Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION XI
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, 18-20. September 2023.

Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION XI
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, 18-20th September 2023.

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

Publisher:
Serbian Ceramic Society

Editors:
Dr. Nina Obradović
Dr. Lidija Mančić

Technical Editors:
Dr. Adriana Peleš Tadić
Dr. Jelena Živojinović

Printing:
Serbian Ceramic Society, Belgrade, 2023.

Edition:
120 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

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

SRPSKO keramičko društvo. Conference Advanced Ceramics and Application : New Frontiers in Multifunctional Material Science and Processing (11 ; 2023 ; Beograd)

Program ; and the Book of abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application XI New Frontiers in Multifunctional Material Science and Processing, Serbian Academy of Sciences and Art Serbia, Belgrade,18-20.September 2023. ; [editors Nina Obradović, Lidija Mančić]. - Belgrade : Serbian Ceramic Society, 2023 (Belgrade : Serbian Ceramic Society). - 90 str. : ilustr. ; 30 cm

Tiraž 120.

ISBN 978-86-905714-0-6

а) Керамика -- Апстракти б) Наука о материјалима -- Апстракти

COBISS.SR-ID 122849545

Dear colleagues and friends,

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

It is nice to host you here in Belgrade in person. 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..

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

Scientific Committee

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

Organizing Committee

Dr. Nina Obradović
Dr. Lidija Mančić
Academician Antonije Đorđević
Dr. Ivana Dinić
Dr. Marina Vuković
Dr. Suzana Filipović
Dr. Anja Terzić
Dr. Milica V. Vasić
Dr. Maja Pagnacco
Dr. Dalibor Marinković
Prof. Dr. Nebojša Mitrović
Prof. Dr. Vesna Paunović
Prof. Dr. Vera Petrović
Dr. Milica Marčeta Kaninski
Dr. Darko Kosanović
Dr. Jelena Vujančević
Dr. Jelena Živojinović
Dr. Adriana Peleš Tadić
Dr. Nebojša Potkonjak
Dr. Marko Perić
Dr. Magdalena Radović
Dr. Miloš Lazarević
Dr. Stanko Aleksić
M. Sci. Isaak Trajković

Sponsors:

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

Acknowledgements:

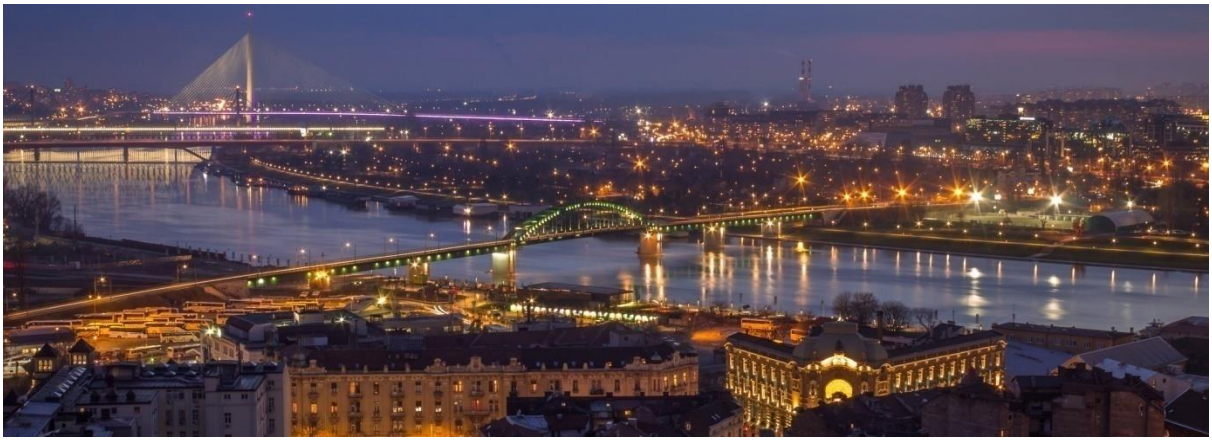
Ministry of Science, Innovations and Technological Development RS
Serbian Academy of Sciences and Arts
Institute of Technical Sciences of SASA, Institute of Physics BU
Hotel Palace, Shenemil

Република Србија
МИНИСТАРСТВО НАУКЕ,
ТЕХНОЛОШКОГ РАЗВОЈА И
ИНОВАЦИЈА

Conference Program and Abstracts

Program and Abstract's Contents

The Eleventh 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 Hall2 (1stfloor), KnezMihailova 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.

Conference fee: Standard fee for foreign participants: 400 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:
18. 09.2023 (8.00-9.00A.M.-2nd Floor) & 19-20.09.2023 (8.00-9.00A.M.–1st Floor)
Posters instalation:
19.09.2023 (16.30-17.00) & 20.09.2023 (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: KnezMihailova 5,http://www.tob.rs/en

Date	Time	Programme	Floor, Room
18th September Monday	**08.00-09.00**	**Registration**	2nd Floor, Hallway
	09.00-09.30	**Opening Ceremony**	2nd Floor, Great Hall
	09.30-10.00	**Award ceremony - Academician V. Radmilovic**	
	10.00-10.15	**Short break & Photo session**	
	10.15-12.00	**Electrochemistry & Catalysis** O. Guillon M. Vujkovic F. Hausen J. Ackovic	
	12.00-12.30	**Coffee Break**	2nd Floor, Hallway
	12.30-14.15	**Electrochemistry & Catalysis** M. Ajdukovic N. Tomic M. Maksumov Z. Mravik K. Milosevic J. Vujancevic	2nd Floor, Great Hall
	14.15-15.00	**Buffet Lunch**	Club SASA, Mezzanine
	15.00-17.30	**Nano, Opto & Bio-ceramics** C. Balaszi K. Balaszi M. Culo D. Milojkov Z. Vasiljevic M. V. Nikolic	2nd Floor, Great Hall
	19.00	**Conference dinner**	Palace Hotel
19th September Tuesday	**08.00-09.00**	**Registration**	1st Floor, Hallway
	09.00-11.30	**Modelling & Simulation** D. Zagorac M. Mirkovic M. Zlatar M. Peric D. Malenov N. Milosavljevic	1st Floor, Blue Hall
	11.30-12.00	**Coffee Break**	1st Floor, Hallway
	12.00-14.10	**Nano, Opto & Bio-ceramics** P. Ferreira Y. Wu S. Stojanovic K. Colic B. Miljevic L. Mancic	1st Floor, Blue Hall
	14.10-15.00	**Buffet Lunch**	Club SASA, Mezzanine
	15.00-17.20	**Renewable energy & Composites** M. Spreitzer P. Zabinski S. Maslovara S. Brkovic M. Marinkovic D. Sciti	1st Floor, Blue Hall
	17.20-19.00	**Poster Session I & Exibitions ***	Club SASA, Mezzanine
	***16.30-17.00**	**Poster Session I & Exibitions Installation**	Club SASA, Mezzanine

20th September Wednesday	**08.00-09.00**	**Registration**	1st Floor, Hallway
	09.00-10.00	**Poster Session II****	Club SASA, Mezzanine
	10.00-12.00	**Basic Ceramics & Sintering** F. Kern G. E. Hilmas V. Pavlovic P. Tatarko D. Galusek	1st Floor, Blue Hall
	12.00-12.30	**Coffee Break**	1st Floor, Hallway
	12.30-14.05	**Basic Ceramics & Sintering** W. G. Fahrenholtz S. Filipovic J. Zivojinovic W. Yared A. Peles Tadic A. Radosavljevic	1st Floor, Blue Hall
	14.05-15.00	**Buffet Lunch**	Club SASA, Mezzanine
	15.00-17.25	**Cement, Clay, Refractories & Glass, Electroceramics** A. Reka D. Sekulic K. Cajko M. Vasic S. Stojiljkovic M. Suljagic N. Djordjevic	1st Floor, Blue Hall
	17.25-18.00	**Awards & Closing Ceremony**	1st Floor, Blue Hall
	**** 8.30-09.00**	**Poster Session II Installation**	Club SASA, Mezzanine

Monday, September 18th, 2023.

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

Great Hall, 2nd Floor

09.00 – 10.00 **Opening Ceremony of the XI Serbian Ceramic Society Conference: Advanced Ceramics and Application XI**
President of SCS – Dr. Nina Obradović, Short music programme, Dr. Marina Soković – Representative of Ministry for Science, Award Ceremony–Academician V. Radmilović

10.00 - 10.15 **Short break and Photo Session**

Great Hall, 2nd Floor

10.15 – 12.00 **Electrochemistry & Catalysis**
Chairpersons: Maja Pagnacco & Dalibor Marinković

10.15– 10.45 **PL Protonic ceramics for hydrogen technologies**
O. Guillon[1,2,3], L. Schäfer[1], M. Ivanova[1], M. Kindelmann[1], M. Bram[1]
[1]Institute of Energy and Climate Research: Materials Synthesis and Processing (IEK-1), ForschungszentrumJülich GmbH, 52425Jülich, Germany
[2]RWTH Aachen University, Institute of Mineral Engineering (GHI), Department of Ceramics and Refractory Materials, 52064 Aachen, Germany
[3]Jülich-Aachen Research Alliance: JARA-Energy, 52425 Jülich, Germany

10.45 – 11.15 **PL What have we achieved regarding the development of rechargeable Na-ion batteries?**
Milica Vujković
University of Belgrade - Faculty of Physical Chemistry, Studentski trg 12-16, Beograd

11.15 - 11.45 **PL Electrochemical Strain Microscopy to reveal local Lithium-ion mobility in solid state electrolytes**
N. Schön[1,2], P. Veelken[1,2], N. Scheer[1,2], F. Hausen[1,2]
[1]Forschungszentrum Jülich, IEK-9, 52428 Jülich, Germany
[2]RWTH Aachen University, IPC, Landoltweg 2, 52065 Aachen, Germany

11.45 – 12.00 **ORL Electrochemical testing of iron phosphor tungsten bronzes as potential electrode material**

Jovana Ackovic[1], Zoran Nedic[2], Tamara Petrović[2], Ružica Micić[1]MajaPagnacco[3], Pavle Tančić[3]
[1]Faculty of Sciences and Mathematics, University of Priština in KosovskaMitrovica, Lole Ribara 29, 38220 Kosovska Mitrovica, Serbia
[2]University of Belgrade - Faculty of Physical Chemistry, Studentski trg 12-16, Belgrade, Serbia
[3]University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Department of Catalysis and Chemical Engineering, Njegoševa 12, 11000 Belgrade, Serbia

12.00 - 12.30 **Coffee Break** **Hallway, 2nd Floor**

Great Hall, 2nd Floor

12.30 - 14.15 **Electrochemistry & Catalysis**

Chairpersons: Maja Pagnacco & Dalibor Marinković

12.30 - 12.50 **INV Evaluation of cobalt supported chitosan-derived carbon-smectite catalysts in Oxone® induced dye degradation**

Gordana Stevanović, Nataša Jović-Jovičić, Jugoslav Krstić, Sanja Marinović, Predrag Banković, Marija Ajduković
University of Belgrade – Institute of Chemistry, Technology and Metallurgy, Department of Catalysis and Chemical Engineering, Njegoševa 12, 11000 Belgrade, Republic of Serbia

12.50 - 13.10 **INV From brookite-based nanopowder towards titanate nanoribbons: structure and application**

Nataša Tomić
Institute of Physics, University of Belgrade, 11080 Belgrade, Serbia

13.10 - 13.30 **INV Friction Force Microscopy as a tool to investigate (electro)catalyticprocesses at surfaces**

M. Maksumov[1,2], A. Kaus[2,3], Z. Teng[4], K. Kleiner[4], F. Gunkel[3], F. Hausen[1,2]
[1]Forschungszentrum Jülich, IEK-9, 52428 Jülich, Germany
[2]RWTH Aachen University, IPC, Landoltweg 2, 52065 Aachen, Germany
[3]Forschungszentrum Jülich, PGI-7, 52428 Jülich, Germany
[4]University of Münster, MEET, Correnstraße 46, 48149 Münster, Germany

13.30 – 13.45 **ORL Graphene oxide/12 tungstophosphoric acid nanocomposites – achieving favorable properties with ion beams for electrochemical supercapacitors**

Željko Mravik[1], Milica Pejčić[1], Jelena Rmuš Mravik[1], Blaž Belec[2], Danica Bajuk-Bogdanovic[3], Sonja Jovanović[1], Smilja Marković[4], Nemanja Gavrilov[3], Vladimir Skuratov[5], Zoran Jovanović[1]

[1]Center of Excellence for Hydrogen and Renewable Energy (CONVINCE), Laboratory of Physics, Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

[2]Materials Research Laboratory, University of Nova Gorica, Ajdovščina, Slovenia

[3]Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia

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

[5]Flerov Laboratory of Nuclear Reactions, Joint Institute for Nuclear Research, Dubna, Moscow region, Russia

13.45 – 14.00 **ORL Kinetics and mechanism study of photocatalytic degradation using heterojunction semiconductors**

Ksenija Milošević[1], Davor Lončarević[1], Melina Kalagasidis Krušić[2], Tihana Mudrinić[1], Jasmina Dostanić[1]

[1]University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Department of Catalysis and Chemical Engineering, Njegoševa 12, 11000 Belgrade, Republic of Serbia

[2]University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Republic of Serbia

14.00 – 14.15 **ORL Detection of bisphenol S via screen-printed electrodes**

Jelena Vujančević[1,2], Špela Trafela[2], Neža Sodnik[2,3] , Zoran Samardžija[2] and Kristina Žagar Soderžnik[2,4]

[1]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Knez Mihailova 35/IV, 11000 Belgrade, Serbia

[2]Department for Nanostructured Materials, Jožef Stefan Institute, Jamova cesta 39, SI-1000 Ljubljana, Slovenia

[3]University of Ljubljana, Faculty of Chemistry and Chemical Technology, Večna pot 113,
SI-1000 Ljubljana, Slovenia

[4]Jozef Stefan Postgraduate School, Jamova cesta 39, SI-1000 Ljubljana, Slovenia

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

Great Hall, 2nd Floor

15.00 - 17.30 **Nano, Opto & Bio-ceramics**
Chairpersons: Lidija Mančić & Ivana Dinić

15.00 - 15.30 **PL Current Status and Future Trends in Nanocarbon added Ceramics**
Csaba Balázsi
Institute for Technical Physics and Materials Science, Centre for Energy Research, Eötvös Loránd Research Network, 1121 Budapest, Konkoly-Thege str. 29-33, Hungary

15.30- 16.00 **PL Ceramic biomaterials: From traditional technologies to novel applications**
Katalin Balázsi
Thin Film Physics Department, Centre for Energy Research, 1121 Budapest, Konkoly-Thege M. str. 29-33, Hungary

16.00 - 16.30 **PL Long, rich and exotic path from insulating to metallic states in strongly correlated ceramic materials**
Matija Čulo
Institut za fiziku, Bijenička cesta 46, HR-10000 Zagreb, Croatia

16.30 – 16.50 **INV Luminescence transitions of Pr^{3+} ($4f^2$) in fluorapatite nanocrystals for potential biomedical application**
Dušan V. Milojkov[1], Gordana D. Marković[1], Miroslav D. Sokić[1],Vaso D. Manojlović[2], Dragosav R. Mutavdžić[3], Goran V. Janjić[4]
[1]Institute for Technology of Nuclear and Other Mineral Raw Materials, 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 for Multidisciplinary Research, University of Belgrade, KnezaVišeslava 1, 11030 Belgrade, Serbia
[4]Institute for Chemistry, Technology and Metallurgy, University of Belgrade,Njegoševa 12, 11000 Belgrade, Serbia

16.50 – 17.10 **INV Biosynthesis of ZnO nanoparticles using agro-waste with antibacterial and antioxidant activity**
Zorka Vasiljevic[1], Jovana Vunduk[2], Milena Dojcinovic[1], Dragana Bartolic[1], Milos Ognjanovic[3], Nenad Tadic[4], Goran Miskovic[5], Maria Vesna Nikolic[1]
[1]University of Belgrade, Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia,
[2]The Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia,

[1]University of Belgrade, Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia,
[2]The Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia,
[3]University of Belgrade, VINČA Institute of Nuclear Sciences - National Institute of the Republic of Serbia, Mike Petrovića Alasa 12-14, Belgrade, Serbia
[4]Faculty of Physics, University of Belgrade, Studentski trg 12, Belgrade, Serbia
[5]Silicon Austria Labs, High Tech Campus Villach Europastraße 12, A-9524 Villach, Austria

17.10 – 17.30 **INV METAL OXIDE NANOPARTICLES AS ACTIVE FOOD PACKAGING COMPONENTS**

Maria Vesna Nikolic[1], Zorka Vasiljevic[1], Jasmina Vidic[2]
[1]University of Belgrade- Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia,
[2]Université Paris-Saclay, INRAE, AgroParisTech, Micalis Institute, Jouy en Josas, France

19.00 – 23.30 Conference Gala dinner Hotel Palace

Tuesday, September 19th, 2023.

Hallway, 1st Floor

08.00 - 09.00 **Registration**

Hall 2, 1st Floor

09.00 - 11.30 **Modelling& Simulation**

Chairpersons: Marko Perić & Magdalena Radovic

09.00 - 09.30 **PL Modeling & Simulation of Advanced CeramicMaterials**

D. Zagorac[1,2]
[1]Institute of Nuclear Sciences Vinča, Materials Science Laboratory, Belgrade University, Belgrade, Serbia
[2]Center for the synthesis, processing, and characterization of materials for use in extreme conditions "Cextreme Lab", Laboratory for Theoretical Investigation of Materials (L-TIM), Belgrade, Serbia

09.30 - 10.00 **PL Structural analysis using the powder diffraction method of different structures from the calcium phosphate group of materials**

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

10.00 - 10.30 **PL Rational Design of Single-Ion Magnets – Computational Chemistry Approach**

Matija Zlatar[1] and Maja Gruden[2]
[1]University of Belgrade – Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, Belgrade, Serbia
[2]University of Belgrade – Faculty of Chemistry, Studentski trg 12-16, Belgrade, Serbia

10.30 - 10.50 **INV DFT Analysis of Hyperfine Couplings in *d* and *f* metal complexes with Tetrahydro Borate Ligands**

M. Perić, Z. Milanović, M. Radović, M. Mirković, A. Vukadinović, D. Stanković, D. Janković, S. Vranješ-Đurić
„VINČA" Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade, 11001 Belgrade, Serbia

10.50 - 11.10 **INV Modelling of stacking interactions relevant to non-metallic electronic materials**

Dušan P. Malenov
University of Belgrade – Faculty of Chemistry, Studentski trg 12-16, 11000 Belgrade, Serbia

11.10 – 11.30 **INV The power of machine learning**

Nataša Milosavljević
Faculty of Agriculture, University of Belgrade

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

Hall 2, 1st Floor

12.00 – 14.10 **Nano, Opto & Bio-ceramics**

Chairpersons: Smilja Marković & Marina Vuković

12.00 - 12.30 **PL Understanding the Cathode Battery Material $LiMn_2O_4$ by Advanced Electron Microscopy**

Paulo J. Ferreira[1,2,3]
[1]INL – International Iberian Nanotechnology Laboratory, Braga, Portugal
[2]Mechanical Engineering Department and IDMEC, Instituto Superior Técnico, University of Lisbon, Lisboa, Portugal
[3]Materials Science and Engineering Program, The University of Texas at Austin, Austin, Texas, USA

12.30 - 13.00 **PL Research of transparent ceramics for optical and photonic applications**

Yiquan Wu
Kazuo Inamori School of Engineering, New York State College of Ceramics Alfred University, New York, USA

13.00 - 13.20 **INV *In vitro* and *in vivo* experimental models to study bioceramics-based biomaterials**

Sanja Stojanović[1] and Stevo Najman[2]
[1]Department of Biology and Human Genetics, Faculty of Medicine, University of Niš, 18000 Niš, Serbia
[2]Department for Cell and Tissue Engineering, Scientific Research Center for Biomedicine, Faculty of Medicine, University of Niš, 18000 Niš, Serbia

13.20 - 13.40 **INV Structural integrity analysis of a hip implant with a ceramic-ceramic sliding surface**

Katarina Čolić[1]

[1]University of Belgrade, Innovation Center of Faculty of Mechanical Engineering,Belgrade, Serbia

13.40 – 13.55 **ORL Visible Light Driven Photocatalytic Ceramic Based Nano-Composites**

Bojan Miljević[1], Romana Cerc Korošec[2], John Milan van der Bergh[1,3], Vesna Miljić[1], Snežana Vučetić[1], Jonjaua Ranogajec[1]
[1]University of Novi Sad, Faculty of Technology, Department of Materials Engineering, Bul. cara Lazara 1, 21000 Novi Sad, Serbia
[2]University of Ljubljana, Faculty of Chemistry and Chemical Technology, Večna pot 113, 1000 Ljubljana, Slovenia
[3]Liverpool John Moores University, Built Environment and Sustainable Technologies (BEST) Research Institute, L3 2ET, Liverpool, United Kingdom

13.55- 14.10 **ORL β-$NaYF_4$:Yb,Tm@TiO_2-Acac core-shell structure for efficient photocatalysis**

Lidija Mančić[1],Ivana Dinić[1], Lucas A. Almeida[2], Jessica Gil-Londoño[2], Marina Vuković[3], Paula Jardim[4], Bojan A. Marinkovic[2]
[1]Institute of Technical Science of SASA, Kneza Mihaila 35/4, Belgrade, Serbia
[2]Department of Chemical and Materials Engineering, Pontifical Catholic University of Rio de Janeiro Rio de Janeiro, RJ, Brazil
[3]Innovative Centre, Faculty of Chemistry, University of Belgrade, Serbia
[4]Department of Metallurgical and Materials Engineering, Federal University of Rio de Janeiro,
Rio de Janeiro, Brazil

14.10 - 15.00 **Buffet Lunch** **Club SASA**

Hall 2, 1st Floor

15.00 - 17.20 **Renewable Energy & Composites**
Chairpersons: Milica Marčeta Kaninski

15.00 – 15.30 **PL Epitaxial oxides on semiconductors: growth perspectives and device applications**

Matjaž Spreitzer[1], Lucija Bučar[1], Hsin-Chia Ho[1], Urška Trstenjak[1], Zoran Jovanović[1,2], Gertjan Koster[1,3]
[1]Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia
[2]Laboratory of Physics, Vinca Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia
[3]MESA+ Institute for Nanotechnology, University of Twente, Enschede, The Netherlands

15.30 – 16.00 **PL The role of epitaxial layer of oxides on surface of hydrogen evolution electrocatalyst**

Piotr Żabiński
Faculty of Non-Ferrous Metals, AGH UniversityA. Mickiewicza 30, 30-059 Kraków, Poland

16.00 – 16.20 **INV Possibilities of integrating alkaline electrolyzer with ionic activators in micro combined heat and power systems**

Sladjana Maslovara[1], Dragana Vasic Anicijevic[2], Vladimir Nikolic[1], Mirjana Kijevcanin[3],Milica Marceta[1]
[1]Institute of General and Physical Chemistry, Studenstski trg 12/V
[2]Vinca Institute of Nuclear Science, Mike Petrovica Alasa 12-14
[3]Faculty of Technology and Metallurgy, Karnegijeva 4

16.20 – 16.40 **INV Investigation of tungsten-carbide-oxideas the anode catalysts supports for the proton exchange membrane fuel cells**

Snežana Brković[1], Milica Marčeta Kaninski[2], Ivana Perović[1], Slađana Malovara[2], Nikola Zdolšek[1], Petar Laušević[1], Vladimir Nikolić[2]
[1]University of Belgrade, Vinča Institute of Nuclear Sciences, Mike Petrovića Alasa 12-14, 11351, Vinča, Belgrade, Serbia
[2]Institute of General and Physical Chemistry, Studentski trg 12/V, 11158, Belgrade, Serbia

16.40 – 17.00 **INV Alumina supported catalysts for biodiesel production**

Milos Marinkovic[1], Milica Marceta Kaninski[1], Vladimir Nikolic[1], Stevan Blagojevic[1], Hadi Waisi[1], Aleksandra Zarubica[2]
[1]University of Belgrade, Institute of General and Physical Chemistry, Studentski trg 12/V, P.O. Box 45, 11158 Belgrade, Serbia
[2]University of Niš, Department of Chemistry, Faculty of Science and Mathematics, Višegradska 33, 18000 Niš, Serbia

17.00 – 17.20 **INV Processing and testing of UHTCMCs for aerospace applications**

D. Sciti[1], A. Vinci[1], L. Zoli[1], S. Mungiguerra[2], R. Savino[2]
[1]CNR-ISSMC, National Research Council of Italy - Institute of Science, Technology and Sustainability for Ceramics, Via Granarolo 64, 48018 Faenza, Italy
[2]University of Naples, Dept. of Industrial Engineering, Naples – 80125 Naples

17.20 - 19.00 Poster Session I & Exibitions Club SASA

Wednesday, September 20th, 2023.

Hallway, 1st Floor

08.00 - 09.00 **Registration& Poster Installation**

09.00 - 10.00 **Poster Session II** **Club SASA**

Hall 2, 1st Floor

10.00 - 12.00 **Basic Ceramics& Sintering**
Chairpersons: Suzana Filipović & Jelena Živojinović

10.00 - 10.30 **PL The role of powder selection and microstructure homogeneity to mechanical properties of zirconia toughened alumina composites**

Frank Kern
Institut für Fertigungstechnologie keramischer Bauteile UniversitätStuttgart Allmandring 7B, D-70569 Stuttgart

10.30 - 11.00 **PL Thermal, Electrical, and Mechanical Properties of (Ti,Cr)B_2 Ceramics**

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

11.00 - 11.20 **INV Hybrid Nanoscale Materials for Convergent Technologies**

V. B. Pavlović[1], G. Vuković[2], M. Nikolić[3], V.P. Pavlović[4], M.Perić[5], S. Nenadović[5], M. Ivanović[5], M. Mirković[5], V.Djoković[5], S. Knežević[5], M.Suljagić[6], Lj.Andjelković[6], A. Janićijević[7], D. Kovačević[7], S.Filipović[8], J. Vujancević[8], B. Vlahovic[9]
[1]University of Belgrade, Faculty of Agriculture, Belgrade, Serbia
[2]University of Wisconsin-Madison, USA
[3]University of Kragujevac, Faculty of Agronomy, Čačak, Serbia
[4]Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia
[5]University of Belgrade, Institute of Nuclear Sciences Vinca, Belgrade, Serbia
[6]University of Belgrade, Department of Chemistry, IChTM, Belgrade, Serbia
[7]The Academy of Applied Technical Studies Belgrade, Belgrade, Serbia

[8]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia
[9]North Carolina Central University, Durham, NC, USA

11.20 - 11.40 **INV Novel Diboride Ceramics for Extreme Environment Applications**

Peter Tatarko[1], Inga Zhukova[1], Naser Hosseini[1], Salvatore Grasso[2], Vasanthakumar Kombamuthu[3], Zdeněk Chlup[4], Alexandra Kovalčíková[5],Monika Tatarková[1], Ivo Dlouhý[3], Ján Dusza[5]
[1]Institute of Inorganic Chemistry, Slovak Academy of Sciences, Dúbravská cesta 9, 845 36 Bratislava, Slovakia
[2]School of Engineering & Materials Science, Queen Mary University of London, Mile End Road, London, E1 4NS, United Kingdom
[3]CEMEA – Center of Excellence for Advanced Materials Applications, Slovak Academy of Sciences, 845 11 Bratislava, Slovakia
[4]Institute of Physics of Materials, Czech Academy of Sciences, Žižkova 22, 616 00 Brno, Czech Republic
[5]Institute of Materials Research, Slovak Academy of Sciences, Watsonová 47, 04001 Košice, Slovakia

11.40 - 12.00 **INV Various strategies and dopants for the preparation of dense $MgAl_2O_4$ ceramics by SPS**

Ali Talimian[1], Ali Najafzadeh[2], Václav Pouchlý[3], Karel Maca[3] and Dušan Galusek[1, 2]
[1]Centre for functional and surface-functionalized glass, TnUAD, Trenčín, Slovakia
[2]CETEC BUT, Brno, Czech Republic
[3]Joint glass centre of the IIC SAS, TnUAD and FChPT STU, Trenčín Slovakia

12.00 - 12.30 **Coffee Break** **Hallway, 1st Floor**

12.30 - 14.05 **Basic Ceramics & Sintering**
Chairpersons: Darko Kosanović & Adriana Peleš Tadić

12.30 – 12.50 **INV Densification of Dual Phase High Entropy Boride-Carbide Ceramics by Pressureless Sintering**

William G. Fahrenholtz, Steven M. Smith II, and Gregory E. Hilmas
Materials Science and Engineering Department, Missouri University of Science and TechnologyRolla, MO 65409 United States

12.50 – 13.05 **ORL Optimization of processing parameters for high entropy dual phase ceramics**

S. Filipovic[1,2], S. Smith[1], N. Obradovic[1,2], G. Hilmas[1], W. Fahrenholtz[1]

[1]Materials Science and Engineering, Missouri University of Science and Technology, Rolla, Missouri, United States
[2]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia

13.05 – 13.20 **ORL Influence of Fe Doping on the Crystal Structure and Optical Properties of Mechanically Activated $SrTiO_3$ Powders**

J. Živojinović[1], A. Peleš Tadić[1], D. Kosanović[1,5], N. Tadić[2], Z. Vasiljević[3], S. M. Lević[4], N. Obradović[1]
[1]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts,Knez Mihailova 35/IV, 11000 Belgrade, Serbia
[2]University of Belgrade, Faculty of Physics, Cara Dusana 13, 11000 Belgrade
[3]University of Belgrade, Institute for Multidisciplinary Research, Kneza Viseslava 1, 11000 Belgrade, Serbia
[4]University of Belgrade, Faculty of Agriculture, Nemanjina 6, 11080 Belgrade, Serbia
[5]Department of Materials Science and Engineering, Missouri University of Science and Technology, Rolla, MO 65409, USA

13.20 – 13.35 **ORL Why delamination cracks occur in ceramics manufactured via DLP, and how to eliminate them**

Wadih Yared
Institute for Manufacturing Technologies of Ceramic Components andComposites, University of Stuttgart, Germany

13.35 – 13.50 **ORL Structural characteristics of $MgAl_2O_4$ spinel**

A. Peleš Tadić[1], J. Živojinović[1], N. Tadić[2], S. M. Lević[3], S. Marković[1], V. Pavlović[3], S. Filipović[1], N. Obradović[1]
[1]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, 11000 Belgrade, Serbia
[2]University of Belgrade, Faculty of Physics, 11000 Belgrade, Serbia
[3]University of Belgrade, Faculty of Agriculture, 11080 Belgrade, Serbia

13.50 – 14.05 **ORL Diatomic earth: Structure and modification**

Petar Knežević[1], Nikola Vuković[2], Katarina Mihajlović[1], Marko Vujaković[1], Katarina Pantović-Spajić[2], Ana Radosavljević-Mihajlović[2]
[1]Faculty of Mining and Geology, Univesity of Belgrade, Đušina 5-7, 11000 Belgrade, Serbia
[2]Institute for Technology of Nuclear and other mineral raw materials, Franshe D Epere 86, Serbia

14.05 - 15.00 **Buffet lunch** **Club SASA**

Hall 3, 1st Floor

15.00 – 17.20 **Cement, Clay, Refractories & Glass, Electroceramics**
Chairperson: Anja Terzić & Milica V. Vasić

15.00 - 15.20 **INV Production of lightweight porous cementitious materials from diatomite via hydrothermal technology**
Arianit A. Reka
Department of Chemistry, Faculty of Natural Sciences and Mathematics, University of Tetovo, Blvd. Ilinden n.n., 1200 Tetovo, Republic of North Macedonia

15.20 - 15.40 **INV Electrical and humidity sensing properties of LNTO ceramics with ZnO as functional additive**
Dalibor L. Sekulić[1], Radoš R. Raonić[2], Tamara B. Ivetić[2]
[1]University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia
[2]University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia

15.40 - 16.00 **INV Chalcogenide glasses as memristive materials**
Kristina O. Čajko[1], Dalibor L. Sekulić[2], Svetlana R. Lukić-Petrović[1]
[1]University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia
[2]University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia

16.00 - 16.15 **ORL The lumped approach in drying modeling of roofing tiles – variable effective diffusivity determination**
Miloš R. Vasić[1], Milica V. Vasić[1]
[1]Institute for testing of materials, Bulevar vojvode Mišića 43

16.15 – 16.30 **ORL Moisture regulation in urban spaces with clay-based plaster**
Milena Živanović[1], Gradimir Cvetanović[1], Staniša Stojiljković[1], Semir Osmanagić[2], Goran Manić[3], Vesna Manić[4]
[1]University of Niš, Faculty of Technology Leskovac
[2]Archaeological Park: Bosnian Pyramid of the Sun Foundation, Visoko
[3]Institute of Occupational Health, Niš
[4]University of Niš, Faculty of Science, Department of Physics,Niš

16.30 - 16.45 **ORL Origin and sustainability of negative ions in the air**
Milena Živanović[1], Gradimir Cvetanović[1], Staniša Stojiljković[1], Semir Osmanagić[2], Goran Manić[3], Vesna Manić[4]
[1]University of Niš, Faculty of Technology Leskovac
[2]Archaeological Park: Bosnian Pyramid of the Sun Foundation, Visoko

[3]Institute of Occupational Health, Niš
[4]University of Niš, Faculty of Science, Department of Physics, Niš

16.45 - 17.05 **INV $BaTiO_3/Ni_xZn_{1-x}Fe_2O_4$ (x =0, 0.5, 1) composites synthesized by thermal decomposition: The influence of phase composition on their magnetic and electrical properties**

M. Šuljagić[1], L. Andjelković[1]
[1]University of Belgrade-Institute of Chemistry, Technology and Metallurgy, Department of Chemistry, Njegoševa 12, 11000 Belgrade

17.05 - 17.25 **INV Mechanochemical synthesis of strontium titanate**

Nataša Đorđević[1], Milica Vlahović[2], Slavica Mihajlović[1]
[1]Institute for Technology of Nuclear and Other Mineral Raw Materials, Franchet d'Esperey Blvd. 86, Belgrade, Serbia
[2]University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Karnegijeva 4, Belgrade, Serbia

17.25 - 18.00 **Awards & Closing Ceremony** **Hall 2, 1st Floor**

Book of Abstracts

INV15
Metal oxide nanoparticles as active food packaging components

Maria Vesna Nikolic[1], Zorka Vasiljevic[1], Jasmina Vidic[2]

[1]University of Belgrade- Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia,
[2]Université Paris-Saclay, INRAE, AgroParisTech, Micalis Institute, Jouy en Josas, France

Replacement of non-degradable food packaging materials with a biodegradable alternative enables reduction of environmental pollution. Metal oxides nanoparticles are good candidates for enhancing and ensuring good mechanical, thermal and barrier properties of biodegradable polymer packaging films. Their incorporation in biodegradable food packaging films has also lead to enhanced antioxidant, antifungal and antibacterial properties of the food packaging and also oxygen barrier properties, UV protection, oxygen and ethylene scavenging resulting in an active food packaging material. The synthesis method has a significant influence on the resulting properties of metal oxide nanoparticles. Green synthesis using plant extracts and extracts of plant bio-waste as reducing and capping agents are one direction for obtaining metal oxide nanoparticles with improved antioxidant and antimicrobial properties. Utilization of bio-waste materials both for metal oxide nanoparticle synthesis and as a source of biopolymers for packaging enables better environmental protection and ensures a circular bio-economy. In selection of metal oxide nanoparticles suitable for application in active packaging bio-nano-composites special attention needs to be paid to nanoparticle migration and cytotoxic activity in order to produce safe, active and biodegradable food packaging materials for the future.

INV16
Production of lightweight porous cementitious materials from diatomite via hydrothermal technology

Arianit A. Reka

Department of Chemistry, Faculty of Natural Sciences and Mathematics, University of Tetovo, Blvd. Ilinden n.n., 1200 Tetovo, Republic of North Macedonia

Industrial minerals like limestone, gypsum and diatomite are abundant in North Macedonia. The first two are very much utilized in the construction industry, while diatomite has not found a utilization yet. In this research the diatomite from Kavadarci region has been used for the production of lightweight porous cementitious materials via hydrothermal technology. The ICP-MS results of the starting material show that it is over 93% SiO_2, with insignificant amount of impurities. XRPD shows that the diatomite is in amorphous state, while SEM images show that this material has a very interesting morphology with many pores in the nanometric range. The hydrothermal process of the mixtures of diatomite and portlandite has been carried out in autoclave at 135°C for 3 hours. The products of the hydrothermal synthesis are porous lightweight cementitious materials that have compressive strength from 15 – 20 MPa and bulk density in the range 0.72 – 0.92 g/cm^3.

INV17

Biosynthesis of ZnO nanoparticles using agro-waste with antibacterial and antioxidant activity

Zorka Vasiljevic[1], Jovana Vunduk[2], Milena Dojcinovic[1], Dragana Bartolic[1], Milos Ognjanovic[3], Nenad Tadic[4], Goran Miskovic[5], Maria Vesna Nikolic[1]

[1]University of Belgrade, Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia,
[2]The Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia,
[3] University of Belgrade, VINČA Institute of Nuclear Sciences - National Institute of the Republic of Serbia, Mike Petrovića Alasa 12-14, Belgrade, Serbia
[4]Faculty of Physics, University of Belgrade, Studentski trg 12, Belgrade, Serbia
[5]Silicon Austria Labs, High Tech Campus Villach Europastraße 12, A-9524 Villach, Austria

Green synthesis is a more sustainable option using renewable biomass such as plants as reducing or stabilizing agents compared to toxic chemical compounds. These biological substances also behave as capping agents, which control the size and shape of the nanoparticles. In this work, ZnO nanoparticles (NPs) have been prepared *via* a simple, low cost and ecofriendly method using citrus fruit peel and extracts as biological reducing agents. Zinc nitrate and zinc acetate were used as a source of zinc ions.XRD analysis revealed the formation of a ZnO wurtzite phase without impurities. Synthesized ZnO NPs with an average electronic band gap ~3 eV were obtained and found to have round-like, hexagonal-like or needle-like structures depending on precursor type. EDS analysis showed a homogeneous distribution in Zn and O elements, attributed to single-phase ZnO constituents. Antibacterial and antioxidant activities of synthesized NPs were evaluated. Obtained results showed that ZnO synthesized from nitrate precursors are more effective in inhibiting growth of *Salmonella* and *Staphylococcus Aureus*. Antioxidant activity of ZnO NPs determined using CUPRAC and ABTS assays showed higher activity of ZnO obtained using nitrate precursors. The maximum scavenging activity of 90% was observed at the concentration of 10 mg/ml.