

The Serbian Society for Ceramic Materials
Institute for Multidisciplinary Research (IMSI), University of Belgrade
Institute of Physics, University of Belgrade
Center of Excellence for the Synthesis, Processing and Characterization of
Materials for use in Extreme Conditions "CEXTREME LAB" - Institute of
Nuclear Sciences "Vinča", University of Belgrade
Faculty of Mechanical Engineering, University of Belgrade
Center for Green Technologies, Institute for Multidisciplinary Research,
University of Belgrade
Faculty of Technology and Metallurgy, University of Belgrade
Faculty of Technology, University of Novi Sad

The background of the banner is a microscopic image of numerous small, white, spherical ceramic particles. The top half of the banner is white, and the bottom half is a gradient of red and orange. The text is overlaid on this background.

PROGRAMME and the BOOK of ABSTRACTS

5CSCS-2019

5th Conference of
the Serbian Society for Ceramic Materials
June 11-13.2019. Belgrade Serbia

Edited by:
Branko Matović
Zorica Branković
Aleksandra Dapčević
Vladimir V. Srdić

Programme and Book of Abstracts of The Fifth Conference of The Serbian Society for Ceramic Materilas **publishes abstracts from the field of ceramics, which are presented at international Conference.**

Editors-in-Chief

Dr. Branko Matović

Dr. Zorica Branković

Prof. Aleksandra Dapčević

Prof. Vladimir V. Srdić

Publisher

Institute for Multidisciplinary Research, University of Belgrade

Kneza Višeslava 1, 11000 Belgrade, Serbia

For Publisher

Prof. Dr Sonja Veljović Jovanović

Printing layout

Vladimir V. Srdić

Press

Faculty of Technology and Metallurgy, Research and Development Centre of Printing Technology, Karnegijeva 4, Belgrade, Serbia

Published: 2019

Circulation: 150 copies

CIP - Каталогизacija у публикацији - Народна библиотека Србије, Београд

666.3/.7(048)

66.017/.018(048)

DRUŠTVO za keramičke materijale Srbije. Konferencija (5 ; 2019 ; Beograd)

Programme ; and the Book of Abstracts / 5th Conference of The Serbian Society for Ceramic Materials, 5CSCS-2019, June 11-13, 2019, Belgrade, Serbia ; [organizers]

The Serbian Society for Ceramic Materials ... [et al.] ; edited by Branko Matović ...

[et al.]. - Belgrade : Institute for Multidisciplinary Research, University, 2019

(Beograd : Faculty of Technology and Metallurgy, Research and Development Centre of Printing Technology). - 139 str. : ilustr. ; 24 cm

Tiraž 150. - Str. 6: Welcome message / Branko Matovic. - Registar.

ISBN 978-86-80109-22-0

a) Керамика - Апстракти

b) Наука о материјалима - Апстракти

c) Наноматеријали - Апстракти

COBISS.SR-ID 276897292

The Serbian Society for Ceramic Materials
Institute for Multidisciplinary Research (IMSI), University of Belgrade
Institute of Physics, University of Belgrade
Center of Excellence for the Synthesis, Processing and Characterization of
Materials for use in Extreme Conditions “CEXTREME LAB” -
Institute of Nuclear Sciences “Vinča”, University of Belgrade
Faculty of Mechanical Engineering, University of Belgrade
Center for Green Technologies, Institute for Multidisciplinary Research,
University of Belgrade
Faculty of Technology and Metallurgy, University of Belgrade
Faculty of Technology, University of Novi Sad

PROGRAMME AND THE BOOK OF ABSTRACTS

**5th Conference of The Serbian Society for
Ceramic Materials**

June 11-13, 2019
Belgrade, Serbia
5CSCS-2019

Edited by:
Branko Matović
Zorica Branković
Aleksandra Dapčević
Vladimir V. Srdić

SPECIAL THANKS TO



Република Србија
МИНИСТАРСТВО ПРОСВЕТЕ,
НАУКЕ И ТЕХНОЛОШКОГ РАЗВОЈА



Turistička
organizacija
Beograda



NATIONAL TOURISM
ORGANISATION OF
SERBIA

Committees

Organizer

- The Serbian Society for Ceramic Materials
- Institute for Multidisciplinary Research (IMSI), University of Belgrade
- Institute of Physics, University of Belgrade
- Center of Excellence for the Synthesis, Processing and Characterization of Materials for use in Extreme Conditions “CEXTREME LAB” - Institute of Nuclear Sciences “Vinča”, University of Belgrade
- Faculty of Mechanical Engineering, University of Belgrade
- Center for Green Technologies, Institute for Multidisciplinary Research, University of Belgrade
- Faculty of Technology and Metallurgy, University of Belgrade
- Faculty of Technology, University of Novi Sad

Scientific Committee

1. Dr. Snežana Bošković, Institute of Nuclear Sciences “Vinča”, University of Belgrade, *Serbia*
2. Prof. Biljana Stojanović, Institute for Multidisciplinary Research, University of Belgrade, *Serbia*
3. Dr. Branko Matović, Institute of Nuclear Sciences “Vinča”, University of Belgrade, *Serbia*
4. Prof. Vladimir V. Srdić, Faculty of Technology, University of Novi Sad, *Serbia*
5. Dr. Zorica Branković, Institute for Multidisciplinary Research, University of Belgrade, *Serbia*
6. Dr. Goran Branković, Institute for Multidisciplinary Research, University of Belgrade, *Serbia*
7. Dr. Zorana Dohčević-Mitrović, Institute of Physics, University of Belgrade, *Serbia*
8. Dr. Maja Šćepanović, Institute of Physics, University of Belgrade, *Serbia*
9. Prof. Tatjana Volkov-Husović, Faculty of Technology and Metallurgy, University of Belgrade, *Serbia*
10. Dr. Miroslav Komljenović, Institute for Multidisciplinary Research, University of Belgrade, *Serbia*
11. Dr. Dejan Zagorac, INN Vinca, University of Belgrade, *Serbia*
12. Prof. Gordana Bakić, Faculty of Mechanical Engineering, University of Belgrade, *Serbia*
13. Prof. Pavle Premović, Faculty of Science, University of Niš, *Serbia*
14. Dr. Nina Obradović, Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, *Serbia*
15. Prof. Vladimir Pavlović, Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, *Serbia*

International Advisory Board

GERMANY:

- Dr. J. Christian Schön, *Max-Planck-Institute for Solid State Research*
- Dr. Klaus Doll, *Institute of Theoretical Chemistry, University of Stuttgart*
- Dr. Žaklina Burghard, *Institute for Mater. Science, University of Stuttgart*
- Dr. Vesna Srot, *Max-Planck-Institute for Solid State Research*

UNITED STATES OF AMERICA:

- Dr. Yuri Rostovtsev, *Department of Physics, University of North Texas*
- Dr. Miladin Radović, *Department of Materials Science and Engineering Program, Texas A&M University*
- Dr. Nikola Dudukovic, *Lawrence Livermore National Laboratory*

SLOVENIA:

- Dr. Barbara Malič, *Jozef Stefan Institute, Ljubljana*
- Dr. Aleksander Rečnik, *Jozef Stefan Institute, Ljubljana*
- Dr. Slavko Bernik, *Jozef Stefan Institute, Ljubljana*

ITALY:

- Dr. Carmen Galassi, *Istituto di Scienza e Tecnologia dei Materiali Ceramici-CNR*
- Dr. Floriana Craciun, *Istituto di Struttura della Materia-CNR, Area di Ricerca di Roma-Tor Vergata*
- Dr. Claudio Ferone, *Department of Engineering, University of Napoli*

CROATIA:

- Dr. Jasminka Popović, *Ruđer Bosković Institute, Zagreb*
- Dr. Andreja Gajović, *Ruđer Bosković Institute, Zagreb*

FRANCE:

- Dr. Xavier Rocquefelte, *Institut des Sciences Chimiques de Rennes*

HUNGARY:

- Dr. Gábor Muksi, *University of Miskolc*

INDIA:

- Dr. Ravi Kumar, *Indian Institute of Technology Madras*

JAPAN:

- Dr. Anna Gubarevich, *Laboratory for Advanced Nuclear Energy, Institute of Innovative Research, Tokyo Institute of Technology*

POLAND:

- Dr. Malgorzata Makowska-Janusik, *Institute of Physics, Faculty of Mathematics and Natural Science, Jan Dlugosz University in Czestochowa*

ROMANIA:

- Dr. Eniko Volceanov, *University Politehnica Bucharest*

SLOVAKIA:

Dr. Peter Tatarko, *Institute of Inorganic Chemistry, Slovak Academy of Sciences*

UKRAINE:

Dr. Tetiana Prikhna, *V. Bakul Institute for Superhard Materials of the National Academy of Sciences of Ukraine*

Organizing Committee

1. Dr. Aleksandra Dapčević, Faculty of Technology and Metallurgy, Belgrade, *Serbia*
2. Maria Čebela, Institute of Nuclear Sciences “Vinča”, Belgrade, *Serbia*
3. Miljana Mirković, Institute of Nuclear Sciences “Vinča”, Belgrade, *Serbia*
4. Jelena Luković, Institute of Nuclear Sciences “Vinča”, Belgrade, *Serbia*
5. Dr. Marija Vuksanović, Institute of Nuclear Sciences “Vinča”, Belgrade, *Serbia*
6. Dr. Milica Počuča Nešić, Institute for Multidisciplinary Research, Belgrade, *Serbia*
7. Dr. Milan Žunić, Institute for Multidisciplinary Research, Belgrade, *Serbia*
8. Dr. Jovana Ćirković, Institute for Multidisciplinary Research, Belgrade, *Serbia*
9. Dr. Nikola Ilić, Institute for Multidisciplinary Research, Belgrade, *Serbia*
10. Jelena Vukašinović, Institute for Multidisciplinary Research, Belgrade, *Serbia*
11. Jelena Jovanović, Institute for Multidisciplinary Research, Belgrade, *Serbia*
12. Olivera Milošević, Institute for Multidisciplinary Research, Belgrade, *Serbia*
13. Dr. Sanja Martinović, IHTM Belgrade, *Serbia*
14. Dr. Milica Vlahović, IHTM Belgrade, *Serbia*
15. Dr. Nataša Tomić, Innovation Center of the Faculty of Technology and Metallurgy, Belgrade, *Serbia*
16. Dr. Slavica Savić, Biosense Institute, Novi Sad, *Serbia*
17. Dr. Bojan Stojadinović, Institute of Physics, Belgrade, *Serbia*
18. Dr. Marija Milanović, Faculty of Technology, Novi Sad, *Serbia*

P. Verma, P.K. Roy STRUCTURAL AND ELECTRO-MAGNETIC PROPERTIES OF Mg-DOPED POLYCRYSTALLINE $\text{Bi}_{0.9}\text{Sm}_{0.1}\text{Fe}_{1-x}\text{Mg}_x\text{O}_3$ ($X \leq 0.1$) FERRITES	127
M. Suthar, P.K. Roy EFFECT OF CERIUM (Ce^{3+}) DOPING ON STRUCTURAL, MAGNETIC AND DIELECTRIC PROPERTIES OF BARIUM HEXAFERRITE	127
P. Šenjug, M. Čebela, F. Torić, T. Klaser, Ž. Skoko, D. Pajić P. Šenjug, MAGNETIC BEHAVIOUR OF Ag DOPED BiFeO_3	128
I. Panic, D. Pantic, J. Radakovic, M. Rosic, Jordanov, V. Dodevski, M. Čebela SYNTHESIS AND CHARACTERIZATION OF BiFeO_3 FINE POWDERS	129
J.D. Bobić, M. Deluca, N.I. Ilić, M.M. Vijatović Petrović, A.S. Dzunuzović, V.K. Veerapandiyan, B.D. Stojanovic FERROELECTRIC, MAGNETIC AND RAMAN SPECTRA MEASUREMENTS OF $\text{Bi}_5\text{Ti}_3\text{FeO}_{15}$ AURIVILLIUS-BASED MULTIFERROIC MATERIALS	130
A. Radojković, M. Žunić, S.M. Savić, S. Perać K. Vojisavljević, D. Luković Golić, Z. Branković, G. Branković ADJUSTING THE ELECTROLYTE PROPERTIES OF $\text{BaCe}_{0.9}\text{Y}_{0.1}\text{O}_{3-\delta}$ BY CO- DOPING	131
S. Perać, S.M. Savić, S. Kojić, Z. Branković¹, G. Branković NANOINDENTATION STUDY OF Cu DOPED NaCo_2O_4 CERAMICS	132
O. Milošević, D. Luković Golić, M. Počuča-Nešić, A. Dapčević, G. Branković, Z. Branković STRUCTURAL, MICROSTRUCTURAL AND FERROELECTRIC PROPERTIES OF Ti-DOPED YMnO_3 CERAMICS SYNTHESIZED BY POLYMERIZATION COMPLEX METHOD	133
D. Luković Golić, J. Vukašinović, V. Ribić, M. Kocen, M. Podlogar, A. Dapčević, G. Branković, Z. Branković THE INFLUENCE OF SINTERING PROCESSING ON MICROSTRUCTURAL, OPTICAL AND ELECTRICAL PROPERTIES OF ZINC OXIDE CERAMICS DOPED WITH Al^{3+} , B^{3+} , Mg^{2+}	134
S.M. Savić, K. Vojisavljević, M. Počuča-Nešić, N. Knežević, M. Mladenović, V. Đokić, Z. Branković SBA-15 ASSISTED SnO_2 HUMIDITY SENSOR	135
J. Vukašinović, M. Počuča-Nešić, D. Luković Golić, A. Dapčević, M. Kocen, S. Bernik, V. Lazović, Z. Branković, G. Branković SPARK PLASMA SINTERING OF CONDUCTIVE Sb-DOPED BaSnO_3	136
M. Počuča-Nešić, K. Vojisavljević, S.M. Savić, V. Ribić, N. Tasić, G. Branković, Z. Branković COMPARISON OF SENSING PROPERTIES OF $\text{SnO}_2/\text{KIT-5}$ AND SnO_2 HUMIDITY SENSORS	137

1. T.K. Gupta, W.G. Carlson, *J. Mater. Sci.*, **20** (1985) 3487
2. T. Tian, L. Cheng, J. Xing, L. Zheng, Z. Man, D. Hu, S. Bernik, J. Zeng, J. Yang, Y. Liu, G. Li, *Mater. Design*, **132** (2017) 479
3. B. Yuksel, T. O. Ozkan, *Mater. Sci. – Poland*, **33** (2015) 220

P-70

SBA-15 ASSISTED SnO₂ HUMIDITY SENSOR

Slavica M. Savić¹, Katarina Vojisavljević², Milica Počuča-Nešić²,
Nikola Knežević¹, Minja Mladenović¹, Veljko Đokić³, Zorica Branković²

¹*Biosense Institute, Group for Nano and Microelectronics,
University of Novi Sad, Novi Sad, Serbia*

²*Institute for Multidisciplinary Research, University of Belgrade,
Belgrade, Serbia*

³*Faculty of Technology and Metallurgy, University of Belgrade,
Belgrade, Serbia*

Over the past decade, the interest for fabrication of mesoporous metal oxides has been increased, and that draw attention globally on fabrication and designing efficient humidity sensors based on these materials. Their unique properties like high surface area, large pore volume and interconnected pore channels provide easier adsorption and facile transportation of water molecules across their surfaces. Nanocasting as technique based on various silica hard templates is one of usually utilized and efficient methods for processing of such materials.

Silica SBA-15 as a template is currently obtaining exclusive attention in applications like photocatalysis, sensing, drug delivery and nanomaterials fabrication since it has high surface area, pore volume, excellent thermal stability and distinctive interconnectivity of its tunable pore channels. In this work, we used SBA-15 as a hard template for production of SnO₂ humidity sensor. SBA-15 assisted mesoporous SnO₂ has been synthesized using incipient wet impregnation process, consisting of two loading/calcination steps to fill up 15 % of the total pore volume of template with SnO₂, followed by template etching with 2M NaOH.

A few micron thick SnO₂ film has been fabricated by applying the paste by the doctor blade applicator onto alumina substrate provided with interdigitated Pt/Ag electrodes. The sensor response of the film towards humidity was tested measuring the change of the complex impedance of the sample exposed to a humid climate chamber environment with the relative humidity, RH ranging from 40 % to 90 % at 25 °C and from 30 % to 90 % at 50 °C. This study demonstrated that nanocast SnO₂ possesses sufficient quality to be used as a material for fabrication of high performance humidity sensors.