
# Serbian Ceramic Society Conference
# ADVANCED CERAMICS AND APPLICATION XII
# New Frontiers in Multifunctional Material Science and Processing

**Serbian Ceramic Society**
**Institute of Technical Sciences of SASA**
**Institute for Testing of Materials**
**Institute of Chemistry Technology and Metallurgy**
**Institute for Technology of Nuclear and Other Raw Mineral Materials**
**Institute of General and Physical Chemistry**

# PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Kneza Mihaila 35**
**Serbia, Belgrade, 18-20. September 2024.**

**Serbian Ceramic Society Conference**
**ADVANCED CERAMICS AND APPLICATION XII**
**New Frontiers in Multifunctional Material Science and Processing**

**Serbian Ceramic Society**
**Institute of Technical Sciences of SASA**
**Institute for Testing of Materials**
**Institute of Chemistry Technology and Metallurgy**
**Institute for Technology of Nuclear and Other Raw Mineral Materials**
**Institute for General and Physical Chemistry**

# PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Kneza Mihaila 35**
**Serbia, Belgrade, 18-20th September 2024.**

**Book title:** Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION XII Program and the Book of Abstracts

**Publisher:**
Serbian Ceramic Society

**Editors**:
Dr. Nina Obradović
Dr. Lidija Mančić

**Technical Editors:**
Dr. Adriana Peleš Tadić
Dr. Jelena Živojinović
Dr. Marina Vuković

**Printing:**
Serbian Ceramic Society, Belgrade, 2024.

**Edition:**
120 copies

CIP - Каталогизација у публикацији Народна библиотека Србије, Београд

666.3/.7(048)
66.017/.018(048)

**SRPSKO keramičko društvo. Conference Advanced Ceramics and Application : New Frontiers in Multifunctional Material Science and Processing (12 ; 2024 ; Beograd)**
Program ; and the Book of abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application XII New Frontiers in Multifunctional Material Science and Processing, Serbia, Belgrade, 18-20. September 2024 ; [editors Nina Obradović, Lidija Mančić]. - Belgrade : Serbian Ceramic Society, 2024 (Belgrade : Serbian Ceramic Society). - 82 str. ; 28 cm

Tiraž 120.

ISBN 978-86-905714-1-3

a) Керамика -- Апстракти b) Наука о материјалима -- Апстракти

COBISS.SR-ID 151937545

**Conference Topics**

- Basic Ceramic Science & Sintering
- Nano-, Opto- & Bio-ceramics
- Modeling & Simulation
- Glass and Electro Ceramics
- Electrochemistry & Catalysis
- Refractory, Cements & Clays
- Renewable Energy & Composites
- Amorphous & Magnetic Ceramics
- Heritage, Art & Design

## Conference Programme Chairs:

Dr. Nina Obradović
Dr. Lidija Mančić

## Scientific Committee

Academician Antonije Đorđević
Academician Zoran Popović
Academician Velimir Radmilović
Dr. Nina Obradović
Dr. Lidija Mančić
Prof. Dr. Wei Pan
Prof. Dr. Reuben Jin-Ru Hwu
Prof. Dr. Hans Fecht
Prof. Dr. Vladimir Pavlović
Prof. Dr. Bojan Marinković
Dr. Takashi Goto
Dr. Steven Tidrow
Dr. Snežana Pašalić
Prof. Dr. Zoran Nikolić
Dr. Nebojša Romčević
Dr. Zorica Lazarević
Dr. Aleksandra Milutinović–Nikolić
Dr. Predrag Banković
Dr. Zorica Mojović
Dr. Nataša Jović Jovičić
Prof. Dr. Branislav Vlahović
Prof. Dr. Vera Pavlović
Prof. Dr. Aleksandar Marinković
Dr. Sanja Stojanović
Prof. Dr. Nebojša Mitrović
Dr. Suzana Filipović
Dr. Darko Kosanović

## Organizing Committee

Dr. Nina Obradović
Dr. Lidija Mančić
Academician Antonije Đorđević
Dr. Smilja Marković
Dr. Ivana Dinić
Dr. Marina Vuković
Dr. Suzana Filipović
Dr. Anja Terzić
Dr. Milica Vasić
Dr. Maja Pagnacco
Prof. Dr. Nebojša Mitrović
Prof. Dr. Vladimir Pavlović
Prof. Dr. Vesna Paunović
Prof. Dr. Vera Petrović
Dr. Milica Marčeta Kaninski
Dr. Darko Kosanović
Dr. Jelena Vujančević
Dr. Jelena Živojinović
Dr. Adriana Peleš Tadić
Dr. Milica Vujković
Dr. Dubravka Milovanović
Dr. Nenad Tadić
Dr. Stanko Aleksić
M. Sci. Isaak Trajković

| Date | Time | Programme | Floor, Room, Address |
|---|---|---|---|
| 18th September Wednesday | 08.00-09.00 | **Registration** | 2nd Floor, Hallway |
| | 09.00-09.30 | **Opening Ceremony** | 2nd Floor, Great Hall |
| | 09.30-10.00 | **Academician S. Vukosavic (PL)** | |
| | 10.00-10.15 | **Award, Photo session & Short break** | |
| | 10.15-12.10 | **Modelling & Simulation (M. Mirkovic)**<br>S. Curtarolo (PL)<br>S. Tidrow (PL)<br>J. Jovanovic (INV)<br>N. Milosavljevic (INV)<br>I. Trajkovic (ORL) | |
| | 12.10-12.30 | **Coffee Break** | 2nd Floor, Hallway |
| | 12.30-14.15 | **Nano, Opto & Bio-ceramics (L. Mancic & S. Markovic)**<br>M. E. Rabanal (PL)<br>M. Pergal (INV)<br>J. Purenovic (INV)<br>I. Stojkovic Simatovic (INV)<br>Z. Stojanovic (OR) | 2nd Floor, Great Hall |
| | 14.15-15.00 | **Buffet Lunch** | Club SASA, Mezzanine |
| | 15.00-16.30 | **Amorphous & Magnetic (N. Mitrovic & V. Paunovic)**<br>N. Novosel (PL)<br>N. Mitrovic (INV)<br>D. Olcan (INV)<br>M. Mirkovic (INV & exhibition announcement) | 2nd Floor, Great Hall |
| | 16.30-18.30 | **Poster Session I & Exhibition *** | Club SASA, Mezzanine |
| | 19.00-23.00 | **Conference dinner** | Restaurant Caruso (Terazije 23/8) |
| 19th September Thursday | 08.00-09.00 | **Registration** | 1st Floor, Hallway |
| | 09.00-10.00 | **Poster Session II**** | Club SASA, Mezzanine |
| | 10.00-12.00 | **Basic Ceramics & Sintering (S. Filipovic)**<br>G. Hilmas (PL)<br>W. Fahrenholtz (PL)<br>I. Brceski (PL)<br>A. Peles Tadic (OR)<br>M. Dujovic (OR) | 1st Floor, Blue Hall |
| | 12.00-12.30 | **Coffee Break** | 1st Floor, Hallway |
| | 12.30-13.45 | **Basic Ceramics & Sintering (D. Kosanovic & N. Labus)**<br>R. Naraparaju (INV)<br>V. Paunovic (INV)<br>S. Filipovic (INV)<br>S. Smith (OR) | 1st Floor, Blue Hall |
| | 13.45-15.00 | **Buffet Lunch** | Club SASA, Mezzanine |
| | 15.00-16.20 | **Clay, Refractory & Cements (A. Terzic & M. Vasic)**<br>A. Sedmak (PL)<br>G. Tavcar (PL)<br>N. Mijatovic (INV) | 1st Floor, Blue Hall |
| | 16.20-17.00 | **Coffee Break** | 1st Floor, Hallway |
| | 19.00-20.00 | **Nikola Tesla Museum** | Krunska 51 |

***16.00-16.30 Poster Session I (Posters 1-25) Installation Club SASA, Mezzanine**

**** 8.30-09.00 Poster Session II (Posters 26-50) Installation Club SASA, Mezzanine**

| | | | |
|---|---|---|---|
| **20th September Friday** | **08.00-09.00** | **Registration** | 1st Floor, Hallway |
| | **09.00-11.30** | **Renewable Energy & Composites (M. Marceta Kaninski)**<br>A. Savic (PL)<br>Z. Khan (PL)<br>N. Pop (PL)<br>V. Radmilovic (INV)<br>B. Rajcic (INV)<br>D. Khamari (INV) | 1st Floor, Blue Hall |
| | **11.30-12.00** | **Coffee Break** | 1st Floor, Hallway |
| | **12.00-13.00** | **Renewable Energy & Composites (D. Milovanovic)**<br>S. Maslovara (INV)<br>B. Stankov (INV)<br>S. Blagojevic (INV) | 1st Floor, Blue Hall |
| | **13.00-14.00** | **Buffet Lunch** | Club SASA, Mezzanine |
| | **14.00-15.40** | **Electrocemistry & Catalysis (M. Pagnacco & M. Vujkovic)**<br>R. Dominko (PL)<br>Z. Jovanovic (PL)<br>E. Fuglein (INV)<br>N. Gavrilov (INV) | 1st Floor, Blue Hall |
| | **15.40-16.00** | **Coffee Break** | 1st Floor, Hallway |
| | **16.00-16.55** | **Electrocemistry & Catalysis (M. Pagnacco & M. Vujkovic)**<br>D. Obradovic (INV)<br>V. Radonjic (INV)<br>M. Pogosova (OR) | 1st Floor, Blue Hall |
| | **17.00-18.00** | **Awards & Closing ceremony** | 1st Floor, Blue Hall |

**Wednesday, September 18th, 2024.**

| | | |
|---|---|---|
| **08.00 – 09.00** | **Registration** | **Hallway, 2nd Floor** |
| | | **Great Hall, 2nd Floor** |
| **09.00 – 10.00** | **Opening Ceremony of the XII Serbian Ceramic Society Conference: Advanced Ceramics and Application XII**<br>**President of SCS – Dr. Nina Obradović, Short music program, Dr. Marina Soković – Representative of Ministry for Science, Award Ceremony–**<br>**PL New materials in electrical grids and power industry**<br>Academician Slobodan Vukosavić |
| **10.00 - 10.15** | **Short break and Photo Session** | |
| | | **Great Hall, 2nd Floor** |
| **10.15 – 12.10** | **Modelling & Simulation**<br>**Chairperson: Miljana Mirkovic** |
| **10.15 – 10.45** | **PL From BIG-data to HOT-properties of high-entropy carbides and carbo-nitrides**<br>Stefano Curtarolo, Edmund T. Pratt<br>Materials Science, Electrical Engineering and Physics, Center for Extreme Materials, Duke University, USA |
| **10.45 – 11.15** | **PL New Simple Material Model and Extension to Rock Salt, $Fm\bar{3}m$ Structure**<br>Steven C. Tidrow<br>New York State College of Ceramics at Alfred University, 1 Pine Street Alfred, NY, USA 14802 |
| **11.15 – 11.35** | **INV The effect of zeolite type and concentration on thermal and mechanical properties of zeolite-poly(methacrylic acid) composite hydrogels**<br>Jelena D. Jovanovic[1], Vesna V. Panic[2], Nebojsa N. Begovic[1], Borivoj K. Adnadjevic[3]<br>[1]Institute for General and Physical Chemistry, Studentski Trg 12-16/V 11158 Belgrade, Serbia<br>[2]University of Belgrade, Innovation Center of Faculty of Technology and Metallurgy, 4 Karnegijeva Street, 11000 Belgrade, Serbia<br>[3]Faculty of Physical Chemistry, University of Belgrade, Studentski Trg 12-16, 11158 Belgrade, Serbia |
| **11.35 – 11.55** | **INV The power of machine learning**<br>Nataša Milosavljević<br>Faculty of Agriculture, University of Belgrade |

**11.55 – 12.10** **ORL Development of a numerical procedure for assessing the fracture resistance of materials for pressure pipelines using the ring specimens**

Isaak Trajković[1], M. Milošević[1], J. Tanasković[2], Z. Radosavljević[3], B. Međo[4]
[1]Innovation center of faculty of Mechanical Engineering in Belgrade, Kraljice Marije 16, 11000 Belgrade, Serbia
[2]University of Belgrade, Faculty of Mechanical Engineering, Kraljice Marije 16, 11000 Belgrade, Serbia
[3]Research and Development Institute Lola, Kneza Višeslava 70a, Belgrade, Serbia
[4]University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia

**12.10 – 12.30** **Coffee Break** **Hallway, 2nd Floor**

**Great Hall, 2nd Floor**

**12.30 – 14.15** **Nano, Opto & Bio-ceramics**
**Chairpersons: Lidija Mančić & Smilja Marković**

**12.30 – 13.00** **PL The wonderful challenges of Nanomaterials**

A. Ferreiro[1], L. Gomez-Villalba[2], Dwight Acosta[3], P. Fernández[4], O. Milosevic[5], Maria E. Rabanal[1]
[1]Carlos III University and IAAB, High School of Engineering, Avenida de la Universidad s/n, 28911- Leganes, Spain.
[2]Institute of Geociencias-CSIC-UCM, Calle del Dr.Severo Ochoa 7, 28040-Madrid
[3]Universidad Nacional Autónoma de Mexico. Institute of Physics (UNAM)
[4]Complutense University, Facultad Ciencias Físicas, Cuidad Universitaria, Plaza Ciencias 1, 28040-Madrid, Spain
[5]Institute of Technical Sciences of Serbian Academy ad Arts, Belgrade, Serbia

**13.00 – 13.20** **INV Poly(dimethylsiloxane)-based polyurethanes and nanocomposites for biomedical and electronic applications**

Marija V. Pergal
Center of Microelectronic Technologies, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, University of Belgrade, Njegoševa 12, 11000 Belgrade, Serbia

**13.20 – 13.40** **INV Novel multifunctional electrochemically active microalloyed composite and nanomaterials, with accompanying scientific discoveries of processes, morphologies and solid-state active contact phenomena**

Jelena Purenović
University of Kragujevac, Faculty of Technical Sciences Čačak
Svetog Save 65, 32000 Čačak, Serbia

**13.40 – 14.00** **INV $V_2O_5$-based nanostructured powders as a cathode material for post-lithium aqueous batteries**
Ivana Stojković Simatović
University of Belgrade - Faculty of Physical Chemistry, Studentski trg 12-16, Belgrade, Serbia

**14.00 – 14.15** **ORL AI aided biomaterials research: stabilization of selenium nanoparticles with proteins**
Zoran Stojanović, Nenad Filipović, Magdalena Stevanović
Institute of Technical Sciences of SASA, Belgrade, Republic of Serbia

**14.15 - 15.00** **Buffet Lunch** **Club SASA**

---

**Great Hall, 2nd Floor**

---

**15.00 – 16.30** **Amorphous & Magnetic**
**Chairpersons: Nebojša Mitrović & Vesna Paunović**

**15.00- 15.30** **PL Exotic magnetic and transport phenomena in strongly correlated ceramic materials**
Nikolina Novosel
Institute for physics, Bijenička cesta 46, 10000 Zagreb, Croatia

**15.30 - 15.50** **INV Magnetically soft and semi-hard materials**
Nebojša Mitrović[1], Borivoje Nedeljković[1], Nina Obradović[2], Jelena Orelj[1], Sanja Aleksić[3], Vladimir Pavlović[4]
[1]Joint Laboratory for Advanced Materials of SASA, Section for Amorphous Systems, Faculty of Technical Sciences Čačak, University of Kragujevac, Serbia,
[2]Institute of Technical Sciences, Serbian Academy of Sciences and Arts, Belgrade, Serbia
[3]University of Niš, Faculty of Electronic Engineering, Niš, Serbia
[4]University of Belgrade, Faculty of Agriculture, Belgrade, Serbia

**15.50 – 16.10** **INV Measurement of dielectric and magnetic properties of ceramic materials**
Antonije Đorđević[1,2], Dragan Olćan[1]
[1]School of Electrical Engineering, University of Belgrade, Bulevar kralja Aleksandra 73, 11120 Belgrade, Serbia
[2]Serbian Academy of Sciences and Arts, Belgrade, Serbia

**16.10 – 16.30** **INV Hydroxyapatite and hydroxyapatite-cellulose composite materials as functional ingredients in cosmetic products**
Miljana Mirković[1], Marko Perić[2], Aleksandra Sknepnek[3], Dunja Miletić[3], Vladimir Pavlović[3], Aleksandra Rašović[4], Marija Šuljagić[5]

[1]Department of Materials, "Vinča" Institute of Nuclear Sciences-National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia
[2]Department of Radioisotopes, "Vinča" Institute of Nuclear Sciences-National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia
[3]University of Belgrade, Faculty of Agriculture, Belgrade, Serbia
[4]Aleksandra Rašović PR AMELLES, Žarka Zrenjanina 43, 36210 Vrnjačka Banja, Srbija
[5]University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Belgrade, Serbia

| | | |
|---|---|---|
| **16.30 – 18.30** | **Poster Session I & Exhibition** | **Club SASA** |
| **19.00 – 23.00** | **Conference dinner** | **Restaurant Caruso** |

**Thursday, September 19th, 2024.**

**Hallway, 1st Floor**

| | |
|---|---|
| **08.00 – 09.00** | **Registration** |
| **09.00 –10.00** | **Poster Session II** **Club SASA** |

**Blue Hall, 1st Floor**

| | |
|---|---|
| **10.00 – 12.00** | **Basic Ceramics & Sintering**<br>**Chairperson: Suzana Filipović** |
| **10.00 – 10.30** | **PL Ultrahigh Temperature Fuel Forms for Nuclear Thermal Propulsion**<br>Gregory E. Hilmas<br>Missouri University of Science and Technology, Department of Materials Science and Engineering, 222 McNutt Hall; 1400 N. Bishop Avenue, Rolla, MO 65409, United States |
| **10.30 – 11.00** | **PL Thermodynamic Analysis of Dual-Phase High Entropy Ceramics**<br>William G. Fahrenholtz[1], Steven M. Smith II[1], Gregory E. Hilmas[1], Stefano Curtarolo[2]<br>[1]Materials Science and Engineering Department Missouri University of Science and Technology Rolla, MO 65409 United States<br>[2]Center for Extreme Materials and Department of Mechanical Engineering and Materials Science Duke University Durham, NC 27708 United States |
| **11.00 – 11.30** | **PL Ceramic and Rare Earth Elements**<br>Ilija Brčeski[1,2]<br>[1]Faculty of Chemistry, University of Belgrade, Studentski trg 12-16, Belgrade<br>[2]European Academy of Sciences and Arts, St. Peter-Bezirk 10, Salzburg, Austria |
| **11.30 – 11.45** | **ORL The influence of mechanical activation parameters as a function of producing a Magnesium aluminate ($MgAl_2O_4$) spinel**<br>A. Peleš Tadić[1], J. Živojinović[1], S. Marković[1], N. Tadić[2], S. M. Lević[3], V. Pavlović[3], S. Filipović[1], N. Obradović[1]<br>[1]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, 11000 Belgrade, Serbia<br>[2]University of Belgrade, Faculty of Physics, 11000 Belgrade, Serbia<br>[3]University of Belgrade, Faculty of Agriculture, 11080 Belgrade, Serbia |
| **11.45 – 12.00** | **ORL Anisotropic Cracking and Lack Thereof in MAX Phases**<br>Miloš Dujović, Sahin Celik, Ankit Srivastava, Miladin Radović<br>Department of Materials Science and Engineering, Texas A&M University, College Station, TX 77843, USA |

**12.00 – 12.30** **Coffee Break** **Hallway, 1st Floor**
**Blue Hall, 1st Floor**

**12.30 – 13.45** **Basic Ceramics & Sintering**
**Chairpersons: Darko Kosanović & Nebojša Labus**

**12.30 – 12.50** **INV Development of oxidation protective coatings on $ZrB_2$ based UHTC materials using magnetron sputtering method**
Ravi Naraparaju, J. E. Förster
Institute of Materials Research, German Aerospace Center, Cologne, Germany

**12.50 – 13.10** **INV Effects of rare earth ions doping on microstructure and electrical properties of barium titanate ceramics**
Vesna Paunović, Zoran Prijić
University of Niš, Faculty of Electronic Engineering, Aleksandra Medvedeva 14, 18000 Niš, Serbia

**13.10 – 13.30** **INV Synthesis and Properties of (Hf,Mo,Ti,W,Zr)$B_2$–(Hf,Mo,Ti,W,Z)C Dual Phase Ceramics**
S. Filipović[1,2], Steven M. Smith II[1], G. Hilmas[1], W. Fahrenholtz[1], N. Obradović[2], S. Curtarolo[3]
[1]Materials Science and Engineering, Missouri University of Science and Technology, 65049 Rolla, Missouri, United States
[2]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, 11000 Belgrade, Serbia
[3]Center for Extreme Materials, Duke University, 27708 Durham, USA

**13.30 – 13.45** **ORL Densification and Properties of High Entropy Boride-SiC-$B_4C$ Ceramics**
Steven M. Smith[1], William G. Fahrenholtz[1], Gregory E. Hilmas[1], Stefano Curtarolo[2,3]
[1]Missouri University of Science and Technology, Rolla, MO, USA
[2]Duke University, Department of Mechanical Engineering and Materials Science, Durham, NC, USA
[3]Duke University, Center of Autonomous Materials Design, Durham, NC, USA

**13.45 – 15.00** **Buffet Lunch** **Club SASA**
**Blue Hall, 1st Floor**

**15.00 – 17.20** **Clay, Refractory & Cements**
**Chairpersons: Anja Terzić & Milica Vasić**

**15.00 – 15.30** **PL Structural integrity aspects of historical stone constructions**
Aleksandar Sedmak[1], Simon Sedmak[2]

[1]University of Belgrade, Faculty of Mechanical Engineering, Kraljice Marije 16, Belgrade, Serbia
[2]Innovation Center of the Faculty of Mechanical Engineering, Kraljice Marije 16, Belgrade, Serbia

**15.30 – 16.00** **PL Zero waste reprocessing of EAF dust – EIT RIS DustRec project**

Gašper Tavčar[1], Davide Mombelli[2], Dragan Radulović[3], Ivica Ristović[4], Mateusz Ciszewski[5], Jasna Kastivnik[6], Ana Mladenovič[7], Alenka Mauko[7]
[1]Jožef Stefan Institute, Department of Inorganic Chemistry and Robert Kocjančič - Jožef Stefan Institute, Department of Inorganic Chemistry and Technology, Jamova 39, SI-1000 Ljubljana, Slovenija
[2]Carlo Mapelli, Gianluca Dall'Osto – Politecnico di Milano, Dipartimento di Meccanica, Via La Masa 1, I-20156 Milano, Italy
[3]Institute for technology of nuclear and other mineral raw materials (ITNMS), Department of PMS, Bulevar Franš d'Eperea 86, RS-11040 Belgrade, Serbia
[4]University of Belgrade, Faculty of Mining and Geology, Djusina 7, RS-11120 Belgrade, Serbia
[5]Łukasiewicz Research Network – Institute of Non-ferrous Metals, Centre of Hydroelectrometallurgy, ul. Sowińskiego 5, PL-44-100 Gliwice, Poland
[6]TH ReMining, Dunajska cesta 156, SI-1000 Ljubljana, Slovenia
[7]Slovenian National Building and Civil Engineering Institute (ZAG), Dimičeva ulica 12, SI-1000 Ljubljana, Slovenia

**16.00 – 16.20** **INV The Evolution of Chemical Analysis in the Construction Industry: Adapting Methodology to New Eco-Friendly Materials**

Nevenka Mijatović
Institute for Materials Testing, Bulevar vojvode Mišića 43, 11000 Belgrade, Serbia

**16.20 – 17.00** **Coffee Break** **1st Floor, Hallway**

**19.00 – 20.00** **Nikola Tesla Museum** **Krunska 51**

**Friday, September 20th, 2024.**

| | | |
|---|---|---|
| **08.00 – 09.00** | **Registration** | **Hallway, 1st Floor** |
| | | **Blue Hall, 1st Floor** |
| **09.00 – 11.30** | **Renewable Energy & Composites**<br>**Chairperson: Milica Marčeta Kaninski** | |
| **09.00 – 09.30** | **PL Porous concrete pavement development with respect to the waste materials and flood control**<br>Aleksandar R. Savić, Marina Škondrić, Ognjen Govedarica<br>University of Belgrade Faculty of Civil Engineering, Belgrade, Serbia | |
| **09.30 – 10.00** | **PL Experimental and numerical analysis of heat transfer performance of composites in clean energy systems**<br>Zulfiqar A. Khan<br>NanoCorr, Energy & Modelling (NCEM) Research Group, Department of Design & Engineering, Bournemouth University, Dorset, Poole, UK | |
| **10.00 – 10.30** | **PL From solar energy to molecular energetics**<br>Nicolina Pop<br>Fundamentals of Physics for Engineers Department,<br>Research Center on Advanced Methods for the Study of Physical Phenomena Politehnica University of Timisoara, Romania | |
| **10.30 – 10.50** | **INV Silver Linings: Nanowires in Optoelectronics**<br>Vuk V. Radmilović[1], Jovan Lukić[1], Velimir R. Radmilović[2]<br>[1]Faculty of Technology and Metallurgy, University of Belgrade, Serbia<br>[2]Serbian Academy of Sciences and Arts, Belgrade, Serbia. | |
| **10.50 – 11.10** | **INV Comparative structural analysis of M-doped (M = Ru, Sb, Ni, Co) $TiO_2$ as support materials in Pt-based catalysts for application in fuel cells**<br>Boris Rajčić[1], Slađana Maslovara[1], Dubravka Milovanović[1], Milica Marčeta Kaninski[1], Vladimir Nikolić[1], Janez Kovač[2], Zoran Šaponjić[1]<br>[1]Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia<br>[2]Jožef Stefan Institute, Jamova Cesta 39, Ljubljana, Slovenia | |
| **11.10 – 11.30** | **INV Linear Parameter Varying sensorless Torque Control for Singularly Perturbed photovoltaic pumping system with Torque and Flux observers**<br>Dalila Khamari[1], Idriss Benlaloui[2], Sabir Ouchen[3], Larbi Chrifi-Alaoui[4]<br>[1]LSTE Laboratory, Electrical Engineering Department; University of Batna2, Algeria. | |

[2]Université 8 mai 1945, Guelma, Algeria.
[3]PowerElectronics and Electrical Drives Laboratory Aalen University, Germany.
[4]University of Picardie Jules Verne, Cuffies, France.

| | | |
|---|---|---|
| **11.30 – 12.00** | **Coffee Break** | **Hallway, 1st Floor** |

| | |
|---|---|
| **12.00 – 13.00** | **Renewable Energy & Composites**<br>**Chairperson: Dubravka Milovanović** |
| **12.00 – 12.20** | **INV Utilizing NiFeMo based ionic activators in alkaline electrolysis: A combination of experimental and theoretical methods**<br>Slađana Maslovara[1], Dragana Vasic Anicijevic[2],Mihajlo Mudrinic[1], Milica Marčeta Kaninski[1], Vladimir Nikolić[1]<br>[1]Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia<br>[2]Vinca Institute of Nuclear Science, University of Belgrade, Mike Petrovica Alasa 12-14, Belgrade, Serbia |
| **12.20 – 12.40** | **INV Spectroscopic Analysis of Beryllium Ceramics**<br>Biljana D. Stankov<br>Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia |
| **12.40 – 13.00** | **INV HEMP COMPOSITES: A Sustainable Alternative for Advanced Material Applications**<br>Stevan N. Blagojević<br>Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia |

| | | |
|---|---|---|
| **13.00 – 14.00** | **Buffet lunch** | **Club SASA**<br>**Blue Hall, 1st Floor** |

| | |
|---|---|
| **14.00 – 15.40** | **Electrocemistry & Catalysis**<br>**Chairpersons: Maja Pagnacco & Milica Vujković** |
| **14.00 – 14.30** | **PL Interfacial stability of NMC materials**<br>Robert Dominko[1,2,3], Blaž Jaklič[4,5], Jan Žuntar[4,5], Elena Tchernychova[1], Gregor Kapun[1], Rekha Narayan[1], Matjaž Spreitzer[4]<br>[1]National Institute of Chemistry, Hajdrihova ulica 19, 1000 Ljubljana, Slovenia<br>[2]Faculty of Chemistry and Chemical Technology, University of Ljubljana, Večna cesta 13, 1000 Ljubljana, Slovenia<br>[3]Alistore-European Research Institute, CNRS FR 3014, Hub de l'Energie, Rue Baudelocque, 80039, Amiens, France<br>[4]Advanced Materials Department, Jožef Stefan Institute, Jamova cesta 39, 1000 Ljubljana, Slovenia |

[5]Jožef Stefan International Postgraduate School, Jamova cesta 39, 1000 Ljubljana, Slovenia

**14.30 – 15.00** **PL PLD growth of functional oxides on Silicon substrate using various template techniques**

Zoran Jovanovic[1,2], Urška Trstenjak[2], Binbin Chen[3], Gertjan Koster[4], Matjaž Spreitzer[2]
[1]Laboratory of Physics, Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia
[2]Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia
[3]Key Laboratory of Polar Materials and Devices (MOE) and Department of Electronics, East China Normal University, 200241 Shanghai, China
[4]MESA+ Institute for Nanotechnology, University of Twente, Enschede, The Netherlands

**15.00 – 15.20** **INV About the Dehydration of Lanthanum Hydroxide – Reaction Mechanism and its Kinetic Studies**

Ekkehard Füglein[1], Dirk Walter[2]
[1]NETZSCH-Gerätebau GmbH, Wittelsbacherstraße 42, D-95100 Selb, Germany
[2]Gefahrstofflaboratorien Chemie und Physik am Institut für Arbeits- und Sozialmedizin der Justus-Liebig-Universität, Aulweg 129, D-35392 Gießen

**15.20 – 15.40** **INV Niobium MXenes: promising materials for applications in energy conversion and storage**

Nemanja Gavrilov[1], Meriene Gandara[2], Biljana Šljukić Paunković[1], Emerson Sarmento Gonçalves [2,3]
[1]University of Belgrade, Faculty of Physical Chemistry, Studentski trg 12-16, 11158 Belgrade, Serbia
[2]Technological Institute of Aviation, Space Science and Technology Graduate Program, Praça Marechal Eduardo Gomes, 50 ,12228-900, São José dos Campos, Brazil
[3]Institute of Aeronautics and Space, Divisão de Materiais, Praça Marechal Eduardo Gomes, 50 e 12228-904, São José dos Campos, Brazil

**15.40 – 16.00** **Coffee Break** **1st Floor, Hallway**

**16.00 – 16.55** **Electrochemistry & Catalysis**
**Chairpersons: Maja Pagnacco & Milica Vujković**

**16.00 – 16.20** **INV Physicochemical and biomimetic information for evaluating compound quality**

Darija Obradović, Saša Lazović
Institute of Physics Belgrade, National Institute of the Republic of Serbia, Pregrevica 118, 11080 Belgrade, Serbia

**16.20 – 16.40** **INV Use of perlite as nickel catalyst support in sunflower oil hydrogenation process**

Vojkan D. Radonjić[1], Dimitrinka Nikolova[2], Margarita Gabrovska[2], Jugoslav B. Krstić[1]
[1]University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia
[2]Institute of Catalysis, Bulgarian Academy of Sciences, Sofia 1113, Bulgaria

**16.40 – 16.55** **ORL Crystal Structure Monitoring - New Insights into the Familiar Ion-Conductive Ceramics**

Mariam Pogosova, Dominic Bresser
Helmholtz-Institut Ulm, Helmholtzstraße 11, 89081 Ulm, Germany

**17.00 – 18.00** **Awards & Closing Ceremony** **Blue Hall, 1st Floor**

α,ω-dihydroxy-poly(ε-caprolactone)-b-poly(dimethylsiloxane)-b-poly(ε-caprolactone) (PCL-b-PDMS-b-PCL) prepolymer were prepared by a two-step polymerization procedure. The tri-block prepolymer contained terminal crystallizable PCL blocks and a central PDMS block. PCL is particularly interesting due to its properties such as excellent water resistance, slow hydrolytic and enzymatic degradation, good biocompatibility, and very high flexibility. The combination of the properties of PCL and PDMS makes this block co-polymer an excellent candidate for preparing PU as a biocompatible substrate for LIG. A series of four samples of PUs with different contents of soft segments (40-70 wt.%) were prepared for subsequent LIG production. We explored the direct induction of LIG on PU networks using $CO_2$ laser irradiation. Additionally, we investigated the possibility of producing LIG on a commercially available polyimide film with subsequent transfer onto PU films. LIG films were characterized using Fourier-transform infrared spectroscopy, Raman spectroscopy, scanning electron microscopy, and X-ray diffraction analysis. We identified the optimal chemical composition and laser processing parameters for LIG production to be applied in wearable sensors.

***Acknowledgement:*** *This research was supported by the University of Belgrade - Institute of Chemistry, Technology and Metallurgy through the "Seed Research Grant" for young scientists ("*Laser-Induced Graphene on Novel Polyurethane Networks for Pulse Sensing Applications, ***G-PU****LSE"), financed by Serbia Accelerating Innovation and Entrepreneurship Project (SAIGE). The authors would like to thank the Ministry of Science, Technological Development, and Innovation of Republic of Serbia (Contract No: 451-03-66/2024-03/200026).*

## P43

## The application of the thin and lumped appreoach for comparision of the drying kinetic registered for various thin clay slabs

Miloš R. Vasić[1], Miloš Vorkapić[2], Aleksandar Vencl[3]

[1]Institute for Testing of Materials, Bulevar Vojvode Mišića 43, 11 000 Belgrade, Serbia
[2]Institute of Chemistry, Technology and Metallurgy - National Institute of the Republic of Serbia, University of Belgrade, Njegoševa 12, 11 000 Belgrade, Serbia.
[3]University of Belgrade, Faculty of Mechanical Engineering, Kraljice Marije 16, 11 000 Belgrade, Serbia

The main goal of this paper was to compare the lumped and thin layer modelling approach for describing the drying kinetics of clay slabs extruded from various clays. Four drying regimes were firstly designed. The drying velocity was fixed to 3 m/s in all experiments. The drying temperature and humidity were hold at $40^0$C and 60% in the first drying regime. These parameters were raised for $10^0$C and 10% in each following experiment. Eight thin-layer models, including the new one, was used. The non-linear regression analysis was applied for fitting the experimental data. The lumped approach is relatively new and it assumes that different drying mechanisms which affects the internal moisture transport are combined and presented in a form of the effective diffusivity constant. The lumped modelling approach has retained and reused the form of the Crack's diffusion equation with only one update. The pure diffusion coefficient was replaced with the effective one. Since the effective moisture diffusivity can vary with time the most advanced lumped models are taking this into account by defining the relationship between the effective diffusivity coefficient and the Fourier number. This model was adopted in this

paper. Results have shown that the best thin layer model was the new one. It was found that this model has up to 5 % deviation from the experimentally registered data at the beginning of the first drying segment. The lumped model was deviating from the experimental data for only 2%. This was another confirmation that the conjugation degree in thin layer modelling is lower than in the case of the lumped approach. This means that thin layer model application is actually very limited, especially for porous materials which predominantly shrinks during drying, due to theoretical assumptions which simplifies the boundary conditions for which the equations were originally developed.

***Acknowledgement:*** *This research has been financially supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia and Ministry of Science, Technological Development and Innovations of the Republic of Serbia (Grants No. 451-03-66/2024-01/200105, 451-03-66/2024-03/200026, 451-03-66/2024-03/200012 and 451-03-47/2023-03/200105)*

## P44

## Effect of temperature treatments on microhardness of additively manufactured PETG

Marija Baltić[1], Ivana Mladenović[2], Miloš Vorkapić[2], Miloš R.Vasić[3], Aleksandar Vencl[1]

[1]University of Belgrade, Faculty of Mechanical Engineering, Kraljice Marije 16, 11 000 Belgrade, Serbia
[2]Institute of Chemistry, Technology and Metallurgy - National Institute of the Republic of Serbia, University of Belgrade, Njegoševa 12, 11 000 Belgrade, Serbia.
[3]Institute for Testing of Materials, Bulevar Vojvode Mišića 43, 11 000 Belgrade, Serbia

The specimens were made using an additive technology. Polyethylene terephthalate glycol (PETG) filament was used as the primary material. Three series with nine different printing specimens (different printing parameters) were made. The Vickers microhardness (HV) of all specimens was tested. The temperature treatments of specimens were done in a mold with NaCl powder (230°C, 30 min), and in a chamber at low temperature (-200 °C, 30 cycles). It was observed that the HV values oscillated, depending on the printing parameters, temperature treatment, and locations. The microhardness was slightly higher on the bottom surface of the specimens than on the top surface. For untreated specimens, the average microhardness measured on the top and bottom surfaces was between 10.2 and 12.6 HV. For specimens treated in mold with NaCl powder, changes in geometry were observed, together with an increased microhardness of 11.0 to 13.5 HV. The treatment in a chamber at low temperature induced a decrease in microhardness, and the values were in the range of 9.0-9.5 HV. It is commonly recognized that the microstructural alterations in amorphous polymers are directly correlated with microhardness. In this connection, the basic idea is to show treatments that can significantly improve/degrade the mechanical properties of this material in daily use.

***Acknowledgement:*** *This research has been financially supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia and Ministry of Science, Technological Development and Innovations of the Republic of Serbia (Grants No. 451-03-*