

# TWELFTH YOUNG RESEARCHERS' CONFERENCE MATERIALS SCIENCE AND ENGINEERING

December 11-13, 2013, Belgrade, Serbia  
Serbian Academy of Sciences and Arts, Knez Mihailova 36

## PROGRAM AND THE BOOK OF ABSTRACTS



MATERIALS RESEARCH SOCIETY OF SERBIA  
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Twelfth Young Researchers' Conference  
Materials Science and Engineering

December 11-13, 2013, Belgrade, Serbia  
Serbian Academy of Sciences and Arts, Knez Mihailova 36

**Program and the Book of Abstracts**

Materials Research Society of Serbia  
Institute of Technical Sciences of SASA

December 2013, 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**

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

## **Scientific and Organizing Committee**

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Smilja Marković                      Institute of Technical Sciences of SASA, Belgrade, Serbia

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Dragana Živković                          Technical Faculty, Bor, Serbia

### Conference Secretary

Aleksandra Stojičić                      Institute of Technical Sciences of SASA, Belgrade, Serbia

## **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.

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## Sponsors



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of Belgrade



# Programme

## Twelfth Young Researchers Conference

### Materials Science and Engineering

Wednesday, December 11, 2013

**08.30 Registration**

**09.00 – 10.00 Opening Ceremony of the Twelfth 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**  
**11<sup>th</sup> YRC 2012 Awards**

**10.00 – 11.45 1<sup>st</sup> Session –Biomaterials I**  
**Chairpersons: Dr. Magdalena Stevanović and Nenad Filipović**

**10.00 – 10.15 Cytotoxicity of Ag/alginate nanocomposites: *in vitro* and *in vivo* studies**  
Jovana Zvicer<sup>1</sup>, Lenart Girandon<sup>2</sup>, Urška Potočar<sup>2</sup>, Mirjam Fröhlich<sup>2,5</sup> Ivan Jančić<sup>3</sup>, Biljana Bufan<sup>3</sup>, Marina Milenković<sup>3</sup>, Jasmina Stojkowska<sup>4</sup>, Vesna Mišković-Stanković<sup>1</sup>, Bojana Obradović<sup>1</sup>  
<sup>1</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia,*  
<sup>2</sup>*Educell d.o.o. Ljubljana, Slovenia,* <sup>3</sup>*Department of Microbiology and Immunology, Faculty of Pharmacy, University of Belgrade, Belgrade, Serbia,* <sup>4</sup>*KreativTeh LLC, Belgrade, Serbia,* <sup>5</sup>*Department of Biochemistry, Molecular and Structural Biology, Jožef Stefan Institute, Ljubljana, Slovenia*

**10.15 – 10.30 Mathematical modeling of silver release from nanocomposite Ag/alginate microbeads**  
Danijela Kostić, Ivana Madžovska, Srdjan Vidović, Bojana Obradović  
*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*

**10.30 – 10.45 Effect of hydrogel composition on controlled release and antimicrobial activity of zinc(II) ions from zinc/poly(2-hydroxyethyl methacrylate/itaconic acid) hydrogels**  
Jelena D. Rusmirović, Jovanka M. Filipović, Simonida Lj. Tomić  
*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*

**10.45 – 11.00 Cellulose functionalization using atmospheric pressure dielectric barrier discharge (DBD) plasma**

Ana Kramar<sup>1</sup>, Mirjana Kostić<sup>1</sup>, Bratislav Obradović<sup>2</sup>, Milorad Kuraica<sup>2</sup>

<sup>1</sup>Faculty of Technology and Metallurgy, Department of Textile Engineering, University of Belgrade, Serbia, <sup>2</sup>Faculty of Physics, University of Belgrade, Serbia

**11.00 – 11.15 Fullerenol nanoparticle in cytoprotection of antitumor drug-treated cells**

Jasmina Katanić<sup>1</sup>, Karmen Stankov<sup>1</sup>, Nebojša Pavlović<sup>1</sup>, Aleksandar Djordjević<sup>2</sup>, Vesna Kojić<sup>1</sup>, Gordana Bogdanović<sup>1</sup>

<sup>1</sup>Medical faculty of Novi Sad, University of Novi Sad, Hajduk Veljkova 3, 21000 Novi Sad, <sup>2</sup>Faculty of science, University of Novi Sad, Trg Dositeja Obradovića 3, 21000 Novi Sad

**11.15 – 11.30 Cytotoxicity of single-walled carbon nanotubes to human lung carcinoma cells: the influence of N-acetylcysteine**

Nikola Jojić<sup>1</sup>, Vesna Kojić<sup>2</sup>, Karmen Stankov<sup>3</sup>, Gordana Bogdanović<sup>2</sup>

<sup>1</sup>European University-Faculty of Pharmacy, Trg Mladenaca 5, 21000 Novi Sad, <sup>2</sup>Department of Experimental Oncology, Oncology Institute of Vojvodina, Sremska Kamenica, <sup>3</sup>Medical faculty of Novi Sad, University of Novi Sad, Hajduk Veljkova 3, 21000 Novi Sad

**11.30 – 11.45 Preparation and characterization of selenium nanoparticles incorporated within poly( $\epsilon$ -caprolactone)**

Nenad Filipović<sup>1</sup>, Magdalena Stevanović<sup>1</sup>, Vladimir Pavlović<sup>1,2</sup>, Dragan Uskoković<sup>1</sup>

<sup>1</sup>Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, Belgrade 11000, Serbia, <sup>2</sup>Faculty of Agriculture, University of Belgrade, Nemanjina 6, Belgrade 11080, Serbia

**11.45 – 12.15 Break**

**12.15 – 14.00 2<sup>nd</sup> Session –Biomaterials II**

**Chairpersons: Prof. Dr. Bojana Obradović and Nenad Petrović**

**12.15 – 12.30 Biomaterials and their application in preprosthetic surgical procedure**

Zorica Ajduković<sup>1</sup>, Nadica Djordjević<sup>2</sup>, Nenad Petrović<sup>1</sup>, Nenad Ignjatović<sup>3</sup>, Dragana Kenić Marinković<sup>1</sup>, Dragan Uskoković<sup>3</sup>

<sup>1</sup>University of Niš, Faculty of Medicine, Clinic of Dentistry, Department of Prosthodontics, Niš, Serbia, <sup>2</sup>University of Priština temporarily seated in Kosovska Mitrovica, Clinic of Dentistry, Department of Prosthodontics, Kosovska Mitrovica, Serbia, <sup>3</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia

**12.30 – 12.45 Effects of post-polymerization treatments on the mechanical properties of a denture base resin**

Dušan Petković<sup>1</sup>, Milena Kostić<sup>2</sup>, Miodrag Manić<sup>1</sup>, Nebojša Krunic<sup>2,3</sup>

<sup>1</sup>Faculty of Mechanical Engineering, University of Niš, Aleksandra Medvedeva 14 Niš, Serbia, <sup>2</sup>Clinic of Dentistry, Department of Prosthodontics, Bul. dr Zorana Djindjića 52, Niš, Serbia, <sup>3</sup>Faculty of Medicine, University of Niš, Bul. dr Zorana Djindjića 81, Niš, Serbia

**12.45 – 13.00 A comparative study of dissolution behavior of bioactive glass ceramics in SBF-K9 and r-SBF**

Muhammad Usman Hashmi<sup>1</sup>, Saqlain Abbas Shah<sup>2</sup>

<sup>1</sup>*Department of Applied Sciences, Superior University Lahore 54000, Pakistan*

<sup>2</sup>*Physics Department, F. C. College University, Lahore 54000, Pakistan*

**13.00 – 13.15 Pectin and poly(ethylene glycol) based films: mechanical and structural properties**

Sanja Šešlija<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>

<sup>1</sup>*Innovation Centre of the Faculty of 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>*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia*

**13.15 – 13.30 Effect of starch gels preparation on the supercritical impregnation of Thymol**

Stoja Milovanović, Jasna Ivanović, Irena Zizović

*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia*

**13.30. – 13.45 Partial characterization of levan from *Brachybacterium sp.* CH-KOV3**

Aleksandra Djurić<sup>1</sup>, Branka Kekez<sup>1</sup>, Jovana Stefanović-Kojić<sup>1</sup>, Dragica Jakovljević<sup>2</sup>, Gordana Gojgić-Cvijović<sup>2</sup>, Ljubiša Ignjatović<sup>3</sup>, Vladimir P. Beškoski<sup>1,2</sup>, Miroslav M. Vrvic<sup>1,2</sup>

<sup>1</sup>*Faculty of Chemistry, University of Belgrade, Serbia,*

<sup>2</sup>*Centre for Chemistry-Institute for Chemistry, Technology and Metallurgy, University of Belgrade,*

<sup>3</sup>*Faculty of Physical Chemistry, University of Belgrade, Serbia*

**13.45 – 14.00 Microbial polysaccharides as a prospective base for new materials**

Branka Kekez<sup>1</sup>, Marija Lješević<sup>1</sup>, Aleksandra Djurić<sup>1</sup>, Jovana Stefanović Kojić<sup>2</sup>, Dragica Jakovljević<sup>2</sup>, Gordana Gojgić-Cvijović<sup>2</sup>, Vladimir P. Beškoski<sup>1,2</sup>, M.M. Vrvic

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<sup>2</sup>*Centre for Chemistry-Institute for Chemistry, Technology and Metallurgy, University of Belgrade, Serbia*

**14.00 – 15.15 Lunch break with refreshments**

**15.15 – 17.15 3<sup>rd</sup> Session – Nanomaterials I: Synthesis and Characterization**  
Chairpersons: Dr. Smilja Marković, Prof. Dr. Nebojša Mitrović and Jelena Zagorac



**15.15 – 15.30 Synthesis and characterization of cesium aluminosilicate phases from LTA zeolites as a precursor**

Mia Omerašević<sup>1</sup>, Maria Čebela<sup>1</sup>, Andrija Savić<sup>2</sup>, Vesna Maksimović<sup>1</sup>, Nikola Vuković<sup>4</sup>, Slavko Mentus<sup>3</sup>, Ana Radosavljević-Mihajlović<sup>1</sup>

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**15.30 – 15.45 Investigation of the yttrium doped CaMnO<sub>3</sub> nanopowders**

Jelena Zagorac<sup>1</sup>, Aleksandra Zarubica<sup>2</sup>, Ana Radosavljević-Mihajlović<sup>1</sup>, Dejan Zagorac<sup>3</sup>, Branko Matović<sup>1</sup>

<sup>1</sup>Institute of Nuclear Sciences Vinča, Materials Science Laboratory, Belgrade University, Belgrade, Serbia, <sup>2</sup>Department of Chemistry, University of Niš, Niš, Serbia, <sup>3</sup>Max Planck Institute for Solid State Research, Stuttgart, Germany

**15.45 – 16.00 Synthesis and characterization of BiFeO<sub>3</sub> nanopowder**

Maria Čebela<sup>1</sup>, Radmila Hercigonja<sup>2</sup>, Marija Prekajski<sup>1</sup>, Mia Omerašević<sup>1</sup> and Branko Matović<sup>1</sup>

<sup>1</sup>Laboratory for Material Science, Institute of Nuclear Sciences "Vinča", University of Belgrade, Belgrade, Serbia, <sup>2</sup>Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, 11158 Belgrade 118, P.O. Box 47, Serbia

**16.00 – 16.15 Synthesis of fine-dispersed chromium carbide powder using carbon nanofibers**

Kseniya D. Dyukova, Ju.L. Krutskii, A.G. Bannov

Novosibirsk State Technical University, Pr. K. Marx 20, Novosibirsk 630092, Russia

**16.15 – 16.30 Oxidation dynamics of the graphite during the graphite oxide synthesis**

Alexander G. Bannov, Anastasia A. Timofeeva

Department of Chemistry and Chemical Technology, Novosibirsk State Technical University, Pr. K. Marx 20, Novosibirsk, 630092, Russia

**16.30 – 16.45 The influence of mechanical activation on the structure of ZnO**

Adriana Peleš<sup>1</sup>, Suzana Filipović<sup>1</sup>, Vera P. Pavlović<sup>2</sup>, Miodrag Mitrić<sup>3</sup>, Nina Obradović<sup>1</sup>, Vladimir B. Pavlović<sup>1</sup>

<sup>1</sup>Institute of Technical Sciences of SASA, Knez Mihailova 35/IV 11000 Belgrade, Serbia, <sup>2</sup>Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia, <sup>3</sup>Institute of Nuclear Sciences Vinca, Laboratory of Solid State Physics, 11001 Belgrade, Serbia

**16.45 – 17.00 Synthesis and characterization of nanocomposite hydrogels based on poly(methacrylic acid) and SiO<sub>2</sub>**

Pavle Spasojević<sup>1</sup>, Vesna Panić<sup>1</sup>, Tijana Radoman<sup>1</sup>, Enis Džunuzović<sup>2</sup>, Sava Veličković<sup>2</sup>

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

**17.00 – 17.15 High energy co-milling - method of polymer-based composite fillers synthesis**

Teodora Sikora, Krystyna Wieczorek-Ciurowa  
*Cracow University of Technology, Faculty of Chemical Engineering and  
Technology, 24 Warszawska Str., 31-155 Cracow, Poland*

**17.15 – 17.30 Break**

**17.30 – 18.45 4<sup>th</sup> Session – Nanomaterials II: Catalysts**

**Chairpersons: Prof. Dr. Nebojša Mitrović, Erik Ortel and Ana Stanković**

**17.30 – 17.45 Photocatalytic and sonocatalytic degradation procedures of methylene blue dye using a ZnO nanostructured powders**

Ana Stanković, Smilja Marković, Dragan Uskoković  
*Institute of Technical Sciences of SASA, Centre for Fine Particles Processing and  
Nanotechnologies, Knez Mihailovica 35/IV, Belgrade, Serbia*

**17.45 – 18.00 Design strategies for hydrogenation catalysts using colloidal and template-based synthesis routes**

Erik Ortel, D. Bernsmeier, B. Paul, R. Kraehnert  
*Technische Universität Berlin, Berlin, Germany*

**18.00 – 18.15 Experimental and theoretical studies on photocatalytic degradation of metoprolol in the presence of electron acceptors**

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

**18.15 – 18.30 The influence of poly-4-vinylpyridine-co-divinylbenzene-Co<sup>2+</sup> catalyst on the reaction pathways of the Bray-Liebhafsky reaction**

Ana Stanojević<sup>1</sup>, Jelena Maksimović<sup>1</sup>, Željko Čupić<sup>2</sup>, Ljiljana Kolar-Anić<sup>1,2</sup>,  
Slobodan Anić<sup>2</sup>  
<sup>1</sup>*Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia*  
<sup>2</sup>*Institute of Chemistry, Technology and Metallurgy, University of Belgrade,  
Department of Catalysis and Chemical Engineering, Belgrade, Serbia*

**18.30 – 18.45 Influence of Fe and ZrO<sub>2</sub> presence in mechanochemically synthesized perovskite ceramics on its dielectric properties**

Piotr Dulian<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*

**Thursday, December 12, 2013**

**09.00 – 10.30      5<sup>th</sup> Session – Theoretical Modelling of Materials I**  
**Chairpersons: Dr. Boban Stojanović and Dr. Dejan Zagorac**

**09.00 – 09.15 Computational studies on advanced materials from bulk crystals to nanoscale structures**

Dejan Zagorac<sup>1,3</sup>, T. Milek<sup>1</sup>, D. Zahn<sup>1</sup>, J.C. Schön<sup>2</sup>, M. Jansen<sup>2</sup>, J. Zagorac<sup>3</sup>, B. Matović<sup>3</sup>

<sup>1</sup>*Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany*

<sup>2</sup>*Max Planck Institute for Solid State Research, Stuttgart, Germany*

<sup>3</sup>*Institute of Nuclear Sciences Vinča, Materials Science Laboratory, Belgrade University, Belgrade, Serbia*

**09.15 – 09.30 Computational methods for muscle modeling at the molecular level**

Djordje Nedić<sup>1</sup>, Marina Svičević<sup>1</sup>, Boban Stojanović<sup>1</sup>, Srboj Mijailović<sup>2</sup>

<sup>1</sup>*Faculty of Science, University of Kragujevac, Radoja Domanovića 12, 34000 Kragujevac, Serbia,* <sup>2</sup>*Northeastern University, Boston, USA*

**09.30 – 09.45 Verification of thermo-mechanical coupling implemented in software PAK Multiphysics on the example of radiofrequency ablation**

Milan Blagojević, Miroslav Živković

*University of Kragujevac, Faculty of Engineering, Sestre Janjić 6, Kragujevac, Serbia*

**09.45 – 10.00 Verification of electro-mechanical coupling implemented in software PAK Multiphysics on the example of piezoelectric transducers**

Milan Blagojević<sup>1</sup>, Miroslav Živković<sup>1</sup>

*University of Kragujevac, Faculty of Engineering, Sestre Janjić 6, Kragujevac, Serbia*

**10.00 – 10.15 Integrity of the pipelines transporting oil and gas**

Alfred Hasanaj

*Department of Mechanical Engineering, Polytechnic University of Tirana, Albania*

**10.15 – 10.30 Determining the stress and strain distribution on complex mechanical structures using the strain gauges measurements**

Mirjana Prvulović<sup>1,3</sup>, Mileta Ristivojević<sup>2</sup>, Zlatan Milutinović<sup>1</sup>

<sup>1</sup>*Institute Gosa, Milana Rakica 35, 11000 Belgrade, Serbia,* <sup>2</sup>*University of Belgrade, The Faculty of Mechanical Engineering, Kraljice Marije 16, 11120 Belgrade, Serbia,* <sup>3</sup>*Termoinženjering, Ulica Oslobođenja br. 39, 26000 Pancevo, Serbia*

**10.30 - 11.00      Break**

**11.00 – 12.45      6<sup>th</sup> Session – Theoretical Modelling of Materials II**  
**Chairpersons: Dr. Željka Nikitović and Siniša Vučenović**

**11.00 – 11.15 Spin arrangements in quasi one-dimensional systems**

Marko Milivojević, Nataša Lazić and Milan Damjanović

*NanoLab, Faculty of Physics, University of Belgrade, Studentski trg 12, 11000  
Belgrade, Serbia*

**11.15 – 11.30 Advanced computational methodologies for modeling realistic polycrystalline magnetic films and devices**

Marko V. Lubarda

*Faculty of Polytechnics, University of Donja Gorica, 81000 Podgorica, Montenegro*

**11.30 – 11.45 Optimisation of *a*-GaN/AlGaN Bragg confined structures for frequency up-conversion relevant for GaAs-based solar cells**

Slobodan Čičić, Jelena Radovanović, Vitomir Milanović

*School of Electrical Engineering, University of Belgrade, Bulevar kralja Aleksandra  
73, 11200 Belgrade, Serbia*

**11.45 – 12.00 Optical and aromaticity properties of sumanene modified with boron and nitrogen atoms; a DFT study**

Stevan Armaković<sup>1</sup>, Sanja J. Armaković<sup>2</sup>, Igor J. Šetrajić<sup>1</sup>, Jovan P. Šetrajić<sup>1</sup>

*<sup>1</sup>University of Novi Sad, Faculty of Sciences, Department of Physics, Trg D.  
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Department of Chemistry, Biochemistry and Environmental Protection, Trg D.  
Obradovića 3, 21000 Novi Sad, Serbia*

**12.00 – 12.15 Modeling buckybowls with semi-empirical levels of theory**

Stevan Armaković<sup>1</sup>, Sanja J. Armaković<sup>2</sup>, Taina Grujić<sup>1</sup>, Jovan P. Šetrajić<sup>1</sup>

*<sup>1</sup>University of Novi Sad, Faculty of Sciences, Department of Physics, Trg D.  
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Department of Chemistry, Biochemistry and Environmental Protection, Trg D.  
Obradovića 3, 21000 Novi Sad, Serbia*

**12.15 – 12.30 Finite element solution of one-dimensional Stefan problem**

Marina Svičević, Miloš Ivanović

*Faculty of Science, University of Kragujevac, Radoja Domanovića 12, 34000  
Kragujevac, Serbia*

**12.30 – 12.45 Ellipsometric data analysis and calculation of ellipsometric parameters of complex materials**

Danka Stojanović<sup>1,2</sup>, Jelena Radovanović<sup>2</sup>, Vitomir Milanović<sup>2</sup>, Zlatko Rakočević<sup>1</sup>

*<sup>1</sup>Vinča Institute of Nuclear Sciences, Laboratory of Atomic Physics, University of  
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University of Belgrade, Bulevar kralja Aleksandra 73, Belgrade, Serbia*

**12.45 – 14.30 Lunch break with refreshments**

**14.30 – 16.00 7<sup>th</sup> Session – Metallurgy and Corrosion of Materials**  
**Chairpersons: Dr. Irena Nikolić and Ionuț Constantin**

**14.30 – 14.45 Strength and durability of bauxite based geopolymers**

Jasmina Krivokapić<sup>1</sup>, I. Janković-Častvan<sup>2</sup>, Vuk V. Radmilović<sup>2</sup>, Irena Nikolić<sup>1</sup>

<sup>1</sup>*University of Montenegro, Faculty of Metallurgy and Technology, Džordža Vašingtona bb, 81000 Podgorica Montenegro,* <sup>2</sup>*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia*

**14.45 – 15.00 Anticorrosive Zn-Ni-P coatings electrodeposited on steel parts from sulfate baths**

Ionuț Constantin<sup>1</sup>, Petru Moldovan<sup>2</sup>

<sup>1</sup>*National R&D Institute for Nonferrous and Rare Metals – IMNR, 102 Biruinței Blvd., Pantelimon, Ilfov County, C.P. 077145,* <sup>2</sup>*Polytechnic University of Bucharest, 313 Splaiul Independenței, district 6, Bucharest, Romania, C.P. 060032*

**15.00 – 15.15 Investigation of Al-5083 alloy obtained by mechanical alloying**

Vasile Soare, Marian Burada, Dumitru Mitrică, Ionuț Constantin, Daniela Violeta Dumitrescu

*National R&D Institute for Nonferrous and Rare Metals – IMNR, 102 Biruinței Blvd., Pantelimon, Ilfov County, Romania, C.P. 077145*

**15.15 – 15.30 Experimental and theoretically investigation of the Ag-Ga-Sn phase diagram**

Ljiljana Nedeljković<sup>1</sup> and Milena Premović<sup>1</sup>

<sup>1</sup>*University in Priština, Faculty of Technical Science, Knjaza Miloša 7, 38220 Kosovska Mitrovica, Serbia*

**15.30 – 15.45 Al-Pb composite formation by low-frequency oscillations of its melts**

Aleksey Dolmatov, Igor Ignat'ev, Edward Pastukhov

*Institute of Metallurgy UB RAS, Yekaterinburg, Russia*

**15.45 – 16.00 Use of quartz crystal microbalance (QCM) measurements to investigate novel top-of-the-line corrosion (TLC) mitigation method**

Ivana Jevremović<sup>1</sup>, Feranando Farelas<sup>2</sup>, Marc Singer<sup>2</sup>, Srdjan 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*

**16.00 – 16.15 Break**

**16.15 – 19.00 8<sup>th</sup> Session – Polymer Science**

**Chairpersons: Prof. Dr. Gordana Ćirić-Marjanović, Dr. Branka Hadžić and Rafal Poreba**

**16.15 – 16.30 The influence of the polybutadiene isomer to the structure of the triblock-copolymer SBM**

Aleksandar P. Stajčić, Dragutin M. Nedeljković, Aleksandar S. Grujić, Lana S. Putić, Jasna T. Stajić-Trošić

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

- 16.30 – 16.45 The preparation of elastomeric poly(lactide) nanocomposite thin films**  
Aleksandra Miletić<sup>1</sup>, Branka Pilić<sup>1</sup>, Ivan Ristić<sup>1</sup>, Suzana Cakić<sup>2</sup>, Nemanja Martić<sup>1</sup>, Djordjije Tripković<sup>1</sup>  
<sup>1</sup>University of Novi Sad, Faculty of Technology, Novi Sad, Serbia,  
<sup>2</sup>University of Niš, Faculty of Technology, Leskovac, Serbia
- 16.45 – 17.00 Curing of epoxy resins modified with thermoplastic polycarbonate-based polyurethane elastomers**  
Vesna Teofilović<sup>1</sup>, Jelena Pavličević<sup>1</sup>, Mirjana Jovičić<sup>1</sup>, Oskar Bera<sup>1</sup>, Milena Špírková<sup>2</sup>, Radmila Radičević<sup>1</sup>  
<sup>1</sup>University of Novi Sad, Faculty of Technology, Novi Sad, Serbia, <sup>2</sup>Institute of Macromolecular Chemistry AS CR v.v.i., Prague, Czech Republic
- 17.00 – 17.15 Influence of pH values on synthesis of PMAA-graft-starch copolymers**  
Vladimir Nikolić<sup>1</sup>, Sava Veličković<sup>2</sup>, Aleksandar Popović<sup>3</sup>  
<sup>1</sup>Innovation Center, Faculty of Chemistry, University of Belgrade, Studentski trg 12-16, 11000 Belgrade, Serbia, <sup>2</sup>Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia, <sup>3</sup>Faculty of Chemistry, University of Belgrade, Studentski trg 12-16, 11000 Belgrade, Serbia
- 17.15 – 17.30 Preparation and characterization of waterborne polyurethane dispersions and films**  
Rafał Poręba, Magdalena Serkis and Milena Špírková  
Institute of Macromolecular Chemistry AS CR, v.v.i., Heyrovského nam. 2, 162 06 Prague 6, Czech Republic
- 17.30 – 17.45 Synthesis and application of novel copolymer of methacrylic acid and 2-acrylamido-2-methylpropane sulfonic acid**  
Aleksandra Nešić<sup>1</sup>, Sava Veličković<sup>2</sup>, Dušan Antonović<sup>2</sup>, Antonije Onjia<sup>1</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
- 17.45 – 18.00 Break**
- 18.00 – 18.15 Optical properties of CdTe/ZnTe self-assembled quantum dots**  
Martina Gilić<sup>1</sup>, N. Romčević<sup>1</sup>, M. Romčević<sup>1</sup>, J. Trajić<sup>1</sup>, D. Stojanović<sup>1</sup>, R. Kostić<sup>1</sup>, W.D. Dobrowolski<sup>2</sup>, G. Karczewski<sup>2</sup> and R. Galazka<sup>2</sup>  
<sup>1</sup>Institute of Physics, University of Belgrade, 11080 Belgrade, Serbia  
<sup>2</sup>Institute of Physics, Polish Academy of Science, 02-668 Warsaw, Poland
- 18.15 – 18.30 Optical properties of Cd<sub>1-x</sub>Mn<sub>x</sub>S nanoparticles**  
Milica Petrović<sup>1</sup>, M. Romčević<sup>1</sup>, N. Romčević<sup>1</sup>, W.D. Dobrowolski<sup>2</sup>, M. Čomor<sup>3</sup>  
<sup>1</sup>Institute of Physics, University of Belgrade, 11080, Serbia, <sup>2</sup>Institute of Physics PAS, Warsaw, 02-668, Poland, <sup>3</sup>Institute Vinča, University of Belgrade, 11000, Serbia

**18.30 – 18.45 Raman scattering study of  $K_xCo_{2-y}Se_2$**

Marko Opačić<sup>1</sup>, N. Lazarević<sup>1</sup>, M. Radonjić<sup>2</sup>, M. Šćepanović<sup>1</sup>, Hechang Lei<sup>3</sup>, D. Tanasković<sup>2</sup>, C. Petrović<sup>3</sup>, Z.V. Popović<sup>1</sup>

<sup>1</sup>Center for Solid State Physics and New Materials, Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia, <sup>2</sup>Scientific Computing Laboratory, Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia, <sup>3</sup>Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, New York 11973-5000, USA

**18.45 – 19.00 Surface states of the topological crystalline insulator  $Pb_{0.4}Sn_{0.6}Te$**

Shiva Safaei, P. Kacman, R. Buczko

Institute of Physics PAS, al. Lotników 32/46, 02-668 Warsaw, Poland

**Friday, December 13, 2013**

**09.00 – 11.00 9<sup>th</sup> Session – Electrochemistry and Magnetic Materials**

**Chairpersons: Dr. Dragana Jugović and Miloš Milović**

**09.00 – 09.15 Electrochemical intercalation of lithium in  $Li_4Ti_5O_{12}/C$  composite with different percentage of carbon**

Aleksandra Lilić

Faculty of Physical Chemistry, Belgrade University, Studentski trg 12-16, 11158 Belgrade, Serbia

**09.15 – 09.30 Sol-gel synthesis of  $Li_2FeSiO_4/C$**

Miloš Milović<sup>1</sup>, Dragana Jugović<sup>1</sup>, Miodrag Mitrić<sup>2</sup>, Bojan Jokić<sup>3</sup>, Robert Dominko<sup>4</sup>, Dragan Uskoković<sup>1</sup>

<sup>1</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia, <sup>2</sup>Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia, <sup>3</sup>Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, <sup>4</sup>Laboratory for Materials Electrochemistry, National Institute of Chemistry, Ljubljana, Slovenia

**09.30 – 09.45 Nafion membrane humidity monitoring and fault detection in PEMFC**

Mila N. Krstajić<sup>1</sup>, Vladimir Yufit<sup>2</sup>, Nigel P. Brandon<sup>2</sup>

<sup>1</sup>Institute of Chemistry, Technology and Metallurgy, Department of Electrochemistry, University of Belgrade, Njegoseva 12, 11000 Belgrade, Serbia, <sup>2</sup>Faculty of Engineering, Department of Earth Science and Engineering, Imperial College London, South Kensington Campus, London SW7 2AZ, United Kingdom

**09.45 – 10.00 Formation of Silver Nanoparticles in Poly(vinyl alcohol) Solution by Electrochemical Synthesis**

Rade Surudžić, Željka Jovanović, Vesna Mišković-Stanković

Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, Belgrade

**10.00 – 10.15 Freeze-drying method for LiFePO<sub>4</sub>/C composite processing**

Maja Kuzmanović<sup>1</sup>, Dragana Jugović<sup>1</sup>, Miodrag Mitrić<sup>2</sup>, Bojan Jokić<sup>3</sup>, Nikola Cvjetičanin<sup>4</sup>, and Dragan Uskoković<sup>1</sup>

<sup>1</sup>*Institute of Technical Sciences of SASA, Belgrade, Serbia*, <sup>2</sup>*The Vinča Institute of Nuclear Science, University of Belgrade, Belgrade, Serbia*, <sup>3</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*, <sup>4</sup>*Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia*

**10.15 – 10.30 Spin glass like behaviour of magnetite nanoparticle system obtained by thermal decomposition of acetylacetonate precursor**

Violeta Nikolić, Vojislav Spasojević, Vladan Kusigerski, Marija Perović, Ana Mraković, Marko Bosković, Jovan Blanuša

*The Vinča Institute, Condensed Matter Physics Laboratory, University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia*

**10.30 – 10.45 Nanostructured materials with magnetic properties in stable colloidal form**

Claudia Nadejde<sup>1</sup>, Maria Andries<sup>1</sup>, Emil Puscasu<sup>1</sup>, Gabriel Oanca<sup>1</sup>, Laura Ursu<sup>2</sup>

<sup>1</sup>*“Alexandru Ioan Cuza” University, Physics Faculty, Iasi, Romania*

<sup>2</sup>*“Petru Poni” Macromolecular Chemistry Institute, Iasi, Romania*

**10.45 – 11.00 Magnetic and magnetotransport behavior of Ge<sub>1-x-y</sub>Pb<sub>x</sub>Mn<sub>y</sub>Te nanocomposite crystals**

Arkadiusz Podgórn<sup>1</sup>, L. Kilański<sup>1</sup>, W. Dobrowolski<sup>1</sup>, V. Domukhovski<sup>1</sup>, A. Reszka<sup>1</sup>, B.J. Kowalski<sup>1</sup>, B. Brodowska<sup>1</sup>, V.E. Slynko<sup>2</sup>, E.I. Slynko<sup>2</sup>

<sup>1</sup>*Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

<sup>2</sup>*Institute of Materials Science Problems, UAS, Chernovtsy, Ukraine*

**11.00 - 11.15 Break**

**11.15 – 13.20 10<sup>th</sup> Session – Sintering of Materials**

**Chairpersons: Dr. Djordje Veljović and Miodrag Lukić**

**11.15 – 11.30 DSC-TG-MS study of hydroxyapatite nanopowders**

Miodrag J. Lukić<sup>1</sup>, Ljiljana Veselinović<sup>1</sup>, Srečo Davor Škapin<sup>2</sup>, Marjeta Maček-Kržmanc<sup>2</sup>, Smilja Marković<sup>1</sup>, Dragan Uskoković<sup>1</sup>

<sup>1</sup>*Institute of Technical Sciences of SASA, Belgrade, Serbia*, <sup>2</sup>*Jožef Stefan Institute, Ljubljana, Slovenia*

**11.30 – 11.45 Hydroxylapatite synthesis and low temperature sintering methods**

Miljana Mirković, Vesna Maksimović, Branko Matović and Anja Došen  
*Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia*

**11.45 – 12.00 Structural, morphological and electrical properties of sintered Fe<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub> nanopowder mixtures**

Zorka Z. Djurić<sup>1</sup>, Obrad S. Aleksić<sup>2</sup>, Maria V. Nikolić<sup>2</sup>

<sup>1</sup>*Institute of Technical Sciences of SASA, Knez Mihailova 35, Belgrade, Serbia*

<sup>2</sup>*Institute for Multidisciplinary Research, University of Belgrade, Kneza Visislava 1, 11000 Belgrade, Serbia*



**12.00 – 12.15 Comparison of mechanical behaviour of SiC sintered specimen to analysis of surface defects**

Nataša Z. Tomić, Marija M. Dimitrijević, Bojan I. Medjo, Marko P. Rakin, Radmila M. Jančić – Heinemann, Radoslav R. Aleksić  
*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia*

**12.15 – 12.30 The influence of the sol-gel method of powder synthesis to the properties of cordierite ceramics**

Vladimir Topalović, Djordje Veljović, Snežana Grujić, Djordje Janačković, Rada Petrović  
*Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11120 Belgrade, Serbia*

**12.30 – 13.00 Testing concepts in nano mechanics**

Krish Narain  
Agilent Technologies UK Ltd, Stevenage, United Kingdom

**13.00 - 14.30 Lunch break with refreshments**

**14.30 – 16.15 11<sup>th</sup> Session – Environmental Science**

**Chairmen: Prof. Dr. Bojana Obradović and Dr. Smilja Marković**

**14.30 – 14.45 Novel membrane adsorbers incorporating cross-linked poly(glycidyl methacrylate-co-2-acrylamido-2-methylpropane sulfonic acid)**

Tanja Tomković<sup>1</sup>, Filip Radovanović<sup>1</sup>, Aleksandra Nastasović<sup>1</sup>, Dana Vasiljević-Radović<sup>1</sup>, Antonije Onjia<sup>2</sup>  
<sup>1</sup>*University of Belgrade, Institute for Chemistry, Technology and Metallurgy, Njegoševa 12, Belgrade,* <sup>2</sup>*University of Belgrade, Vinča Institute of Nuclear Sciences, P.O. Box 522, Belgrade*

**14.45 – 15.00 Molybdenum sorption by porous copolymer**

Bojana M. Ekmešćić<sup>1</sup>, Danijela D. Maksin<sup>2</sup>, Jelena P. Marković<sup>2</sup>, Z.M. Vuković<sup>3</sup>, Antonije E. Onjia<sup>2</sup>, Aleksandra B. Nastasović<sup>1</sup>  
<sup>1</sup>*University of Belgrade, Institute of Chemistry Technology and Metallurgy, Department of Chemistry, Njegoševa 12, Belgrade,* <sup>2</sup>*University of Belgrade, Vinča Institute of Nuclear Sciences, P.O. Box 522, Belgrade,* <sup>3</sup>*University of Belgrade, Institute of Chemistry Technology and Metallurgy, Department of Catalysis and Chemical Engineering, Njegoševa 12, Belgrade*

**15.00 – 15.15 Pectin as biosorbent for the removal of copper ions from aqueous salt solutions**

Sanja Šešlija<sup>1</sup>, Goran Zebić<sup>2</sup>, Sava Veličković<sup>3</sup>  
<sup>1</sup>*Innovation Centre of the Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia,* <sup>2</sup>*Institute of Chemistry, Technology and Metallurgy, Department of Ecology and Technoeconomics, Belgrade, Serbia,* <sup>3</sup>*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia*

**15.15 – 15.30 Research of application possibilities of different sorption materials for Cu (II) removal from aqueous solutions**

Marija Petrović, Jelena Milojković, Marija Mihajlović, Tatjana Šoštarić, Zorica Lopičić, Jelena Petrović, Mirjana Stojanović  
*Institute for Technology of Nuclear and Other Mineral Raw Materials ITNMS, Franchet d'Esperey St, 11 000 Belgrade, Serbia*

**15.30 – 15.45 Biosorption efficiency of Cu (II) ions from aqueous solution by corn cob**  
Marija Petrović, Tatjana Šoštarić, Jelena Milojković, Marija Mihajlović, Jelena Petrović, Mirjana Stojanović

*Institute for Technology of Nuclear and Other Mineral Raw Materials ITNMS, Franchet d'Esperey St, 11 000 Belgrade, Serbia*

**15.45 – 16.00 Asymmetric hydrogel membranes for heavy metal adsorption**

Aleksandar Stajčić<sup>1</sup>, Filip Radovanović<sup>1</sup>, Aleksandra Nastasović<sup>1</sup>, Jasna Stajčić-Trošić<sup>1</sup>, Jelena Marković<sup>2</sup>, Antonije Onjia<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, Vinča Institute of Nuclear Sciences, P.O. Box 522, 11000 Belgrade, Serbia*

**16.00 – 16.15 Removal of model heavy metal ions (Ni<sup>2+</sup>) by hybrid hydrogels based on poly(methacrylic acid) and casein**

Vesna Panić<sup>1</sup>, Pavle Spasojević<sup>1</sup>, Mihajlo Jović<sup>2</sup>, Sava Veličković<sup>3</sup>

<sup>1</sup>*Innovation Centre of 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>*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*

**16.15 - 16.30 Break**

**16.30 – 18.00 12<sup>th</sup> Session – Various Problems in Materials Science**

**Chairpersons: Dr. Edin Suljovrujić and Mihael Bučko**

**16.30 – 16.45 Laser assembling of thin bioceramic and biocomposite films on titanium utilizing Pulsed laser deposition (PLC) and Matrix-assisted pulsed laser evaporation (MAPLE) techniques**

Sanja Eraković<sup>1</sup>, Ana Janković<sup>1</sup>, Carmen Ristoscu<sup>2</sup>, Liviu Duta<sup>2</sup>, Natalia Serban<sup>2</sup>, Anita Visan<sup>2</sup>, George E. Stan<sup>3</sup>, Catalin Luculescu<sup>2</sup>, Djordje Janacković<sup>1</sup>, Ion N. Mihailescu<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>*National Institute for Lasers, Plasma and Radiation Physics, Magurele, Ilfov,*

<sup>3</sup>*National Institute of Materials Physics, Bucharest – Magurele, Romania*

**16.45 – 17.00 Magnetic and optical properties of the nickel thin film deposited by GLAD technique**

Jelena Potočnik, Miloš Nenadović, Zlatko Rakočević

*Institute of Nuclear Science Vinča, Laboratory of Atomic Physics, University of Belgrade, Mike Alasa 12-14, 11001 Belgrade Serbia*

- 17.00 – 17.15 The cataphoretic deposition of epoxy coating on Zn–Mn alloy substrate**  
Mihael Bučko<sup>1</sup>, Vesna Mišković-Stanković<sup>2</sup>, J. B. Bajat<sup>2</sup>  
<sup>1</sup>*Military Academy, University of Defence, Pavla Jurišića Šturma Street 33, Belgrade, Serbia* <sup>2</sup>*Faculty of Technology and Metallurgy, University of Belgrade, P.O.Box 3503, YU-11120 Belgrade, Serbia*
- 17.15 – 17.30 Core-shell fibers for composite materials with self-healing ability**  
Ivana Radović, Vesna Radojević, Petar S. Uskoković, Dušica B. Stojanović, Aleksandar Kojović and Radoslav Aleksić  
*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia*
- 17.30 – 17.45 Effect of diamond paste finishing on AFM surface texture parameters of dental nanofilled and nanohybrid composites polished by two different procedures**  
Tijana Lainović<sup>1</sup>, Larisa Blažić<sup>1,2</sup>, Marko Vilotić<sup>3</sup>, Dragan Kukuruzović<sup>3</sup>, Damir Kakaš<sup>3</sup>  
<sup>1</sup>*Faculty of Medicine, School of Dentistry, University of Novi Sad, Novi Sad, Serbia,* <sup>2</sup>*Clinic of Dentistry of Vojvodina, Novi Sad, Serbia,* <sup>3</sup>*Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia*
- 17.45 – 18.00 Dependence of high density polyethylene XPS spectrum on electron flood gun parameters**  
Danilo Kisić, Maja Popović, Zlatko Rakočević  
*University of Belgrade, "Vinča" Institute of Nuclear Sciences, Laboratory of Atomic Physics, Mike Petrovića Alasa 12-14, Belgrade, Serbia*
- 18.00 Closing Ceremony**

IX/5

### **Freeze-drying method for $\text{LiFePO}_4/\text{C}$ composite processing**

Maja Kuzmanović<sup>1</sup>, Dragana Jugović<sup>1</sup>, Miodrag Mitrić<sup>2</sup>,  
Bojan Jokić<sup>3</sup>, Nikola Cvjetičanin<sup>4</sup>, and Dragan Uskoković<sup>1</sup>

<sup>1</sup>*Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia,*

<sup>2</sup>*The Vinča Institute of Nuclear Science, University of Belgrade, Belgrade, Serbia,* <sup>3</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia,* <sup>4</sup>*Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia*

Based on its high capacity, stability, low toxicity and low cost of raw materials, phospho-olivine  $\text{LiFePO}_4$  became a material of great interest for Li-ion battery application. Synthesis of  $\text{LiFePO}_4/\text{C}$  cathode material was performed by freeze-drying method using different organic acids as carbon source. Freeze-drying process consists of freezing of a precursor solution, elimination of solvent by sublimation (vacuum drying) and final calcinations of as-dried powder under slightly reductive atmosphere. The main advantage of this synthesis method is possibility of introducing a carbon source and mixing of reactants at atomic level which provides homogeneity of precursor solution. Synthesized materials were characterized by X-ray powder diffraction, scanning electron microscopy, particle size analyzer and galvanostatic charging/discharging.

IX/6

### **Spin glass like behaviour of magnetite nanoparticle system obtained by thermal decomposition of acetylacetonate precursor**

Violeta Nikolić, Vojislav Spasojević, Vladan Kusigerski, Marija Perović,  
Ana Mraković, Marko Bosković, Jovan Blanuša

*The Vinča Institute, Condensed Matter Physics Laboratory,  
University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia*

The research aim was to investigate the magnetic properties of strongly interacting  $\text{Fe}_3\text{O}_4$  nanoparticles. Monodisperse nanoparticles were prepared by thermal decomposition of iron (III) acetylacetonate. Transmission electron microscopy pointed to the narrow particle size distribution with the mean particle size of  $(4.87 \pm 1.10)$  nm. The magnetic properties were studied by means of SQUID magnetometer, with AC and DC measurements carried in the wide range of applied magnetic field, temperature and frequencies. Magnetic characterization proved superparamagnetic behaviour at high, as well as spin glass like (SGL) properties at low temperatures. The experimental fingerprints for SGL behaviour were found in the observed memory effects.