

# THIRTEENTH YOUNG RESEARCHERS' CONFERENCE MATERIALS SCIENCE AND ENGINEERING

December 10-12, 2014, Belgrade, Serbia  
Serbian Academy of Sciences and Arts, Knez Mihailova 36

## PROGRAMME & THE BOOK OF ABSTRACTS



Materials Research Society of Serbia  
&  
Institute of Technical Sciences of SASA

December 2014, Belgrade, Serbia

**THIRTEENTH YOUNG RESEARCHERS' CONFERENCE  
MATERIALS SCIENCE AND ENGINEERING**

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**Program and the Book of Abstracts**

**Materials Research Society of Serbia  
&  
Institute of Technical Sciences of SASA**

**December 2014, Belgrade, Serbia**

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Program and the Book of Abstracts

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## **Aim of the Conference**

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

## **Topics**

New synthesis and processing methods  
Materials for high-technology applications  
Theoretical modelling of materials  
Nanostructured materials  
Biomaterials

## **Scientific and Organizing Committee**

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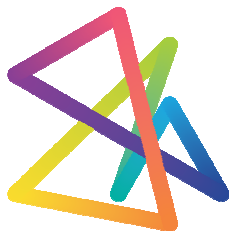
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**Results of the Conference**

Beside printed «Program and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in journals “Tehnika – Novi Materijali” and “Processing and Application of Ceramics“. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony.

**Sponsors**



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## Meet the recipients of 12YRC 2013 awards

**Jovana Zvicer**, PhD student at Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, presented "Cytotoxicity of Ag/alginate nanocomposites: *in vitro* and *in vivo* studies", by Jovana Zvicer, Lenart Girandon, Urška Potočar, Mirjam Fröhlich, Ivan Jančić, Biljana Bufan, Marina Milenković, Jasmina Stojkowska, Vesna Mišković-Stanković, Bojana Obradović. Ms. Zvicer finished academic and master studies and in 2011 enrolled PhD studies and began her research career at the Faculty of Technology and Metallurgy, University of Belgrade. During recent years she has participating in various national and international projects, including Eureka and Cost Action projects. She presented result of her studies in many conferences, including 9YRC 2010, TERMIS 2012, NanoBelgrade 2013, 12YRC 2013, TERMIS 2014, YUCOMAT 2014. Her major fields of interests are tissue engineering, bioreactor cultivations, cytotoxicity studies in different systems and development of novel biomaterials.

**Dr. Marko V. Lubarda**, assistant professor at the Faculty of Polytechnics, University of Donja Gorica, Podgorica, Montenegro, presented "Advanced computational methodologies for modeling realistic polycrystalline magnetic films and devices". Dr. Lubarda finished his BSc studies of physics in 2006 at a Department of Physics, University of California in San Diego, and MSc (in 2007) and PhD (in 2012) studies of materials science and engineering at the same university in their Materials Science and Engineering Program. His research area is computational micromagnetics and device physics. He is a recipient of 7 honours and awards: Elected member of the *Center for Young Scientists* of the *Montenegrin Academy of Sciences and Arts* (March 2014); The 2013 Young Researcher Award from the Montenegrin Academy of Sciences and Arts (December, 2013); The Montenegrin Ministry of Science Annual Award for the Most Outstanding Scientist in Montenegro Under the Age of 35 (December, 2013); Award from the MRS- Serbia for the work on polycrystalline magnetic films and devices presented at 12YRC 2013, held in Belgrade from December 11-13, 2013; Article *APL*, 99, 13 (2011) selected for publication by the American Institute of Physics and the American Physical Society in corporation with other societies and publishers in the October 10, 2011 issue of *Virtual Journal of Nanoscale Science & Technology*; Travel award for the 2010 IEEE Magnetics Society Summer School in Dresden, Germany (2010) - 11th Joint MMM/Intermag Conference, Washington DC, student travel grant recipient (2010). He participated in 16 research projects and 5 research workshops. Until now, Dr. Lubarda presented results of his studies at 26 conferences and published 11 papers in peer-reviewed journals.

**Ivana Jevremović**, PhD student at the Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, presented "Use of quartz crystal microbalance (QCM) measurements to investigate novel top-of-the-line corrosion (TLC) mitigation method", by Ivana Jevremović, Feranando Farelas, Marc Singer, Srdjan Nešić, Vesna Mišković-Stanković. Ms. Jevremović finished her MSc studies in chemical engineering at the Department of Physical Chemistry and Electrochemistry, Faculty of Technology and Metallurgy, University of Belgrade in 2010 and enrolled the PhD studies at the same Faculty. She works as a Research Assistant at the Inovation center of the Faculty of Technology and

Metallurgy, University of Belgrade. She was on a 10 months internship as a research scholar at Institute for Corrosion and Multiphase Technology, Ohio University, where she performed the research related to her PhD thesis on the corrosion inhibition of carbon steel in CO<sub>2</sub> environment. She won the third prize in the category of Harvey Herro Applied corrosion technology within NACE student poster sessions for a poster titled " Top-of-the-line corrosion (TLC) mitigation of mild steel in CO<sub>2</sub> environment using corrosion inhibitor injected within a Foam Carrier in Salt Lake City, USA (2012). She was awarded by Serbian Chemical Society for the overall achievement during B.Sc. studies. Her research interest is particularly focused on the corrosion inhibition of mild steel in CO<sub>2</sub> environment. She is a member of the Serbian Chemical Society and the American Association of Engineers Corrosion (National Association of Corrosion Engineers, NACE). She has published 5 papers in peer-reviewed journals and 18 in conference proceedings.

**Dr. Rafał Poręba** from the Institute of Macromolecular Chemistry AS CR, v.v.i., Prague, Czech Republic, presented "Preparation and characterization of waterborne polyurethane dispersions and films", by Rafał Poręba, Magdalena Serkis and Milena Špírková. Dr. Poręba finished MSc studies in 2009 at the Rzeszow University of Technology, Faculty of Chemistry, Poland, and PhD studies in 2014 at The Institute of Chemical Technology, Faculty of Chemical Technology, Prague, Czech Republic. He works at the Institute of Macromolecular Chemistry Academy of Sciences of the Czech Republic in Prague, Department of Nanostructured Polymers and Composites. He participated at 12 international conferences and is a recipient of 4 awards: best presentation at 12YRC 2013, Dean's Award in recognition of popularization of the Faculty of Chemistry among the youth through organization and leading of chemical shows for secondary school students in 2008, and the annual Rector's Award in acknowledgement of scientific and organizational work in 2007 and 2008.

**Violeta Nikolić**, PhD student and Postgraduate Research Fellow at the Vinča Institute, Condensed Matter Physics Laboratory, University of Belgrade, Belgrade, Serbia, presented "Spin glass like behaviour of magnetite nanoparticle system obtained by thermal decomposition of acetylacetonate precursor", by Violeta Nikolić, Vojislav Spasojević, Vladan Kusigerski, Marija Perović, Ana Mraković, Marko Bosković, Jovan Blanuša. Ms. Nikolić finished her BSc and MSc studies in 2010 and 2011, respectively, at the Faculty of Physical Chemistry, University of Belgrade. She is a member of Society of Physical Chemists of Serbia and Materials Research Society of Serbia and participated at IV International Scientific Conference *Contemporary Materials 2011* – Banja Luka, 12YRC 2013 and YUCOMAT 2014. She participates at the following teams and projects: 2011-2014. – Project: "Magnetic and with radionuclides marked nanostructured materials applicable in medicine"; part of the VINCENT Center of Excellence (National R&D Centre of Excellence for Knowledge-based multifunctional materials; a part of the VINCA Institute); FP7-ERA Chairs project – "Strengthening of the MagBioVin Research and Innovation Team for Development of Novel Approaches for Tumour Therapy based on Nanostructured Materials".

**Programme**  
**Thirteenth Young Researchers Conference**  
**Materials Science and Engineering**

**Wednesday, December 10, 2014**

**08.30            Registration**

**09.00 – 10.00 Opening Ceremony of the Thirteenth Young Researchers Conference – Materials Science and Engineering**  
**Dr. Smilja Marković, President of the Programming and Organizing Committee**  
**Prof. Dr. Dragan Uskoković, President of the Materials Research Society of Serbia**  
**Academician Zoran Djurić, Director of the Institute of Technical Sciences of SASA**  
**12<sup>th</sup> YRC 2013 Awards**

**10.00 – 11.30 1<sup>st</sup> Session – Biomaterials I**  
**Chairpersons: Dr. Magdalena Stevanović and Marija Babić**

**10.00 – 10.15 Polymeric matrices based on 2-hydroxyethyl acrylate and itaconic acid for controlled drug release**  
Marija M. Babić, Bojan Dj. Božić, Katarina M. Antić, Jovana S. Jovašević Vuković, Marija D. Perišić, Jovanka M. Filipović, Simonida Lj. Tomić  
*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*

**10.15 – 10.30 Mesoporous silica nanoparticles and their application in drug delivery**  
Sanja Milenković<sup>1</sup>, Nikola Knežević<sup>1,2</sup>, Aleksandar Djordjević<sup>1</sup>, Danica Jović<sup>1</sup>, Ivana Borišev<sup>1</sup>  
*<sup>1</sup>Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Science, University of Novi Sad, Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia, <sup>2</sup>European University-Faculty of Pharmacy, Trg mladenaca 5, 21000 Novi Sad, Serbia*



**10.30 – 10.45 Effect of a molecular weight on the release process from alginate microbeads**

Jovana M. Ilić<sup>1</sup>, Aleksandar S. Grujić<sup>1</sup>, Mirko Z. Stijepović<sup>1</sup>, Jasna T. Stajić-Trošić<sup>1</sup>, Branko M. Bugarski<sup>2</sup>

<sup>1</sup>University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, 11000 Belgrade, Serbia, <sup>2</sup>University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia

**10.45 – 11.00 Solid state characterization of maltose-embedded hemoglobin from porcine slaughterhouse blood**

Katarina S. Bukara<sup>1</sup>, Ivana T. Kostić<sup>1</sup>, Vesna Lj. Ilić<sup>2</sup>, Smilja B. Marković<sup>3</sup>, Nenad Ž. Lazarević<sup>4</sup>, Branko M. Bugarski<sup>1</sup>

<sup>1</sup>Department of Chemical Engineering, Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11060 Belgrade, Serbia,

<sup>2</sup>Institute for Medical Research, University of Belgrade, Dr Subotica 4 POB 39, 11129 Belgrade 102, Serbia, <sup>3</sup>Institute of Technical Sciences of SASA, Knez Mihailova 35/IV P.O. BOX 377, 11000 Belgrade, Serbia, <sup>4</sup>Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Zemun, Belgrade, Serbia

**11.00 – 11.15 Influence of whey proteins addition on mechanical stability of biopolymer beads with immobilized probiotics**

Nataša Obradović<sup>1</sup>, Tanja Krunic<sup>1</sup>, Ivana Damnjanović<sup>1</sup>, Ana Jenić<sup>2</sup>, Marica Rakin<sup>2</sup>, Marko Rakin<sup>2</sup>, Branko Bugarski<sup>2</sup>

<sup>1</sup>University of Belgrade, Innovation Centre of the Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia, <sup>2</sup>University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia

**11.15 – 11.30 Optimization of chitosan gel preparation for supercritical impregnation of thymol**

Stoja Milovanović<sup>1</sup>, Milica Pantić<sup>2</sup>, Jasna Ivanović<sup>1</sup>, Irena Žižović<sup>1</sup>

<sup>1</sup>University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia, <sup>2</sup>University of Maribor, Faculty of Chemistry and Chemical Engineering, Smetenova ulica 17, 2000 Maribor, Slovenia

**11.30 – 11.45 Break**

**11.45 – 13.30 2<sup>nd</sup> Session – Biomaterials II**

**Chairpersons: Prof. Dr. Nenad Ignjatović and Dr. Sanja Eraković**

**11.45 – 12.00 Effect of surface modification on corrosion behavior of Mg-based implants**

Aydin Tahmasebifar<sup>1</sup>, Said Murat Kayhan<sup>1</sup>, Muammer Koç<sup>2</sup>, Zafer Evis<sup>1</sup>  
<sup>1</sup>Middle East Technical University, Dept. of Engineering Sciences, Ankara, 06800, Turkey, <sup>2</sup>Istanbul Şehir University, Dept. of Industrial and System Engineering, Istanbul, 34660, Turkey

**12.00 – 12.15 Mechanical properties of micro-scale porous surfaces for Mg-based implants**

Said Murat Kayhan<sup>1</sup>, Aydin Tahmasebifar<sup>1</sup>, Zafer Evis<sup>1</sup>, Muammer Koç<sup>2</sup>  
<sup>1</sup>Middle East Technical University, Dept. of Engineering Sciences, Ankara, 06800, Turkey, <sup>2</sup>Istanbul Şehir University, Dept. of Industrial and System Engineering, Istanbul, 34660, Turkey

**12.15 – 12.30 Plasma surface modification of chitosan films to control biocompatibility**

Tatiana S. Demina<sup>1</sup>, M.G. Drozdova<sup>2</sup>, M.Yu. Yablokov<sup>1</sup>, A.B. Gilman<sup>1</sup>, T.A. Akopova<sup>1</sup>, E.A. Markvicheva<sup>2</sup>, A.N. Zelenetskii<sup>1</sup>  
<sup>1</sup>Enikolopov Institute of Synthetic Polymer Materials RAS, Moscow, Russia, <sup>2</sup>Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry RAS, Moscow, Russia

**12.30 – 12.45 Hemolytic, antimicrobial and histological analysis of nanocomposite biomaterials based on HAP and polymers**

Zorica Ajduković<sup>1</sup>, Nenad Petrović<sup>2</sup>, Nenad Ignjatović<sup>3</sup>, Tatjana Mihajilov-Krstev<sup>4</sup>, Jelena Rajković<sup>4</sup>, Dragana Kenic Marinković<sup>5</sup>, Dragan Uskoković<sup>3</sup>  
<sup>1</sup>University of Niš, Faculty of Medicine, Clinic of Stomatology, Department of Prosthodontics, Bulevar Zorana Djindjića 81, 18000 Niš, Serbia, <sup>2</sup>University of Niš, Faculty of Medicine, Department of Dentistry, Bulevar Zorana Djindjića 81, 18000 Niš, Serbia, <sup>3</sup>Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, PO Box 377, 11000 Belgrade, Serbia, <sup>4</sup>University of Niš, Faculty of Science and Mathematics, Department of Biology and Ecology, Višegradska 33, P. O. Box 224, 18000 Niš, Serbia, <sup>5</sup>Private dental practice “Kalodent” Niš, Pasterova 15, 18 000 Niš, Serbia

**12.45 – 13.00 Electrophoretic hybrid hydroxyapatite/graphene coatings on titanium**

Sanja Eraković<sup>1</sup>, Ana Janković<sup>1</sup>, Miodrag Mitrić<sup>2</sup>, Ivana Z. Matić<sup>3</sup>, Zorica D. Juranić<sup>3</sup>, Gary C.P. Tsui<sup>4</sup>, Chak-yin Tang<sup>4</sup>, Vesna Mišković-Stanković<sup>1</sup>, Kyong Yop Rhee<sup>5</sup>, Soo Jin Park<sup>6</sup>  
<sup>1</sup>Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, <sup>2</sup>Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia, <sup>3</sup>Institute of Oncology and Radiology of Serbia, Belgrade, Serbia, <sup>4</sup>Department of Industrial and Systems Engineering, The Hong Kong

*Polytechnic University, Hung Hom, Kowloon, Hong Kong, PR China,*  
*<sup>5</sup>Department of Mechanical Engineering, Kyung Hee University, Yongin,*  
*Korea, <sup>6</sup>Chemistry, Collage of Natural Sciences, Inha University, Incheon,*  
*Korea*

**13.00 – 13.15 Processing and properties of bioceramic materials based on hydroxyapatite doped with ions of magnesium and copper**

Tanja Stamenić, Djordje Veljović, Rada Petrović, Djordje Janačković  
*Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, Belgrade, Serbia*

**13.15 – 13.30 Sintered bioactive glass-ceramics prepared from strontium containing polyphosphate glass**

Vladimir S. Topalović<sup>1</sup>, V.D. Živanović<sup>1</sup>, S.D. Matijašević<sup>1</sup>, J.D. Nikolić<sup>1</sup>, S.R. Grujić<sup>2</sup>, S.V. Smiljanić<sup>2</sup>, S.N. Zildžović<sup>1</sup>  
*<sup>1</sup>Institute for the Technology of Nuclear and other Mineral Raw Materials, 86 Franchet d'Esperey St., 11000 Belgrade, Serbia, <sup>2</sup>Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia*

**13.30 – 13.45 Break**

**13.45 – 15.15 3<sup>rd</sup> Session – Biomaterials III**

**Chairpersons: Dr. Djordje Veljović and Jovana Jovašević**

**13.45 – 14.00 Early fracture healing in ovariectomized rats femur helped with alfacalcidol and platelet-rich plasma on bio-oss carrier**

Jelena Rajković<sup>1</sup>, Stevo Najman<sup>2</sup>, Sanja Stojanović<sup>2</sup>, Ljubiša Djordjević<sup>1</sup>, Vladimir Cvetković<sup>1</sup>, Zorica Ajduković<sup>3</sup>  
*<sup>1</sup>University of Niš, Faculty of Science and Mathematics, Department of Biology and Ecology, Niš, Serbia; <sup>2</sup>University of Niš, Faculty of Medicine, Department for Cell and Tissue Engineering; Institute of Biology and Human Genetics, Niš, Serbia; <sup>3</sup>University of Niš, Faculty of Medicine, Clinic of Stomatology, Department of Prosthodontics, Niš, Serbia*

**14.00 – 14.15 Fabrication and characterization of electrospun PCL/PHBHHx fibers**

Giulia Rella<sup>1</sup>, Ranjana Rai<sup>1</sup>, Marwa Tallawi<sup>1</sup>, Judith E. Roether<sup>2</sup>, Joachim Kaschta<sup>2</sup>, Dirk W. Schubert<sup>2</sup>, Aldo R. Boccaccini<sup>1</sup>  
*<sup>1</sup>Institute of Biomaterials, Department of Materials Science and Engineering, University of Erlangen-Nuremberg, Cauerstr. 6, 91058 Erlangen, Germany, <sup>2</sup>Institute of Polymer Materials, Department of Materials Science and*

*Engineering, University of Erlangen-Nuremberg, Martensstr. 7, 91058 Erlangen, Germany*

**14.15 – 14.30 Antibacterial activity of a new clay-TiO<sub>2</sub> nanocomposites on gram positive and gram-negative bacteria**

Amir Lashgari, Shahriar Ghamami

*Department of Chemistry, Faculty of Science, Imam Khomeini International University, Qazvin, Iran*

**14.30 – 14.45 Synthesis, characterization, anti-tumor and antibacterial activities study of nano leaf CuO**

Shahriar Ghamami, Amir Lashgari

*Department of Chemistry, Faculty of Science, Imam Khomeini International University, Qazvin, Iran*

**14.45 – 15.00 Evaluation of genotoxicity of (meth)acrylate polymers in HeLa cells by using alkaline comet assay**

Dijana Takić Miladinov<sup>1</sup>, Jelena Najdanović<sup>2</sup>, Dragana Tričković-Vukić<sup>2</sup>, Sanja Stojanović<sup>2</sup>, Simonida Tomić<sup>3</sup>, Perica Vasiljević<sup>1</sup>, Stevo Najman<sup>2</sup>

<sup>1</sup>*University of Niš, Faculty of Science and Mathematics, Department of Biology and Ecology, Niš, Serbia;* <sup>2</sup>*University of Niš, Faculty of Medicine, Institute of Biology and Human Genetics, Niš, Serbia;* <sup>3</sup>*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia*

**15.00 – 15.15 Structural, release and antibacterial properties of pH sensitive hydrogels based on 2-hydroxyethyl acrylate and itaconic acid with incorporated copper(II) ions**

Jovana S. Jovašević Vuković, Marija M. Babić, Katarina M. Antić, Marija D. Perišić, Jovanka M. Filipović, Simonida Lj. Tomić

*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*

**15.15 – 16.15 Lunch Break with refreshments**

**16.15 – 18.00 4<sup>th</sup> Session – Nanomaterials: Synthesis and characterization  
Chairpersons: Dr. Dragana Jugović and Dr. Bjorn Eckhardt**

**16.15 – 16.30 Investigation of Fe<sub>3</sub>O<sub>4</sub>@cyanuric chloride supermagnetic nanoparticles effects on physical properties of flexible polyurethane foam nanocomposites**

Mir Mohammad Alavi Nikje, Seideh Leila Rahmani Andabil and Lida Sarchami

*Department of Chemistry, Faculty of Science, Imam Khomeini International University, Qazvin, Iran*

- 16.30 – 16.45 Preparation and characterization of polyurethane rigid foam nanocomposites by incorporation of magnetic core-shell Fe<sub>3</sub>O<sub>4</sub>@APTS/2-Chloropyridine nanoparticles**  
Mir Mohammad Alavi Nikje, Lida Sarchami and Seideh Leila Rahmani Andabil  
*Department of Chemistry, Faculty of Science, Imam Khomeini International University, Qazvin, Iran*
- 16.45 – 17.00 The synthesis of micelle-templated mesoporous metal carbonates and metal oxides**  
Björn Eckhardt, Erik Ortel, Ralph Kraehnert  
*Technical University of Berlin, Berlin, Germany*
- 17.00 – 17.15 The influence of synthesis parameters on physicochemical properties of hydrothermally/solvothermally derived cobalt ferrite nanoparticles**  
Sonja Jovanović<sup>1</sup>, Matjaž Spreitzer<sup>2</sup>, Danilo Suvorov<sup>2</sup>  
*<sup>1</sup>Laboratory of Physics, Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia, <sup>2</sup>Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia*
- 17.15 – 17.30 Fullerene C<sub>60</sub> dimer oxides**  
Igor Medić, Aleksandar Djordjević, Ivana Borišev, Danica Jović  
*Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Science, University of Novi Sad, Trg D. Obradovića 3, 21000 Novi Sad, Serbia*
- 17.30 – 17.45 Photocatalytic behavior of nanostructured systems based on Ag&ZnO synthesized by solvothermal method**  
Lidia Muñoz<sup>1</sup>, A. Sierra-Fernández<sup>1,2</sup>, L.S. Gómez-Villalba<sup>2</sup>, O. Milošević<sup>3</sup>, M.E. Rabanal<sup>1</sup>  
*<sup>1</sup>University Carlos III of Madrid and IAAB, Department of Materials Science and Engineering and Chemical Engineering, Avda. Universidad 30, 28911 Leganes, Madrid, Spain, <sup>2</sup>Instituto de Geociencias (CSIC, UCM), C/ José Antonio Novais 2, 28040 Madrid, Spain, <sup>3</sup>Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11000 Belgrade, Serbia*
- 17.45 – 18.00 Release profiles of a new quinolone derivative from mesoporous silica materials**  
Mihaela Deaconu<sup>1,2</sup>, Lucia Pintilie<sup>2</sup>, Dragoş Gudovan<sup>1</sup>, Dan Mihaiescu<sup>1</sup>  
*<sup>1</sup>University “Politehnica” of Bucharest, Faculty of Applied Chemistry and Materials Science, 1-7 Gh Polizu Street, 011061 Bucharest, Romania,*

<sup>2</sup>*National Institute for Chemical-Pharmaceutical Research and Development,  
112 Vitan Av., 031299 Bucharest, Romania*

**Thursday, December 11, 2014**

**09.00 – 10.45 5<sup>th</sup> Session – Theoretical Modelling of Materials I**

**Chairpersons: Dr. Željka Nikitović and Dr. Siniša Vučenović**

**09.00 – 09.15 Helically coiled carbon nanotubes as nanomechanical oscillators**

Zoran P. Popović, Milan Damnjanović, Ivanka Milošević

*Faculty of Physics, University of Belgrade, 11001 Belgrade, Serbia*

**09.15 – 09.30 Electronic nature of the low-temperature anomalies of specific heat in carbon nanotubes**

Alexander Ponomarev<sup>1</sup>, Valery Egorushkin<sup>1</sup>, Natalia Melnikova<sup>2</sup>, Nadezhda Bobenko<sup>1</sup>

<sup>1</sup>*Institute of Strength Physics and Materials Science Siberian Branch of Russian Academy of Sciences, Tomsk 634021, Russia,* <sup>2</sup>*V.D. Kuznetsov Siberian Physical Technical Institute of Tomsk State University, Tomsk 634050, Russia*

**09.30 – 09.45 Carbon nanotubes based active area of field effect transistors – basic analytical models**

Nikola V. Stojiljković<sup>1</sup>, Petar M. Lukić<sup>1</sup>, Vladan M. Lukić<sup>1</sup>, Rajko M. Šašić<sup>2</sup>

<sup>1</sup>*Faculty of Mechanical Engineering, University of Belgrade, Kraljice Marije 16, 11120 Belgrade, Serbia,* <sup>2</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11120 Belgrade*

**09.45 – 10.00 Investigation of Risken–Nummedal–Graham–Haken instabilities in quantum cascade lasers**

Nikola Vuković<sup>1</sup>, Jelena Radovanović<sup>1</sup>, Vitomir Milanović<sup>1</sup>, Dmitri L. Boiko<sup>2</sup>

<sup>1</sup>*School of Electrical Engineering, University of Belgrade, RS-11120, Belgrade, Serbia,* <sup>2</sup>*Centre Suisse d'Electronique et de Microtechnique SA, 2002, Neuchâtel, Switzerland*

**10.00 – 10.15 First principle calculation of phonons and electron-phonon interaction in graphene**

Jelena Pešić, Vladimir Damljanović, Radoš Gajić

*Graphene laboratory, Center for Solid State Physics and New Materials, Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade*

**10.15 – 10.30 Wake effect in the interaction of slow correlated charges with supported graphene due to plasmon-phonon hybridization**

Tijana Marinković<sup>1</sup>, Ivan Radović<sup>1</sup>, Duško Borka<sup>1</sup>, Zoran L. Mišković<sup>2</sup>  
<sup>1</sup>VINČA Institute of Nuclear Sciences, University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia, <sup>2</sup>Department of Applied Mathematics, and Waterloo Institute for Nanotechnology, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1

**10.30 – 10.45 Analytical and computational modeling for the study of magnetization response in nanoscale heterostructures envisioned for coming generation memory and processing applications**

Marko V. Lubarda<sup>1</sup>, Majd Kuteifan<sup>2</sup>, Sidi Fu<sup>2</sup>, Ruinan Chang<sup>2</sup>, Marco A. Escobar<sup>2</sup>, Stephane Mangin<sup>3</sup>, Eric E. Fullerton<sup>2</sup>, Vitaliy Lomakin<sup>2</sup>  
<sup>1</sup>Faculty of Polytechnics, University of Donja Gorica, 81000 Podgorica, Montenegro, <sup>2</sup>Center for Magnetic Recording Research, University of San Diego, California, USA, <sup>3</sup>Institut Jean Lamour, Université de Lorraine, Vandoeuvre-Les-Nancy, France

**10.45 - 11.15 Break**

**11.15 – 12.45 6<sup>th</sup> Session – Theoretical Modelling of Materials II**  
**Chairpersons: Dr. Boban Stojanović and Zoran Popović**

**11.15 – 11.30 Minimal volume photoacoustic cell as a Helmholtz resonator**

Miroljub Nešić<sup>1,2</sup>, Marica Popović<sup>1,2</sup>, M. Rabasović<sup>3</sup>, Dragan Markušev<sup>3</sup>, Slobodanka Galović<sup>2</sup>  
<sup>1</sup>School of Electrical Engineering, University of Belgrade, Bulevar Kralja Aleksandra 73, 10120, Belgrade, Serbia, <sup>2</sup>Vinca Institute of Nuclear Sciences, University of Belgrade, PO Box 522, 10001, Belgrade, Serbia, <sup>3</sup>Institute of Physics, Belgrade, University of Belgrade, Pregrevica 118, 11080 Zemun, Serbia

**11.30 – 11.45 Optoelectronic and charge carrier hopping properties of small diameter boron nitride nanotubes**

Stevan Armaković<sup>1</sup>, Sanja J. Armaković<sup>2</sup>, Jovan P. Šetrajić<sup>1</sup>  
<sup>1</sup>University of Novi Sad, Faculty of Sciences, Department of Physics, Trg Dositeja Obradovića 4, 21000, Novi Sad, Serbia, <sup>2</sup>University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Trg Dositeja Obradovića 3, 21000, Novi Sad, Serbia

- 11.45 – 12.00 Modification of electronic and chemical properties of graphene by oxygen-containing functional groups – First principles study**  
Ana Dobrota, Igor Pašti  
*University of Belgrade, Faculty of Physical Chemistry, Studentski trg 12-16, 11158 Belgrade, Serbia*
- 12.00 – 12.15 Photoisomerisation mechanism of novel molecular switches – a theoretical investigation**  
Dušan Dimić, Milena Petković  
*Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, 11 158 Belgrade*
- 12.15 – 12.30 Determination of paracetamol in pharmaceuticals by pulse perturbation of the Bray-Liebhafsky oscillatory reaction**  
Ana Stanojević<sup>1</sup>, Nataša Pejić<sup>2</sup>, Ljiljana Kolar-Anić<sup>1, 3</sup>, Slobodan Anić<sup>3</sup>, Dragomir Stanislavljev<sup>1</sup>, Željko Čupić<sup>3</sup>  
<sup>1</sup>*Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia,*  
<sup>2</sup>*Faculty of Pharmacy University of Belgrade, Belgrade, Serbia,* <sup>3</sup>*Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Department of Catalysis and Chemical Engineering, Belgrade, Serbia*
- 12.30 – 12.45 Application of multi-criteria decision making (MCDM) methods for biomedical materials selection**  
Dušan Petković, Miloš Madić, Miodrag Manić, Goran Radenković  
*Faculty of Mechanical Engineering, University of Niš, Aleksandra Medvedeva 14 Niš, Serbia*
- 12.45 – 14.15 Lunch break with refreshments**
- 14.15 – 15.45 7<sup>th</sup> Session – Metallurgy and Corrosion of Materials I**  
**Chairpersons: Dr. Dragomir Glišić and Ivana Jevremović**
- 14.15 – 14.30 Representation of microstructure of artificially aged 6061 aluminum alloy using two different etching solutions**  
Uroš Stamenković  
*Univerzitet u Beogradu, Tehnički fakultet u Boru, Vojske Jugoslavije 12, 19210 Bor, Serbia*
- 14.30 – 14.45 Electrochemical and thermodynamic investigation of talloil diethylenetriamine imidazoline as corrosion inhibitor for carbon dioxide corrosion of mild steel**  
Ivana Jevremović<sup>1</sup>, Marc Singer<sup>2</sup>, Srđan Nešić<sup>2</sup>, Vesna Mišković-Stanković<sup>1</sup>



<sup>1</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia;* <sup>2</sup>*Institute for Corrosion and Multiphase Technology, Ohio University, Athens, OH, USA*

**14.45 – 15.00 Anticorrosive epoxy/clay nanocomposites and nanocoatings**

Miloš Tomić<sup>1</sup>, Violeta Likić<sup>2</sup>, Branko Dunjić<sup>1</sup>, Jasna Djonlagić<sup>1</sup>

<sup>1</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, Belgrade, Serbia,* <sup>2</sup>*Zvezda-Helios, Radovana Grkovića 24, 32000 Gornji Milanovac, Serbia*

**15.00 – 15.15 Impact of crankshaft material on the elastic line deformation of his main journal**

Asllan Hajderi<sup>1</sup>, R. Kosova<sup>2</sup>

<sup>1</sup>*Department of Mechanic and Transport, “Aleksander Moisiu” University” Durres, Albania,* <sup>2</sup>*Department of Mathematics “Aleksander Moisiu” University” Durres, Albania*

**15.15 – 15.30 Investigation on kinetics of hydrogen absorption by Zr-based alloys**

Dragan Conić, Katarina Batalović

*Laboratory for nuclear and plasma physics, Vinca Institute of nuclear sciences, University of Belgrade, P.O.Box 522, Belgrade, Serbia*

**15.30 – 15.45 Thermally induced structural transformations of Fe<sub>40</sub>Ni<sub>40</sub>P<sub>14</sub>B<sub>6</sub> amorphous alloy**

Milica M. Vasić, Vladimir A. Blagojević, Dragica M. Minić

*Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, Belgrade, Serbia*

**15.45 – 16.00 Break**

**16.00 – 17.00 8<sup>th</sup> Session – Metallurgy and Corrosion of Materials II  
Chairpersons: Dr. Dragomir Glišić and Ivana Jevremović**

**16.00 – 16.15 Mechanochemical treatment – a new way in powder metallurgy diamonds tools technology**

Teodora Sikora<sup>1</sup>, Janusz Konstanty<sup>2</sup>, Andrzej Romański<sup>2</sup>, Krystyna Wieczorek-Ciurowa<sup>1</sup>

<sup>1</sup>*Cracow University of Technology, Faculty of Chemical Engineering and Technology, Cracow, Poland,* <sup>2</sup>*AGH - University of Science and Technology, Faculty of Metals Engineering and Industrial Computer Science, Cracow, Poland*

- 16.15 – 16.30 Prediction of electrical resistivity values for binary alloys in Ag-Au-Cu-Pd system using artificial neural networks**  
Nikola Kostić, Dragana Živković, Saša Stojadinović, Dragan Manasijević, Ljubiša Balanović  
*University of Belgrade, Technical faculty in Bor, VJ12, 19210 Bor, Serbia*
- 16.30 – 16.45 Train brakes for high speed trains**  
Nemanja Trifunović<sup>1</sup>, Dejan Trifunović<sup>2</sup>, Mirko Stijepović<sup>1</sup>, Aleksandar Grujić<sup>1</sup>, Jasna Stajić-Trošić<sup>1</sup>  
<sup>1</sup>*University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, 11000 Belgrade, Serbia*, <sup>2</sup>*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia*
- 16.45 – 17.00 The magnetocaloric properties of the Mn<sub>2-x</sub>Fe<sub>x</sub>P<sub>0.5</sub>As<sub>0.5</sub> (x = 1.0 and 0.7) compounds**  
Igor Radelytskyi<sup>1</sup>, R. Szymczak<sup>1</sup>, A. Ślawska-Waniewska<sup>1</sup>, V. Dyakonov<sup>1,2</sup>  
<sup>1</sup>*Institute of Physics, PAS, 02-668 Warsaw, Al. Lotników 32/46, Poland*, <sup>2</sup>*Donetsk Institute for Physics and Engineering named after O.O. Galkin, NASU, 83114 Donetsk, R. Luxembourg str. 72, Ukraine*
- 17.00 – 17.15 Break**
- 17.15 – 18.15 9<sup>th</sup> Session – Polymer Science**  
**Chairpersons: Prof. Dr. Gordana Ćirić-Marjanović and Dr. Tatiana Demina**
- 17.15 – 17.30 Chitosan-based materials for laser stereolithography**  
Tatiana S. Demina<sup>1</sup>, T.A. Akopova<sup>1</sup>, P.S. Timashov<sup>2</sup>, V.N. Bagratashvili<sup>2</sup>, A.N. Zelenetskii<sup>1</sup>  
<sup>1</sup>*Enikolopov Institute of Synthetic Polymer Materials RAS, Moscow, Russia*, <sup>2</sup>*Institute on Laser and Information Technologies RAS, Troitsk, Russia*
- 17.30 – 17.45 Investigations on Methacrylate based polyHIPEs for possible application as separators in Li-ion batteries**  
Werner Paschinger, Alexander Bismarck  
*Institute for Materials Chemistry & Research, University of Vienna, Waehringer Straße 42, A-1090 Wien, Austria*
- 17.45 – 18.00 Synthesis and characterization of biodegradable diblock and triblock copolymers based on PCL and PEO**  
Marijana Ponjavić, Marija Nikolić, Jasna Djonlagić  
*Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva*

4, Belgrade, Serbia

**18.00 – 18.15 Synthesis and characterization of modified pectin films intended for food packaging application**

Sanja Sešlija<sup>1</sup>, Aleksandra Nešić<sup>2</sup>, Roberto Avolio<sup>3</sup>, Maria Errico<sup>3</sup>, Mario Malinconico<sup>3</sup>, Sava Veličković<sup>4†</sup>, Melina Kalgasidis Krušić<sup>4</sup>, Ivanka Popović<sup>4</sup>

<sup>1</sup>*Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Belgrade, Serbia,* <sup>2</sup>*Vinča Institute for Nuclear Sciences, University of Belgrade, Belgrade, Serbia,* <sup>3</sup>*Institute on Polymer Chemistry and Technology, Pozzuoli (Na), Italy,* <sup>4</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*

**Friday, December 12, 2014**

**09.00 – 11.00 10<sup>th</sup> Session – Composites**

**Chairpersons: Dr. Edin Suljovrujić and Nataša Tomić**

**09.00 – 09.15 Adhesion effects of ethylene-vinyl acetate copolymer (EVA) on optical fibers**

Nataša Z. Tomić, Bojan I. Medjo, Marko P. Rakin, Radmila M. Jančić–Heinemann, Radoslav R. Aleksić<sup>†</sup>

*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia*

**09.15 – 09.30 Impact testing of kolon *p*-aramid fabrics with various types of reinforcement**

Vera Obradović, Dušica Stojanović, Miloš Petrović, Irena Živković, Vesna Radojević, Petar Uskoković, Radoslav Aleksić<sup>†</sup>

*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia*

**09.30 – 09.45 Mechanical properties of experimental composites containing a low-shrinkage monomer and monoacylphosphine oxide photoinitiator**

Jovana Stasić<sup>1</sup>, Dragica Manojlović<sup>1</sup>, Ivana Cvijović-Alagić<sup>2</sup>, Maja Lezaja<sup>1</sup>, Tatjana Savić-Stanković<sup>1</sup>, Vesna Miletić<sup>1</sup>

<sup>1</sup>*University of Belgrade, School of Dental Medicine, DentalNet Research Group, Rankeova 4, Belgrade, Serbia,* <sup>2</sup>*University of Belgrade, Institute of Nuclear Sciences „Vinča“, P.O. Box 522, 11000 Belgrade, Serbia*

**09.45 – 10.00 Composite solid electrolytes based on LiNO<sub>2</sub>**

Yulia G. Mateyshina, A.S. Ulihin, N.F. Uvarov

*Institute of Solid State Chemistry and Mechanochemistry, Kutateladze 18,  
Novosibirsk, Russia*

- 10.00 – 10.15 Structure and properties of  $\text{BaTiO}_3 - \text{Ni}_{(1-x)}\text{Zn}_{(x)}\text{Fe}_2\text{O}_4$  composites**  
Adis S. Džunuzović<sup>1</sup>, N.I. Ilić<sup>1</sup>, M.M. Vijatović Petrović<sup>1</sup>, J.D. Bobić<sup>1</sup>, R. Grigalaitis<sup>2</sup>, B.D. Stojanović<sup>1</sup>  
<sup>1</sup>*Institute for Multidisciplinary Research, Belgrade University, Belgrade, Serbia,* <sup>2</sup>*Faculty of Physics, Vilnius University, Vilnius, Lithuania*
- 10.15 – 10.30 Dielectrical properties of  $\text{Er}_2\text{O}_3$  doped  $\text{BaTiO}_3$  ceramics**  
Miloš Marjanović, Miloš Djordjević, Vesna Paunović  
*University of Niš, Faculty of Electronic Engineering, Aleksandra Medvedeva 14, Niš, Serbia*
- 10.30 – 10.45 Effect of Y-doping on structure and properties of multiferroic  $\text{BiFeO}_3$  ceramics**  
Nikola Ilić<sup>1</sup>, Bojan Stojadinović<sup>2</sup>, Adis Džunuzović<sup>1</sup>, Jelena Bobić<sup>1</sup>, Zorana Dohčević-Mitrović<sup>2</sup>, Biljana Stojanović<sup>1</sup>  
<sup>1</sup>*Institute for Multidisciplinary Research, University of Belgrade, Kneza Višeslava 1, 11000 Belgrade, Serbia,* <sup>2</sup>*Institute of Physics, University of Belgrade, Pregrevica 118, Belgrade, Serbia*
- 10.45 – 11.00 The role of mechanochemistry in preparation of high dielectric constant and low-loss electroceramics**  
Piotr Dulan<sup>1</sup>, W. Bąk<sup>2</sup>, Cz. Kajtoch<sup>2</sup>, K. Wieczorek-Ciurowa<sup>1</sup>  
<sup>1</sup>*Faculty of Chemical Engineering and Technology, Cracow University of Technology, 24, Warszawska Str., 31-155 Cracow, Poland,* <sup>2</sup>*Institute of Physics, Pedagogical University, 2, Podchorążych Str., 30-084 Cracow, Poland*
- 11.00 - 11.15 Break**
- 11.15 – 12.45 11<sup>th</sup> Session – Catalysis**  
**Chairpersons: Dr. Predrag Banković and Mila Krstajić**
- 11.15 – 11.30 Analysis of catalyst wetting efficiency influence on performances of industrial TBR for hydrodesulfurization and hydrodearomatization reactions**  
Ivana M. Mijatović, Sandra B. Glišić, Aleksandar M. Orlović  
*Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11120 Belgrade, Serbia*

**11.30 – 11.45 Formic acid electrooxidation on carbon supported platinum catalyst with preferential plane orientation**

Mila N. Krstajić<sup>1</sup>, Sanja I. Stevanović<sup>1</sup>, Snežana Lj. Gojković<sup>2</sup>, Vladislava M. Jovanović<sup>1</sup>

<sup>1</sup>*Department of Electrochemistry, ICTM, University of Belgrade, Serbia*

<sup>2</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Serbia*

**11.45 – 12.00 Effect of electron acceptors on the kinetics of alprazolam photodegradation under simulated solar irradiation**

Nina L. Finčur, Daniela V. Šojić, Vesna N. Despotović, Biljana F. Abramović

*University of Novi Sad, Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Sciences, Trg D. Obradovića 3, 21000 Novi Sad, Serbia*

**12.00 – 12.15 Influence of calcination temperature of La-doped titania to the degradation efficiency of beta blockers in water suspension**

Sanja Armaković<sup>1</sup>, Biljana Abramović<sup>1</sup>, Mirjana Grujić-Brojčin<sup>2</sup>, Maja Ščepanović<sup>2</sup>, Aleksandar Golubović<sup>2</sup>

<sup>1</sup>*Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Sciences, University of Novi Sad, Trg D. Obradovića 3, 21000 Novi Sad, Serbia,* <sup>2</sup>*Center for Solid State Physics and New Materials, Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia*

**12.15 – 12.30 Hydrogen storage in MgH<sub>2</sub> enhanced by addition of VO<sub>2</sub>(B)**

Sanja Milošević<sup>1</sup>, Luca Pasquini<sup>2</sup>, Igor Milanović<sup>1</sup>, Andjelka Djukić<sup>1</sup>, Ljiljana Matović<sup>1</sup>, Željka Rašković-Lovre<sup>1</sup>, Jasmina Grbović Novaković<sup>1</sup>

<sup>1</sup>*Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia,* <sup>2</sup>*Department of Physics and Astronomy, University of Bologna, Bologna, Italy*

**12.30 – 12.45 Desorption properties of MgH<sub>2</sub>-TiO<sub>2</sub> nanocomposites for hydrogen storage**

Ana Mraković<sup>1</sup>, Sanja Milošević<sup>1</sup>, Radojka Vujasin<sup>1</sup>, Slavko Mentus<sup>2</sup>, Sandra Kurko<sup>1</sup>, Jasmina Grbović Novaković<sup>1</sup>

<sup>1</sup>*Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia,* <sup>2</sup>*Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia*

**12.45 – 13.45 Lunch break with refreshments**

**13.45 – 15.15 12<sup>th</sup> Session – Environmental Science**

**Chairmen: Dr. Smilja Marković and Mina Jovanović**

**13.45 – 14.00 Magnetic macroporous copolymer for technetium-99 removal from contaminated groundwater**

Bojana Ekmešić<sup>1</sup>, Drina Janković<sup>2</sup>, Danijela Maksin<sup>2</sup>, Aleksandar Vukadinović<sup>2</sup>, Aleksandra Nastasović<sup>1</sup>, Vojislav Spasojević<sup>2</sup>, Vladan Kusigerski<sup>2</sup>

<sup>1</sup>University of Belgrade, ICTM, Njegoševa 12, Belgrade, Serbia, <sup>2</sup>University of Belgrade, Vinča Institute of Nuclear Sciences, P.O. Box 522, Belgrade, Serbia

**14.00 – 14.15 Technetium-99 removal by amino-functionalized macroporous copolymer**

Zvezdana Sandić<sup>1</sup>, Bojana Ekmešić<sup>3</sup>, Aleksandar Vukadinović<sup>2</sup>, Drina Janković<sup>2</sup>, Danijela Maksin<sup>2</sup>, Ljiljana Suručić<sup>3</sup>, Aleksandra Nastasović<sup>3</sup>

<sup>1</sup>University of Banja Luka, Faculty of Sciences, Mladena Stojanovića 2, Banja Luka, Republic of Srpska, B&H, <sup>2</sup>University of Belgrade, Vinča Institute of Nuclear Sciences, P.O. Box 522, Belgrade, Serbia, <sup>3</sup>University of Belgrade, ICTM, Njegoševa 12, Belgrade, Serbia

**14.15 – 14.30 The application of the polymer-zeolyte composite materials for the waste gas treatment**

Dragutin M. Nedeljković, Aleksandar S. Stajčić, Aleksandar S. Grujić, Mirko Z. Stijepović, Jasna T. Stajić-Trošić

University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, 11000 Belgrade, Serbia

**14.30 – 14.45 Mn(II) adsorption onto commercial zeolite A: process kinetics and mechanism**

Mina Jovanović<sup>1</sup>, Iztok Arcon<sup>2,3</sup>, Nataša Novak Tusar<sup>4,2</sup>, Bojana Obradović<sup>5</sup>, Nevenka Rajić<sup>5</sup>

<sup>1</sup>Innovation Center of the Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia, <sup>2</sup>University of Nova Gorica, Vipavska 13, 5000 Nova Gorica, Slovenia, <sup>3</sup>Institute Jozef Stefan, Jamova 39, 1000 Ljubljana, Slovenia, <sup>4</sup>National Institute of Chemistry, Hajdrihova 19, 1000 Ljubljana, Slovenia, <sup>5</sup>Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia

**14.45 – 15.00 Dynamic adsorption of Rhodamine B from dilute aqueous solutions using negatively-charged membrane adsorbers**

Tanja Tomković, Aleksandra Nastasović, Filip Radovanović

University of Belgrade, Institute for Chemistry, Technology and Metallurgy, Njegoševa 12, Belgrade

**15.00 – 15.15 Organic/inorganic nanosilica support role in the recovery of terephthalic acid from poly(ethylene terephthalate) wastes**

Elmira Ghamary, Mir Mohammad Alavi Nikje

*Chemistry Department, Faculty of Science, Imam Khomeini International University, PO Box: 288, Qazvin, Iran*

**15.15 – 15.30 Quantification of basic dyes adsorption onto mesoporous silica SBA-15 using image analysis software**

Aleksandra Nešić<sup>1</sup>, Maja Kokunesoski<sup>1</sup>, Tatjana Volkov-Husović<sup>2</sup>, Sava Veličković<sup>2†</sup>

<sup>1</sup>*Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade,*

<sup>2</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*

**15.30 - 15.45 Break**

**15.45 – 17.15 13<sup>th</sup> Session – Thin films and coatings**

**Chairmen: Dr. Rastko Vasilic and Alexander Kukharchik**

**15.45 – 16.00 Study of the surface topography of thin-film conductive nanostructured coatings and the relative effects**

Alexander Kukharchik<sup>1,2</sup>, Natalia Kamanina<sup>1,2</sup>

<sup>1</sup>*Lab for Photophysics of media with nanoobjects, Vavilov State Optical Institute, Kadetskaya Liniya V.O., dom.5, korpus 2, St.- Petersburg, 199053, Russia,* <sup>2</sup>*Saint-Petersburg Electrotechnical University (“LETI”), St. Petersburg, Russia*

**16.00 – 16.15 Structural characterization of BaTiO<sub>3</sub> thin films obtained with spin coating and inkjet printing method**

Jelena Vukmirović<sup>1</sup>, Djordjije Tripković<sup>1</sup>, Branimir Bajac<sup>1</sup>, Nataša Samardžić<sup>2</sup>, Elvira Djurdjić<sup>3</sup>, Željka Cvejić<sup>3</sup>, Goran Stojanović<sup>2</sup>, Vladimir V. Srdić<sup>1</sup>

<sup>1</sup>*Department of Materials Engineering, Faculty of Technology, University of Novi Sad, Serbia,* <sup>2</sup>*Department of Microelectronics, Faculty of Technical Sciences, University of Novi Sad, Serbia,* <sup>3</sup>*Department of Physics, Faculty of Sciences, University of Novi Sad, Serbia*

**16.15 – 16.30 Synthesis, structural characterization and dielectric properties of barium titanate thin films**

Jovana Stanojević<sup>1</sup>, Branimir Bajac<sup>1</sup>, Jelena Vukmirović<sup>1</sup>, Djordjije Tripković<sup>1</sup>, Elvira Djurdjić<sup>2</sup>, Željka Cvejić<sup>2</sup>, Vladimir Srdić<sup>1</sup>

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**16.30 – 16.45 Graphene synthesis from solid precursor: the effect of annealing temperature and time**

Jovana Prekodravac<sup>1</sup>, Zoran Marković<sup>1</sup>, Ivanka Holclajtner Antunović<sup>2</sup>, Svetlana Jovanović<sup>1</sup>, Milica Budimir<sup>1</sup>, Biljana Todorović Marković<sup>1</sup>  
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**16.45 – 17.00 Relaxation of AC conductivity of isotactic polypropylene(iPP) after treatment in a solution of LiCl at a high positive electrical potential**

Ivan Petronijević<sup>1</sup>, Filip Marinković<sup>1</sup>, Jablan Dojčilović<sup>1</sup>, Adriaan S. Luyt<sup>2</sup> and Duško Dudić<sup>2,3</sup>  
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**17.00 – 17.15 Manganese electrodeposition with the assistance of urea in high concentration**

Mihael Bučko<sup>1</sup>, Mladen Vuruna<sup>1</sup>, Ljubica Radović<sup>2</sup>, Jelena B. Bajat<sup>3</sup>  
<sup>1</sup>*Military Academy, University of Defense, P.J. Sturma 33, Belgrade,* <sup>2</sup>*Military Technical Institute, Ratka Resanovića 1, Belgrade,* <sup>3</sup>*Faculty of Technology and Metallurgy, University of Belgrade, P.O. Box 3503, Belgrade, Serbia*

**17.15 – 17.30 Break**

**17.30 – 18.45 14<sup>th</sup> Session – Various Problems in Materials Science  
Chairpersons: Dr. Ljiljana Matović and Aleksandar Matković**

**17.30 – 17.45 Relating nanoscopic structure to macroscopic properties of liquid-phase exfoliated graphene**

Aleksandar Matković, Marijana Milićević, Ivana Milošević, Jelena Pešić, Borislav Vasić, Marko Spasenović, Radoš Gajić  
*Center for Solid State Physics and New Materials, Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia*



**17.45 – 18.00 Atomic force microscopy and Kelvin probe force microscopy measurements of single and few layer grapheme**

Uroš Ralević<sup>1</sup>, Borislav Vasić<sup>1</sup>, Aleksandar Matković<sup>1</sup>, Roman Gorbachev<sup>2</sup>, Radoš Gajić<sup>1</sup>

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**18.00 – 18.15 AFM study of bacteria treated with graphene quantum dots**

Biljana Ristić<sup>1</sup>, Marina Milenković<sup>1</sup>, Ivana Dakić<sup>1</sup>, Biljana Todorović-Marković<sup>2</sup>, Momir Milosavljević<sup>2</sup>, Milica Budimir<sup>2</sup>, Verica Paunović<sup>1</sup>, Miroslav Dramićanin<sup>2</sup>, Zoran Marković<sup>2</sup>, Vladimir Trajković<sup>1</sup>

<sup>1</sup>*Institute of Microbiology and Immunology, School of Medicine, University of Belgrade, Dr. Subotica 1, 11000 Belgrade, Serbia,* <sup>2</sup>*Vinca Institute of Nuclear Sciences, University of Belgrade, 11000 Belgrade, Serbia*

**18.15 – 18.30 Determination of Nd-Yag laser parameters for metal threads cleaning in textile artefacts**

Bojana Radojković<sup>1</sup>, Slavica Ristić<sup>1</sup>, Milorad Zrilić<sup>2</sup>, Suzana Polić<sup>3</sup>

<sup>1</sup>*Institute Goša, Milana Rakića 35, Belgrade, Serbia,* <sup>2</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, Belgrade,* <sup>3</sup>*Central Institute for Conservation in Belgrade, Terazije 26, Belgrade, Serbia*

**18.30 – 18.45 Mössbauer study of Hf<sub>0.5</sub>Ta<sub>0.5</sub>Fe<sub>2</sub>**

Ivan Madjarević<sup>1</sup>, V. Ivanovski<sup>1</sup>, B. Cekić<sup>1</sup>, C. Petrović<sup>2</sup>

<sup>1</sup>*Laboratory of Nuclear and Plasma Physics, University of Belgrade, Vinča Institute of Nuclear Sciences, P.O. Box 522, 11001 Belgrade, Serbia,* <sup>2</sup>*Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, New York 11973, USA*

**18.45 Closing Ceremony**

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### **First principle calculation of phonons and electron-phonon interaction in graphene**

Jelena Pešić, Vladimir Damljanović, Radoš Gajić

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University of Belgrade, Pregrevica 118, 11080 Belgrade*

Density Functional Theory (DFT) is a quantum mechanical method used in physics and chemistry to describe structure of materials. Our research employs DFT for calculations of properties of 2D carbon honeycomb lattice, graphene. The focus of the research is on the phonons and electron-phonon coupling in doped graphene. Vibrational frequencies, phonon displacement patterns at the Brillouin zone center are calculated for the lithium intercalated graphene (LIG). Also electron-phonon coupling constant and superconducting critical temperature were studied, as well as methods for enhancing superconductivity of LIG. We show that the electron-phonon coupling constant can be significantly enhanced and critical temperature of LIG can be augmented up to 30K.

DFT calculations are performed using computational resources at Johannes Kepler University, Linz, Austria. This work was supported by the Serbian Ministry of Education, Science and Technological Development under projects OI 171005. This research is also supported by Qatar National Research Fund, cycle seven, (QNRF) under grant number NPRP 7-665-1-125.

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### **Wake effect in the interaction of slow correlated charges with supported graphene due to plasmon-phonon hybridization**

Tijana Marinković<sup>1</sup>, Ivan Radović<sup>1</sup>, Duško Borka<sup>1</sup>, Zoran L. Mišković<sup>2</sup>

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The inter-particle interaction energy and the total stopping power for a correlated motion of two point charges that move above supported graphene at a speed smaller than the graphene Fermi speed are theoretically investigated. The slowly moving charges excite low-frequency collective mode which survives the Landau damping in the region of the intra-band single particle excitations in doped graphene. We show that this mode gives rise to wake effect manifested in the oscillatory patterns in both the interaction energy and the stopping power when the charges move with their inter-particle axis pointing in the direction of motion.