

The Serbian Society for Ceramic Materials  
Institute for Multidisciplinary Research, 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

A microscopic image of ceramic particles, showing a transition from white to red. The particles are spherical and densely packed. The top half is white, and the bottom half is red, with a horizontal boundary line.

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## 4CSCS-2017

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**Branko Matović**  
**Zorica Branković**  
**Dušan Bućevac**  
**Vladimir V. Srdić**

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<b>J. Ruzic, S. Emura, I. Watanabe, T. Ohmura</b> INVESTIGATION OF THE Mo DISTRIBUTION THROUGH THE LARGE B-PHASE GRAINS AND ITS INFLUENCE ON ELASTIC MODULUS OF Ti-12Mo ALLOY BY NANOINDENTATION TEST .....	107
<b>B. Jokić, I. Cvijović-Alagić, B. Babić, D. Jugović, M. Mitrić</b> INVESTIGATION OF DIFFERENT SINTERING CONDITIONS ON MECHNAICAL PROPERTIES OF NANOSTRUCTURED BIOCERAMICS .....	108
<b>M. Vuksanović, M. Gajić Kvašček, M. Dojčinović, T. Volkov Husović, R. Jančić Heinemann</b> APPLICATION OF PRINCIPAL COMPONENT ANALYSIS TO INVESTIGATE THE MORPHOLOGY DAMAGE CAUSED BY CAVITATION .....	109
<b>J. Maletaškić, B. Matović, M. Cebela, M. Prekajski Djordjević, A. Matković, D. Kozlenko, S. Kichanov</b> COMBINED MAGNETIC AND STRUCTURAL CHARACTERIZATION OF HIDROTHERMAL BISMUTH FERRITE (BiFeO <sub>3</sub> ) NANOPARTICLES .....	110
<b>G. Ferreira Teixeira, A. Džunuzović, G.M.M.M. Lustosa, M. Vijatovic Petrovic, B.D. Stojanović, M.Ap. Zaghete</b> NZF-BT COMPOSITES: A PHOTOLUMINESCENCE APPROACH .....	111
<b>T. Bräuniger</b> CHARACTERISATION OF CALCIUM ALUMINATE PHASES IN CEMENTS BY <sup>27</sup> AL-MAS-NMR SPECTROSCOPY .....	112
<b>M. Počuča-Nešić, Z. Marinković Stanojević, A. Dapčević, N. Tasić, Z. Jagličić, Z. Branković, G. Branković</b> PREPARATION OF YMnO <sub>3</sub> CERAMIC MATERIAL FROM CHEMICALLY PREPARED POWDERS .....	113
<b>A. Miletić, B. Škorić, P. Panjan, L. Kovačević, P. Terek, G. Dražič</b> NANOLAYERED C <sub>7</sub> AlN/TiSiN COATING DESIGNED FOR TRIBOLOGICAL APPLICATION .....	114
<b>J. Vukašinović, M. Počuča-Nešić, D. Luković Golić, S.M. Savić, Z. Branković, G. Branković</b> ELECTRICAL PROPERTIES OF BaSn <sub>(1-x)</sub> Sb <sub>x</sub> O <sub>3</sub> CERAMICS MATERIALS .....	115
<b>M. Podlogar, A. Kaya, D. Vengust, D. Svetin, A. Rečnik, S. Bernik</b> MORPHOLOGY EVOLUTION OF ZnO FILMS INFLUENCED BY DOPANTS UNDER HYDROTHERMAL CONDITIONS .....	116
<b>Author Index</b>	117



P-55

## **ELECTRICAL PROPERTIES OF BaSn<sub>(1-x)</sub>Sb<sub>x</sub>O<sub>3</sub> CERAMICS MATERIALS**

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BaSnO<sub>3</sub> is a perovskite oxide widely used as dielectric ceramic material, thermally stable capacitor in electronic industry and chemical humidity sensor. It is also an electrical insulator (band gap ~ 3.1 eV), which becomes an n-type conductor by doping.

The aim of this work was to prepare BaSn<sub>(1-x)</sub>Sb<sub>x</sub>O<sub>3</sub> (BSSO) by mechanochemically assisted solid-state synthesis, starting from BaCO<sub>3</sub>, SnO<sub>2</sub> and Sb<sub>2</sub>O<sub>3</sub> as precursors. The concentration of Sb in BSSO was varied from 0.04 to 0.1. All starting mixtures were homogenized and activated in a planetary ball mill with isopropanol as a solvent. As-prepared powders were dried and calcined at 900 °C for 4 h. After calcination, powders were uniaxially pressed into pellets and sintered at temperature of 1200 °C for 3 h. Phase composition and microstructure of perovskite BSSO were identified by X-ray diffraction (XRD) and scanning electron microscopy (SEM), respectively. The influence of Sb doping on electrical characteristics of ceramic material was determined by measuring the current-voltage characteristics for all samples at room temperature in air. The band gap values for BSSO calculated using Kubelka-Munk transformation and Tauc linearization of the obtained diffuse reflectance spectra, confirmed conductive behavior of prepared ceramic samples.