
# Serbian Ceramic Society Conference
# ADVANCED CERAMICS AND APPLICATION X
# 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**

# PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Knez Mihailova 35**
**Serbia, Belgrade, 26-27. September 2022.**

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

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**Serbia, Belgrade, 26-27th September 2022.**

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Dr. Nina Obradović
Dr. Lidija Mančić

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Dr. Suzana Filipović
Dr. Adriana Peleš Tadić
Dr. Jelena Živojinović

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Dear colleagues and friends,

We have great pleasure to welcome you to the Advanced Ceramic and Application X Conference organized by the Serbian Ceramic Society in cooperation with the Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy, Institute for Technology of Nuclear and Other Raw Mineral Materials and Institute for Testing of Materials. This Conference is dedicated to Prof. Dr. Vojislav Mitić, president of Serbian ceramic society, who passed away in September 2021.

It is nice to host you here in Belgrade in person. As you probably know, Serbia launched a vaccination campaign at the beginning of last year, so up to date more than 70 percent of the adult population has been vaccinated. Since there is no one statistic to compare the COVID19 outbreaks and fears for loved ones in different countries, we believe that we all suffer similarly during this pandemic. That is why we appreciate even more your positive attitude and readiness to travel in this uncertain time. We deeply hope that the ACA X Conference will be worth remembering, that you will respect all COVID-19 safety measures at SASA building, that you will have a nice time here and that ultimately you will return to your home safely. We are very proud that we succeeded in bringing the scientific community together again and fostering the networking and social interactions around an interesting program on emerging advanced ceramic topics. The chosen topics cover contributions from fundamental theoretical research in advanced ceramics, computer-aided design and modeling of new ceramics products, manufacturing of nano-ceramic devices, developing of multifunctional ceramic processing routes, etc.

Traditionally, ACA Conferences gather leading researchers, engineers, specialists, professors and PhD students trying to emphasize the key achievements which will enable the widespread use of the advanced ceramics products in the High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, etc.

Serbian Ceramic Society was initiated in 1995/1996 and fully registered in 1997 as Yugoslav Ceramic Society, being strongly supported by American Ceramic Society. Since 2009, it has continued as the Serbian Ceramic Society in accordance with Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in South-East Europe, with members from more than 20 Institutes and Universities, active in 9 sessions. Part of our members are also members of the Serbian Chapter of ACerS since 2019. Their activities in the organization of this conference is highly recognized. To them and all of you thanks for being with us here at ACA X.

Dr. Nina Obradović
*President of the Serbian Ceramic Society*

Dr. Suzana Filipović
*President of the General Assembly of the Serbian Ceramic Society*

**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:

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Dr. Lidija Mančić SRB

## Conference Co-chairs:

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Prof. Dr. Rainer Gadow GER

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Analysis - Lab equipment,
Turistička organizacija Beograda, Inovacioni centar Mašinskog fakulteta,
Institut za ispitivanje materijala, Jeol
Institut za tehnologiju nuklearnih i drugih mineralnih sirovina, Kefo, SCAN

## Acknowledgements:

**Ministry of Education, Science and Technological Development RS**
Serbian Academy of Sciences and Arts
Institute of Technical Sciences of SASA, Institute of Physics BU
American Ceramics Society – Serbian Chapter
Hotel Palace, Shenemil

# Conference Program and Abstracts

# Program and Abstract's Contents



The Tenth Serbian Ceramic Conference Advanced Ceramics and Application

## Conference Information:

**Conference location:** Belgrade (Beograd) – the capital of Serbia, Serbian culture, education, science and economy, having about 2.5 million habitants. Belgrade is situated in South-Eastern Europe, on the Balkan Peninsula, at the confluence of the Sava and Danube Rivers in north- central Serbia. The official language is Serbian, while foreigners can use English.
**Conference venue:** Serbian Academy of Sciences and Arts - SASA, Great Hall (2nd floor) and Halls 2, 3 (1st floor), Knez Mihailova 35, Belgrade, Serbia.
**Dress code:** Serbian Academy of Science and Arts is a distinguished institution of supreme national importance. We kindly ask you to respect a dress code and not to wear short skirts and pants (above the knee); tank top and sleeveless shirts; flip-flops and open-toed sandals.

**Covid-19 outbreak - information for conference participants:**
Prevention and general precautions:

- avoid close contact (within 1 m) with people who are ill with fever, cough or respiratory symptoms;
- wear a face covering in enclosed environments;
- wash or sanitize your hands frequently – after coughing, before preparing food or eating, after toilet use, after contact with ill persons, and during exposure to high traffic public areas;
- cover your mouth and nose with a disposable tissue when coughing or sneezing and use the nearest waste receptacle to dispose of it after use. If you do not have a disposable tissue, cough or sneeze in your elbow;
- strictly do not attend the conference if you are unwell. Stay at home or your accommodation if you become unwell, develop a fever or respiratory symptoms;
- if you or other participants in the conference hall are unwell, inform the conference organizers and arrange to get an assessment from a healthcare provider.

**Conference fee:** Standard fee for foreign participants: 300 EUR; Standard fee for domestic participants: 12000 RSD; **Discounts**: Members of SCS, Invited lecturers and PhD Students: 50%; Plenary lecturers & the last year winners (oral and poster presentations): Free of charge.

**Invoice and bank details for Conference fee payment:** Banka Intesa ad Beograd, Account No. 160-380150-55, notification: Conference fee – participant name.

**Paying of the conference fee and Gala dinner at site will be available only in cash.**
**Registration:**
**26. 09.2022 (8.00-9.00A.M.-2nd Floor) & 27.09.2022 (8.00-9.00A.M.–1st Floor)**
**Posters instalation:**
**26.09.2022 (16.30-17.00) & 27.09.2022 (8.30-9.00) CLUB SASA**
**After each session, participants should remove their posters!**

**Useful telephone numbers:**
Police:192
Firemen:193
Ambulance:194

**Taxi services:** For the taxi services from Belgrade Nikola Tesla Airport to any destination in Belgrade area and further, please contact TAXI INFO desk, located in the baggage area.

**Time zone:** Belgrade and Serbia are located in the Central European time zone region GMT + 1
**Electricity:** The electricity voltage in Belgrade is 220V. Electrical outlets are standard EU.
**Currency:** The official currency in Serbia is dinar, abbreviated RSD. Money may be exchanged in all banks and authorized exchange offices. Exchange rate for 1 EUR is around 118 RSD. Cash may be taken from ATMs 24 hours a day. Credit cards are accepted in shops, hotels and restaurants.
**Water:** Tap water in Belgrade is safe to drink.

**Abstracts and papers publication:** The official language of the conference is English. Conference abstracts will be published in the **Book of Abstracts**.
Limited number of papers presented at the conference will be possible to publish in **Science of Sintering.**

**Type of presentation:** Visuals for oral presentations should be in Microsoft PowerPoint (.ppt or .pptx) or Adobe Acrobat Reader 9 (.pdf). Any animation or video files must be compatible with Windows 7 and Windows Media Player. Bring your presentation to speaking desk at the beginning of the day when your presentation will be. Posters should be prepared in dimension: 70x100 cm. The official language on conference is English.

**Additional Conference information** president@serbianceramicsociety.rs
http://www.serbianceramicsociety.rs/about.htm

**Recommended places near the Conference venue:**
**Hotel**: Hotel Palace, Topličin venac 23; http://www.palacehotel.co.rs/
**Exchange office:** „Hulk“, Vuka Karadžića 4
**Tourist Information Centre:** Knez Mihailova 5, http://www.tob.rs/en

| Date | Time | Programme | | Floor, Room |
|---|---|---|---|---|
| **26th September Monday** | **08.00-09.00** | **Registration** | | 2nd Floor, Hallway |
| | **09.00-09.50** | **Opening Ceremony** | | 2nd Floor, Great Hall |
| | **09.50-10.00** | **Short Break & Photo Session** | | 2nd Floor, Great Hall |
| | **10.00-11.30** | **Nano- Opto- & Bio-Ceramic**<br>J. V. Rau<br>B. Marinkovic<br>M. E. Rabanal | | 2nd Floor, Great Hall |
| | **11.30-12.00** | **Coffee Break** | | 2nd Floor, Hallway |
| | **12.00-14.00** | **Nano- Opto- & Bio-Ceramic**<br>V. Rac<br>M. Kuzmanovic<br>Z. Stojanovic<br>M. Vukovic<br>D. Bozanic<br>I. Dinic<br>T. Kovacevic | | 2nd Floor, Great Hall |
| | **14.00-15.00** | **Buffet Lunch** | | Club SASA, Mezzanine |
| | **15.00-17.00** | **Ceramic & Sintering**<br>R. Gadow<br>W. G. Fahrenholtz<br>M. Omerasevic<br>Lj. Andjelkovic<br>M. Mirkovic | | 2nd Floor, Great Hall |
| | **17.00-18.30** | **Poster Session & Coffee Break** | **Round Table-ACerS** | Club SASA, Mezzanine |
| | **19.30** | **Conference dinner** | | Palace Hotel |
| **27th September Tuesday** | **08.00-09.00** | **Registration & Poster Installation** | | 1st Floor, Hallway |
| | **09.00-10.00** | **Poster Session** | | Club SASA, Mezzanine |
| | **10.00-13.05** | **Ceramic & Sintering Amorphous & Magnetic Ceramics Hall 2**<br>K. Maca<br>N. Gilli<br>F. Kern<br>V. Marak<br>D. Bucevac<br>F. A. Khan<br>M. Vasic<br>D. Sekulic<br>N. Mitrovic | **Modelling & Simulation Hall 3**<br>M. Huger<br>S. R. Baivier<br>T. Garbowski<br>M. Peric<br>Z. Nikitovic<br>P. Ilias<br>D. Uremovic<br>J. Stojic<br>L. Fiore<br>K. Anrhour | 1st Floor |
| | **13.00-14.00** | **Buffet Lunch** | | Club SASA, Mezzanine |
| | **14.00-16.30** | **Electrochemistry & Catalysis Hall 2**<br>Z. Mojovic<br>M. Tisma<br>D. Marinkovic<br>M. Pagnacco<br>M. Rosic<br>M. Miladinovic | **Renewable Energy & Composites Hall 3**<br>S. Blagojevic<br>V. Birdeanu<br>J. Kovac<br>S. Erakovic Pantovic<br>A. Dobrota<br>A. Radulovic | 1st Floor |
| | **16.30-17.00** | **Coffee Break** | | 1st Floor |
| | **17.00-19.15** | **Cement, Clay & Refractory materials Hall 2**<br>M. Serdar<br>G. Goel<br>E. Nikolic<br>I. Despotovic<br>S. Vucetic<br>J. Bijeljic | **Glass & Electro Ceramics Hall 3**<br>R. Jih Ru Hwu<br>S. Tsai<br>A. Prijic<br>S. Matijasevic<br>V. Paunovic<br>A. Rotaru | 1st Floor |
| | **19.15-20.00** | **Awards & Closing Ceremony** | | 1st Floor, Hall 2 |

# Monday, September 26th, 2022.

**08.00 – 09.00** **Registration** **Hallway, 2nd Floor**

**Great Hall, 2nd Floor**

**09.00 – 09.50** **Opening Ceremony of the Tenth Serbian Ceramic Society Conference: Advanced Ceramics and Application X**
**President of SCS – Dr. Nina Obradović, Short music programme, Prof. Dr. Branislav Ranđelović – about Prof. Dr. Vojislav Mitić, Representative of Serbian Chamber of Commerce, Award ceremony - Dr. Olivera Milošević**

**09.50 - 10.00** **Short break and Photo Session**

**Great Hall, 2nd Floor**

**10.00 – 11.30** **Nano- Opto- & Bio-Ceramic**
**Chairpersons: Lidija Mančić & Smilja Marković**

**10.00– 10.30** **PL Advanced multifunctional materials for biomedical implants**
Julietta V. Rau[1,2]
[1]Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche (ISM-CNR), Via del Fosso del Cavaliere, 100 - 00133 Rome, Italy
[2]Sechenov First Moscow State Medical University, Institute of Pharmacy, Department of Analytical, Physical and Colloid Chemistry, Trubetskaya 8, build. 2, Moscow 119991, Russian Federation

**10.30 – 11.00** **PL Extrinsic point defects in oxide ceramics: two recent examples of their effects on physical properties**
Bojan A. Marinkovic, Esteban Camilo Moreno Diaz, Jessica Gil Londoño
Department of Chemical and Materials Engineering, Pontifical Catholic University of Rio de Janeiro (PUC-Rio), 22453-900, Rio de Janeiro, RJ, Brazil

**11.00 - 11.30** **PL Nanomaterials: size is the key**
A. Ferreiro[1], G. Flores-Carrasco[2], A. Urbieta[3], P. Fernández [3], L. Gomez-Villalba[4], O. Milosevic[5], M. E. Rabanal[1]
[1]Carlos III University and IAAB, High School of Engineering, Avenida de la Universidad s/n, 28911- Leganes, Spain

[2]Tecnológico Nacional de México / ITS de Tepeaca, 75219 Tepeaca, Puebla, México
[3]Complutense University, Facultad Ciencias Físicas, Cuidad Universitaria, Plaza Ciencias 1, 28040-Madrid, Spain
[4]Institute of Geociencias-CSIC-UCM, Calle del Dr.Severo Ochoa 7, 28040-Madrid
[5]Institute of Technical Sciences of Serbian Academy of Sciences and Arts Belgrade, Serbia

**11.30 - 12.00 Coffee Break Hallway, 2nd Floor**

## Great Hall, 2nd Floor

**12.00 - 14.00 Nano- Opto- & Bio-Ceramic**
**Chairpersons: Lidija Mančić & Smilja Marković**

**12.00 - 12.20 INV Quantifying acidity and basicity of oxides: a calorimetric approach**

Vladislav Rac[1], Vesna Rakić[1], Dušan Stošić[2,3], Aline Auroux[4]
[1]University of Belgrade - Faculty of Agriculture, Nemanjina 6, 11000 Zemun-Belgrade, Serbia.
[2]Normandie Univ., ENSICAEN, UNICAEN, CNRS, 14000 Caen, France.
[3]Vinča Institute of Nuclear Sciences, University of Belgrade, P. O. Box 522, 11001 Belgrade, Serbia.
[4]Univ. Lyon, Université Claude Bernard Lyon 1, CNRS, IRCELYON, F-69626 Villeurbanne, France.

**12.20 - 12.40 INV Physicochemical and electrochemical characterization of carbon derived from Al- based metal organic framework**

Maja Kuzmanović[a], Miloš Milović[a], Milica Vujković[b]
[a]Institute of Technical Sciences of the Serbian Academy of Science and Arts, Knez Mihailova 35/IV, 11000 Belgrade, Serbia
[b]Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12–16, 11158 Belgrade, Serbia

**12.40 - 13.00 INV From classical to machine learning aided approach - hydrothermal synthesis planning for metal oxide nanomaterials**

Zoran Stojanović, Magdalena Stevanović
Institute of Technical Science of SASA, Knez Mihailova Street 35/IV, Belgrade, Republic of Serbia

**13.00 – 13.15** **ORL Hydroxyapatite grafting with alanine amino acid efficiency of different methods**

Marina Vuković[1], Bruna Carolina Dorm[2], Eliane Trovatti[2], Nenad Ignjatović[3], Smilja Marković[3], Srečo Škapin[4], Ivana Dinić[3], Lidija Mančić[3]

[1]Innovative Centre, Faculty of Chemistry, University of Belgrade, Serbia

[2]University of Araraquara - UNIARA, Araraquara, SP, Brazil

[3]Institute of Technical Sciences of SASA, Belgrade, Serbia

[4]Jožef Stefan Institute, Ljubljana, Slovenia

**13.15 – 13.30** **ORL Electronic structure of silver-bismuth iodide rudorffite nanomaterials studied by synchrotron radiation soft X-ray photoemission spectroscopy**

D. K. Božanić[1,2], D. Danilović[1,2], A. R. Milosavljević[3], P. Sapkota[4,5], R. Dojčilović[1,2], D. Tošić[1], N. Vukmirović[6], S. Ptasinska[4,5], V. Djoković[1,2]

[1]Department of Radiation Chemistry and Physics, "Vinča" Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia

[2]Center of Excellence for Photoconversion, Vinča" Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia

[3]Synchrotron SOLEIL, l'Orme des Merisiers, St. Aubin, BP48, 91192 Gif sur Yvette Cedex, France

[4]Radiation Laboratory, University of Notre Dame, Notre Dame, IN 46556, USA

[5]Department of Physics, University of Notre Dame, Notre Dame, IN 46556, USA

[6]Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, 11080, Belgrade, Serbia

**13.30 – 13.45** **ORL Quantum efficiency of up-converting $SrGd_2O_4$:Yb,Er nanoparticles**

Ivana Dinić[1], Tijana Stamenković[2], Nadežda Radmilović[2], Marina Vuković[3], Mihailo D. Rabasović[4], Vesna Lojpur[2], Lidija Mančić[1]

[1]Institute of Technical Science of SASA, Knez-Mihailova 35/4, Belgrade, Serbia

[2]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

[3]Innovative Centre, Faculty of Chemistry, University of Belgrade, Serbia

[4]Photonic Center, Institute of Physics, Belgrade, University of Belgrade, Serbia

**13.45 – 14.00** **ORL Thermostable polyurethane composites consisting of bio-based polimer matrix and inorganic mineral reinforcements**

Tihomir Kovačević[1]*, Jelena Gržetić[1], Slavko Mijatov[1], Marica Bogosavljević[1], Saša Brzić[1]
[1]Ministry of Defense, Military Technical Institute, Republic of Serbia

**14.00 - 15.00** **Buffet Lunch** **Club SASA**

**Great Hall, 2nd Floor**

**15.00 - 17.00** **Ceramic & Sintering**

**Chairpersons: Nebojša Labus & Darko Kosanović**

**15.00 - 15.30** **PL Process technologies and applications of Basalt fiber reinforced SiOC composites**

Rainer Gadow, Patrick Weichand
Institut für Fertigungstechnologie keramischer Bauteile, Universität Stuttgart, Allmandring 7b, D-70569 Stuttgart, Germany

**15.30 - 16.00** **PL Zeta phase tantalum carbide: a high strength, high toughness ceramic**

William G. Fahrenholtz
Missouri University of Science and Technology, Department of Materials Science and Engineering, 222 McNutt Hall; 1400 N. Bishop Avenue, Rolla, MO 65409, United States

**16.00 - 16.20** **INV Dense pollucite ceramics obtained by hot-pressing as a potential matrix for the immobilization of cesium ions**

Mia Omerašević
Department of Materials Science, Vinča Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade, 11000, Belgrade, Serbia

**16.20 – 16.40** **INV The phase content effect on the functional properties of $BaTiO_3/CoFe_2O_4$ composites prepared by different synthetic methods**

Ljubica Andjelković
University of Belgrade-Institute of Chemistry, Technology and Metallurgy, Department of Chemistry, Njegoševa 12, Belgrade, Serbia

**16.40 – 17.00** **INV Synthesis and characterization of high-temperature strontium doped monazite ceramics**

Miljana Mirković
Department Materials, „VINČA" Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia

**17.00 - 18.30** **Poster Session* (P1-P24) & Round Table ACerS** **Club SASA**

**19.30** **Conference Gala dinner** **Hotel Palace**

***16.30 – 17.00** **Poster Installation** **Club SASA**

# Tuesday, September 27th, 2022.

## Hallway, 1st Floor

**08.00 - 09.00** **Registration & Poster Installation**

**09.00 - 10.00** **Poster Session (P25-P49)** **Club SASA**

## Hall 2, 1st Floor

**10.00 - 13.05** **Ceramic & Sintering Amorphous & Magnetic Ceramics**
**Chairpersons: Nebojša Labus & Darko Kosanović & Nebojša Mitrović**

**10.00 - 10.30** **PL Rapid sintering of structural and functional ceramics without application of pressure**
Karel Maca, Vladimír Prajzler, Radek Kalousek, David Salamon
Brno University of Technology, CEITEC, Brno, Czech Republic

**10.30 - 10.50** **INV Multi-phase $(Zr,Ti,Me)B_2$ solid solutions: preparation and microstructure evolution**
Laura Silvestroni[1], Nicola Gilli[1], Nina Obradović[2], Suzana Filipović[2], Jeremy Watts[3], William G. Fahrenholtz[3]
[1]CNR-ISTEC, Inst. of Science and Technology for Ceramics, Via Granarolo 64, 48018 Faenza, Italy
[2]Institute of Technical Sciences of SASA, Kneza Mihaila 35/IV, 11000 Belgrade, Serbia
[3]Dep. of Mater. Sci. & Eng, Missouri Univ. of Science and Technology, Rolla, MO, 65409, USA

**10.50 - 11.10** **INV Rare earth co-stabilizing of zirconia - an engineering toolbox for creating structural ceramics with tailored mechanical properties**
Frank Kern
Institut für Fertigungstechnologie keramischer Bauteile Universität Stuttgart Allmandring 7B, D-70569 Stuttgart

**11.10 - 11.25** **ORL Rapid rate sintering of bulk low-positive thermal expansion material $Al_2W_3O_{12}$ for thermal shock resistance applications**
Vojtech Marak[1], Daniel Drdlik[1, 2], Thais Moreira[3], Bojan A. Marinkovic[3]

[1]CEITEC BUT, Brno University of Technology, Purkynova 123, 612 00 Brno, Czech Republic
[2]Faculty of Mechanical Engineering, Brno University of Technology, Technicka 2, 616 69 Brno, Czech Republic
[3]Department of Chemical and Materials Engineering, Pontifical Catholic University of Rio de Janeiro (PUC-Rio), 22453-900, Rio de Janeiro, RJ, Brazil

**11.25 - 11.40** **ORL $Al_2O_3$-YAG ceramic composite with improved creep resistance**

Dušan Bučevac, Miljana Mirković, Snežana Nenadović, Ljiljana Kljajević, Mia Omerašević
Department of materials science, Vinca Institute of Nuclear Sciences - National Instiute of the Republic of Serbia, University of Belgrade, Belgrade 11000, Serbia

**11.40 – 12.10** **PL Structural characteristics, cation distribution, and elastic properties of $Cr^{3+}$ substituted stoichiometric and non-stoichiometric cobalt ferrites**

F. A. Khan[1], M. A. Islam[1], M. A. A. Bally[1], M. Z. Ahsan[2], S. M. Hoque[3]
[1]Department of Physics, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
[2]Department of Physics, Military Institute of Science and Technology (MIST), Dhaka, Bangladesh
[3]Materials Science Division, Atomic Energy Center Dhaka (AECD), Dhaka, Bangladesh

**12.10 – 12.30** **INV Thermal stability, mechanism and kinetics of thermally induced microstructural transformations of $Fe_{72}Ni_8Si_{10}B_{10}$ amorphous/nanocrystalline composite**

Milica M. Vasić[1], Dragica M. Minić[1]
[1]Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, Belgrade, Serbia

**12.30 – 12.50** **INV Memristive properties of amorphous chalcogenides and their application in neuromorphic architectures**

Dalibor L. Sekulić[1], Kristina O. Čajko[2], Svetlana R. Lukić-Petrović[2]
[1]University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia
[2]University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia

**12.50 – 13.05** **ORL Structural properties of FeCoV alloys produced by PIM / MIM technology**

Borivoje Nedeljković[1], Vladimir Pavlović[2], Nina Obradović[2], Nebojša Mitrović[1]

[1]Faculty of Technical Sciences, University of Kragujevac, Svetog Save 65, 32 000 Čačak, Serbia
[2]Institute of Technical Sciences of SASA, Knez Mihailova 35, 11000 Belgrade, Serbia

**13.00 - 14.00 Buffet lunch Club SASA**

## Hall 2, 1st Floor

**14.00 – 16.30 Electrochemistry & Catalysis**
**Chairpersons: Maja Pagnacco & Dalibor Marinković**

**14.00 - 14.30 PL Alumina as electrode material**
Zorica Mojović
University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, 11000 Belgrade, Serbia

**14.30 - 15.00 PL The role of fungi in circular and sustainable bioeconomy**
Marina Tišma
Josip Juraj Strossmayer University of Osijek, Faculty of Food Technology Osijek, Franje Kuhača 18, 31000 Osijek, Croatia

**15.00 - 15.20 INV Neat and loaded CaO-based catalysts from natural or waste sources for the triacylglycerols methanolysisis reaction**
Dalibor Marinković
University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Negoševa 12, Belgrade, Serbia

**15.20 - 15.40 INV The Briggs-Rauscher oscillatory reaction method as a "fingerprint" for bentonite clays**
Maja Pagnacco[1], Jelena Maksimović[2], Tihana Mudrinić[1], Marija Ajduković[1], Predrag Banković[1], Aleksandra Milutinović-Nikolić[1]
[1]University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, 11000, Belgrade, Serbia
[2]Faculty for Physical Chemistry, University of Belgrade, Studentski trg 12-16, 11000, Belgrade, Serbia

**15.40 – 16.00** **INV Examination of the structure and the photocatalyticbehavior of nanostructure $CoMoO_4$**

Milena Rosić[1], Maria Čebela[1], Aleksandra Zarubica[2]
[1]Laboratory for Material Science, Institute of Nuclear Sciences „Vinča“, National Institute of the Republic of Serbia, University of Belgrade, PO Box 522, 11001 Belgrade, Serbia
[2]Department of Chemistry, Faculty of Science and Mathematics, University of Niš, Višegradska 33, 18000 Niš, Serbia

**16.00 - 16.20** **INV The ashes obtained from the combustion of agro-industrial waste as catalysts for biodiesel production**

Marija Miladinović
University of Niš, Faculty of Agriculture, Kosančićeva 4, Kruševac, Srbija

**16.30 - 17.00** **Coffee Break** **Hallway, 1st Floor**

## Hall 2, 1st Floor

**17.00 - 19.15** **Cement, Clay & Refractory materials**
**Chairpersons: Anja Terzić & Milica V. Vasić**

**17.00 – 17.30** **PL Diverting local reactive materials from landfill to sustainable construction**

Marijana Serdar
Department of Materials, Faculty of Civil Engineering, University of Zagreb, Croatia

**17.30 – 18.00** **PL Valorisation of waste to manufacture eco-bricks: towards circular economy and sustainability**

Gaurav Goel
School of Energy and Environment, Thapar Institute of Engineering Technology, Patiala, 147004, India

**18.00 – 18.20** **INV Natural brick of Viminacium**

Emilija Nikolić[1], Ivana Nikolić-Delić[2], Ljiljana Miličić[2], Mladen Jovičić[1]
[1]Institute of Archaeology, Serbia
[2]Institute for Testing of Materials, Serbia

**18.20 – 18.40** **INV The application possibilities of waste materials in concrete – the current state in Serbia**

Iva Despotović
Faculty of Mechanical and Civil Engineering in Kraljevo, University of Kragujevac, Serbia

**18.40 – 19.00** **INV Red mud utilisation: Hazardous waste or a valuable raw material**

Snežana Vučetić[1], Damir Čjepa[2], Bojan Miljević[1], Jonjaua Ranogajec[1]
[1]University of Novi Sad, Faculty of Technology Novi Sad, Bul. Cara Lazara 1, 21000 Novi Sad, Serbia,
[2]Lafarge BFC doo, member of Lafarge Holcim group, Trg BFC 1, 21300 Beočin, Serbia

**19.00 – 19.15** **ORL Possibilities of usage hazardous waste slag in geopolymer mixtures**

Jelena Bijeljić[1], Nenad Ristić[2], Dejan Blagojević[1], Dušan Grdić[2]
[1]Academy of technical and educational vocational Studies Niš, Serbia
[2] Faculty of Civil Engineering and Architecture Niš, Niš, Serbia

**19.15 - 20.00 Awards & Closing Ceremony Hall 2, 1st Floor**

**Hallway, 1st Floor**

**08.00 - 09.00** **Registration & Poster Installation**

**09.00 - 10.00** **Poster Session (P25-P49)** **Club SASA**

**Hall 3, 1st Floor**

**10.00 - 13.05** **Modelling & Simulation**
**Chairpersons: Vladimir Buljak & Branislav Ranđelović**

**10.00 - 10.30** **PL Ability of refractory materials to sustain thermal shocks - how to take advantage of microcracks voluntary introduced within microstructure?**
Marc Huger[1], Damien Andre[1], Nicolas Tessier Doyen[1], Octavian Pop[2], Jean-Christophe Dupre[3], Pascal Doumalin[3]
[1]University of Limoges, CNRS, IRCER, UMR 7315, 12 rue Atlantis, 87000 Limoges, France
[2]University of Limoges, GEMH, EA 3178, F-19300 Egletons, France
[3]University of Poitiers, CNRS, PPRIME, UPR 3346, F-86962 Futuroscope Chasseneuil, France

**10.30 - 11.00** **PL Finite element model to better design refractory pieces used in the steel industry**
Séverine Romero-Baivier
R&D Flow Control, Vesuvius, Ghlin, Belgium

**11.00 - 11.20** **INV Stochastic calibration methods applied to brittle materials**
Tomasz Garbowski[1]
[1]Poznan University of Life Sciences, Faculty of Environmental and Mechanical Engineering, Wojska Polskiego 28, 60-627 Poznan, Poland

**11.20 - 11.40** **INV Theoretical investigation of structural and electronic influences on the magnetic properties**
Marko Perić
Vinča Institute of Nuclear Sciences, University of Belgrade, National Institute of the Republic of Serbia

**11.40 - 12.00** **INV Characteristic energy of $Ne^+$ ions in $CF_4$ gas**
Željka Nikitović, Zoran Raspopović
Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia

**12.00 – 12.15** **ORL Digital image correlation and inverse analysis for characterization of fracture properties**

Ilias Psilakis, Vladimir Buljak
University of Belgrade Mechanical engineering faculty - Strength of materials department, Belgrade, Serbia

**12.15 – 12.30** **ORL Algorithm for automatic insertion of cohesive elements for simulation of brittle materials**

Domagoj Uremović, Vladimir Buljak
University of Belgrade Mechanical engineering faculty - Strength of materials department

**12.30 – 12.45** **ORL Computational implementation and validation of constitutive models for heat resistant devices**

Jovana Stojić, Dr. Massimo Penasa
CAEmate SRL Innovative Startup, Bolzano, Italy

**12.45 – 13.00** **ORL Development of thermoplastic constitutive models for refractory ceramics in wide temperature range**

Lorenzo Fiore[1], Andrea Piccolroaz[2], Severine Romero Baivier[3]
[1,2]Department of Civil, Environmental and Mechanical Engineering University of studies of Trento, Italy
[1,3]Vesuvius Company, Ghlin, Belgium

**13.00 – 13.15** **ORL Development of thermal shock protocol of experiment of carbon-based refractory materials**

Kaoutar Anrhour[1,2,*], Séverine Romero Baivier[1], Andrea Piccolraoz[2] , Sébastien Gregoire[3]
[1,3]Vesuvius Group Rue de Douvrain 17, 7011 Ghlin, Belgium
[2]University of Trento Via Mesiano, 77, 38123 Trento TN, Italy

**13.15 - 14.00** **Buffet lunch** **Club SASA**

## Hall 3, 1st Floor

**14.00 – 16.30** **Renewable Energy & Composites**
**Chairperson: Milica Marčeta Kaninski**

**14.00 - 14.30** **PL Surface activity of metal/surfactants interface**

Stevan Blagojević
Institute of general and physical chemistry, Studentski trg 12/V, Belgrade, Serbia

**14.30 - 15.00** **PL Surface engineering processes, novel material and their structures for improving corrosion resistance of engineering materials**

Aurel Valentin Bîrdeanu
Infigo Consulting, Romania

**15.00 - 15.30** **PL Characterization of surfaces and thin films of advanced ceramics materials by surface sensitive techniques XPS and SIMS**

Janez Kovač
Department of Surface Engineering, Jozef Stefan Institute, SI-1000 Ljubljana, Slovenia

**15.30 - 15.50** **INV Improving the electrochemical performance of spray pyrolytic rare-earth cobaltite-based perovskite**

Sanja Eraković Pantović[1], Miroslava Varničić[1], Marija Mihailović[1], Miroslav Pavlović[1], Jasmina Stevanović[1,2], Vladimir Panić[1,2,3]
[1]Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Department of Electrochemistry, University of Belgrade, Njegoševa 12, 11 000 Belgrade, Serbia
[2]Centre of Excellence in Environmental Chemistry and Engineering - ICTM, University of Belgrade, Njegoševa 12, 11000 Belgrade, Serbia
[3]State University of Novi Pazar, Department of Chemical-Technological Sciences, Novi Pazar, Serbia

**15.50 – 16.10** **INV Imperfections in graphene and their role in energy related applications: DFT insights**

Ana S. Dobrota
University of Belgrade – Faculty of Physical Chemistry, Studentski trg 12-16, 11158 Belgrade, Serbia

**16.10 - 16.30** **INV Structural characterization and comparative analysis of Ru doped $SnO_2$ and $TiO_2$ support materials for Pt-based fuel cells**

Milica P. Marčeta Kaninski, Zoran V. Šaponjić, Mihajlo D. Mudrinić, Dubravka S. Milovanović, Boris M. Rajčić, Aleksandra M. Radulović, Vladimir M. Nikolić
Institute of General and Physical Chemistry, Studenstski trg 12/V, 11000 Belgrade, Republic of Serbia

**16.30 - 17.00** **Coffee Break** **Hallway, 1st Floor**

## Hall 3, 1st Floor

**17.00 - 19.15** **Glass & Electro Ceramics**
**Chairpersons: Vesna Paunović & Vera Petrović**

**17.00 – 17.30** **PL Speech dedicated to the memory of Prof. Dr. Vojislav V. Mitić - Chemical reactivity of buckminsterfullerene $C_{60}$**

R. Jih Ru Hwu
Department of Chemistry, National Tsing Hua University, Hsinchu 300043, Taiwan

**17.30 – 17.50** **INV In memoriam of Professor Dr. Vojislav V. Mitić:The Brownian motion of radicals in DNA cleavage and polyphosphazenes as detoxicants for nerve-agents**

Susan Shwu-Chen Tsay
Department of Chemistry, National Tsing Hua University, Hsinchu 300043, Taiwan

**17.50 – 18.10** **INV Consideration of alternative materials for passive heatsinks under a natural cooling conditions**

Aneta Prijić, Miloš Marjanović, Jana Vračar, Aleksandra Stojković, Zoran Prijić
Faculty of Electronic Engineering, University of Niš, Aleksandra Medvedeva 14, 18000 Niš, Serbia

**18.10 – 18.30** **INV The analysis of the crystal growth process of the lithium germanium phosphate glass**

Srdjan D. Matijašević[1], Vladimir S. Topalović[1], Veljko V. Savić[1], Nebojša J. Labus[3], Jelena D. Nikolić[1], Snežana N. Zildžović[1], Snežana R. Grujić[2]
[1]Institute for Technology of Nuclear and Other Mineral Raw Materials (ITNMS), 86 Franchet d Esperey St., 11000 Belgrade, Serbia
[2]Faculty of Technology and Metallurgy, University of Belgrade, 4 Karnegijeva St., 11000 Belgrade, Serbia
[3]Institute of Technical Sciences of SASA, Knez-Mihailova 35/IV St., 11000 Belgrade, Serbia

**18.30 – 18.50** **INV Electrical characteristics of Sb doped $BaTiO_3$ ceramics**

Vesna Paunović, Aleksandra Stojković, Neda Stanojević, Miloš Marjanović, Zoran Prijić
University of Nis, Faculty of Electronic Engineering, Nis, Serbia

**18.50 – 19.10** **INV Society alike porous media**

Andrei Rotaru[1,2], Vlad T. Popa[3]
[1]University of Craiova, Department of Biology and Environmental Engineering, Str. A.I. Cuza, Nr. 13, 200585, Craiova, Romania
[2]Institute of Physical Chemistry "Ilie Murgulescu" of the Romanian Academy, Department of Chemical Thermodynamics, Splaiul Independentei, Nr. 202, 060021, Bucharest, Romania
[3]Institute of Physical Chemistry "Ilie Murgulescu" of the Romanian Academy, Department of Surface Chemistry and Catalysis, Splaiul Independentei, Nr. 202, 060021, Bucharest, Romania

**19.15 - 20.00** **Awards & Closing Ceremony** **Hall 2, 1st Floor**

# Book of Abstracts

minimize the function, which often has many local minima. Undoubtedly, the identification of constitutive parameters in brittle materials belongs to this group of issues. The article presents a method of calibrating the problems of non-convex functions of many variables. The method is based on an iterative refinement of the representation of the objective function composed of its expected value and corresponding uncertainty. The new points used to update the approximation are selected so as to explore the parameter space in search of the global minimum and at the same time reduce the standard deviation of the estimation where the greatest mapping inaccuracies occur. The presented algorithm is characterized by high efficiency and speed of calibration of even very complex models.

## INV22

## Natural brick of Viminacium

Emilija Nikolić[1], Ivana Nikolić-Delić[2], Ljiljana Miličić[2], Mladen Jovičić[1]

[1]Institute of Archaeology, Serbia
[2]Institute for Testing of Materials, Serbia

Building activity in Viminacium, an important Roman legionary fortress and a city on the Danube in today's Serbia, was influenced by its natural surroundings. They influenced the position and orientation of the first fortification, built in the 1st century AD, as well as the range of raw materials for the construction of buildings in all of Viminacium's life phases. The first building material along with wood that Romans encountered after coming to the northern edge of the Stig Plain must have been red burnt soil created by coal combustion, whose source is only a few kilometres from the fortress. The first ramparts were constructed using blocks made of this material, called "crvenka" by the local people, which was used for building purposes in the wider area until relatively recently. It is very well known that man-made brick was used as an artificial material with pozzolanic features added to Roman lime mortars. Viminacium was a provincial centre of brick production, using local soil as a raw material. Since crvenka can be recognised as a kind of "natural brick" made of local sediments, an assumption was made that it could also have been used in Viminacium lime mortars as a natural pozzolanic addition. After laboratory research of its mineralogical, mechanical, physical, and chemical characteristics, crushed and ground crvenka was mixed with lime. Mortars with excellent mechanical properties were created, offering us one of the indicators of their possible hydraulicity. With the knowledge of the firing temperatures that could have been developed in Roman brick kilns, this research will be continued. An attempt to determine the temperature that red ceramic fragments, visible in the composition of Viminacium mortars, were fired at, will be made, leading us further towards their possible characterisation as artificial or "natural" brick.

***Acknowledgments***
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