



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.

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Dr. Suzana Filipović

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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:

Dr. Nina Obradović SRB
Dr. Lidija Mančić SRB

Conference Co-chairs:

Prof. Dr. Olivera Milošević SRB
Prof. Dr. Rainer Gadow GER

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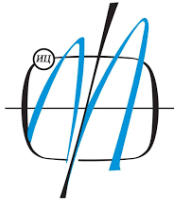
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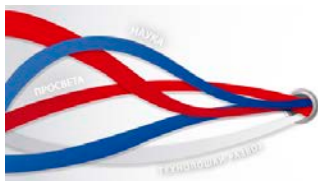
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Institut za ispitivanje materijala, Jeol
Institut za tehnologiju nuklearnih i drugih mineralnih sirovina, Kefo, SCAN



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American Ceramic Society – Serbian Chapter
Hotel Palace, Shenemil



Conference Program and Abstracts

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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 inhabitants. 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>

The Tenth Serbian Ceramic Society Conference »Advanced Ceramics and Application«
September 26-27, 2022 Serbian Academy of Sciences and Arts, Knez Mihailova 35,
Belgrade, Serbia

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

¹Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche (ISM-CNR), Via del Fosso del Cavaliere, 100 - 00133 Rome, Italy

²Sechenov 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. Ferreira¹, G. Flores-Carrasco², A. Urbieto³, P. Fernández³, L. Gomez-Villalba⁴, O. Milosevic⁵, M. E. Rabanal¹

¹Carlos III University and IAAB, High School of Engineering, Avenida de la Universidad s/n, 28911- Leganes, Spain

²Tecnológico Nacional de México / ITS de Tepeaca, 75219 Tepeaca, Puebla, México

³Complutense University, Facultad Ciencias Físicas, Ciudad Universitaria, Plaza Ciencias 1, 28040-Madrid, Spain

⁴Institute of Geociencias-CSIC-UCM, Calle del Dr. Severo Ochoa 7, 28040-Madrid

⁵Institute 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 Rac¹, Vesna Rakić¹, Dušan Stošić^{2,3}, Aline Auroux⁴
¹University of Belgrade - Faculty of Agriculture, Nemanjina 6, 11000 Zemun-Belgrade, Serbia.
²Normandie Univ., ENSICAEN, UNICAEN, CNRS, 14000 Caen, France.
³Vinča Institute of Nuclear Sciences, University of Belgrade, P. O. Box 522, 11001 Belgrade, Serbia.
⁴Univ. 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
^aInstitute of Technical Sciences of the Serbian Academy of Science and Arts, Knez Mihailova 35/IV, 11000 Belgrade, Serbia
^bFaculty 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 Vuković¹, Bruna Carolina Dorm², Eliane Trovatti², Nenad Ignjatović³, Smilja Marković³, Srečo Škapin⁴, Ivana Dinić³, Lidija Mančić³

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

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

³Institute of Technical Sciences of SASA, Belgrade, Serbia

⁴Jožef Stefan Institute, Ljubljana, Slovenia

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

D. K. Božanić^{1,2}, D. Danilović^{1,2}, A. R. Milosavljević³, P. Sapkota^{4,5}, R. Dojčilović^{1,2}, D. Tošić¹, N. Vukmirović⁶, S. Ptasinska^{4,5}, V. Djoković^{1,2}

¹Department 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

²Center 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

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

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

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

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

13.30 – 13.45 **ORL Quantum efficiency of up-converting SrGd₂O₄:Yb,Er nanoparticles**

Ivana Dinić¹, Tijana Stamenković², Nadežda Radmilović², Marina Vuković³, Mihailo D. Rabasović⁴, Vesna Lojpur², Lidija Mančić¹

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

²Department 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

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

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

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

Tihomir Kovačević^{1*}, Jelena Gržetić¹, Slavko Mijatov¹, Marica Bogosavljević¹, Saša Brzić¹

¹Ministry 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 BaTiO₃/CoFe₂O₄ 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)B₂ solid solutions: preparation and microstructure evolution

Laura Silvestroni¹, Nicola Gilli¹, Nina Obradović², Suzana Filipović²,
Jeremy Watts³, William G. Fahrenholtz³

¹CNR-ISTEC, Inst. of Science and Technology for Ceramics, Via
Granarolo 64, 48018 Faenza, Italy

²Institute of Technical Sciences of SASA, Kneza Mihaila 35/IV, 11000
Belgrade, Serbia

³Dep. 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 Al₂W₃O₁₂ for thermal shock resistance applications

Vojtech Marak¹, Daniel Drdlik^{1, 2}, Thais Moreira³, Bojan A. Marinkovic³

¹CEITEC BUT, Brno University of Technology, Purkynova 123, 612 00 Brno, Czech Republic

²Faculty of Mechanical Engineering, Brno University of Technology, Technická 2, 616 69 Brno, Czech Republic

³Department 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 Al₂O₃-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 Institute of the Republic of Serbia, University of Belgrade, Belgrade 11000, Serbia

11.40 – 12.10 **PL Structural characteristics, cation distribution, and elastic properties of Cr³⁺ substituted stoichiometric and non-stoichiometric cobalt ferrites**

F. A. Khan¹, M. A. Islam¹, M. A. A. Bally¹, M. Z. Ahsan², S. M. Hoque³

¹Department of Physics, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

²Department of Physics, Military Institute of Science and Technology (MIST), Dhaka, Bangladesh

³Materials 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 Fe₇₂Ni₈Si₁₀B₁₀ amorphous/nanocrystalline composite**

Milica M. Vasić¹, Dragica M. Minić¹

¹Faculty 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. Sekulić¹, Kristina O. Čajko², Svetlana R. Lukić-Petrović²

¹University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia

²University 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 Nedeljković¹, Vladimir Pavlović², Nina Obradović², Nebojša Mitrović¹

¹Faculty of Technical Sciences, University of Kragujevac, Svetog Save
65, 32 000 Čačak, Serbia

²Institute 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 methanolysis
reaction**
Dalibor Marinković
University of Belgrade, Institute of Chemistry, Technology and
Metallurgy, National Institute of the Republic of Serbia, Njegoševa 12,
Belgrade, Serbia

**15.20 - 15.40 INV The Briggs-Rauscher oscillatory reaction method as
a “fingerprint” for bentonite clays**
Maja Pagnacco¹, Jelena Maksimović², Tihana Mudrinić¹, Marija
Ajduković¹, Predrag Banković¹, Aleksandra Milutinović-Nikolić¹
¹University of Belgrade, Institute of Chemistry, Technology and
Metallurgy, Njegoševa 12, 11000, Belgrade, Serbia
²Faculty for Physical Chemistry, University of Belgrade, Studentski trg
12-16, 11000, Belgrade, Serbia

15.40 – 16.00 INV Examination of the structure and the photocatalytic behavior of nanostructure CoMoO₄

Milena Rosić¹, Maria Čebela¹, Aleksandra Zarubica²

¹Laboratory for Material Science, Institute of Nuclear Sciences „Vinča“, National Institute of the Republic of Serbia, University of Belgrade, PO Box 522, 11001 Belgrade, Serbia

²Department 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 Nikolić¹, Ivana Nikolić-Delić², Ljiljana Miličić², Mladen Jovičić¹

¹Institute of Archaeology, Serbia

²Institute 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 Vučetić¹, Damir Čjepa², Bojan Miljević¹, Jonjaua Ranogajec¹
¹University of Novi Sad, Faculty of Technology Novi Sad, Bul. Cara Lazara 1, 21000 Novi Sad, Serbia,
²Lafarge 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 Bijeljić¹, Nenad Ristić², Dejan Blagojević¹, Dušan Grdić²
¹Academy of technical and educational vocational Studies Niš, Serbia
²Faculty 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 Randelović

10.00 - 10.30 PL Ability of refractory materials to sustain thermal shocks - how to take advantage of microcracks voluntarily introduced within microstructure?

Marc Huger¹, Damien Andre¹, Nicolas Tessier Doyen¹, Octavian Pop²,
Jean-Christophe Dupre³, Pascal Doumalin³

¹University of Limoges, CNRS, IRCER, UMR 7315, 12 rue Atlantis, 87000 Limoges, France

²University of Limoges, GEMH, EA 3178, F-19300 Egletons, France

³University 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 Garbowski¹

¹Poznan 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 CF₄ 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 Fiore¹, Andrea Piccolroaz², Severine Romero Baivier³
^{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 Baivier¹, Andrea Piccolraoz², Sébastien Gregoire³
^{1,3}Vesuvius Group Rue de Douvrain 17, 7011 Ghlin, Belgium
²University 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 Pantović¹, Miroslava Varničić¹, Marija Mihailović¹,
Miroslav Pavlović¹, Jasmina Stevanović^{1,2}, Vladimir Panić^{1,2,3}
¹Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Department of Electrochemistry, University of Belgrade, Njegoševa 12, 11 000 Belgrade, Serbia
²Centre of Excellence in Environmental Chemistry and Engineering - ICTM, University of Belgrade, Njegoševa 12, 11000 Belgrade, Serbia
³State 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 SnO₂ and TiO₂ 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, Studenstki 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 C₆₀**
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. Matijašević¹, Vladimir S. Topalović¹, Veljko V. Savić¹, Nebojša J. Labus³, Jelena D. Nikolić¹, Snežana N. Zildžović¹, Snežana R. Grujić²
¹Institute for Technology of Nuclear and Other Mineral Raw Materials (ITNMS), 86 Franchet d Esperey St., 11000 Belgrade, Serbia
²Faculty of Technology and Metallurgy, University of Belgrade, 4 Karnegijeva St., 11000 Belgrade, Serbia
³Institute of Technical Sciences of SASA, Knez-Mihailova 35/IV St., 11000 Belgrade, Serbia
- 18.30 – 18.50** **INV Electrical characteristics of Sb doped BaTiO₃ 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. Popa³

¹University of Craiova, Department of Biology and Environmental Engineering, Str. A.I. Cuza, Nr. 13, 200585, Craiova, Romania

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³Institute 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 Nikolić¹, Ivana Nikolić-Delić², Ljiljana Miličić², Mladen Jovičić¹

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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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followed in the mass range from 10 mg to 50 mg at 30 °C. It was found that mass increase was beneficial for the decolorization rate. The effect of temperature was investigated from 30 °C to 60 °C. The decolorization was over 90% after only 10 minutes for the temperature of 60 °C, while with the temperature decrease, the decolorization rate decreased. Co-AlFePILC was found to be an efficient catalyst in degradation of tartrazine in the presence of Oxone®.

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P8

Chemical analysis of historical mortars from the Roman period in Serbia

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This work is part of the MoDeCo2000 project research concerning the historical mortars from the Roman period in today's Serbia. It is focused on the chemical analysis of mortar samples selected from archaeological sites along the Danube River. The main compositional and technological features of the mortars were determined by chemical analyses with energy-dispersive x-ray fluorescence (EDXRF) and inductively coupled plasma optical emission spectrometry (ICP-OES) with an HF resistant introductory system. The aim of this study is to present the analytical chemistry strategy used for the rapid and reliable characterisation of the relevant features of historical mortars.

It is concluded that the EDXRF technique can be directly applied to solid samples, but ICP-OES still requires sample decomposition and dissolution to make full use of its analytical capabilities. However, in many cases, ICP-OES includes a quartz introductory system, and hydrofluoric acid removal by treatment with borates must be applied before measurement. Replacing the quartz introductory system with an HF resistant introductory system is achieved to eliminate the neutralisation step with borates, and still get very accurate boron and silicon results.

After detailed research, standard reference certified materials of selected rocks, clays, and limestone (CRM NIST 688 (basalt rock), NCS DC CRM 60102 (clay), NCS DC CRM 60104 (clay), NCS DC CRM 60105 (clay), NCS DC CRM 60106 (clay), BCS-CRM 512 (dolomite), BCS-CRM 513 (limestone)) were analyzed with the same chemical techniques, sighting the identification of potential types of raw materials employed for the production of mortars. Data analysis as a tool of statistics was applied to evaluate the characteristics of mortars, mutually differentiating mortars from different sites, as well as typify updated samples.

The analytical results showed that the EDXRF technique can be used together with other well-established techniques (ICP-OES) and presents a good potential as a reliable, cheap, and fast chemistry strategy to carry out the study of historical building materials. Elaboration of cheap and quick analytical methodology is an important aspect in the development of advanced steps in the research of historical mortars' production technology.

Acknowledgment: This research was supported by the Science Fund of the Republic of Serbia, PROMIS, #6067004, MoDeCo2000.