

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

**Serbian Ceramic Society**  
**Institute of Technical Science 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, 23-25. September 2019**

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Prof.dr Vojislav Mitić

Dr Lidija Mančić

Dr Nina Obradović

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**EUROPEAN ACADEMY**  
of Sciences and Arts

Dear Colleagues,

We have great pleasure to welcome you to the Advanced Ceramic and Application Conference VIII 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.

Advanced Ceramics today include many old-known ceramic materials produced through newly available processing techniques as well as broad range of the innovative compounds and composites, particularly with plastics and metals. Such developed new materials with improved performances already bring a new quality in the everyday life. The chosen Conference topics cover contributions from a fundamental theoretical research in advanced ceramics, computer-aided design and modeling of a new ceramics products, manufacturing of nanoceramic devices, developing of multifunctional ceramic processing routes, etc. Traditionally, ACA Conferences gather leading researchers, engineers, specialist, professors and PhD students trying to emphasize the key achievements which will enable the wide spread use of the advanced ceramics products in High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, etc.

Serbian Ceramic Society has been 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 Serbian Ceramic Society in accordance to the Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in the South-East Europe, with members from more than 20 Institutes and Universities, active in 16 sessions, by program and the frames which are defined by the American Ceramic Society activities.

This year the conference is supported by the Serbian Chapter of American Ceramic Society and European Academy of Sciences and Arts.

Prof. Dr Vojislav Mitić  
*President of the Serbian Ceramic Society*  
*World Academy Ceramics Member*  
*European Academy of Sciences & Arts Member*

Prof. Dr Olivera Milošević,  
*President of the General Assembly of the*  
*Serbian Ceramic Society*  
*Academy of Engineering Sciences of Serbia Member*

## Conference Topics

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

### Conference Programme Chairs:

Dr. Lidija Mančić SRB

Dr. Nina Obradović SRB

### Conference Co-chairs:

Prof. Dr. Vojislav Mitić SRB

Prof. Dr. Olivera Milošević SRB

Prof. Dr. Rainer Gadow GER

Prof. Dr. Marcel Van de Voorde EU

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## **Sponsors & Endorsements:**

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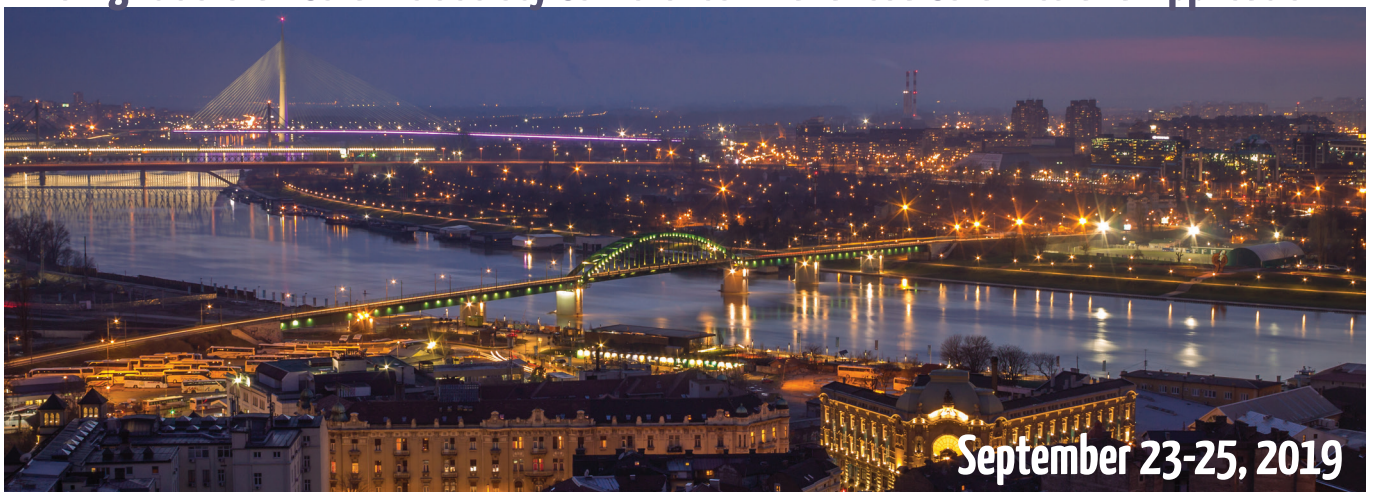
Serbian Academy of Sciences and Arts, European Academy of Sciences and Arts,  
American Ceramics Society – Serbian Chapter, Institute of Technical Sciences of SASA,  
Archeological Institute of SASA, Institute of Physics UB, Vinča Institute of Nuclear Sciences UB -  
Laboratory of Physics (010), Electrical Engineering Institute Nikola Tesla and  
High School-Academy for Arts and Conservation.

# **Conference Program and Abstracts**

# Program and Abstract's Contents

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## The Eight Serbian Ceramic Society Conference »Advanced Ceramics and Application«



## Conference Information:

**Conference venue:** Serbian Academy of Sciences and Arts, Great Hall (second floor) and Halls 1, 2 (first floor), Knez Mihailova 35, Belgrade, Serbia

**Conference fee:** Standard fee for foreign participants: 200 EUR; Standard fee for domestic participants: 10000 RSD, Members of SCS, Keynote lecturers and PhD Students: 50% Discount; Invited lecturers have 40% Discount; Plenary lecturers & the last year winners for 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 at site will be available only in cash.

**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.

**Abstracts and papers publication:** The official language of the conference is English. Conference abstracts will be published in the Book of Abstracts Conference. Papers presented at the conference can be submitted for publishing either in book or selected journals. More precisely, Serbian Ceramic Society and Springer Nature will publish each year one of Chapter book draw on the research and innovation presented at ACA Conferences in the frame of chosen topic. Beside, limited number of papers will be consider for publishing in following journals: Materials Chemistry and Physics, Journal of Ceramic Science and Technology and Science of Sintering.

Deadlines for submitting of full manuscripts will be delivered after the Conference.

**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 reception desk at the beginning of the Conference on flash memory. 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 Palas, Topličin venac 23; <http://www.palacehotel.co.rs/>

Restaurant: Pivnica „Maxim 2“, Đure Jakšića 1, Belgrade (street beside conference venue)

Exchange office: „Hulk“, Vuka Karadžića 4

Tourist Information Centre: Knez Mihailova 5

Water: Tap water in Belgrade is safe to drink.



# Program Overview

| Date                        | Time   | Programme   | Floor, Room                       |
|-----------------------------|--|---|-----------------------------------|
| September, 23,<br>Monday    | 08.00-09.00  | Registration  | 2 <sup>nd</sup> Floor, Hall       |
|                             | 09.00-09.30  | Opening Ceremony  | 2 <sup>nd</sup> Floor, Great Hall |
|                             | 09.30-09.40  | Short Break   | 2 <sup>nd</sup> Floor, Great Hall |
|                             | 09.40-11.10  | Plenary Session 1   | 2 <sup>nd</sup> Floor, Great Hall |
|                             | 11.10-11.30  | Coffee Break & Photo Session                                      | 2 <sup>nd</sup> Floor, Hal        |
|                             | 11.30-13.00  | Plenary Session 2   | 2 <sup>nd</sup> Floor, Great Hall |
|                             | 13.00-15.00  | Buffet Lunch  | Club SASA                         |
|                             | 15.00-16.30  | Plenary Session 3   | 2 <sup>nd</sup> Floor, Great Hall |
|                             | 16.30-16.50  | Coffee Break  | 2 <sup>nd</sup> Floor, Hal        |
|                             | 16.50-18.05  | Keynote Session   | 2 <sup>nd</sup> Floor, Great Hall |
|                             | 20.00  | Conference dinner (with invitations)                              |                                   |
| September, 24,<br>Tuesday   | 08.00-09.00  | Registration<br>Posters Installation                              | Club SASA                         |
|                             | 09.00-10.25  | Session: Basic Ceramic Science & Sintering<br>Hall 2              | 1 <sup>st</sup> Floor             |
|                             | 10.25-10.45  | Coffee Break  | 1 <sup>st</sup> Floor, Hall       |
|                             | 10.45-13.00  | Session: Nano-, Opto- & Bio-Ceramic<br>Hall 2                     | 1 <sup>st</sup> Floor             |
|                             | 13.00-14.00  | Buffet Lunch  | Club SASA                         |
|                             | 14.00-16.15  | Session: Magnetic Ceramic and Heritage,<br>Art & Design<br>Hall 2 | 1 <sup>st</sup> Floor             |
|                             | 16.15-16.30  | Coffee Break  | 1 <sup>st</sup> Floor, Hall       |
|                             | 16.30-18.00  | Poster Session  | Club SASA                         |
| September, 25,<br>Wednesday | 09.30-11.00  | Session: Electrochemistry & Catalysis<br>Hall 1                   | 1 <sup>st</sup> Floor             |
|                             |  | Session: Glass & ElectroCeramics<br>Hall 2                        |                                   |
|                             | 11.00-11.15  | Coffee Break  |                                   |
|                             | 11.15-12.35  | Session: Modeling & Simulation<br>Hall 1                          |                                   |
|                             |  | Session: Energy, Refractory, Cements<br>Hall 2                    |                                   |
|                             | 12.45-13.30  | Annual meeting of the Serbian Ceramic Society                     |                                   |
| 13.30-14.15                 | American Ceramic Society Serbian Chapter Round Table |   |                                   |
| 14.15                       | Buffet Lunch   | Maxim 2   |                                   |

**Monday, September 23<sup>rd</sup>, 2019**

**08.00 – 09.00 Registration Hall, 2<sup>nd</sup> Floor**

**Great Hall, 2<sup>nd</sup> Floor**

**09.00 – 09.30 Opening Ceremony of the Seventh Serbian Ceramic Society Conference:  
Advanced Ceramics and Application**  
Prof.dr Vojislav Mitić, Dr. Olivera Milošević, Prof. Vladimir Pavlović, Dr. Dušan Jovanović,  
Marcel Van de Voorde, Branislav Brindić, President of SASA Academician Vladimir Kostić,  
Representatives of MNTR, High Representatives of the Government RS

**09.30 - 09.40 Short break**

**Great Hall, 2<sup>nd</sup> Floor**

**09.40 – 11.10 Plenary Session 1**  
Chairpersons: Olivera Milošević, Eugene Medvedovski

**09.40 – 10.10 PL 1 Modification and Construction of Cathode Materials for Advanced Li-ion Batteries**  
Cheng-Yu Wu, Hao Yang, Yang Wang, Yi-Chun Jin and Jenq-Gong Duh  
Department of Material Sciences and Engineering,  
National Tsing-Hua University, Hsinchu, Taiwan

**10.10 – 10.40 PL 2 Ceramics to metal joining for next generation power devices**  
Katsuaki Suganuma  
The Institute of Scientific and Industrial Research, Osaka University, Japan

**10.40 - 11.10 PL 3 Interface Engineering in Perovskite-based Nanocomplex  
Ceramics for High Dielectric & Piezoelectric Performances**  
S. Wada<sup>1</sup>, R. Kayanuma<sup>1</sup>, Y. Isobe<sup>1</sup>, K. Matsumoto<sup>1</sup>,  
S. Ueno<sup>1</sup>, I. Fujii<sup>1</sup>, C. Moriyoshi<sup>2</sup>, Y. Kuroiwa<sup>2</sup>  
<sup>1</sup>Material Science and Technology, University of Yamanashi,  
4-4-37 Takeda, Kofu, Yamanashi 400-8510, Japan  
<sup>2</sup>Department of Physical Science, Hiroshima University,  
1-3-1 Kagamiyama, Higashi-Hiroshima, Hiroshima 739-8526, Japan

**11.10 - 11.30 Coffee Break and Photo Session Hall, 2<sup>nd</sup> Floor**

## Great Hall, 2<sup>nd</sup> Floor

11.30 - 13.00

### Plenary Session 2

Chairpersons: Walter Arnold, Vladimir Pavlovic

11.30 - 12.00

### PL 4 Advanced Ceramics and Coatings for Mineral and Oil & Gas Processing and Power Generation and the Technology Importance for Ceramic Manufacturing

Eugene Medvedovski

Endurance Technologies Inc., Calgary, AB, Canada

12.00 - 12.30

### PL 5 Zirconia/Alumina Meta-Material for Biomedical Applications: Experience for Sintering and Real Practice

S.Kulkov, A.Buyakov, D.Kulbakin and I.Kazantsev, A.Tsukanov

Tomsk State University, Institute of Strength Physics and Material Sciences RAS and Medical clinic

12.30 - 13.00

### PL 6 How first principles methods can be used to understand and predict the properties of microwave ceramic dielectrics

Nathan Newman, Justin Gonzales and Chris Muhich

Materials Program, Arizona State University, Tempe, AZ

13.00 - 15.00

### Buffet Lunch

Club SASA, Mezzanine

## Great Hall, 2<sup>nd</sup> Floor

15.00 - 16.30

### Plenary Session 3

Chairpersons: Nathan Newman, Sergei Kulkov

15.00 - 15.30

### PL 7 Rare Earth Oxides as Environmentally-Friendly Corrosion Inhibitors

William G. Fahrenholtz

Missouri University of Science and Technology

15.30 - 16.00

### PL 8 Near-Field Imaging Using Atomic Force Acoustic Microscopy

Walter Arnold

I.Phys. Institut, Georg-August Universität Göttingen, Germany, and Department of Materials Science and Engineering, Saarland University, Saarbrücken, Germany

16.00 - 16.30

### PL 9 Learning from Nature: Strong, Tough and Lightweight Biological/Bio-inspired Ceramic-based Composites

Po-Yu Chen

Department of Materials Science and Engineering National Tsing Hua University

**16.30 - 16.50**      **Coffee Break**      **Hall, 2<sup>nd</sup> Floor**

**Hall, 2<sup>nd</sup> Floor**

**16.50 - 18.05**

**Keynote Session**

Chairpersons: Satoshi Wada, Jenq-Gong Duh

**16.50 - 17.15**

**KN 1 Structural and Morphological study of  $\text{NaNbO}_3$  nanostructure synthesized over metallic niobium**

Beatriz Canabarro<sup>1</sup>, [Paula Jardim](#)<sup>1</sup>

<sup>1</sup>Department of Metallurgical and Materials Engineering,  
Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

**17.15 - 17.40**

**KN 2 Multimaterials 3D printing: simplifying manufacturing and reducing costs**

[Rouslan Svintsitski](#)

3DCeram Sinto, Limoges, France

**17.40 - 18.05**

**KN 3 Bioinspired metal oxide nanomaterials for sustainable applications**

[Ziqi Sun](#)

ARC Future Fellow, Queensland University of Technology (QUT), Australia

**20.00**

**Conference dinner (with invitation)**

**Tuesday, September 24<sup>th</sup>, 2019**

**08.00 - 09.00 Registration / Posters and Exhibition Installation Hall, 1<sup>st</sup> Floor**

**Hall 2, 1<sup>st</sup> Floor**

**09.00 - 10.25 Session: Basic Ceramic Science and Sintering**

Chairpersons: Nina Obradović

**09.00 - 09.30 PL 10 Processing and properties of structural and functional ceramics at Brno University of Technology**

K. Maca<sup>1,2</sup>, K. Drdlikova<sup>1</sup>, T. Spusta<sup>1,2</sup>, V. Prajzler<sup>1</sup>

<sup>1</sup>CEITEC BUT, Brno University of Technology,  
Purkynova 123, 612 00 Brno, Czech Republic

<sup>2</sup>Faculty of mechanical Engineering, Brno University of Technology,  
Purkynova 123, 612 00 Brno, Czech Republic

**09.30 - 09.50 INV-BCS 1 Thermal thin film investigations via Time Domain Thermoreflectance method on Nb<sub>2</sub>O<sub>5</sub>**

Lisa Mitterhuber, Elke Kraker, Stefan Defregger

Materials Center Leoben Forschungs GmbH,  
Rosseggerstraße 12, 8700 Leoben, Austria

**09.50 - 10.10 INV-BCS 2 Morphological and structural characterization of spinel MgAl<sub>2</sub>O<sub>4</sub>**

S. Filipović<sup>1</sup>, N. Obradović<sup>1</sup>, W. G. Fahrenholtz<sup>2</sup>, B. A. Marinković<sup>3</sup>,  
J. Rogan<sup>4</sup>, S. Lević<sup>5</sup>, V. Pavlović<sup>1</sup>

<sup>1</sup>Institute of Technical Sciences of the Serbian Academy of Sciences and Arts,  
11000 Belgrade, Serbia

<sup>2</sup>Materials Science and Engineering, Missouri University of Science and Technology,  
Rolla, Missouri, United States

<sup>3</sup>Pontificia Universidade Catolica de Rio de Janeiro,  
Dept. of Chemical and Materials Engineering, Rio de Janeiro, Brasil

<sup>4</sup>Department of General and Inorganic Chemistry,  
Faculty of Technology and Metallurgy, University of Belgrade, 11120 Belgrade, Serbia

<sup>5</sup> Faculty of Agriculture University of Belgrade, 11000 Belgrade, Serbia

**10.10 - 10.25 ORL- BCS 1 The effect of heating rate on densification and grain growth during pressure-less sintering of fine grained alumina and zirconia ceramics**

Vladimír Prajzler<sup>1</sup>, Tomáš Spusta<sup>1</sup>, Karel Maca<sup>1,2</sup>

<sup>1</sup> CEITEC, Brno University of Technology, Purkyňova 123, 612 00 Brno, Czech Republic

<sup>2</sup> Faculty of Mechanical Engineering, Brno University of Technology,  
Technická 2896/2, 616 69 Brno, Czech Republic

**10.25 - 10.45 Coffee Break Hall, 1<sup>st</sup> Floor**

## Hall 2, 1<sup>st</sup> Floor

- 10.45 – 13.00**      **Session: Nano-, Opto- & BioCeramic**  
Chairpersons: Lidija Mančić
- 10.45 - 11.10**      **KN 4 XRD-XRF-Raman-IR Combined Analysis: the EU H2020 SOLSA project**  
Daniel Chateigner<sup>1</sup>, Luca Lutterotti<sup>2</sup> and the SOLSA Consortium<sup>3</sup>  
<sup>1</sup>Normandie Université, Université de Caen Normandie, CNRS-CRISMAT, France  
<sup>2</sup>Department of Materials Engineering, Engineering Faculty, University of Trento, Italy  
<sup>3</sup><http://www.solsa-mining.eu>
- 11.10 - 11.35**      **KN 5 Synthesis of Ce/Ru Doped ZnO photocatalysts to the degradation of emerging pollutants in wastewater**  
G. Flores-Carrasco<sup>1,2</sup>, M. Rodríguez-Peña<sup>3</sup>, O. Milosevic<sup>4</sup>, A. Urbieto<sup>3</sup>, P. Fernández<sup>3</sup>, M.E. Rabanal<sup>1</sup>  
<sup>1</sup>Universidad Carlos III de Madrid & IAAB, Dept. of Materials Science and Engineering and Chemical Engineering, Avda. Universidad 30, 28911 Leganes, Madrid, Spain  
<sup>2</sup>CIDS-ICUAP Benemérita Universidad Autónoma de Puebla, Av. San Claudio y 14 sur, Edif. 103C C.U., Col. San Manuel, Puebla 72570, México  
<sup>3</sup>Departamento Física de Materiales, Fac. Ciencias Físicas, Universidad Complutense, Ciudad Universitaria, 280540 Madrid, Spain  
<sup>4</sup>Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Knez Mihailova 35/IV, 11000 Belgrade, Serbia
- 11.35 - 12.00**      **KN 6 Hydrothermal synthesis of the oxide powders**  
Srecko Stopic, Bernd Friedrich  
IME Process Metallurgy and Metal Recycling of the RWTH Aachen University, Germany
- 12.00 - 12.20**      **INV-NOB 1 Dynamic tuning of quantum light emitted from atom-like defects in hexagonal boron nitride**  
Snežana Lazić<sup>1</sup>, Sergio Pinilla Yanguas<sup>1</sup>, Carlos Gibaja<sup>2</sup>, Pablo Ares<sup>2</sup>, Félix Zamora<sup>2</sup> and Herko P. Van der Meulen<sup>1</sup>  
<sup>1</sup>Departamento de Física de Materiales, Instituto “Nicolás Cabrera” and Instituto de Física de Materia Condensada (IFIMAC), Universidad Autónoma de Madrid (UAM), 28049 Madrid, Spain  
<sup>2</sup>Departamento de Química Inorgánica, UAM, 28049 Madrid, Spain
- 12.20 - 12.40**      **INV-NOB 2 ZrO<sub>2</sub> Based Nanomaterials: Application in Photocatalysis**  
Milica Carević, Tatjana Savić, Nadica Abazović and Mirjana Čomor  
Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia
- 12.40 - 13.00**      **INV-NOB 3 Models and methods for testing the cells and tissues interactions with biomaterials**  
Stevo Najman  
University of Niš, Faculty of Medicine, Department of Biology and Human Genetics and Department for Cell and Tissue Engineering, 18000 Niš, Serbia
- 13.00 - 14.00**      **Buffet Lunch**      **Club SASA, Mezzanine**

**Hall 2, 1<sup>st</sup> Floor**

- 14.00 - 16.15**      **Session: Magnetic Ceramic and Heritage, Art & Design**  
Chairpersons: Snežana Lazić and Smilja Marković
- 14.00 - 14.30**      **PL 11 Frequency and temperature dependent dielectric and magnetic properties of Manganese doped Cobalt ferrite nanoparticles**  
F. A. Khan<sup>1</sup> and M. Z.Ahsan<sup>2</sup>  
<sup>1</sup> Department of Physics, Bangladesh University of Engineering and Technology, Dhaka-1000, Bangladesh  
<sup>2</sup> Department of Physics, Military Institute of Science and Technology Dhaka-1216, Bangladesh
- 14.30 - 14.55**      **KN 7 New sustainable processing of RE-based magnetic materials**  
Spomenka Kobe  
Jožef Stefan Institute, Ljubljana, Slovenia
- 14.55 - 15.15**      **INV-MC 1 How do preparation method and starch-encapsulation influence the magnetic properties of nanocrystalline cobalt ferrite?**  
Ljubica Andjelković  
Department of Chemistry, IChTM, University of Belgrade, Studentski Trg 12-16, 11000, Belgrade
- 15.15- 15.30**      **INV-MC 2 Ethyl cellulose based magnetic nanocomposite membranes**  
Aleksandar Stajčić<sup>1</sup>, Ivana Radović<sup>2</sup>, Vladimir Dodevski<sup>2</sup>, Vladan Čosović<sup>1</sup>, Jasna Stajić-Trošić<sup>1</sup>, Miloš Vorkapić<sup>1</sup> and Dana Vasiljević-Radović<sup>1</sup>  
<sup>1</sup>University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, 11000 Belgrade, Serbia  
<sup>2</sup>University of Belgrade, Vinca Institute of Nuclear Sciences, Laboratory for Materials Sciences, Mike Petrovića Alasa 12-14, P.O. Box 522, Belgrade 11000, Serbia
- 15.30 - 15.45**      **ORL-HAD 1 Zlakusa hand-wheel pottery making as a cultural heritage and its protection**  
Biljana Djordjević<sup>1</sup>, Maja Milošević<sup>2</sup> and Mihovil Logar<sup>2</sup>  
<sup>1</sup>National Museum in Belgrade, Serbia  
<sup>2</sup>University of Belgrade, Faculty of Mining and Geology, Belgrade, Serbia
- 15.45 - 16.00**      **ORL-HAD 2 Contextualizing the use of a ceramic vessel from Kostolac - Archaeoacoustic Analysis**  
Dragan Novković<sup>1</sup>, Aleksandra Nikolić<sup>2</sup>, Zorana Đorđević<sup>3</sup>  
<sup>1</sup> The School of Electrical and Computer Engineering of Applied Studies  
<sup>2</sup> Central Institute for Conservation  
<sup>3</sup> Institute for Multidisciplinary Research, University of Belgrade
- 16.00 - 16.15**      **ORL-HAD 3 Interpretation of the Miniature Ceramic Artifacts**  
Lidija Balj  
Museum of Vojvodina, Dunavska 35, Novi Sad, Serbia

**16.15 - 16.30**

**Coffee Break**

**Hall, 1<sup>st</sup> Floor**

**Club SASA, Mezzanine**

**16.30 - 18.00**

**Poster Session**

Chairpersons: Suzana Filipović, Marina Vuković and Sandra Veljković



**Wednesday, September, 25<sup>th</sup>, 2019**

**Hall 1, 1<sup>st</sup> Floor**

- 09.30 - 11.00**      **Session: Electrochemistry and Catalysis**  
Chairpersons: Predrag Banković
- 09.30 – 10.00**      **PL 12 Ceramic-based catalysts as a sustainable solution for the challenges related to the critical raw materials (CRM)**  
Zara Cherkezova-Zheleva  
Institute of Catalysis, Bulgarian Academy of Sciences,  
Acad. G. Bonchev St., Bldg. 11, 1113 Sofia, Bulgaria
- 10.00 - 10.15**      **ORL- EC 1 Evaluation of the nickel state in Ni/BCY15 cermet - anode for proton conducting solid oxide fuel cell**  
D. Nikolova<sup>1</sup>, M. Gabrovska<sup>1</sup>, E. Mladenova<sup>2</sup>, D. Vladikova<sup>2</sup>,  
Y. Karakirova<sup>1</sup>, Z. Stoynov<sup>2</sup>  
<sup>1</sup>Institute of Catalysis, Bulgarian Academy of Sciences, Sofia, Bulgaria  
<sup>2</sup>Acad. Evgeni Budevski Institute of Electrochemistry and Energy Systems,  
Bulgarian Academy of Sciences, Sofia, Bulgaria
- 10.15 - 10.30**      **ORL- EC 2 Bimetallic CuNi/BCY15 cermet anode for proton conducting solid oxide fuel cell**  
M. Gabrovska<sup>1</sup>, D. Nikolova<sup>1</sup>, E. Mladenova<sup>2</sup>, D. Vladikova<sup>2</sup>, Z. Stoynov<sup>2</sup>  
<sup>1</sup>Institute of Catalysis, Bulgarian Academy of Sciences,  
Acad. G. Bonchev Str., Bldg. 11, 1113 Sofia, Bulgaria  
<sup>2</sup>Acad. Evgeni Budevski Institute of Electrochemistry and Energy Systems, Bulgarian  
Academy of Sciences, Acad. G. Bonchev Str., Bldg. 10, 1113 Sofia, Bulgaria
- 10.30 - 10.45**      **ORL- EC 3 Cobalt impregnated natural and acid modified montmorillonite as catalysts in heterogeneous catalytic oxidation of nicotine in the presence of Oxone®**  
I. Ilić<sup>1</sup>, A. Milutinović-Nikolić<sup>2</sup>, I. Gržetić<sup>3</sup>, M. Ajduković<sup>2</sup>,  
B. Milovanović<sup>4</sup>, T. Mudrinić<sup>2</sup>, N. Jović-Jovičić<sup>2</sup>  
<sup>1</sup>Institute of General and Physical Chemistry  
Studentski trg 12/V, 11000 Belgrade, Serbia  
<sup>2</sup>University of Belgrade - Institute of Chemistry, Technology and Metallurgy  
Center for Catalysis and Chemical Engineering, Njegoševa 12, 11000 Belgrade, Serbia  
<sup>3</sup>University of Belgrade – Faculty of Chemistry,  
Studentski trg 12-16, 11000 Belgrade, Serbia  
<sup>4</sup>Alumina ltd., Karakaj, 75400 Zvornik, Bosnia and Herzegovina
- 10.45 – 11.00**      **ORL-EC 4 Calcium oxide on coal fly ash cancrinite-type zeolite as a catalyst for biodiesel production**  
Stefan Pavlović, Predrag Banković, Dalibor Marinković, Miroslav Stanković  
University of Belgrade, Institute of Chemistry, Technology, and Metallurgy, Njegoševa 12,  
11001 Belgrade

**11.00 - 11.15**

**Coffee Break**

**Hall, 1<sup>st</sup> Floor**

## Hall 1, 1<sup>st</sup> Floor

11.15 - 12.35

### Session: Modeling & Simulation

Chairpersons: Zara Cherkezova-Zheleva

11.15 - 11.40

### KN 9 Systematic investigation of grain aggregation induced by neck evolution under sintering conditions

Zoran S. Nikolić

University of Niš, 18000 Niš, Univerzitetski trg 2, Serbia

11.40 - 12.00

### INV-MS 1 Theoretical and experimental study of multiferroics BiFeO<sub>3</sub> and Bi<sub>(1-x)</sub>Ho<sub>x</sub>FeO<sub>3</sub>

Maria Čebela<sup>1,2</sup>, Pavla Šenjug<sup>2</sup>, Filip Torić<sup>2</sup>, Teodoro Klaser<sup>2</sup>,  
Željko Skoko<sup>2</sup>, Dejan Zagorac<sup>1</sup> and Damir Pajić<sup>2</sup>

<sup>1</sup> Institute for Nuclear sciences "Vinča", University of Belgrade, Serbia

<sup>2</sup> Department of Physics, Faculty of Science, University of Zagreb,

Bijenička c. 32, HR-10000 Zagreb, Croatia

12.00 - 12.20

### INV- MS 2 Brownian fractal motion and energy effect on microorganism's fluctuation

Goran Lazovic<sup>1</sup>, Vojislav V. Mitic<sup>2,3</sup>, Dusan Milosevic<sup>2</sup>

<sup>1</sup> Faculty of Mechanical Engineering University of Belgrade, Serbia

<sup>2</sup> Faculty of Electronic Engineering University Nis, Serbia

<sup>3</sup> Institute Technical Sciences of SASA, Belgrade, Serbia

12.20 - 12.35

### INV- MS 3 Graph theory applied to modeling and simulation of microstructure evolution in sintering

Branislav M. Randjelović and Zoran S. Nikolić

University of Niš, Faculty of Electronic Engineering,

Aleksandra Medvedeva 14, 18000 Niš, Serbia

14.15

Buffet Lunch

Maxim 2

## Hall 2, 1<sup>st</sup> Floor

09.30 - 10.55

### Session: Glass & ElectroCeramics

Chairpersons: Spomenka Kobe

09.30 - 09.55

### KN 8 Alkali activation of waste materials: sustainability and innovation in processing traditional ceramics

Bartolomeo Coppola, Paola Palmero, Jean-Marc Tulliani, Laura Montanaro  
Politecnico di Torino, Department of Applied Science and Technology,  
Corso Duca Degli Abruzzi, 24, Italy

- 09.55 - 10.15**      **INV-GE 1 High sensitivity characterization of the nonlinear electric susceptibility of glasses and glass-ceramics in the microwave range**  
Florian Bergmann<sup>1</sup>, Martin Letz<sup>1</sup>, Holger Maune<sup>2</sup>, Gerhard Jakob<sup>3</sup>  
<sup>1</sup> Schott AG, Mainz, Germany  
<sup>2</sup> Technische Universität Darmstadt, Darmstadt, Germany  
<sup>3</sup> Johannes Gutenberg Universität Mainz, Mainz, Germany
- 10.15 - 10.35**      **INV-GE 2 The BaTiO<sub>3</sub> ferroelectric properties within the microscale fractal nature**  
Vojislav V. Mitic<sup>1,2</sup>, Goran Lazovic<sup>3</sup>, Chun-An Lu<sup>4</sup>, Vesna Paunovic<sup>1</sup>, Sandra Veljkovic<sup>1</sup>, Nathan Newman<sup>5</sup>, Branislav Vlahovic<sup>6</sup>  
<sup>1</sup>University of Nis, Faculty of Electronic Engineering, Nis, Serbia;  
<sup>2</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia;  
<sup>3</sup>University of Belgrade, Faculty of Mechanical Engineering, Belgrade, Serbia  
<sup>4</sup>Industrial Technology Research Institute, Taiwan  
<sup>5</sup>Arizona State University, Chemical and Materials Engineering (MACME), USA  
<sup>6</sup>North Carolina Central University, USA
- 10.35 - 10.55**      **INV-GE 3 Synthesis, characterization and application of activated carbon materials obtained from biowaste**  
Vladimir Dodevski<sup>1</sup>, Bojan Janković<sup>2</sup>, Ivana Radović<sup>1</sup>, Milan Kragović<sup>1</sup>, Marija Stojmenović<sup>1</sup>  
<sup>1</sup>University of Belgrade, Institute of Nuclear Sciences “Vinča”, Laboratory for Materials Sciences, Mike Petrovića Alasa 12-14, P.O. Box 522, 11001 Belgrade, Serbia  
<sup>2</sup>University of Belgrade, Institute of Nuclear Sciences “Vinča”, Department of Physical Chemistry, Mike Petrovića Alasa 12-14, P.O. Box 522, 11001 Belgrade, Serbia

**11.00 - 11.15**

**Coffee Break**

**Hall, 1<sup>st</sup> Floor**

**Hall 2, 1<sup>st</sup> Floor**

**11.15 - 12.20**

**Session: Energy, Refractory, Cements**

Chairpersons: Bartolomeo Coppola

**11.15 - 11.35**

**INV-ERC 1 Processing of metal-ceramic composites by Spark Plasma Sintering: application to bulk composites and joining purposes**

Dina V. Dudina<sup>1, 2, 3, 4\*</sup>, Tomila M. Vidyuk<sup>2,5</sup>, Michail A. Korchagin<sup>2, 3</sup>, Maksim A. Esikov<sup>1,3</sup>, Vyacheslav I. Mali<sup>1</sup>, Alexander G. Anisimov<sup>1</sup>

<sup>1</sup> Lavrentyev Institute of Hydrodynamics SB RAS, Lavrentyev Ave. 15, Novosibirsk, 630090, Russia

<sup>2</sup> Institute of Solid State Chemistry and Mechanochemistry SB RAS, Kutateladze str. 18, Novosibirsk, 630128, Russia

<sup>3</sup> Novosibirsk State Technical University, K. Marx Ave. 20, Novosibirsk, 630073, Russia

<sup>4</sup> Novosibirsk State University, Pirogova str. 2, Novosibirsk, 630090, Russia

<sup>5</sup>Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Institutskaya str. 4/1, 630090 Novosibirsk, Russia

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|----------------------|---|
| <b>11.35 - 11.50</b> | <b>ORL-ERC 1 Amidoxime-based Polymers for Extraction of Uranium from Seawater</b><br><u>Sinisa Vuković</u><br>Deloitte AI Insights, 22 Adelaide St, Toronto ON M5H 0A9 Canada   |
| <b>11.50 - 12.05</b> | <b>ORL-ERC 2 Synthesis and thermal phase evolution assessment of advanced Barium-Magnesium-Alumino-Silicate powders</b><br><u>Mariano Casas-Luna</u> <sup>1</sup> , <u>Simona Ravaszová</u> <sup>2</sup> , <u>David Jech</u> <sup>1</sup> ,<br><u>Karel Dvorak</u> <sup>2</sup> , <u>Ladislav Celko</u> <sup>1</sup><br><sup>1</sup> Central European Institute of Technology - Brno University of Technology, Brno, Czech Republic<br><sup>2</sup> Brno University of Technology, Faculty of Civil Engineering, Institute of Technology of Building Materials and Components, Brno, Czech Republic |
| <b>12.05 - 12.20</b> | <b>ORL-ERC 3 Dust particles in low-pressure hydrocarbon plasmas plasmas: mechanisms of formation and suppression of formation</b><br><u>O. Stepanović</u><br>Harder Digital Sova d.o.o. Niš, Serbia   |
| <b>12.45 - 13.30</b> | <b>Annual meeting of the Serbian Ceramic Society</b>  |
| <b>13.30 - 14.15</b> | <b>American Ceramic Society Serbian Chapter Round Table</b>   |
| <b>14.15</b>         | <b>Buffet Lunch</b> <span style="float: right;"><b>Maxim 2</b></span>   |

fluctuation. There is a great interest for new ideas development how to control transformation of electronic particles chaotical Brownian fluctuations. Here we developed on very important tool for more complex electronic parameters and particles analysis.

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### Use of clinker brick in contemporary architectonic building facade design

Aleksandra Ćurčić<sup>1</sup>, Sandra Veljković<sup>2</sup>, Aleksandar Keković<sup>3</sup>,  
Gordana Topličić Ćurčić<sup>4</sup>

<sup>1</sup>Faculty of Civil Engineering and Architecture, University of Niš,  
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<sup>2</sup> Faculty of Electronic Engineering, University of Niš,  
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<sup>3</sup>Faculty of Civil Engineering and Architecture, University of Niš,  
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Aleksandra Medvedeva 14, 18000 Niš

With the growing awareness of the importance of implementation of adequate design principles, also rise the need for the improvement of environmental and sustainable materials. The material which is specially discussed in this paper is clinker brick, and its use for construction of facades of buildings having different uses.

Brick as a material has been present in architecture and human living for centuries. This material of outstanding characteristics has been permanently developing. Clay is the basic and main constituent of each brick. Due to such composition and continuous development of products, facade bricks meet the growing demands of modern life and provide optimum construction of the facade. Apart from that, they meet the corresponding esthetic criteria and requirements.

Clinker brick is obtained from the fired clay at temperatures over 1.000 degree Celsius. Sintering closes the pores, which makes clinker bricks almost completely water non-absorbent. It makes it extremely resistant and insensitive to high temperatures, frost and chemical agents. Clinker brick is a warm and agreeable natural product. It is an environmental building material. Its durability is very long, estimated to more than 100 years. It absorbs heat very well, it can be used multiple times and be recycled. Clinker brick is available in multiple colors and forms of various surface structures. Natural, ceramic color of clinker brick, which is generated during the firing process, it is durable and does not fade in time.

Clinker bricks are resistant and architectonically adaptable, which makes them ideal cladding for façade surfaces. They can be combined with different materials. They achieved the level of quality which can meet different requirements and technical standards. Also, by combining various types of façade bricks, it is possible to form complex designs of façade surfaces. Thus, building corners can be rounded, each entrance can be separately designed, while the arches above the windows or doors can also be distinctly designed. A considerable visual effect on the façade is achieved by different brick patterns. This makes possible the distinctive design of facades, which acquire originality.

The paper shows some of the prominent examples of facades constructed using clinker bricks.