



**Serbian Ceramic Society Conference  
ADVANCED CERAMICS AND APPLICATION V  
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  
School of Electrical Engineering and Computer Science of Applied Studies**

**PROGRAM AND THE BOOK OF ABSTRACTS**

**Serbian Academy of Sciences and Arts, Knez Mihailova 35  
Serbia, Belgrade, 21st-23rd September 2016.**



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**Serbia, Belgrade, 21-23. September 2016.**

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

**Publisher:**

Serbian Ceramic Society

**Editors:**

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**Printing:**

Serbian Academy of Sciences and Arts,  
*Knez Mihailova 35, Belgrade*

**Edition:**

140 copies

CIP

Dear Colleagues,

We have great pleasure to welcome you to the Advanced Ceramic and Application Conference V organized by the Serbian Ceramic Society in cooperation with the Institute for Testing of Materials, Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy, Institute for Technology of Nuclear and Other Raw Mineral Materials and School of Electrical Engineering and Computer Science of Applied Studies.


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, prosthesis, 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.

**Advanced Ceramic & Application Conference V is dedicated to Academician Momčilo Ristić.**



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*

### General Conference Topics

- Basic Ceramics Science
- Nanostructural, Bio- and Opto-Ceramic Materials and Technologies
- Multifunctional Materials
- Magnetic and Amorphous Materials
- Construction Materials and Eco-ceramics
- Composite Materials, Catalysis and Electrocatalysis
- Artistic Ceramics and Design, Archaeology and Heritage
- Young Researchers
- Sintering processes
  - kinetics
  - microstructure
  - thermodynamics
  - modeling

### Conference Co-chairmens:

Prof. Dr. Vojislav Mitić SRB  
Prof. Dr. Olivera Milošević SRB  
Prof. Dr. Marcel Van de Voorde EU  
Prof. Dr. Rainer Gadow GER

### Conference Programme Chairs:

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### **Organizing Committee**

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Ivan Dugandžić SRB  
Zoran Gajić SRB

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### **Acknowledgements:**

The Conference Organizers are grateful to the Ministry of Education and Science of the Republic of Serbia for financial support, as well as to the Serbian Academy of Sciences and Arts, European Academy of Sciences and Arts, American Ceramics Society, Institute of Technical Sciences of SASA, Archeological Institute of SASA, Institute of Physics UB, Vinča Institute of Nuclear Sciences - Laboratory of Physics (010), Electrical Engineering Institute Nikola Tesla, Technical High School Niš, High School-Academy for Arts and Conservation, Serbian Orthodox Church. We are also grateful to the FORMAT doo, and others who support the conference.

# **Conference Program and Abstracts**

## **Program and Abstract's Contents**

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## Conference Information:

**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: 100 EUR; Standard fee for domestic participants: 50 EUR, Members of SCS and PhD Students: 30 EUR, last year winners for oral and poster presentations: free of charge.

**Abstracts and papers publication:** The official language of the conference is English. Conference abstracts are published in this Book of Abstracts. Contributions presented at the conference can be submitted for publishing in peer-reviewed Journals Science of Sintering and Journal of Multifunctional Materials and Ceramics as well as for Conference Proceedings published by Atlantic Press.

**Type of presentation:** Visuals for oral presentations should be in Microsoft PowerPoint, versions up to 2007 (.ppt or .pptx, or Adobe Acrobat Reader 9 (.pdf)). Any animation or video files must be compatible with Windows 7 and Windows Media Player. Please bring your presentation to the reception desk at the beginning of the Conference on flash memory. Posters should be prepared in dimension: 70x100 cm. The official language of the conference is English.

**Restaurant Peking** Vuka Karadžića 2 (50m from the Conference Venue).

### Additional Conference information

Phone: +381-11-2027-247

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<http://www.serbianceramicsociety.rs/about.htm>



## Program Overview

| Date                        | Time          | PROGRAMME   | Floor, Room                           |
|-----------------------------|---------------|---|---------------------------------------|
| September,<br>21, Wednesday | 08.00-09.00   | Registration  | 2 <sup>nd</sup> Floor, Hall           |
|                             | 09.00-09.20   | Opening Ceremony  | 2 <sup>nd</sup> Floor,<br>Great Hall  |
|                             | 09.20-09.30   | Short Break   | 2 <sup>nd</sup> Floor, Hall           |
|                             | 09.30-12.00   | Plenary Session 1   | 2 <sup>nd</sup> Floor,<br>Great Hall  |
|                             | 12.00-12.30   | Coffee Break & Photo Session  | 2 <sup>nd</sup> Floor, Hall           |
|                             | 12.30-14.00   | Plenary Session 2   | 2 <sup>nd</sup> Floor,<br>Great Hall  |
|                             | 14.00-15.00   | Buffet Lunch  | Club SASA,<br>Mezzanine               |
|                             | 15.00-17.00   | Plenary Session 3   | 2 <sup>nd</sup> Floor,<br>Great Hall  |
|                             | 17.00-17.30   | Coffee Break  | 2 <sup>nd</sup> Floor, Hall           |
|                             | 17.30-19.00   | Plenary Session 4   | 2 <sup>nd</sup> Floor,<br>Great Hall  |
|                             | 20.00         | Conference Dinner<br>(with invitation only)   | Restaurant<br>Peking                  |
| September,<br>22, Thursday  | 08.30-09.00   | Registration<br>Poster and Exhibition Installation  | 1 <sup>st</sup> Floor, Hall           |
|                             | 09.00-10.40   | Keynote Session 1   | 1 <sup>st</sup> Floor, Blue<br>Hall   |
|                             | 10.40 – 11.00 | Coffee Break  | 1 <sup>st</sup> Floor, Hall           |
|                             | 11.00-13.00   | 1 <sup>st</sup> Session: Basic Ceramic and Sintering                                      | 1 <sup>st</sup> Floor, Blue<br>Hall   |
|                             | 13.00-14.00   | Buffet Lunch  | Club SASA<br>Mezzanine                |
|                             | 14.00-15.40   | Keynote Session 2   | 1 <sup>st</sup> Floor, Blue<br>Hall   |
|                             | 15.40-16.10   | Coffee Break  | 1 <sup>st</sup> Floor, Hall           |
|                             | 16.10-17.55   | 2 <sup>nd</sup> Session: Nano, Opto, Bio and Multifunctional<br>Ceramic                   | 1 <sup>st</sup> Floor, Blue<br>Hall   |
|                             | 17.55-18.15   | Round table 1 Atlantis Press Publishing   |                                       |
|                             | 18.15-19.15   | Poster Session  | 1 <sup>st</sup> Floor, Hall           |
| September,<br>23, Friday    | 09.00-11.05   | Keynote Session 3   | 1 <sup>st</sup> Floor, Blue<br>Hall   |
|                             | 11.05-11.30   | Coffee Break  | 1 <sup>st</sup> Floor, Hall           |
|                             | 11.30-13.15   | 3 <sup>rd</sup> Session: Magnetic, Amorphous, Composites<br>and Catalysts                 | 1 <sup>st</sup> Floor, Blue<br>Hall 2 |
|                             | 13.15-14.15   | Buffet Lunch  | Restaurant<br>Peking                  |
|                             | 14.15-16.35   | 4 <sup>th</sup> Session: Construction materials, Eco-ceramic<br>and Heritage              | 1 <sup>st</sup> Floor, Blue<br>Hall 2 |
|                             | 16.35-17.30   | Round Table 2 Intelligent materials for the future:<br>Serbia-EU cooperation perspectives | 1 <sup>st</sup> Floor, Blue<br>Hall 2 |
|                             | 17.30         | Closing Ceremony  | 1 <sup>st</sup> Floor, Blue<br>Hall 2 |

**Wednesday, September 21<sup>st</sup>, 2016**

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

- 08.00-09.00**      **Registration**  
**Great Hall, 2<sup>nd</sup> Floor**
- 09.00-09.20**      **Opening Ceremony of the Fifth Serbian Ceramic Society Conference: Advanced Ceramics and Application**  
**Prof. Dr. Vojislav Mitić, Prof. Dr. Olivera Milošević, Prof. Dr. Vladimir Pavlović, Prof. Dr. Danilo Suvorov, Dr. Zeger Karssen, Prof. Dr. Muamer Zukorlić, High-representative of Government**
- 09.20-09.30**      **Short break**  
**Great Hall, 2<sup>nd</sup> Floor**
- 09.30-12.00**      **Plenary Session 1**  
**Chairpersons: Branislav Vlahović, Vladimir Pavlović**
- 09.30-10.00**      **PL1 Novel Graphene and Graphene like 2D materials synthesis**  
Chuanbao Cao  
Research Center of Materials Science, Beijing Institute of Technology, China
- 10.00-10.30**      **PL2 Fundamental mechanisms that determine the loss tangent and temperature coefficient of resonant frequency ( $\tau_F$ ) in modern microwave ceramic dielectrics**  
Nathan Newman<sup>1</sup>, Shengke Zhang<sup>1</sup>, Hasan Sahin<sup>2,4</sup>, Engin Torun<sup>2</sup>, Francois Peeters<sup>2</sup>, Dinesh Martien<sup>3</sup>, Tyler DaPron<sup>3</sup>, and Neil Dilley<sup>3</sup>  
<sup>1</sup>Arizona State University, Tempe, AZ  
<sup>2</sup>Dept. Of Physics, University of Antwerp, Belgium  
<sup>3</sup>Quantum Design, San Diego, CA  
<sup>4</sup>Department of Photonics, Izmir Institute of Technology, Turkey
- 10.30-11.00**      **PL3 Rare earth oxide stabilized zirconia ceramics and composites with enhanced mechanical and functional properties**  
Frank Kern  
Universität Stuttgart, IFKB Stuttgart, Deutschland
- 11.00-11.30**      **PL4 New Superionic Conductor Narpsio Glass-Ceramics**  
Toshinori Okura  
Department of Applied Chemistry, School of Advanced Engineering, Kogakuin University, Tokyo, Japan

- 11.30-12.00**     **PL5 Oxides Powders Produced by Plasma-Spray Pyrolysis Technique and Sintered Ceramics for Structural and Biomedical Applications**  
Sergey N. Kulkov  
Ceramic Composites Lab., Inst. of Strength Phys. and Material Sciences, RAS, Tomsk, Russia and Tomsk State University
- Hall, 2<sup>nd</sup> Floor**
- 12.00-12.30**     **Coffee Break and Photo Session**
- Great Hall, 2<sup>nd</sup> Floor**
- 12.30-14.00**     **Plenary Session 2**  
Chairpersons: Chuanbao Cao, Lidija Mančić
- 12.30-13.00**     **PL6 Morpho-Genetic Materials: Functional Materials Replicated from Superstructures of Natural Species**  
Di Zhang  
State Key Laboratory of Metal Matrix Composites, Shanghai Jiao Tong University, China
- 13.00-13.30**     **PL7 Air-Stable High Efficiency Hybrid Solar Cells Based on Metal Oxide and Graphene**  
Yoon-Bong Hahn  
School of Semiconductor and Chemical Engineering, Chonbuk National University, Republic of Korea
- 13.30-14.00**     **PL8 Modelling of Weakly Coupled Nanoparticles**  
Branislav Vlahovic, Igor Filikhin  
North Carolina Central University, Durham, New York, USA
- 14.00-15.00**     **Buffet Lunch**
- Club SASA,  
Mezzanine Hall, 1<sup>st</sup> floor**
- Great Hall, 2<sup>nd</sup> Floor**
- 15.00-17.00**     **Plenary Session 3**  
Chairpersons: Frank Kern, Dušan Jovanović
- 15.00-15.30**     **PL9 Zr<sub>n+1</sub>AlC<sub>n</sub> MAX phases for future fission environments**  
Eugenio Zapata Solvas  
Centre for Nuclear Engineering, Department of Materials, Imperial College London, UK

- 15.30-16.00**      **PL10 Geopolimers: Versatil Ceramic Composites Made at Ambient Temperatures, or Precursors to HT Structural Ceramic Powders**  
Waltraud Kriven  
Department of Material Science&Engineering, University of Illinois USA
- 16.00-16.30**      **PL11 Spectroscopic studies of heavy metal glasses**  
Saleem Farooq Shaukat, Robina Farooq  
COMSATS Institute of Information Technology, Lahore, Pakistan
- 16.30-17.00**      **PL12 The Role of Microstructural Features in High Frequency and Energy Ceramics**  
Danilo Suvorov  
Advanced Materials Department, Jozef Stefan Institute, Ljubljana, Slovenia
- 17.00-17.30**      **Coffee Break**      **Hall, 2<sup>nd</sup> Floor**  
**Great Hall, 2<sup>nd</sup> Floor**
- 17.30-19.00**      **Plenary Session 4**  
**Chairpersons: Di Zhang, Dragoljub Mirjanić**
- 17.30-18.00**      **PL13 Design and development of car body from composite materials using single step resin infusion process**  
Zaffar M. Khan  
Department of Aeronautics and Astronautics,  
Institute of Space Technology  
Islamabad, Pakistan
- 18.00-18.30**      **PL14 Porous Mano Structured Ceramics – From Bulk to Nanofibers**  
G. S. Grader  
Chemical Engineering Department, Technion, Haifa, 32000, ISRAEL
- 18.30-19.00**      **PL15 Multi Layer Ceramics: Design and Process Methods**  
Krishnamurty Balasubramanian  
Nonferrous Materials Technology Development Centre,  
Kanchanbagh, Hyderabad, India
- 20.00**      **Conference Dinner**      **Restaurant Peking**  
**(with invitations)**

**Thursday, September 22<sup>nd</sup>, 2016**  
**Hall, 1<sup>st</sup> floor**

**08.30-09.00**      **Registration**  
**Posters Installation**

**Blue Hall 2, 1<sup>st</sup> floor**

**09.00-10.40**      **Keynote Session 1**  
**Chairpersons: Smilja Marković, Suzana Filipović**

**09.00-09.25**      **KN1 Bioelectrochemical harvesting of greenhouse gases**  
Robina Farooq, Saleem Farooq Shaukat  
COMSATS Institute of Information Technology, Lahore, Pakistan

**09.25-09.50**      **KN2 Metallic Butterfly Scales: Fabrication and Their Plasmonic Applications**  
Jiajun Gu  
State Key Laboratory of Metal Matrix Composites, Shanghai Jiao Tong University, China

**10.50-10.15**      **KN3 Modeling Liquid Bridge Rupture Induced by Grain Rearrangement**  
Zoran S. Nikolic  
University of Niš, Faculty of Electronic Engineering, Department of Microelectronics, Niš, Serbia

**10.15-10.40**      **KN4 Electric Discharge Coating of Metals with Ceramic Compounds**  
Sükrü Talaş  
Department of Metallurgical and Materials Engineering, Faculty of Technology Afyon Kocatepe University, A.N.S. Campus, Turkey

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

**10.40-11.00**      **Coffee Break**

**Blue Hall 2, 1<sup>st</sup> floor**

**11.00-13.00**      **1<sup>st</sup> Session: Basic Ceramic and Sintering**  
**Chairpersons: Vaclav Pouchly, Nina Obradović**

**11.00-11.20**      **INV1 Curie-Weiss Law Fractal Corrections and Clausius-Mossotti Equation**  
Vojislav V. Mitić<sup>1,2</sup>, Ljubiša M. Kocić<sup>1</sup>, Vesna V. Paunović<sup>1</sup>  
<sup>1</sup>University of Niš, Faculty of Electronic Engineering, Niš, Serbia  
<sup>2</sup> Institute of Technical Sciences of SASA, Belgrade, Serbia

- 11.20-11.40 INV2 Resonant ultrasound spectroscopy in the study of relaxation processes in tetragonal tungsten bronzes**  
Andrei Rotaru  
INFLPR – National Institute for Laser, Plasma and Radiation Physics,  
Laser Department, Bucharest, Romania
- 11.40-12.00 INV3 Modeling, designing and processing of barium titanate stannate functionally graded electroceramics**  
Smilja Marković<sup>1</sup>, Srečo Davor Škapin<sup>2</sup>, Boban Stojanović<sup>3</sup>, Danilo Suvorov<sup>2</sup>, Dragan Uskoković<sup>1</sup>  
<sup>1</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia  
<sup>2</sup>Jožef Stefan Institute, Ljubljana, Slovenia  
<sup>3</sup>Faculty of Science, University of Kragujevac, Serbia
- 12.00-12.15 OR1 The Rare-Earths influences on doped BaTiO<sub>3</sub> Ceramics Microstructure and Electric Characteristics**  
Vesna V. Paunović<sup>1</sup>, Vojislav V. Mitić<sup>1,2</sup>, Ljubiša M. Kocić<sup>1</sup>, Miloš Marjanović<sup>1</sup>, Miloš Đorđević<sup>1</sup>  
<sup>1</sup>University of Nis, Faculty of Electronic Engineering, Niš, Serbia  
<sup>2</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia
- 12.15-12.30 OR2 Implementation of Wide-Bandgap Materials in Power Electronics Components**  
Jelena Milojković<sup>1</sup>, Simon Le Blond<sup>2</sup>, Vojislav Mitić<sup>3</sup>, Vančo Litovski<sup>2</sup>  
<sup>1</sup>Innovation centre of advanced technologies, Niš, Serbia  
<sup>2</sup>University of Bath, Bath, UK  
<sup>3</sup>Serbian Academy of Science and Arts, Belgrade, Serbia
- 12.30-12.45 OR3 The nonorthogonality effects on capacitive behaviour of quantum dot**  
Miloš S. Dražić, Ivana Đurišić, Viktor Z. Cerovski and Radomir Žikić  
Institute of Physics, University of Belgrade, Pregrevica 118, Belgrade
- 12.45-13.00 OR4 Spectroscopy characterization of YFeO<sub>3</sub> obtained by the mechanochemical synthesis**  
Zorica Ž. Lazarević<sup>1</sup>, Čedomir Jovalekić<sup>2</sup>, Dalibor Sekulić<sup>3</sup>, Valentin N. Ivanovski<sup>4</sup>, Ana Umićević<sup>4</sup>, Martina Gilić<sup>1</sup>, Nebojša Ž. Romčević<sup>1</sup>  
<sup>1</sup>Institute of Physics, University of Belgrade, Belgrade, Serbia  
<sup>2</sup>The Institute for Multidisciplinary Research, University of Belgrade, Serbia  
<sup>3</sup>Faculty of Technical Sciences, University of Novi Sad, Serbia  
<sup>4</sup>Institute of Nuclear Sciences Vinča, University of Belgrade, Serbia
- 13.00-14.00 Buffet Lunch** **Club SASA, Mezzanine**

**Blue Hall 2, 1<sup>st</sup> floor**

- 14.00-15.40**      **Keynote Session 2**  
Chairpersons: Vladimir Blagojević, Dragana Jugović
- 14.00-14.25**      **KN5 Environmental forensics – concepts and contemporary challenges**  
Goran Kniewald  
Rudjer Bošković Institute, Zagreb, Croatia
- 14.25-14.50**      **KN6 Fractals, Materials and Energy Technologies L**  
Ljubiša M. Kocić<sup>1</sup>, Vojislav V. Mitić<sup>1,2</sup>, Vesna V. Paunović<sup>1</sup>  
<sup>1</sup>University of Niš, Faculty of Electronic Engineering, Niš, Serbia  
<sup>2</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia
- 14.50-15.15**      **KN7 Yttrium doped barium cerate: ceramic matrix in the solid oxide fuel cells**  
Margarita Gabrovska<sup>1</sup>, Dimitrinka Nikolova<sup>1</sup>, Slavcho Rakovsky<sup>1</sup>,  
Daria Vladikova<sup>2</sup>, Emiliya Mladenova<sup>2</sup>, Zdravko 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
- 15.15-15.40**      **KN8 Intelligent nanomaterials for medicine diagnostic and therapy application**  
Dragoljub Lj. Mirjanić<sup>1</sup>, Snežana Pelemiš<sup>2</sup>  
<sup>1</sup>Academy of Sciences and Arts of Republic of Srpska, B&H  
<sup>2</sup>Faculty of Technology, University of East Sarajevo, B&H
- 15.40-16.10**      **Coffee Break**      **Hall, 1<sup>st</sup> floor**
- Blue Hall 2, 1<sup>st</sup> floor**
- 16.10-17.55**      **2<sup>nd</sup> Session – Nano, Opto, Bio and Multifunctional Ceramic**  
Chairpersons: Zorica Lazarević, Vesna Paunović
- 16.10-16.30**      **INV4 Electrical characterization of YFeO<sub>3</sub> nanoferrite and its potential application for humidity sensing**  
Dalibor L. Sekulić<sup>1</sup>, Zorica Ž. Lazarević<sup>2</sup>, Čedomir D. Jovalekić<sup>3</sup>,  
Nebojša Ž. Romčević<sup>2</sup>  
<sup>1</sup>University of Novi Sad, Faculty of Technical Sciences, Novi, Serbia  
<sup>2</sup>University of Belgrade, Institute of Physics, Belgrade, Serbia  
<sup>3</sup>University of Belgrade, The Institute for Multidisciplinary Research, Belgrade, Serbia



- 16.30-16.50**      **INV5 Development and Evaluation of glass-like coatings for cardiovascular implant applications such as stents**  
M. Amlung<sup>1</sup>, K. Kiefer<sup>1,2</sup>, P. W. de Oliveira<sup>1</sup>, H. Abdul-Khaliq<sup>2</sup>  
<sup>1</sup>INM – Leibniz-Institute for New Materials, 66123 Saarbrücken, Germany  
<sup>2</sup>Clinic for Pediatric Cardiology, Saarland University, 66124 Homburg, Germany
- 16.50-17.10**      **INV6 A review on the selection of anode materials for solid-oxide fuel cells**  
Shabana P. S. Shaikh, and K.P.Adhi  
Advanced Materials Processing Lab, Department Of Physics, SBP, Pune University, Pune, India
- 17.10-17.25**      **OR5 Synthesis and structural characterization of some cathode materials for lithium-ion batteries**  
Dragana Jugović<sup>1</sup>, Miodrag Mitrić<sup>2</sup>  
<sup>1</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia  
<sup>2</sup>Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia
- 17.25-17.40**      **OR6 Application of Ceramic Components in Knee Arthroplasties**  
Aleksandar Radunović<sup>1</sup>, Zoran Popović<sup>2</sup>, Aleksandar Jevtić<sup>1</sup>  
<sup>1</sup>MD,MMA, Belgrade, Serbia  
<sup>2</sup>Vožd clinic, Belgrade, Serbia
- 17.40-17.55**      **OR7 *In vivo* degradation of Bio-Oss<sup>®</sup> in implants loaded with macrophages treated with lipopolysaccharide**  
Jelena Živković<sup>1</sup>, Sanja Stojanović<sup>1</sup>, Marija Vukelić-Nikolić<sup>1</sup>, Jelena Najdanović<sup>1</sup>, Vladimir Cvetković<sup>2</sup>, Maja Čakić-Milošević<sup>3</sup>, Stevo Najman<sup>1</sup>  
<sup>1</sup>University of Niš, Faculty of Medicine, Institute of Biology and Human Genetics, Department for Cell and Tissue Engineering, Niš, Serbia  
<sup>2</sup>University of Niš, Faculty of Science and Mathematics, Department of Biology and Ecology, Niš, Serbia  
<sup>3</sup>University of Belgrade, Faculty of Biology, Belgrade, Serbia
- 17.55-18.15**      **Round table 1 Atlantis Press Publishing**  
Moderator: Zeger Karssen
- 18.15-19.15**      **Poster Session**      **Hall, 1<sup>st</sup> floor**

**Friday, September, 23<sup>rd</sup>, 2015**

**Blue Hall 2, 1<sup>st</sup> floor**

- 09.00-11.05**      **Keynote Session 3**  
**Chairpersons: Goran Kniewald, Ljubiša Kocić**
- 09.00-09.25**      **KN9 Energy storage systems for stationary applications**  
Palani Balaya  
Department of Mechanical Engineering, National University of  
Singapore, Singapore
- 09.25-09.50**      **KN10 Smart composite materials for waste water  
remediation**  
Ajay Kumar Mishra  
Nanotechnology and Water Sustainability Research Unit, College of  
Science, Engineering and Rechnology, University of South Africa,  
South Africa
- 09.50-10.15**      **KN11 Magnetic properties of melt-spun alnico-v alloy  
ribbon**  
Feroz A. Khan  
Department of Physics, Bangladesh University of Engineering and  
Technology (BUET), Dhaka-1000, Bangladesh
- 10.15-10.40**      **KN12 The rainbow ion-solid interaction potential**  
Srdan Petrović  
Laboratory of Physics, Vinča Institute of Nuclear Sciences, University  
of Belgrade, P. O. Box 522, 11001 Belgrade, Serbia
- 10.40-11.05**      **KN13 An overview of ceramics in dentistry: Basic properties  
and clinical applications**  
Csaba Hegedűs  
University of Debrecen, Department of Biomaterials and Prosthetic  
Dentistry, University of Debrecen, Hungary
- Hall, 1<sup>st</sup> floor**
- 11.05-11.30**      **Coffee Break**

**Blue Hall 2, 1<sup>st</sup> floor**

- 14.15-16.50**      **3<sup>rd</sup> Session: Magnetic, Amorphous, Composites and Catalysts**  
**Chairpersons: Dalibor Sekulić, Christina Graf**
- 11.30-11.50**      **INV7 Silica-based Catalytic Systems Prepared by Sol-Gel Methods**  
Raed Abu-Reziq  
Institute of Chemistry, Casali Center for Applied Chemistry, Center for Nanoscience and Nanotechnology, The Hebrew University, Jerusalem, Israel
- 12.50-12.10**      **INV8 Ceramic powder compaction: numerical simulation and calibration through inverse analysis**  
Vladimir Buljak, Shwetank Pandey, Milorad Milovancevic  
University of Belgrade, Mechanical Engineering Faculty, Department of Strength of Materials
- 14.15-16.50**      **INV9 Comparative fractal analysis of *Valeriana officinalis* roots shrinkage during drying**  
Ivan J. Zlatanović<sup>1</sup>, Dragana V. Rančić<sup>1</sup>, Vojislav V. Mitić<sup>2,3</sup>, Ljubiša Kocić<sup>3</sup>  
<sup>1</sup>University of Belgrade – Faculty of Agriculture  
<sup>2</sup>Institute of Technical Sciences of SASA  
<sup>3</sup>University of Niš – Faculty of Electronic Engineering
- 14.15-16.50**      **OR8 Mo-doped TiO<sub>2</sub> nanocomposite coatings: visible light photocatalytic activity and antifungal efficiency**  
Bojan Miljević<sup>1</sup>, J. M. Van der Bergh<sup>1</sup>, S. Vučetić<sup>1</sup>, A. Vidaković<sup>1</sup>, S. Markov<sup>1</sup>, D. Lazar<sup>2</sup>, J. Ranogajec<sup>1</sup>  
<sup>1</sup>University of Novi Sad, Faculty of Technology, Novi Sad, Serbia  
<sup>2</sup>University of Novi Sad, Faculty of Sciences, Department of Physics, Novi Sad, Serbia
- 14.15-16.50**      **OR9 Characterisation of Mn<sub>0.63</sub>Zn<sub>0.37</sub>Fe<sub>2</sub>O<sub>4</sub> powders after intensive milling and subsequent thermal treatment**  
Nebojša Labus<sup>1</sup>, Zorka Vasiljević<sup>1</sup>, Obrad Aleksić<sup>1</sup>, Miloljub Luković<sup>1</sup>, Smilja Marković<sup>1</sup>, Vladimir Pavlović<sup>1</sup>, Slavko Mentus<sup>2,3</sup>, Maria Vesna Nikolić<sup>4</sup>  
<sup>1</sup>Institute of Technical Sciences of SASA, Beograd, Serbia  
<sup>2</sup>Faculty of Physical Chemistry, University of Belgrade, Serbia  
<sup>3</sup>Serbian Academy of Sciences and Arts, Belgrade, Serbia  
<sup>4</sup>Institute for Multidisciplinary Research, University of Belgrade, Beograd, Serbia

**14.15-16.50 OR10 Optical and structural characterization of Se–CuSe<sub>2</sub> thin films**

Martina Gilić<sup>1</sup>, Milica Ćurčić<sup>1</sup>, Jovana Ćirković<sup>2</sup>, Uroš Ralević<sup>1</sup>, Miodrag Mitrić<sup>3</sup>, Tanja Barudžija<sup>3</sup>, Svetlana Savić-Šević<sup>1</sup>, Nebojša Romčević<sup>1</sup>, Ibrahim Yahia<sup>4</sup>

<sup>1</sup>Institute of Physics Belgrade, University of Belgrade, Belgrade, Serbia

<sup>2</sup>The Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia

<sup>3</sup>Institute of Nuclear Sciences Vinča, University of Belgrade, Belgrade, Serbia

<sup>4</sup>Nano-Science and Semiconductors Labs., Physics department, Faculty of Education, Ain Shams University, Roxy, Cairo, Egypt

**13.15-14.15 Buffet Lunch Restaurant Peking**

**14.15-16.35 4<sup>th</sup> Session: Constructional, Eco-ceramic and Catalysts**  
**Chairpersons: Vladimir Pavlović, Darko Kosanović**

**14.15-14.35 INV10 Silica particles with controlled roughness – synthesis, characterization, and use as building blocks for non-close packed arrays**

Christina Graf, Christian Goroncy, Madlen Schudde, Christian Grunewald, Thomas Risse

Institut für Chemie und Biochemie, Freie Universität Berlin, Germany

**14.35-14.55 INV11 Influence of different pore-forming agents on wollastonite microstructures**

Nina Obradović<sup>1</sup>, Suzana Filipović<sup>1</sup>, Smilja Marković<sup>1</sup>, Miodrag Mitrić<sup>2</sup>, Vesna Antić<sup>3</sup>, Vladimir B. Pavlović<sup>1</sup>

<sup>1</sup>Institute of Technical Sciences of SASA, Belgrade, Serbia

<sup>2</sup>Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

<sup>3</sup>Faculty of Agriculture, University of Belgrade, Belgrade, Serbia

**14.55-15.15 INV12 Education and materials science in cultural heritage preservation**

Jonjaua Ranogajec<sup>1</sup>, Slavica Vujović<sup>2</sup>, Snežana Vučetić<sup>1</sup>, Bojan Miljević<sup>1</sup>, Helena Hiršenberger<sup>3</sup>, John Milan van der Bergh<sup>1</sup>

<sup>1</sup>University of Novi Sad, Faculty of Technology, Novi Sad, Serbia

<sup>2</sup>Provincial Institut for Protection of Cultural Heritage Monuments, Petrovaradin, Serbia

<sup>3</sup>University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia

- 15.15-15.35**      **INV13 Characteristics of mortar from the archeological site Romuliana – Gamzigrad**  
Gordana A. Topličić-Ćurčić<sup>1</sup>, Ana J. Momčilović-Petronijević<sup>1</sup>,  
Vojislav V. Mitić<sup>2,3</sup>, Vesna V. Paunović<sup>2</sup>, Dušan Z. Grdić<sup>1</sup>, Nenad S.  
Ristić<sup>1</sup>, Zoran J. Grdić<sup>1</sup>  
<sup>1</sup>University of Nis, Faculty of Civil Engineering and Architecture, Nis,  
Serbia  
<sup>2</sup>University of Nis, Faculty of Electronic Engineering, Nis, Serbia  
<sup>3</sup>Serbian Academy of Science and Art, Institute of Technical Sciences,  
Belgrade, Serbia
- 15.35-15.50**      **OR11 Conservation and restauration of seven paintings by Veljko Zecevic on canvas**  
Filip Jankovic  
Graduated painter-restorer, a freelancer  
Belgrade, Serbia
- 15.50-16.05**      **OR12 Detoxication of methanol from water solution using zeolite**  
Milena S. Stojiljković<sup>1</sup>, Staniša T. Stojiljković<sup>2</sup>  
Faculty of Technology Leskovac, University of Niš
- 16.05-16.20**      **OR13 Importance of the synergical application of the EU regulation on construction products (EU CPR 305/2011) from the fire safety aspect**  
Edin Garaplija, Sanin Džidić  
Institute for Fire and Explosion Safety and Protection, Sarajevo
- 16.20-16.35**      **OR14 The in-situ challenge of better understanding structure-properties relationship in nanomaterials**  
Dušan Popović  
Analysis
- 16.35-17.30**      **Round table 2 Intelligent materials for the future: Serbia-EU perspectives for cooperation**  
Moderators: Vladimir Pavlović, Nina Obradović
- 17.30**              **Closing Ceremony**

investigations and money laundering for the purpose of financing terrorism, resulting in broadening of the scope of data to the level which makes it impossible for human logical evaluation. Technologies development that enables increasing capacity of speed and the amount of data processing has enabled defining, analysing and exploring more and more models. This led to the idea of computer experiments and simulations trying to get to more complex planning and forecasting for the purpose of countering terrorism and “dirty” money transaction, as highly dangerous, complex and variable phenomena. This presentation aims at quotation the wide spectrum of mathematically founded fractal concepts suited to generate computer models of anti-terrorist activities. In this sense, the logistic behind the items connected with detecting and recognizing degree of terroristic threat by comparing fractal structure of people’s faces, fast search through the databases of faces and fingerprints. The speed of searching processes is of vital importance which promotes the crucial importance of compression and data reduction with preservation of regularity. Especially important are analytic forecasting of missing visual data and forms, to supplement the empirical evidences and records. All these operations are possible with higher degree of knowledge utilization and adaptation of virtual reality in the fight against terrorism and different forms of money laundering. The results indicate that the achievements implementation of the concept of fractals depends on substantial prior knowledge, environmental influences, subsystem integration, decentralization and synchronization, and allows us to come up with similar high information technology models, but not necessarily to enable identification of the authentic features of the various anomalies that result in objectively asocial consequences. In this sense, we conclude that the application of information technology in the fight against terrorism, based on the concept of fractals has its place in the arsenal of anti-terroristic prevention.

## **P10**

### **Effects of SA surface treatment on the properties of CaCO<sub>3</sub> used as filler in construction composites**

Dragan Radulović<sup>1</sup>, Anja Terzić<sup>2</sup>, Ljubiša Andrić<sup>1</sup>, Milan Petrov<sup>1</sup>

<sup>1</sup>Institute for Technology of Nuclear and Other Raw Mineral Materials, Belgrade, Serbia

<sup>2</sup>Institute for Materials Testing, Belgrade, Serbia

Calcium carbonate (CaCO<sub>3</sub>) is mineral filler that has been most extensively used in the construction composites as well as in the polymer industry. Coarse CaCO<sub>3</sub> grains can be easily incorporated into the composite material, but the smaller-sized particles tend to agglomerate due to the enhanced particle-to-particle interactions, which leads to serious performance problems. The most efficient way of surpassing this problem is to enhance the final composite properties by surface treatment of the filler with a surfactant. Following such procedure a water-repellent construction composites are obtained (i.e. reparation mortars, mortars for the exterior works, thin coatings for concrete walls, etc.). The stearic acid is a universal and economical surfactant which is often used to improve CaCO<sub>3</sub> hydrophobic properties. This study investigates and subsequently compares the surface and mechanical properties of untreated ground calcium carbonate powder and treated powder with stearic acid using a dry process coating system. The CaCO<sub>3</sub> powder (grain size class: -200 + 63 μm) was pulverized in a laboratory Retsch-ZM-1 mill with a 250 μm mesh size sieve and a peripheral

comminuting path. The surface of  $\text{CaCO}_3$  powder is generally hydrophilic, but it was changed to a hydrophobic surface when coated with SA. The coating procedure was conducted in following manner: 1% of SA was added to the  $\text{CaCO}_3$  powder which was previously thermally treated at  $120^\circ\text{C}$  for 2 hours, and the mixture was stirred in a laboratory mixer with 1500 rpm. The surface treatment decreases the intensity of particle-to-particle interaction and increase adhesion of filler. There has been extensive research reporting about the effects of stearic acid surface treatment on the physical properties and thermal behavior as well as mechanical properties of  $\text{CaCO}_3$  composites. The contact angle of water on the coated calcium carbonate powder surface and hydrophobicity are increased with increasing concentration of SA. As a result, thermal stability and mechanical properties of the composite were increased compared to untreated  $\text{CaCO}_3$  composites. The influence of surface treatment of the particles, with and without stearic acid on the mechanical, thermal and structural properties was studied. The experiments included mechanical and physical testing; differential thermal analysis, scanning electron microscopy (SEM), X-ray diffraction (XRD) and Fourier transform infrared spectroscopy. The composite systems containing coated  $\text{CaCO}_3$  were found to exhibit better mechanical properties as compared to composite systems containing uncoated  $\text{CaCO}_3$ .

## P11

### Dielectric properties of precision woven polymer mesh fabrics

Dragana D. Cerovic<sup>1,2</sup>, Slavica B. Maletic<sup>1</sup>, Koviljka A. Asanovic<sup>3</sup>, Filip S. Marinkovic<sup>1</sup>,  
Ivan M. Petronijevic<sup>1</sup>, Jablan R. Dojcilovic<sup>1</sup>

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University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia

Polyamides (PA) and polyethylene terephthalate (PET) are semi-crystalline polymers used for a wide range of applications in different forms. For their application as the substrates in electronics, it is important to know their dielectric properties. This investigation was performed on three precision woven mesh fabrics made of PA 6.6, PET and PA 6.6 with carbon fibre. Relative dielectric permeability of samples was examined as functions of frequency (20 Hz - 80 kHz) at room conditions. At lower frequency it can be seen that values of dielectric permeability slightly decrease with increasing frequency, while above 800 Hz there is no changes in the values for all three samples. Dielectric loss tangent was examined as functions of frequency (20 Hz - 2 kHz) in the temperature range from 150 K to 380 K for precision woven mesh fabrics made of PA 6.6 and PET. The analysis of dielectric spectra has shown existence of  $\gamma$ ,  $\beta$  and  $\alpha$  - relaxation in the range of measurements.