



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 - Каталогизacija 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

a) 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

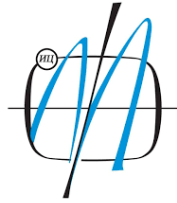
Sponsors:

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



The Eleventh Serbian Ceramic Society Conference »Advanced Ceramics and Application«
 September 18-20, 2023 Serbian Academy of Sciences and Arts, Knez Mihailova 35,
 Belgrade, Serbia

Date	Time	Programme	Floor, Room
18 th September Monday	08.00-09.00	Registration	2 nd Floor, Hallway
	09.00-09.30	Opening Ceremony	2 nd 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	2 nd Floor, Hallway
	12.00-12.30	Coffee Break	
	12.30-14.15	Electrochemistry & Catalysis M. Ajdukovic N. Tomic M. Maksumov Z. Mravik K. Milosevic J. Vujancevic	2 nd 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	2 nd Floor, Great Hall
19.00	Conference dinner	Palace Hotel	
19 th September Tuesday	08.00-09.00	Registration	1 st Floor, Hallway
	09.00-11.30	Modelling & Simulation D. Zagorac M. Mirkovic M. Zlatar M. Peric D. Malenov N. Milosavljevic	1 st Floor, Blue Hall
	11.30-12.00	Coffee Break	1 st Floor, Hallway
	12.00-14.10	Nano, Opto & Bio-ceramics P. Ferreira Y. Wu S. Stojanovic K. Colic B. Miljevic L. Mantic	1 st 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	1 st Floor, Blue Hall
	17.20-19.00	Poster Session I & Exhibitions *	Club SASA, Mezzanine
*16.30-17.00	Poster Session I & Exhibitions Installation	Club SASA, Mezzanine	

The Eleventh Serbian Ceramic Society Conference »Advanced Ceramics and Application«
 September 18-20, 2023 Serbian Academy of Sciences and Arts, Knez Mihailova 35,
 Belgrade, Serbia

20th September Wednesday	08.00-09.00	Registration	1 st 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	1 st Floor, Blue Hall
	12.00-12.30	Coffee Break	1 st Floor, Hallway
	12.30-14.05	Basic Ceramics & Sintering W. G. Fahrenheitz S. Filipovic J. Zivojinovic W. Yared A. Peles Tadic A. Radosavljevic	1 st 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	1 st Floor, Blue Hall
	17.25-18.00	Awards & Closing Ceremony	1 st 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. Schäfer¹, M. Ivanova¹, M. Kindelmann¹, M. Bram¹
¹Institute of Energy and Climate Research: Materials Synthesis and Processing (IEK-1), Forschungszentrum Jülich GmbH, 52425 Jülich, Germany
²RWTH Aachen University, Institute of Mineral Engineering (GHI), Department of Ceramics and Refractory Materials, 52064 Aachen, Germany
³Jülich-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}
¹Forschungszentrum Jülich, IEK-9, 52428 Jülich, Germany
²RWTH 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 Acković¹, Zoran Nedić², Tamara Petrović², Ružica Micić¹, Maja Pagnacco³, Pavle Tančić³
¹Faculty of Sciences and Mathematics, University of Priština in Kosovska Mitrovica, Lole Ribara 29, 38220 Kosovska Mitrovica, Serbia
²University of Belgrade - Faculty of Physical Chemistry, Studentski trg 12-16, Belgrade, Serbia
³University 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)catalytic processes at surfaces**

M. Maksumov^{1,2}, A. Kaus^{2,3}, Z. Teng⁴, K. Kleiner⁴, F. Gunkel³, F. Hausen^{1,2}

¹Forschungszentrum Jülich, IEK-9, 52428 Jülich, Germany

²RWTH Aachen University, IPC, Landoltweg 2, 52065 Aachen, Germany

³Forschungszentrum Jülich, PGI-7, 52428 Jülich, Germany

⁴University 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 Mravik¹, Milica Pejčić¹, Jelena Rmuš Mravik¹, Blaž Belec², Danica Bajuk-Bogdanovic³, Sonja Jovanović¹, Smilja Marković⁴, Nemanja Gavrilov³, Vladimir Skuratov⁵, Zoran Jovanović¹

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

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

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

⁴Institute of Technical Sciences of SASA, Belgrade, Serbia

⁵Flerov 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 Milošević¹, Davor Lončarević¹, Melina Kalagasidis Krušić², Tihana Mudrinić¹, Jasmina Dostanić¹

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

²University 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 Trafela², Neža Sodnik^{2,3}, Zoran Samardžija² and Kristina Žagar Soderžnik^{2,4}

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

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

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

⁴Jozef 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 Pr³⁺ (4f²) in fluorapatite nanocrystals for potential biomedical application**
Dušan V. Milojkov¹, Gordana D. Marković¹, Miroslav D. Sokić¹, Vaso D. Manojlović², Dragosav R. Mutavdžić³, Goran V. Janjić⁴
¹Institute for Technology of Nuclear and Other Mineral Raw Materials, 86 Franchet d Esperey St., 11000 Belgrade, Serbia
²Faculty of Technology and Metallurgy, University of Belgrade, 4 Karnegijeva St., 11000 Belgrade, Serbia
³Institute for Multidisciplinary Research, University of Belgrade, KnezaVišeslava 1, 11030 Belgrade, Serbia
⁴Institute 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 Vasiljevic¹, Jovana Vunduk², Milena Dojcinovic¹, Dragana Bartolic¹, Milos Ognjanovic³, Nenad Tadic⁴, Goran Miskovic⁵, Maria Vesna Nikolic¹
¹University of Belgrade, Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia,
²The Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia,

¹University of Belgrade, Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia,

²The Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia,

³University of Belgrade, VINČA Institute of Nuclear Sciences - National Institute of the Republic of Serbia, Mike Petrovića Alasa 12-14, Belgrade, Serbia

⁴Faculty of Physics, University of Belgrade, Studentski trg 12, Belgrade, Serbia

⁵Silicon 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 Nikolic¹, Zorka Vasiljevic¹, Jasmina Vidic²

¹University of Belgrade- Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia,

²Université 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 Ceramic Materials

D. Zagorac^{1,2}

¹Institute of Nuclear Sciences Vinča, Materials Science Laboratory, Belgrade University, Belgrade, Serbia

²Center 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 Zlatar¹ and Maja Gruden²

¹University of Belgrade – Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, Belgrade, Serbia

²University 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 LiMn₂O₄ by Advanced Electron Microscopy**

Paulo J. Ferreira^{1,2,3}

¹INL – International Iberian Nanotechnology Laboratory, Braga, Portugal

²Mechanical Engineering Department and IDMEC, Instituto Superior Técnico, University of Lisbon, Lisboa, Portugal

³Materials 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 Stojanović¹ and Stevo Najman²

¹Department of Biology and Human Genetics, Faculty of Medicine, University of Niš, 18000 Niš, Serbia

²Department 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 Čolić¹

¹University 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 Miljević¹, Romana Cerc Korošec², John Milan van der Bergh^{1,3}, Vesna Miljić¹, Snežana Vučetić¹, Jonjaua Ranogajec¹

¹University of Novi Sad, Faculty of Technology, Department of Materials Engineering, Bul. cara Lazara 1, 21000 Novi Sad, Serbia

²University of Ljubljana, Faculty of Chemistry and Chemical Technology, Večna pot 113, 1000 Ljubljana, Slovenia

³Liverpool John Moores University, Built Environment and Sustainable Technologies (BEST) Research Institute, L3 2ET, Liverpool, United Kingdom

13.55- 14.10 ORL β -NaYF₄:Yb,Tm@TiO₂-Acac core-shell structure for efficient photocatalysis

Lidija Mančić¹, Ivana Dinić¹, Lucas A. Almeida², Jessica Gil-Londoño², Marina Vuković³, Paula Jardim⁴, Bojan A. Marinkovic²

¹Institute of Technical Science of SASA, Kneza Mihaila 35/4, Belgrade, Serbia

²Department of Chemical and Materials Engineering, Pontifical Catholic University of Rio de Janeiro Rio de Janeiro, RJ, Brazil

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

⁴Department 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 Spreitzer¹, Lucija Bučar¹, Hsin-Chia Ho¹, Urška Trstenjak¹, Zoran Jovanović^{1,2}, Gertjan Koster^{1,3}

¹Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia

²Laboratory of Physics, Vinca Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

³MESA+ 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 Maslovara¹, Dragana Vasic Anicijevic², Vladimir Nikolic¹,
Mirjana Kijevcanin³, Milica Marceta¹
¹Institute of General and Physical Chemistry, Studenstki trg 12/V
²Vinca Institute of Nuclear Science, Mike Petrovica Alasa 12-14
³Faculty of Technology and Metallurgy, Karnegijeva 4
- 16.20 – 16.40** **INV Investigation of tungsten-carbide-oxides the anode catalysts supports for the proton exchange membrane fuel cells**
Snežana Brković¹, Milica Marčeta Kaninski², Ivana Perović¹, Slađana Malovara², Nikola Zdolšek¹, Petar Laušević¹, Vladimir Nikolić²
¹University of Belgrade, Vinča Institute of Nuclear Sciences, Mike Petrovića Alasa 12-14, 11351, Vinča, Belgrade, Serbia
²Institute of General and Physical Chemistry, Studentski trg 12/V, 11158, Belgrade, Serbia
- 16.40 – 17.00** **INV Alumina supported catalysts for biodiesel production**
Milos Marinkovic¹, Milica Marceta Kaninski¹, Vladimir Nikolic¹,
Stevan Blagojevic¹, Hadi Waisi¹, Aleksandra Zarubica²
¹University of Belgrade, Institute of General and Physical Chemistry,
Studentski trg 12/V, P.O. Box 45, 11158 Belgrade, Serbia
²University of Niš, Department of Chemistry, Faculty of Science and
Mathematics, Višegradaska 33, 18000 Niš, Serbia
- 17.00 – 17.20** **INV Processing and testing of UHTCMCs for aerospace applications**
D. Sciti¹, A. Vinci¹, L. Zoli¹, S. Mungiguerra², R. Savino²
¹CNR-ISSMC, National Research Council of Italy - Institute of Science,
Technology and Sustainability for Ceramics, Via Granarolo 64, 48018
Faenza, Italy
²University of Naples, Dept. of Industrial Engineering, Naples – 80125
Naples
- 17.20 - 19.00** **Poster Session I & Exhibitions** **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
Universität Stuttgart Allmandring 7B, D-70569 Stuttgart

10.30 - 11.00 PL Thermal, Electrical, and Mechanical Properties of (Ti,Cr)B₂ 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. Pavlović¹, G. Vuković², M. Nikolić³, V.P. Pavlović⁴, M. Perić⁵, S. Nenadović⁵, M. Ivanović⁵, M. Mirković⁵, V. Djoković⁵, S. Knežević⁵, M. Suljagić⁶, Lj. Andjelković⁶, A. Jančićević⁷, D. Kovačević⁷, S. Filipović⁸, J. Vujančević⁸, B. Vlahović⁹

¹University of Belgrade, Faculty of Agriculture, Belgrade, Serbia

²University of Wisconsin-Madison, USA

³University of Kragujevac, Faculty of Agronomy, Čačak, Serbia

⁴Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia

⁵University of Belgrade, Institute of Nuclear Sciences Vinca, Belgrade, Serbia

⁶University of Belgrade, Department of Chemistry, IChTM, Belgrade, Serbia

⁷The Academy of Applied Technical Studies Belgrade, Belgrade, Serbia

⁸Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia

⁹North Carolina Central University, Durham, NC, USA

11.20 - 11.40 INV Novel Diboride Ceramics for Extreme Environment Applications

Peter Tatarko¹, Inga Zhukova¹, Naser Hosseini¹, Salvatore Grasso², Vasanthakumar Kombamuthu³, Zdeněk Chlup⁴, Alexandra Kovalčíková⁵, Monika Tatarková¹, Ivo Dlouhý³, Ján Dusza⁵

¹Institute of Inorganic Chemistry, Slovak Academy of Sciences, Dúbravská cesta 9, 845 36 Bratislava, Slovakia

²School of Engineering & Materials Science, Queen Mary University of London, Mile End Road, London, E1 4NS, United Kingdom

³CEMEA – Center of Excellence for Advanced Materials Applications, Slovak Academy of Sciences, 845 11 Bratislava, Slovakia

⁴Institute of Physics of Materials, Czech Academy of Sciences, Žižkova 22, 616 00 Brno, Czech Republic

⁵Institute 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 MgAl₂O₄ ceramics by SPS

Ali Talimian¹, Ali Najafzadeh², Václav Pouchlý³, Karel Maca³ and Dušan Galusek^{1,2}

¹Centre for functional and surface-functionalized glass, TnUAD, Trenčín, Slovakia

²CETEC BUT, Brno, Czech Republic

³Joint 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 Technology Rolla, MO 65409 United States

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

S. Filipovic^{1,2}, S. Smith¹, N. Obradovic^{1,2}, G. Hilmas¹, W. Fahrenholtz¹

¹Materials Science and Engineering, Missouri University of Science and Technology, Rolla, Missouri, United States

²Institute 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 SrTiO₃ Powders**

J. Živojinović¹, A. Peleš Tadić¹, D. Kosanović^{1,5}, N. Tadić², Z. Vasiljević³, S. M. Lević⁴, N. Obradović¹

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

²University of Belgrade, Faculty of Physics, Cara Dusana 13, 11000 Belgrade

³University of Belgrade, Institute for Multidisciplinary Research, Kneza Viseslava 1, 11000 Belgrade, Serbia

⁴University of Belgrade, Faculty of Agriculture, Nemanjina 6, 11080 Belgrade, Serbia

⁵Department 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 and Composites, University of Stuttgart, Germany

13.35 – 13.50 **ORL Structural characteristics of MgAl₂O₄ spinel**

A. Peleš Tadić¹, J. Živojinović¹, N. Tadić², S. M. Lević³, S. Marković¹, V. Pavlović³, S. Filipović¹, N. Obradović¹

¹Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, 11000 Belgrade, Serbia

²University of Belgrade, Faculty of Physics, 11000 Belgrade, Serbia

³University of Belgrade, Faculty of Agriculture, 11080 Belgrade, Serbia

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

Petar Knežević¹, Nikola Vuković², Katarina Mihajlović¹, Marko Vujaković¹, Katarina Pantović-Spajić², Ana Radosavljević-Mihajlović²

¹Faculty of Mining and Geology, University of Belgrade, Đušina 5-7, 11000 Belgrade, Serbia

²Institute for Technology of Nuclear and other mineral raw materials, Franske D Eper 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. Sekulić¹, Radoš R. Raonić², Tamara B. Ivetić²
¹University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia
²University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia
- 15.40 - 16.00** **INV Chalcogenide glasses as memristive materials**
Kristina O. Čajko¹, Dalibor L. Sekulić², Svetlana R. Lukić-Petrović¹
¹University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia
²University 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. Vasić¹, Milica V. Vasić¹
¹Institute for testing of materials, Bulevar vojvode Mišića 43
- 16.15 – 16.30** **ORL Moisture regulation in urban spaces with clay-based plaster**
Milena Živanović¹, Gradimir Cvetanović¹, Staniša Stojiljković¹, Semir Osmanagić², Goran Manić³, Vesna Manić⁴
¹University of Niš, Faculty of Technology Leskovac
²Archaeological Park: Bosnian Pyramid of the Sun Foundation, Visoko
³Institute of Occupational Health, Niš
⁴University of Niš, Faculty of Science, Department of Physics, Niš
- 16.30 - 16.45** **ORL Origin and sustainability of negative ions in the air**
Milena Živanović¹, Gradimir Cvetanović¹, Staniša Stojiljković¹, Semir Osmanagić², Goran Manić³, Vesna Manić⁴
¹University of Niš, Faculty of Technology Leskovac
²Archaeological Park: Bosnian Pyramid of the Sun Foundation, Visoko

³Institute of Occupational Health, Niš

⁴University of Niš, Faculty of Science, Department of Physics, Niš

16.45 - 17.05 **INV BaTiO₃/Ni_xZn_{1-x}Fe₂O₄ (x =0, 0.5, 1) composites synthesized by thermal decomposition: The influence of phase composition on their magnetic and electrical properties**

M. Šuljagić¹, L. Andjelković¹

¹University 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 Đorđević¹, Milica Vlahović², Slavica Mihajlović¹

¹Institute for Technology of Nuclear and Other Mineral Raw Materials, Franchet d'Esperey Blvd. 86, Belgrade, Serbia

²University 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

PL11

Rational Design of Single-Ion Magnets – Computational Chemistry Approach

Matija Zlatar¹ and Maja Gruden²

¹University of Belgrade – Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, Belgrade, Serbia

²University of Belgrade – Faculty of Chemistry, Studentski trg 12-16, Belgrade, Serbia

In recent years, there has been a growing interest in single-ion magnets that display a bistable (up/down) magnetic spin state below specific critical temperature because of their potential applications. Single-ion magnets exhibit magnetic properties like those observed in conventional bulk magnets but are of molecular origin. Obtaining single-ion magnets working at room temperature is reduced to understanding Zero-Field-Splitting parameters determining the magnetic anisotropy of isolated transition metal complex. In this talk, the computational study of magnetic anisotropy in a series of transition metal complexes will be presented when changing the metal ion or the ligands in a controlled way. We will discuss the influences of coordination number, molecular symmetry, ligand field strength, spin-orbit coupling, spin and oxidation states, redox potential, spin and charge localization, electronic degeneracies, etc. A fundamental understanding of all these factors is a prerequisite for fulfilling our ambition - to develop a new generation of single-ion magnets.

Acknowledgments: This research was supported by the Science Fund of the Republic of Serbia, #7750288, Tailoring Molecular Magnets and Catalysts Based on Transition Metal Complexes – TMMagCat.

PL12

Understanding the Cathode Battery Material LiMn_2O_4 by Advanced Electron Microscopy

Paulo J. Ferreira^{1,2,3}

¹INL – International Iberian Nanotechnology Laboratory, Braga, Portugal

²Mechanical Engineering Department and IDMEC, Instituto Superior Técnico, University of Lisbon, Lisboa, Portugal

³Materials Science and Engineering Program, The University of Texas at Austin, Austin, Texas, USA

The need for portable energy storage has led to the creation of a Li-ion battery industry. Of the many cathode chemistries for Li-ion batteries, $\text{Li}[\text{Mn}_2]\text{O}_4$ is an appealing cathode due to its moderate capacity, environmentally-friendly and cost-effective Mn, and high rate capabilities due to its cubic spinel framework, allowing 3D Li^+ diffusion. Yet, this material has shown capacity loss, attributed to the dissolution of Mn to the electrolyte. In this work we show by HAADF STEM that a restructured surface is formed in this material, where a stable surface layer of Mn_3O_4 , followed by $\text{Li}_{1+x}\text{Mn}_2\text{O}_4$ subsurface with retention of bulk LiMn_2O_4 is formed. Recent advances in STEM also allow us to obtain images proportional to the projected potential, electric field and charge distribution, by using differential phase contrast