

INSTITUTE OF TECHNICAL SCIENCES OF SASA  
MATERIALS RESEARCH SOCIETY OF SERBIA

*Programme and the Book of Abstracts*

**TWENTY-FIRST YOUNG RESEARCHERS' CONFERENCE  
MATERIALS SCIENCE AND ENGINEERING**

Belgrade, November 29 – December 1, 2023



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MATERIALS SCIENCE AND ENGINEERING**

**November 29 – December 1, 2023, Belgrade, Serbia**

**Program and the Book of Abstracts**

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

2023

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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

Biomaterials  
Environmental science  
Materials for high-technology applications  
Materials for new generation solar cells  
Nanostructured materials  
New synthesis and processing methods  
Theoretical modelling of materials

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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 journal “Tehnika – Novi Materijali”. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony. Part of the award is free-of-charge conference fee at YUCOMAT 2024.

### Sponsors



**ANALYSIS**  
LABORATORY EQUIPMENT

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**Programme**  
**Twenty-First Young Researchers Conference**  
**Materials Science and Engineering**

**Wednesday, November 29, 2023**

**09.00 – 09.30 Opening Ceremony**

**09.30 – 11.15 1<sup>st</sup> Session – Biomaterials I**

**Chairpersons: Prof. Dr. Bojana Obradović and Katarzyna Pastuszak**

**09.30 – 09.45 Dental cements based on  $\alpha$ -tricalcium phosphate and boron nitride: Synthesis, mechanical and antibacterial properties and bioactivity**

Ivana Šarić<sup>1</sup>, Tamara Vlajić-Tovilović<sup>2</sup>, Đorđe Veljović<sup>1</sup>

<sup>1</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Serbia*, <sup>2</sup>*School of Dental Medicine, University of Belgrade, Serbia*

**09.45 – 10.00 Development of macroporous bioceramic materials based on multi-ion doped calcium-hydroxyapatite coated with chitosan**

Teodora Jakovljević<sup>1</sup>, Jelena Stanisavljević<sup>1</sup>, Tamara Matić<sup>1</sup>, Julijana Tadić<sup>2</sup>, Đorđe Veljović<sup>1</sup>

<sup>1</sup>*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia*, <sup>2</sup>*Vinča Institute of Nuclear Science, University of Belgrade, Serbia*

**10.00 – 10.15 Synthesis of nanoparticles based on RuBisCO protein derived from pumpkin leaves for the controlled release of vitamin B12**

Dora B. Mikašinović, Jelena R. Mijalković, Zorica D. Knežević-Jugović

*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11020 Belgrade, Serbia*

**10.15 – 10.30 Starch aerogels impregnated using supercritical CO<sub>2</sub>: Application in controlled release of biologically active compounds**

Filip Koldžić, Stoja Milovanović, Ivana Lukić, Melina Kalagasidis Krušić

*University of Belgrade – Faculty of Technology and Metallurgy*

**10.30 – 10.45 Evaluation of the anti-inflammatory potential of *Paeonia tenuifolia* L. petal extract**

Natalija Čutović<sup>1</sup>, Tatjana Marković<sup>1</sup>, Tamara Carević<sup>2</sup>, Dejan Stojković<sup>2</sup>, Branko Bugarski<sup>3</sup>, Aleksandra A. Jovanović<sup>4</sup>

<sup>1</sup>*Institute for Medicinal Plants Research “Dr Josif Pančić”, Tadeuša Košćuška 1, 11000 Belgrade, Serbia,* <sup>2</sup>*Department of Plant Physiology, Institute for Biological Research “Siniša Stanković”—National Institute of Republic of Serbia, University of Belgrade, Bulevar Despota Stefana 142, 11000 Belgrade, Serbia,* <sup>3</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia,* <sup>4</sup>*Institute for the Application of Nuclear Energy INEP, University of Belgrade, Banatska 31b, Zemun, 11080 Belgrade, Serbia*

#### **10.45 – 11.00 Comparison of model bacterial membranes of selected *Legionella* species**

Małgorzata Jurak<sup>1</sup>, Katarzyna Pastuszek<sup>1</sup>, Agnieszka Ewa Wiącek<sup>1</sup>, Bożena Kowalczyk<sup>2</sup>, Jacek Tarasiuk<sup>2</sup>, Marta Palusińska-Szyszt<sup>2</sup>

<sup>1</sup>*Department of Interfacial Phenomena, Institute of Chemical Sciences, Faculty of Chemistry, Maria Curie-Skłodowska University, Maria Curie-Skłodowska Sq. 3, 20-031 Lublin, Poland,*

<sup>2</sup>*Department of Genetics and Microbiology, Institute of Biological Sciences, Faculty of Biology and Biotechnology, Maria Curie-Skłodowska University, Akademicka 19, 20-033 Lublin, Poland*

#### **11.00 – 11.15 Study on interactions between the LL-37 peptide and model bacterial membranes**

Katarzyna Pastuszek<sup>1</sup>, Małgorzata Jurak<sup>1</sup>, Agnieszka Ewa Wiącek<sup>1</sup>, Bożena Kowalczyk<sup>2</sup>, Jacek Tarasiuk<sup>2</sup>, Marta Palusińska-Szyszt<sup>2</sup>

<sup>1</sup>*Department of Interfacial Phenomena, Institute of Chemical Sciences, Faculty of Chemistry, Maria Curie-Skłodowska University, Maria Curie-Skłodowska Sq. 3, 20-031 Lublin, Poland,*

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#### **11.15 – 11.30 Break**

#### **11.30 – 13.00 2<sup>nd</sup> Session – Biomaterials II**

**Chairpersons: Dr. Ivana Drvenica and Nina Tomić**

#### **11.30 – 11.45 Activity of resveratrol nanobelt-like particles against *Pseudomonas aeruginosa* biofilms**

Nina Tomić<sup>1</sup>, Nenad Filipović<sup>1</sup>, Dragana Mitić Čulafić<sup>2</sup>, Tea Ganić<sup>2</sup>, Sergey Klyagin<sup>3</sup>, Alexander Osmolovskiy<sup>3</sup>, Magdalena M. Stevanović<sup>1</sup>

<sup>1</sup>*Group for Biomedical Engineering and Nanobiotechnology, Institute of Technical Sciences of SAsA, Belgrade, Serbia, Knez Mihailova 35/IV 11000 Belgrade, Serbia,* <sup>2</sup>*University of Belgrade – Faculty of Biology; Studentski trg 16, Belgrade, Serbia,* <sup>3</sup>*Department of Microbiology, Faculty of Biology, Lomonosov Moscow State University; Russia 119234, Moscow, Leninskie gory, 1, building 12*

#### **11.45 – 12.00 Cultivation of bone cells from different sources in a biomimetic 3D *in vitro* bone model based on alginate scaffolds and a perfusion bioreactor**

Ivana Banicevic<sup>1</sup>, Mia Milosevic<sup>1,2</sup>, Jelena Petrovic<sup>1,2</sup>, Ksenia Menshikh<sup>3</sup>, Milena Milivojevic<sup>4</sup>, Milena Stevanovic<sup>4</sup>, Radmila Jankovic<sup>5</sup>, Andrea Cochis<sup>3</sup>, Elena Della Bella<sup>6</sup>, Jasmina Stojkovska<sup>1</sup>, Martin Stoddart<sup>6</sup>, Lia Rimondini<sup>3</sup>, Bojana Obradovic<sup>1</sup>

<sup>1</sup>University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia, <sup>2</sup>Innovation Center of the Faculty of Technology and Metallurgy, Belgrade, Serbia, <sup>3</sup>Center for Translational Research on Autoimmune and Allergic Diseases–CAAD, Università del Piemonte Orientale, Italy, <sup>4</sup>University of Belgrade, Institute of Molecular Genetics and Genetic Engineering, Belgrade, Serbia, <sup>5</sup>University of Belgrade, School of Medicine, Belgrade, Serbia, <sup>6</sup>AO Research Institute Davos, Davos, Switzerland

### **12.00 – 12.15 Tuneable alginate hydrogel microfibers to support 3D cultures of cancer cells requiring different culture media**

Jelena Petrović<sup>1,2</sup>, Jasmina Stojkovska<sup>1</sup>, Miodrag Dragoj<sup>3</sup>, Milica Pešić<sup>3</sup>, Milena Milivojević<sup>4</sup>, Luka Bojić<sup>4</sup>, Milena Stevanović<sup>4,5</sup>, Radmila Janković<sup>6</sup>, Bojana Obradović<sup>1</sup>

<sup>1</sup>University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia, <sup>2</sup>Innovation Center of the Faculty of Technology and Metallurgy, Belgrade, Serbia, <sup>3</sup>University of Belgrade, Institute for Biological Research “Sinisa Stankovic” - National Institute of the Republic of Serbia, Belgrade, Serbia, <sup>4</sup>University of Belgrade, Institute of Molecular Genetics and Genetic Engineering, Belgrade, Serbia, <sup>5</sup>Serbian Academy of Sciences and Arts, Belgrade, Serbia, <sup>6</sup>University of Belgrade, School of Medicine, Belgrade, Serbia

### **12.15 – 12.30 Influence of synthesized calcium phosphate-based nanomaterial on proliferation of dental pulp stem cells in various *in vitro* conditions**

Milica Tomić<sup>1</sup>, Sanja Stojanović<sup>1,2</sup>, Nenad Ignjatović<sup>3</sup>, Stevo Najman<sup>1,2</sup>

<sup>1</sup>University of Niš, Faculty of Medicine, Scientific Research Center for Biomedicine, Department for Cell and Tissue Engineering, 18000 Niš, Serbia, <sup>2</sup>University of Niš, Faculty of Medicine, Department of Biology and Human Genetics, 18000 Niš, Serbia, <sup>3</sup>Institute of Technical Sciences of the Serbian Academy of Science and Arts, 11000 Belgrade, Serbia

### **12.30 – 12.45 Comparative analysis of subcutaneous tissue reaction to different collagen membranes with or without addition of blood**

Milena Radenković Stošić<sup>1</sup>, Sanja Stojanović<sup>1,2</sup>, Mike Barbeck<sup>3</sup>, Stevo Najman<sup>1,2</sup>

<sup>1</sup>University of Niš, Faculty of Medicine, Scientific Research Center for Biomedicine, Department for Cell and Tissue Engineering, 18000 Niš, Serbia, <sup>2</sup>University of Niš, Faculty of Medicine, Department of Biology and Human Genetics, 18000 Niš, Serbia, <sup>3</sup>Clinic and Policlinic for Dermatology and Venereology, University Medical Center Rostock, 18057 Rostock, Germany

### **12.45 – 13.00 Study of the properties of oxidized cellulose plus bioglass as a new bioink for application in regenerative medicine**

Rauany Cristina Lopes<sup>1</sup>, Mônica Rosas Costa Iemma<sup>1</sup>, Luiz Henrique Montezor<sup>1</sup>, André Capaldo Amaral<sup>1</sup>, Lidija Mančić<sup>2</sup>, Eliane Trovatti<sup>1</sup>



<sup>1</sup>University of Araraquara - UNIARA, Rua Carlos Gomes, 1217, CEP: 14801-340, Araraquara, SP, Brazil, <sup>2</sup>Institute of Technical Sciences of SASA, P.O. Box 377, 11000 Belgrade, Serbia

### **13.00 – 14.00 Lunch break**

### **14.00 – 15.30 3<sup>rd</sup> Session – Biomaterials III**

**Chairpersons: Prof. Dr. Đorđe Veljović and Milica Marković**

#### **14.00 – 14.15 Nanofabrication and characterisation of magnetic Fe<sub>3</sub>O<sub>4</sub> nanostructures for potential environmental and biomedical applications**

Dušan Milojkov<sup>1</sup>, Ana Mraković<sup>2</sup>, Gvozden Jovanović<sup>1</sup>, Nikola Vuković<sup>1</sup>, Mladen Bugarčić<sup>1</sup>, Anja Antanasković<sup>1</sup>, Vukosava Živković-Radovanović<sup>3</sup>

<sup>1</sup>Institute for Technology of Nuclear and other Mineral Raw Materials, 11000 Belgrade, Serbia, <sup>2</sup>Vinca Institute for Nuclear Science, University of Belgrade, 11351 Belgrade, Serbia, <sup>3</sup>Faculty of Chemistry, University of Belgrade, 11158 Belgrade, Serbia

#### **14.15 – 14.30 Peroxidase-like activity of chitosan modified magnetic nanoparticles**

Iryna Khmara, Iryna Antal, Alena Jurikova, Martina Kubovcikova, Vlasta Zavisova, Martina Koneracka

*Institute of Experimental Physics, SAS, Watsonova 47, Kosice, Slovakia*

#### **14.30 – 14.45 Towards new approaches for Ultraviolet sterilization of MXenes**

Yuliia Varava<sup>1,2</sup>, Volodymyr Deineka<sup>1,3</sup>, Valeriia Korniienko<sup>1</sup>, Kateryna Diedkova<sup>1,3</sup>, Viktoriia Korniienko<sup>1,3</sup>, Veronika Zahorodna<sup>4</sup>, Oleksiy Gogotsi<sup>4</sup>, Maksym Pogorielov<sup>1,3</sup>

<sup>1</sup>Sumy State University, Sumy, Ukraine, <sup>2</sup>Silesian University of Technology, Gliwice, Poland, <sup>3</sup>University of Latvia, Riga, Latvia; <sup>4</sup>Materials Research Center LTD, Kyiv, Ukraine

#### **14.45 – 15.00 Atomic and molecular spectroscopic analysis of chemically treated pig shoulder bone: possible application in forensics**

Milica Marković, Miroslav Kuzmanović, Dušan Dimić

*University of Belgrade, Faculty of Physical Chemistry, Studentski trg 12-16, 11000 Belgrade, Serbia*

#### **15.00 – 15.15 Application of polylactide (PLA) biomaterial in various fields of medicine**

Zorana Z. Stojsavljević<sup>1,2</sup>, Slobodanka P. Galović<sup>2</sup>, Katarina Lj. Đorđević<sup>2</sup>

*University of Belgrade, <sup>1</sup>Faculty of Biomedical Engineering and Technologies, Belgrade, Serbia, <sup>2</sup>Institute for Nuclear Sciences Vinča, Laboratory for radiation physics and chemistry, Belgrade, Serbia*

#### **15.15 – 15.30 The material for the treatment of periapical granulomas**

Kuzenko Yevhen, Roman Moskalenko, Kuzenko Olena

*Department of Pathology, Sumy State University, Sumy, Ukraine*

## 15.30 – 15.45 Break

### 15.45 – 17.15 4<sup>th</sup> Session – Environmental Materials I

Chairpersons: Prof. Dr. Ljiljana Damjanović-Vasilić and Danijela Smiljanić

#### 15.45 – 16.00 Bentonite modified with cationic surfactant as promising adsorbent for carbamazepine

Danijela Smiljanić, Aleksandra Daković, Milena Obradović, Milica Ožegović, Marija Marković

*Institute for Technology of Nuclear and Other Mineral Raw Materials, Franše d' Epere 86*

#### 16.00 – 16.15 Assisted phytostabilization of Pb-contaminated soil using brushite-metakaolin geopolymer materials and *Festuca rubra*

Dunja Djukić<sup>1</sup>, Tomica Mišljenović<sup>1</sup>, Gordana Andrejić<sup>2</sup>, Uroš Aleksić<sup>2</sup>, Ksenija Jakovljević<sup>1</sup>, Miljana Mirković<sup>3</sup>

<sup>1</sup>University of Belgrade, Faculty of Biology, Belgrade, Serbia, <sup>2</sup>Department of Agrochemistry and Radioecology, Institute for the Application of Nuclear Energy, University of Belgrade, Zemun, Serbia, <sup>3</sup>Department of Materials, "Vinča" Institute of Nuclear Sciences-National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia

#### 16.15 – 16.30 Improvement of sorption properties of natural clay pyrophyllite by ultrasonic treatment

Katarina Tošić, Anđela Mitrović Rajić, Sanja Milošević Govedarović, Sara Mijaković, Ana Vujačić Nikezić, Jasmina Grbović Novaković, Bojana Paskaš Mamula

*Centre of Excellence for Hydrogen and Renewable Energy, Vinča Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade, POB 522, Belgrade, Serbia*

#### 16.30 – 16.45 The impact of thermal treatment on spent coffee grounds for chlorpyrifos removal from water

Vedran Milanković<sup>1</sup>, Tamara Tasić<sup>1</sup>, Snežana Brković<sup>1</sup>, Igor Pašti<sup>2</sup>, Tamara Lazarević-Pašti<sup>1</sup>

<sup>1</sup>Laboratory of Physical Chemistry, Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia, <sup>2</sup>Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia

#### 16.45 – 17.00 Applying carbon materials derived from cellulose for the removal of malathion and chlorpyrifos in food processing

Tamara Tasić<sup>1</sup>, Vedran Milanković<sup>1</sup>, Igor Pašti<sup>2</sup>, Tamara Lazarević-Pašti<sup>1</sup>

<sup>1</sup>Laboratory of Physical Chemistry, Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia, <sup>2</sup>Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia

**17.00 – 17.15 Quality control of gas flow proportional counter for beta spectrometric determination of <sup>90</sup>Sr**

Nataša Sarap<sup>1</sup>, Stefana Dejković<sup>2</sup>, Marija Janković<sup>1</sup>, Jelena Krneta Nikolić<sup>1</sup>, Vojislav Stanić<sup>1</sup>, Milica Rajačić<sup>1</sup>

<sup>1</sup>University of Belgrade, Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, Radiation and Environmental Protection Department, Mike Petrovića Alasa 12-14, 11001 Belgrade, <sup>2</sup>University of Belgrade, Faculty of Physical Chemistry, Studentski trg 12-16, 11000 Belgrade, Serbia

**17.15 – 17.30 Break**

**17.30 – 18.45 5<sup>th</sup> Session – Environmental Materials II**

**Chairpersons: Dr. Smilja Marković and Miomir Krsmanović**

**17.30 – 17.45 Application of thin-layer chromatography in the assessment of lipophilicity of chloroacetamide derivatives'**

Dragana Mekić, Đendi Vaštag, Suzana Apostolov

University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Novi Sad, Serbia

**17.45 – 18.00 Microplastics in urban soils of Belgrade: Abundance and potential sources**

Ivana Mikavica<sup>1</sup>, Dragana Ranđelović<sup>1</sup>, Miloš Ilić<sup>2</sup>, Milena Obradović<sup>1</sup>, Jovica Stojanović<sup>1</sup>, Jelena Mutić<sup>2</sup>

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**18.00 – 18.15 Microbial degradation of terephthalic acid as a PET-derived compound**

Natalija Petronijević<sup>1</sup>, Marija Lješević<sup>2</sup>, Branka Lončarević<sup>2</sup>, Kristina Joksimović<sup>2</sup>, Gordana Gojgić-Cvijović<sup>2</sup>, Vladimir Bešković<sup>1</sup>, Jasmina Nikodinović-Runić<sup>3</sup>

<sup>1</sup>University of Belgrade, Faculty of Chemistry, <sup>2</sup>University of Belgrade, Institute of Chemistry, Technology and Metallurgy, <sup>3</sup>University of Belgrade, Institute of Molecular Genetics and Genetic Engineering

**18.15 – 18.30 Immobilization of nickel ions into stable crystal structures as a promising way for their removal from wastewater**

Miomir Krsmanović<sup>1</sup>, Aleksandar Popović<sup>2</sup>, Željko Radovanović<sup>3</sup>, Smilja Marković<sup>4</sup>, Mia Omerašević<sup>1</sup>

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<sup>2</sup>Faculty of Chemistry, University of Belgrade, Studentski Trg 12-16,

Belgrade, Serbia, <sup>3</sup>Innovation Centre of Faculty of Technology and Metallurgy, University of

*Belgrade, Karnegijeva 4, Belgrade, Serbia, <sup>4</sup>Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Knez Mihailova 35/IV, Belgrade, Serbia*

**18.30 – 18.45 Particularities of the isolation of rare earth elements from mechanochemically modified brown coals**

Lidiya I. Yudina<sup>1,2</sup>, Tatiana S. Skripkina<sup>2</sup>, Svetlana S. Shatskaya<sup>2</sup>, Uliana E. Nikiforova<sup>2</sup>  
<sup>1</sup>*Novosibirsk state university, Faculty of natural sciences, Novosibirsk, Russia,* <sup>2</sup>*Institute of solid state chemistry an mechanochemistry, Novosibirsk, Russia*

**Thursday, November 30, 2023**

**09.00 – 11.00 6<sup>th</sup> Session – Theoretical Modeling of Materials**

**Chairpersons: Dr. Marko Opačić and Kristina Stevanović**

**09.00 – 09.15 Quinuclidine thiosemicarbazone crystal structure determination: Quantum insights via Hirshfeld atom refinement and intermolecular interaction energies**

Milica G. Bogdanović<sup>1</sup>, Vidak N. Raičević<sup>2</sup>, Marko V. Rodić<sup>1</sup>  
<sup>1</sup>*University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia,* <sup>2</sup>*University of Novi Sad, Faculty of Medicine, Novi Sad, Serbia*

**09.15 – 09.30 Computational modeling vs. experimental analyses of the energetic performance of pyrotechnic mixtures and explosives**

Jelena Mojsilović<sup>1</sup>, Mladen Timotijević<sup>1</sup>, Mirjana Krstović<sup>1,2</sup>, Jelena Petković-Cvetković<sup>1</sup>, Bojana Fidanovski<sup>1,2</sup>, Danica Bajić<sup>1,2</sup>  
<sup>1</sup>*Military Technical Institute, Belgrade, Serbia,* <sup>2</sup>*Military Academy, Belgrade, Serbia*

**09.30 – 09.45 Composite PBX explosives with different polymer binders**

Mirjana Krstović<sup>1,2</sup>, Danica Bajić<sup>1,2</sup>, Mladen Timotijević<sup>1</sup>, Jelena Mojsilović<sup>1</sup>, Slavica Terzić<sup>1</sup>  
<sup>1</sup>*Military Technical Institute, Belgrade, Serbia,* <sup>2</sup>*Military Academy, University of Defense, Belgrade, Serbia*

**09.45 – 10.00 Modelling the detonation pressure of phlegmatized explosives in EXPLO5**

Mladen Timotijević, Danica M. Bajić, Slavica Terzić  
*Military Technical Institute, Belgrade, Serbia*

**10.00 – 10.15 QSAR and machine learning models of redox potentials of some organic pigments**

Kristina Stevanović<sup>1</sup>, Jelena Maksimović<sup>2</sup>, Jelena Senčanski<sup>3</sup>, Maja Pagnacco<sup>4</sup>, Milan Senčanski<sup>5</sup>

<sup>1</sup>Vinča Institute of Nuclear Sciences, Belgrade, Serbia, <sup>2</sup>Faculty of Physical Chemistry, Belgrade, Serbia, <sup>3</sup>Institute for General and Physical Chemistry, Belgrade, Serbia, <sup>4</sup>Institute of Chemistry, Technology and Metallurgy, Belgrade, Serbia, <sup>5</sup>Institute of Molecular Genetics and Genetic Engineering, Belgrade, Serbia

### **10.15 – 10.30 The photogenerated excess carriers influence on the photoacoustic signal of a narrow bandgap semiconductor**

Milica A. Dragaš<sup>1,2</sup>, Slobodanka P. Galović<sup>3</sup>, Katarina Lj. Đorđević<sup>3</sup>

<sup>1</sup>Faculty of Physics, University of Belgrade, 12 Studentski trg, 11001 Belgrade, Serbia,

<sup>2</sup>Faculty of Philosophy, University of East Sarajevo, 1 Alekse Santica, 71420 Pale, Bosnia and Herzegovina, <sup>3</sup>Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade, 12-14 Mike Petrovica Alasa, 11351 Vinča, Belgrade, Serbia

### **10.30 – 10.45 Density functional theory calculation of the optical properties of graphene quantum dots**

Tatjana Agatonović Jovin, Biljana Todorović Marković, Zoran Marković

Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia

### **10.45 – 11.00 Oxygen-terminated Ti<sub>3</sub>C<sub>2</sub> MXene as an excitonic insulator**

Nilesh Kumar, František Karlický

Department of Physics, Faculty of Science, University of Ostrava, 30. dubna 22, 701 03 Ostrava, Czech Republic

### **11.00 – 11.15 Break**

### **11.15 – 12.45 7<sup>th</sup> Session – Nanostructured Materials I**

**Chairpersons: Dr. Dragana Jugović and Katarina Aleksić**

### **11.15 – 11.30 Hydrogen storage properties of MgH<sub>2</sub>-Ni system**

Milica Prvulović<sup>1</sup>, Bojana Babić<sup>1</sup>, Nenad Filipović<sup>2</sup>, Željko Mravik<sup>1</sup>, Sanja Milošević Govedarović<sup>1</sup>, Zorana Sekulić<sup>3</sup>, Igor Milanović<sup>1</sup>

<sup>1</sup>Vinča Institute of Nuclear Sciences, National Institute of Republic of Serbia, Centre of Excellence for Renewable and Hydrogen Energy, The University of Belgrade, POB 522, 11000 Belgrade, Republic of Serbia, <sup>2</sup>Institute of Technical Sciences of SASA, Knez Mihajlova 35/IV, 11000 Belgrade, Republic of Serbia, <sup>3</sup>Ministry of Capital Investments, The Government of Montenegro, Directorate for Energy and Energy Efficiency, Podgorica, Montenegro

### **11.30 – 11.45 Temperature dependence of electric properties of GO and GO/WPA films on interdigital electrodes**

Željko Mravik<sup>1</sup>, Milica Pejčić<sup>2</sup>, Marija Grujičić<sup>2</sup>, Jelena Rmuš Mravik<sup>1</sup>, Miša Stević<sup>3</sup>, Zoran Stević<sup>4,5</sup>, Zoran Jovanović<sup>1</sup>

<sup>1</sup>*Center of Excellence for Hydrogen and Renewable Energy (CONVINCE), Laboratory of Physics, Vinča Institute of Nuclear Sciences, University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia,* <sup>2</sup>*Laboratory of Physics, Vinča Institute of Nuclear Sciences, University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia,* <sup>3</sup>*Elsys Eastern Europe, Omladinskih Brigada 90e, 11070 Belgrade, Serbia,* <sup>4</sup>*Technical faculty in Bor, University of Belgrade, 19210 Bor, Serbia,* <sup>5</sup>*School of Electrical Engineering, University of Belgrade, Bulevar kralja Aleksandra 73, 11120 Belgrade, Serbia*

**11.45 – 12.00 Electrochemically exfoliated graphene as support of platinum nanoparticles for methanol oxidation reaction and hydrogen evolution reaction**

Jelena P. Georgijević, Irina Srejić, Mirjana Novaković, Lazar Rakočević, Jelena Potočnik, Aleksandar Maksić

*Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, P.O. Box 522, Belgrade, 11001, Serbia*

**12.00 – 12.15 ZnO@RuO<sub>2</sub> composites: Cost-effective trifunctional electrocatalysts for enhanced OER, HER, and ORR activities in water electrolysis**

Katarina Aleksić<sup>1</sup>, Ivana Stojković Simatović<sup>2</sup>, Smilja Marković<sup>1</sup>

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

**12.15 – 12.30 Investigating the influence of hydrothermal treatment on oxygen functional groups in graphene oxide-based nanocomposites**

Milica Pejčić<sup>1</sup>, Željko Mravik<sup>1</sup>, Danica Bajuk-Bogdanović<sup>2</sup>, Marija Grujičić<sup>1</sup>, Jelena Rmuš Mravik<sup>1</sup>, Sonja Jovanović<sup>1</sup>, Zoran Jovanović<sup>1</sup>

*<sup>1</sup>Laboratory of Physics, Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia, <sup>2</sup>Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia*

**12.30 – 12.45 Enhanced electrochemical detection of gallic acid using modified glassy carbon electrodes with Zn/Ga-doped cobalt ferrite**

Marija Grujičić<sup>1</sup>, Marko Jelić<sup>1</sup>, Ivana Stojković Simatović<sup>2</sup>, Danica Bajuk Bogdanović<sup>2</sup>, Darija Petković<sup>1</sup>, Zoran Jovanović<sup>1</sup>, Sonja Jovanović<sup>1</sup>

*<sup>1</sup>Laboratory of Physics, Vinča Institute of Nuclear Sciences – National institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia, <sup>2</sup>Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia*

**12.45 – 13.45 Lunch break**

**13.45 – 15.15 8<sup>th</sup> Session – Nanostructured Materials II**  
**Chairpersons: Dr. Ana Stanković and Tijana Stamenković**

**13.45 – 14.00 Yb<sup>3+</sup>/Tm<sup>3+</sup> doped SrGd<sub>2</sub>O<sub>4</sub> as photoluminescent and photocatalytic material**

Tijana Stamenković<sup>1</sup>, Marjan Randelović<sup>2</sup>, Ivana Dinić<sup>3</sup>, Lidija Mančić<sup>3</sup>, Vesna Lojpur<sup>1</sup>  
<sup>1</sup>*Department of Atomic Physics, Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, P.O. Box 522, 11001 Belgrade, University of Belgrade, Serbia,* <sup>2</sup>*Faculty of Science and Mathematics, University of Niš, Niš, Serbia,* <sup>3</sup>*Institute of Technical Science of SASA, Knez-Mihailova 35/4, Belgrade, Serbia*

#### **14.00 – 14.15 Physicochemical characterization of mechanochemically activated pyrophyllite/Ag composites**

Sara Mijaković, Jasmina Grbović Novaković, Katarina Tošić, Anđela Mitrović Rajić, Bojana Paskaš Mamula, Ana Vujačić Nikezić

*Centre of Excellence for Renewable and Hydrogen Energy, “Vinča” Institute of Nuclear Sciences, National Institute of Republic of Serbia, University of Belgrade, POB 522, 11000 Belgrade*

#### **14.15 – 14.30 Measurement of EMI shielding performance of graphene oxide – silver nanoparticles composites**

Anđela Stefanović<sup>1,2</sup>, Dejan Kepić<sup>1</sup>, Svetlana Jovanović Vučetić<sup>1</sup>, Kamel Haddadi<sup>3</sup>, Biljana Todorović Marković<sup>1</sup>

<sup>1</sup>*Vinča Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade P.O. Box 522, 11000 Belgrade, Serbia,* <sup>2</sup>*Faculty of Chemistry, University of Belgrade, Studentski trg 12-16, 11158, Belgrade, Serbia,* <sup>3</sup>*University of Lille, CNRS, Centrale Lille, University Polytechnique Hauts-de-France, UMR 8520-IEMN, F-59000 Lille, France*

#### **14.30 – 14.45 Plasmon induced enhancement of photoinduced antibacterial activity of graphene quantum dots**

Slađana Dorontić, Svetlana Jovanović, Biljana Todorović Marković

*„Vinča”-Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade P.O. Box 522, 11000 Belgrade, Serbia*

#### **14.45 – 15.00 Innovative modifications of graphene quantum dots for improved photodynamic therapy in antibacterial treatment**

Mila Milenković, Slađana Dorontić, Biljana Todorović Marković, Svetlana Jovanović

*Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, P.O. Box 522, 11000 Belgrade, Serbia*

#### **15.00 – 15.15 Enhanced photocatalytic performance of BaTiO<sub>3</sub>/MoO<sub>3</sub>/Ag ternary heterostructure**

Kevin V. Alex<sup>1,2</sup>, Jose P. B. Silva<sup>3</sup>, K. Kamakshi<sup>4</sup>, K. C. Sekhar<sup>1</sup>

<sup>1</sup>*Department of Physics, School of Basic and Applied Sciences, Central University of Tamil Nadu, Thiruvavur, 610-005, India,* <sup>2</sup>*International & Inter University Centre for Nanoscience & Nanotechnology, Mahatma Gandhi University, Kottayam, 686-560, India,* <sup>3</sup>*Physics Center of Minho and Porto Universities (CF-UM-UP), University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal,* <sup>4</sup>*Department of Science and Humanities, Indian Institute of Information Technology, Thiruchirapalli, 620-012, India*

## 15.15 – 15.30 Break

### 15.30– 17.15 9<sup>th</sup> Session – Nanostructured Materials III

Chairpersons: Dr. Ivana Dinić and Marko Jelić

#### 15.30 – 15.45 Thin film deposition of multilayers on silicon substrate laser pre-patterned

Nevena Božinović, Suzana Petrović, Mirjana Novaković, Vladimir Rajić

*Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, P.O. Box 522, Belgrade, 11001, Serbia*

#### 15.45 – 16.00 UV protection with novel porous organosilica nanoparticles

Aleksandra Pavlović<sup>1</sup>, Nikola Knežević<sup>1</sup>, Irena Miler<sup>1</sup>, Mihailo Rabasović<sup>2</sup>

*<sup>1</sup>Institute BioSense, University of Novi Sad, Serbia, <sup>2</sup>Institute of Physics, Belgrade*

#### 16.00 – 16.15 Photoelectrochemical water oxidation properties of bismuth vanadate photoanode irradiated by swift heavy ions

Marko Jelić<sup>1</sup>, Ekaterina Korneeva<sup>2</sup>, Nikita Kirilkin<sup>2</sup>, Tatiana Vershinina<sup>2</sup>, Oleg Orelovich<sup>2</sup>, Vladimir Skuratov<sup>2</sup>, Zoran Jovanović<sup>1</sup>, Sonja Jovanović<sup>1</sup>

*<sup>1</sup>Laboratory of Physics, Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia, <sup>2</sup>Joint Institute for Nuclear Research, Dubna, Russia*

#### 16.15 – 16.30 Improvement of Au-poly(N-isopropylacrylamide) hydrogel nanocomposites: Single-layer vs. bi-layered systems

Nikolina Nikolić, Jelena Spasojević, Una Stamenović, Vesna Vodnik, Ivana Vukoje, Zorica Kačarević-Popović, Aleksandra Radosavljević

*Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia*

#### 16.30 – 16.45 Radiological and structural analysis of aluminosilicate materials incorporated with samarium (III)-oxide

Sanja Knežević<sup>1</sup>, Miloš Nenadović<sup>2</sup>, Jelena Potočnik<sup>2</sup>, Danilo Kisić<sup>2</sup>, Milica Rajačić<sup>3</sup>, Snežana Nenadović<sup>1</sup>, Marija Ivanović<sup>1</sup>

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#### 16.45 – 17.00 Comparison of the conventional and green microemulsion synthesis of the manganese oxide nanoparticles



Tatjana Baljak<sup>1</sup>, Stéphane Pronier<sup>2</sup>, Celine Fontaine<sup>2</sup>, Ranka Šatara<sup>1</sup>, Radojka Jandrić<sup>1</sup>, Slađana Četojević<sup>1</sup>, Smiljana Paraš<sup>1</sup>, Suzana Gotovac Atlagić<sup>1</sup>

<sup>1</sup>University of Banja Luka, Faculty of Natural Sciences, Chemistry Department, Mladena Stojanovića 2, 78000, Banja Luka, Republic of Srpska, Bosnia and Herzegovina, <sup>2</sup>Université de Poitiers, Institut de Chimie des Milieux et Matériaux de Poitiers (IC2MP), 86073 Poitiers Cedex 9, France

**17.00 – 17.15 Preparation of dispersion strengthened nanocomposite with Al<sub>2</sub>O<sub>3</sub> and MgO particles by spark plasma sintering**

František Kromka<sup>1</sup>, Juraj Szabó<sup>1</sup>, Ondrej Milkovič<sup>1</sup>, Katarína Ďurišínová<sup>1</sup>, Nebojša Labus<sup>2</sup>

<sup>1</sup>Slovak Academy of Sciences, Institute of Materials Research, Košice, Slovak Republic,

<sup>2</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia

**Friday, December 1, 2023**

**09.00 – 10.30 10<sup>th</sup> Session – New Synthesis and Processing Methods I**

**Chairpersons: Dr. Sonja Jovanović and Dr. Konrad Terpilowski**

**09.00 – 09.15 Properties of polymer/MXene nanocomposite films**

Ivan Pešić<sup>1</sup>, Sanja Ostojić<sup>2</sup>, Miloš Petrović<sup>3</sup>, Dana Vasiljević Radović<sup>1</sup>, Milena Rašljić Rafajilović<sup>1</sup>, Vesna Radojević<sup>3</sup>, Marija V. Pergal<sup>1</sup>

<sup>1</sup>University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoseva 12, 11000, Belgrade, Serbia, <sup>2</sup>Institute of General and Physical Chemistry, University of Belgrade, Studentski trg 12-16, 11000, Belgrade, Serbia, <sup>3</sup>Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia

**09.15 – 09.30 “Green” synthesis of silver nanoparticles and their biosafety**

Konrad Terpilowski<sup>1</sup>, K. Dybkova<sup>2</sup>, O. Goncharuk<sup>2,3</sup>, L. Rieznichenko<sup>2</sup>, T. Gruzina<sup>2</sup>, S. Dybkova<sup>2,3</sup>

<sup>1</sup>Maria Curie-Skłodowska University, Poland, <sup>2</sup>F.D. Ovcharenko Institute of biocolloidal chemistry of NAS of Ukraine, 42 Vernadskogo Ave., Kyiv 03142, Ukraine, <sup>3</sup>Institute of Agrophysics, Polish Academy of Sciences, Doświadczalna 4, 20-290 Lublin, Poland

**09.30 – 09.45 PLD growth of strontium titanate thin films on SrO-deoxidized and rGO-buffered Si(001) substrate**

Darija Petković<sup>1</sup>, Hsin Chia-Ho<sup>2</sup>, Urška Trstenjak<sup>2</sup>, Janez Kovač<sup>3</sup>, Damjan Vengust<sup>2</sup>, Matjaž Spreitzer<sup>2</sup>, Zoran Jovanović<sup>1</sup>

<sup>1</sup>Laboratory of Physics, Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, Belgrade, Serbia, <sup>2</sup>Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia, <sup>3</sup>Department of Surface Engineering, Jožef Stefan Institute, Ljubljana, Slovenia

**09.45 – 10.00 Study of abnormal grain growth in cold-rolled AA5182 Al-Mg alloy**

M. Ghulam Isaq Khan<sup>1</sup>, Filip Rajković<sup>2</sup>, Miljana Popović<sup>1</sup>, Dejan Prelević<sup>2</sup>, Aleksandar Čitić<sup>3</sup>, Tamara Radetić<sup>1</sup>

<sup>1</sup>*Faculty of Technology & Metallurgy, University of Belgrade, Serbia*, <sup>2</sup>*Faculty of Mining & Geology, University of Belgrade, Serbia*, <sup>3</sup>*Military-Technical Institute, Belgrade, Serbia*

**10.00 – 10.15 Analysis of the change in structural parameters of mechanically alloyed Cu composite materials using different milling methods**

Marko Simić<sup>1</sup>, Emilija Nidžović<sup>1</sup>, Željko Radovanović<sup>2</sup>, Jovana Ružić<sup>1</sup>

<sup>1</sup>*Department of Materials, “Vinča” Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade*, <sup>2</sup>*Faculty of Technology and Metallurgy, University of Belgrade*

**10.15 – 10.30 Synthesis and high-temperature / high-pressure exposure of compositionally complex rock-salt-type transitional metal (carbo)nitrides**

Dharma Teja Teppala<sup>1</sup>, Shrikant Bhat<sup>2</sup>, Leonard Keil<sup>1</sup>, Jan Bernauer<sup>1</sup>, Johannes Peter<sup>3</sup>, Hans-Joachim Kleebe<sup>3</sup>, Emanuel Ionescu<sup>1,4</sup>

<sup>1</sup>*Institute for Material Science, Technical University of Darmstadt, 64287 Darmstadt, Germany*, <sup>2</sup>*Photon Science, DESY, 22607 Hamburg, Germany*, <sup>3</sup>*Institute for Applied Geosciences, Technical University of Darmstadt, 64287 Darmstadt, Germany*, <sup>4</sup>*Fraunhofer IWKS, Brentanostrasse 2a, 63755 Alzenau, Germany*

**10.30 – 10.45 Break**

**10.45 – 12.15 11<sup>th</sup> Session – New Synthesis and Processing Methods II  
Chairpersons: Dr. Miloš Milović and Katarina Rondović**

**10.45 – 11.00 Metabolic insights through nondestructive monitoring: A case study on *Vriesea carinata***

Sara V. Ristić, Anđelija N. Mladenović, Gorana D. Madžarević, Marija M. Petković Benazzouz, Katarina M. Miletić

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

**11.00 – 11.15 Continuous monitoring of leaf optical properties for the early pathogen detection in sweet chestnut**

Anđelija N. Mladenović, Gorana D. Madžarević, Sara V. Ristić, Marija M. Petković Benazzouz, Katarina M. Miletić

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

**11.15 – 11.30 Real-time detection of early signs of Mg and N deficiency in hydroponically grown *Ocimum basilicum*: An innovative optical approach with nutrient recovery insights**

Gorana D. Madžarević, Anđelija N. Mladenović, Sara V. Ristić, Marija M. Petković Benazzouz, Katarina M. Miletić

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

**11.30 – 11.45 Generating mesoporosity in zeolite 13X by applying mild alkaline treatment with urea solution**

Katarina Rondović<sup>1</sup>, Vladislav Rac<sup>2</sup>, Vesna Rakić<sup>2</sup>, Igor Pašti<sup>1</sup>, Ljiljana Damjanović-Vasilic<sup>1</sup>  
<sup>1</sup>University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia, <sup>2</sup>University of Belgrade, Faculty of Agriculture, Belgrade, Serbia

**11.45 – 12.00 A fast and efficient synthesis of gamma rays dosimeters based on metalophthalocyanines**

Daliborka Odobaša<sup>1</sup>, Bojana Vasiljević<sup>2</sup>, Dragana Marinković<sup>2</sup>  
<sup>1</sup>Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, 11000 Belgrade, Serbia, <sup>2</sup>Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade, P. O. Box 522, 11000 Belgrade, Serbia

**12.00 – 12.15 The influence of the pre-deformation and post-deformation process on hardness and microstructure of the the EN AW-7075 aluminum alloy**

Avram S. Kovačević  
*University of Belgrade, Technical faculty in Bor, Bor, Serbia*

**12.15 – 13.00 Lunch break**

**13.00 – 14.30 12<sup>th</sup> Session – Materials for High-technology Application I  
Chairpersons: Dr. Zoran Jovanović and Ljubinka Vasić**

**13.00 – 13.15 Utilization of carbon fiber in the context of microbial fuel cell systems**

Kristina Joksimović<sup>1</sup>, Aleksandra Žerađanin<sup>1</sup>, Branka Lončarević<sup>1</sup>, Marija Lješević<sup>1</sup>, Danijela Randjelović<sup>1</sup>, Vladimir Beškoski<sup>2</sup>  
<sup>1</sup>University of Belgrade, Institute for chemistry, metallurgy and technology, National Institute of the Republic of Serbia, Njegoševa 12, Belgrade, <sup>2</sup>University of Belgrade, Faculty of chemistry, Studentski trg 12-16, Belgrade, Serbia

**13.15 – 13.30 Polycrystalline nickel modified with rhodium as an effective electrocatalyst for hydrogen-based energy conversion technologies**

Ljubinka Vasić, Nikola Tričković, Zaharije Bošković, Aleksandar Z. Jovanović, Igor A. Pašti  
*University of Belgrade – Faculty of Physical Chemistry, Belgrade, Serbia*

**13.30 – 13.45 Perspective of Ni-Sn modified Ni foams in industrial scale alkaline water electrolysis**

Jelena Gojčić<sup>1</sup>, Aleksandar Petričević<sup>1</sup>, Mila Krstajić Pajić<sup>1</sup>, Thomas Rauscher<sup>2</sup>, Christian Immanuel Bernaecker<sup>2</sup>, Vladimir Jović<sup>3</sup>  
<sup>1</sup>University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia, <sup>2</sup>Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Branch Lab Dresden, Winterbergstraße 28, 01277 Dresden, Germany,

<sup>3</sup>*University of Belgrade, Institute for Multidisciplinary Research, Kneza Višeslava 1, 11030 Belgrade, Serbia*

**13.45 – 14.00 Ni-MoO<sub>2</sub> as electrocatalyst for hydrogen evolution reaction**

A. Petricevic<sup>1</sup>, Jelena Gojic<sup>1</sup>, Mila Krstajic Pajic<sup>1</sup>, T. Rauscher<sup>2</sup>, Christian Immanuel Bernaecker<sup>2</sup>, Vladimir Jovic<sup>3</sup>

<sup>1</sup>*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000*

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<sup>3</sup>*University of Belgrade, Institute for Multidisciplinary Research, Kneza Višeslava 1, 11030 Belgrade, Serbia*

**14.00 – 14.15 The influence of ZnCl<sub>2</sub> on the capacitance of hydrothermally synthesized vine shoots-derived carbon**

Minea Kapidžić<sup>1</sup>, Jana Mišurović<sup>1</sup>, Veselinka Grudić<sup>1</sup>, Milica Vujković<sup>2</sup>

<sup>1</sup>*University of Montenegro – Faculty of Metallurgy and Technology, Cetinjski put bb, 81000 Podgorica, Montenegro,* <sup>2</sup>*University of Belgrade – Faculty of Physical Chemistry, Studentski trg 12-16, 11158, Belgrade, Serbia*

**14.15 – 14.30 Hydrothermal carbonization of olive mill waste to electrode materials**

Sonja Kastratović<sup>1</sup>, Minea Kapidžić<sup>1</sup>, Danilo Marković<sup>1</sup>, Veselinka Grudić<sup>1</sup>, Milica

Vujković<sup>2</sup>, Jana Mišurović<sup>1</sup>

<sup>1</sup>*University of Montenegro, Faculty of Metallurgy and Technology, Cetinjski put 2, 81000,*

*Podgorica, Montenegro,* <sup>2</sup>*University of Belgrade – Faculty of Physical Chemistry, Studentski trg 12-16, 11158, Belgrade, Serbia*

**14.30 – 14.45 Break**

**14.45 – 16.15 13<sup>th</sup> Session – Materials for High-technology Application II**

**Chairpersons: Dr. Marina Vuković and Natalia Majewska**

**14.45 – 15.00 Environmentally friendly cell with a rechargeable CF/AgCl-PPy cathode**

Aleksandra S. Popović, Branimir N. Grgur

*TMF, University of Belgrade, Serbia, Karnegijeva 4*

**15.00 – 15.15 The effect of homogenization conditions on microstructure and recrystallization behavior of AA5182 alloy**

Aleksandar Ćitić<sup>1</sup>, Miljana Popović<sup>2</sup>, Tamara Radetić<sup>2</sup>, Muhamad Ghulam Isaq Khan<sup>2</sup>

<sup>1</sup>*Military-technical Institute, Belgrade, Serbia,* <sup>2</sup>*Faculty of Technology and Metallurgy, University of Belgrade, Serbia*

**15.15 – 15.30 Geopolymerisation of the kaolin from Bosnia and Herzegovina: Synthesis, characterization and potential application in high-tech ceramics**

Marija Stojaković<sup>1</sup>, Sunčica Sukur<sup>1</sup>, Elvir Babajić<sup>2</sup>, Esad Salčin<sup>3</sup>, Zvezdana Sandić<sup>1</sup>, Ferenc Madai<sup>4</sup>, Viktor Madai<sup>4</sup> and Suzana Gotovac Atlagić<sup>1</sup>

<sup>1</sup>University of Banja Luka, Faculty of Natural Sciences and Mathematics, Mladena Stojanovića 2, 78 000 Banja Luka, Bosnia and Herzegovina, <sup>2</sup>University of Tuzla, Faculty of Mining, Geology and Civil Engineering, Univerzitetska 2, Tuzla 75000, Bosnia and Herzegovina, <sup>3</sup>Ministry of Energy and Mining of Republic of Srpska, Trg Republike Srpske 1, 78 000 Banja Luka, Bosnia and Herzegovina, <sup>4</sup>University of Miskolc, Institute of Mineralogy and Geology, H-3515 Miskolc Egyetemváros, Hungary

### **15.30 – 15.45 Dependence of alumina/ascorbate oxidase biosensor electrocatalytic activity on alumina type**

Barbara Ramadan<sup>1</sup>, Sonja Novaković<sup>1</sup>, Miloš Mojović<sup>1</sup>, Zorica Mojović<sup>2</sup>

<sup>1</sup>University of Belgrade Faculty of Physical Chemistry, Studentski trg 12-16, Belgrade, Republic of Serbia, <sup>2</sup>University of Belgrade – Institute of Chemistry, Technology and Metallurgy, Department of Catalysis and Chemical Engineering, Njegoševa 12, Belgrade, Republic of Serbia

### **15.45 – 16.00 Influence of chemical and mechanical pressure on luminescence properties of Cr<sup>3+</sup>-activated near-infrared phosphors**

Natalia Majewska<sup>1</sup>, Ru-Shi Liu<sup>2</sup>, Sebastian Mahlik<sup>1,3</sup>

<sup>1</sup>Institute of Experimental Physics, Faculty of Mathematics, Physics and Informatics, University of Gdansk, Wita Stwosza 57, 80-308 Gdansk, Poland, <sup>2</sup>Department of Chemistry, National Taiwan University, Taipei 106, Taiwan, <sup>3</sup>International Centre for Theory of Quantum Technologies (ICTQT), University of Gdansk, 80-308 Gdańsk, Poland

### **16.00 – 16.15 Utilizing absorption spectroscopy for investigating radiochromic films in radiation dosimetry**

Stevan Pecić<sup>1</sup>, Miloš Vičić<sup>1</sup>, Ivan Belča<sup>1</sup>, Ljubomir Kurij<sup>2</sup>, Strahinja Stojadinović<sup>3</sup>, Slobodan Dević<sup>4</sup>

<sup>1</sup>Faculty of Physics, Belgrade, Serbia, <sup>2</sup>University Clinical Center of Serbia, Belgrade, Serbia, <sup>3</sup>University of Texas Southwestern Medical Center, Dallas TX, USA, <sup>4</sup>McGill University, Montreal, Canada

### **16.15 – 16.30 Break**

### **16.30 – 17.45 14<sup>th</sup> Session – Materials for High-technology Application III and Materials for New Generation Solar Cells**

**Chairpersons: Dr. Vuk Radmilović and Dr. Lazar Rakočević**

### **16.30 – 16.45 Characterization and hydrogen evolution on Pt/nanoplatelets**

Lazar Rakočević<sup>1</sup>, Jelena Golubović<sup>2</sup>, Vladimir Rajić<sup>1</sup>, Svetlana Štrbac<sup>2</sup>

<sup>1</sup>INN Vinca, Laboratory of Atomic Physics, University of Belgrade, Serbia, Mike Alasa 12-14, 11001 Belgrade, Serbia, <sup>2</sup>Institute of Chemistry, Technology and Metallurgy, Department of Electrochemistry, University of Belgrade, Njegoševa 12, 11000 Belgrade, Serbia

**16.45 – 17.00 Investigation of varied dip-coating methods for the deposition of TiO<sub>2</sub> blocking layer of the photoanode of Dye-Sensitized Solar Cells**

Evgenija Milinković, Vladislav Jovanov and Katarina Cvetanović

*Department of Microelectronic Technologies, Institute of Chemistry Technology and Metallurgy, National Institute of the Republic of Serbia, University of Belgrade, Njegoseva 12, 11000 Belgrade, Serbia*

**17.00 – 17.15 Spin-coated TiO<sub>2</sub> thin films: Fabrication and characterization study**

Nastasija Conic<sup>1,2</sup>, Evgenija Milinkovic<sup>3</sup>, Vladislav Jovanov<sup>3</sup>, Jovana Gojanovic<sup>1</sup>

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**17.15 – 17.30 Metal complexes as potential new materials for dye-sensitized solar cells – Synthesis and characterization of Zn(II) complex with asymmetric Schiff base of 2,6-diacetylpyridine**

Marijana S. Kostić, Vukadin M. Leovac, Milica G. Bogdanović, Marko V. Rodić, Mirjana M. Radanović

*University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia*

**17.30 – 17.45 The analysis of roof-integrated PV plant with the possible usage of battery energy storage system**

Đorđe Jovanović<sup>1</sup>, Branislav Milenković<sup>2</sup>

*<sup>1</sup>Mathematical Institute of SASA, Department of Computer Sciences, Kneza Mihaila 36, Belgrade, Faculty of Applied Sciences, Department of Mechanical Engineering, Dušana Popovića 22a, Niš*

**18.00 Closing Ceremony**

5-4

**Immobilization of nickel ions into stable crystal structures as a promising way for their removal from wastewater**

Miomir Krsmanović<sup>1</sup>, Aleksandar Popović<sup>2</sup>, Željko Radovanović<sup>3</sup>,  
Smilja Marković<sup>4</sup>, Mia Omerašević<sup>1</sup>

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Environmental pollution is increasing day by day due to industrial activities. Heavy metals are pollutants of special concern due to their toxicity, persistence, and bioaccumulation in nature. Nickel is a heavy metal that is mostly used in industries because of its anticorrosion behavior. As a consequence, nickel ions are present in the wastewater from mining, electroplating, battery manufacturing and metal finishing industries. Nickel ions are non-biodegradable, and as such, they are present in surface water. Their high concentrations can have a dangerous impact on human health and aquatic life. In this work, a promising method for the removal of Ni ions from wastewater and their incorporation into a stable crystal structure was described. Ni-exchanged form of LTA zeolite was prepared by the standard procedure of ion exchange. After the ion exchange, powder samples were heated at temperatures of 900 to 1300 °C in order to obtain a stable crystal structure of Ni-spinel, NiAl<sub>2</sub>O<sub>4</sub>. XRF analysis was used to study ion exchange efficiency. Characterization of raw as well as thermally treated powder samples of Ni-exchanged LTA zeolite was conducted by XRPD, DTA/TG, FT-IR and SEM analysis.