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

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 - Каталогизација 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

ROFA

Turistička organizacija Beograda

SERBIA

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

Scientiific 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*

HUNGURY:

Dr. Gábor Mucsi, *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 Politechica 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-71

SPARK PLASMA SINTERING OF CONDUCTIVE Sb-DOPED $BaSnO_3$

Jelena Vukašinović[1], Milica Počuča-Nešić[1], Danijela Luković Golić[1], Aleksandra Dapčević[2], Matej Kocen[3], Slavko Bernik[3], Vladimir Lazović[4], Zorica Branković[1], Goran Branković[1]

[1]*Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia*
[2]*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*
[3]*Jožef Stefan Institute, Ljubljana, Slovenia*
[4]*Institute of Physics Belgrade, University of Belgrade, Belgrade, Serbia*

Barium stannate, $BaSnO_3$, belongs to the group of perovskite-type alkaline earth stannates. It is an electrical insulator, but doping with proper cation can change its' electrical properties and transform it into an n-type semiconductor.

In this work, we present the Sb-doped barium stannate, $BaSn_{1-x}Sb_xO_3$, $x = 0.00$, 0.04, 0.06, 0.08 and 0.10 (labelled as BSSOx×100), using $BaCO_3$, SnO_2 and Sb_2O_5 as starting materials. Mechanically activated precursors were calcined at 900 °C for 4 h and subsequently sintered by Spark Plasma Sintering (SPS) Technique. For the characterization of obtained ceramic samples various techniques were used: X-ray Diffraction (XRD) analysis, High Resolution Transmission and Field Emission electron microscopy (HRTEM and FESEM) and UV-Vis spectroscopy. Electrical conductivity of $BaSn_{1-x}Sb_xO_3$ ceramic samples was determined by measuring the current-voltage (*I–U*) characteristics in different mediums (air, silicon oil) at room temperature and temperatures up to 150 °C.

XRD analysis confirmed the formation of the cubic $BaSnO_3$ perovskite phase as a major, and tetragonal Ba_2SnO_4 as a secondary phase. The content of Ba_2SnO_4 phase decreased with introducing of Sb into the $BaSnO_3$ lattice. FESEM micrographs of fractured $BaSn_{1-x}Sb_xO_3$ ceramic samples showed well-densified microstructure and decrease of grain size with the increment of x. HRTEM analyses revealed the existence of low angle grain boundary (LAGB), which provides low energy conduction path of electrons. The results obtained from UV-Vis spectroscopy, indicated the decrease of band gap value of $BaSn_{1-x}Sb_xO_3$ samples with increasing Sb concentration. Electrical characterization confirmed that Sb-doped $BaSnO_3$ exhibits n-type conductivity. $BaSn_{1-x}Sb_xO_3$ samples with $x = 0.04$, 0.06, 0.08 showed linear *I–U* characteristics at temperatures up to 150 ºC. The highest electrical conductivity was 1.96 S/cm for the $BaSn_{0.92}Sb_{0.08}O_3$. The increase of Sb concentration to $x = 0.10$ led to the loss of *I–U* characteristics' linearity.