes-Bolyai University, Romania Plasmonic-based nanoplatforms for light-activated therapy, bioimaging and sensing
16:30	Orlando FATIBELLO-FILHO – <i>on-line presentation</i> Department of Chemistry, São Carlos Federal University, Brazil Modified electrodes with nanostructured carbon and/or metallic composites for applications in electroanalysis
17:00	Commute to the Hotel Moxy
18:30	Sightseeing tour of Bucharest starting from Hotel Moxy, followed by Conference Dinner (20:00)

16 May, 2024

INVITED ORAL PRESENTATIONS

Session 5: Chairman – Simion AȘTILEAN	
09:00	Mihaela DONI National Institute for Research & Development in Chemistry and Petrochemistry, Romania Biosensing approaches for development of innovative analytical systems for agriculture, food and environmental fields
09:30	Gabriela GRAZIANI Polytechnic University of Milan, Italy Nanostructured antibacterial films by Ionized Jet Deposition: An overview
10:00	Monica FLORESCU Department of Fundamental, Prophylactic and Clinical Disciplines, Faculty of Medicine, Transilvania University of Brașov, Romania Functional nanostructured materials for biomedical applications
10:30	Coffee Break
11:00	Marc Lamy DE LA CHAPELLE Université du Mans, France; Babes-Bolyai University, Romania Detection, identification and structural study of biomolecules by Surface Enhanced Raman Spectroscopy
11:30	Mariana Carmen CHIFIRIUC / Grațiela GRĂDIȘTEANU Faculty of Biology, University of Bucharest, Romania Novel therapeutic approaches for the management of malignant wounds
12:00	Casan-Pastor NIEVES – on-line presentation Institute of Materials Science of Barcelona, Spain Redox gradients in materials and unwired bipolar electrodes in neural systems
12:30	CONCLUDING REMARKS
13:00	Lunch