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

PROGRAMME and the BOOK of ABSTRACTS

4CSCS-2017

4th Conference of the Serbian Society for Ceramic Materials
June 14-16.2017. Belgrade Serbia

Edited by:
Branko Matović
Zorica Branković
Dušan Bućevac
Vladimir V. Srdić

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

Editors-in-Chief
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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
Zonex, Beograd, Serbia
Circulation: 140 copies

CIP- Каталогизација у публикацији
Народна библиотека Србије

666.3/.7(048)
66.17 /.018(048)

DRUŠTVO za keramičke materijale Srbije. Konferencija (4 ; 2017 ; Beograd)

Programme ; and the Book of Abstracts / 4th Conference of The Serbian Society for Ceramic Materials, 4CSCS-2017, June 14-16, 2017, Belgrade, Serbia ; [organizers] The Serbian Society for Ceramic Materials ... [et al.] ; edited by Branko Matović ... [et al.]. - Belgrade : Institute for Multidisciplinary Research, University, 2017 (Beograd : Zonex). - 116 str. : ilustr. ; 24 cm

Tiraž 140. - Str. 6: Welcome message / Branko Matovic. - Registar.

ISBN 978-86-80109-20-6

a) Керамика - Апстракти
b) Наука о материјалима - Апстракти
c) Наноматеријали - Апстракти

COBISS.SR-ID 236529164

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FOR NUCLEAR RESEARCH

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WELCOME MESSAGE

On behalf of the organizers and organizing committee of the 4th Conference of the Serbian Society for Ceramic Materials (4CSCS-2017), I would like to extend my warmest welcome to all of you for attending the 4CSCS-2017. The conference is hosted and organized by the Serbian Society for Ceramic Materials, and co-organized by Institute for Multidisciplinary Research - University of Beograd, Institute of Physics - University of Beograd, Center of excellence for the synthesis, processing and characterization of materials for use in extreme conditions "CEXTREME LAB" - Institute of Nuclear Sciences Vinca, University of Belgrade and Faculty of Mechanical Engineering, University of Belgrade.

The goal of the Conference is to provide a platform for academic exchange among participants from universities, institutes, companies around the region in the field of ceramics research as well as to explore new direction for future development. 4CSCS-2017 aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of Ceramic Materials. It also provides the premier inter-multi-trans-disciplinary forum for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns, practical challenges encountered and the solutions adopted in the field of Ceramic Materials. We have received more tabout 100 abstracts submitted from 15 countries.

The Conference will feature two plenary lectures, 25 invited talks and more than 70, oral and poster presentations as well as exhibitions of some new ceramic materials and devices. 4CSCS-2017 includes Ceramic Powders, Characterization and Processing, High temperature Phenomena, Sintering, Microstructure Design and Mechanical Properties, Electro and Magnetic Ceramics, Ceramic Composites, Membranes and Multimaterials, Traditional Ceramics and Computing in Materials Science. Exhibitions from company sponsors will be held at the Conference as well.

We are grateful for the support from the Ministry of Education, Science and Technological Development of the Republic of Serbia. We would also like to express our sincere thanks to the symposia organizers, session chairs, presenters, exhibitors and all the Conference attendees for their efforts and enthusiastic support in this exciting time in Belgrade. I look forward to meeting you and interacting with you at Conference.

4SCSC-2017 President

Branko Matovic

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NZF-BT COMPOSITES: A PHOTOLUMINESCENCE APPROACH

Guilhermina Ferreira Teixeira[1], Adis Džunuzović[2], Glauco M.M.M. Lustosa[1], Mirjana Vijatovic Petrovic[2], Biljana D. Stojanović[2], Maria Ap. Zaghete

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Photoluminescence (PL) analysis provide us important information about the structure of materials, however the PL behavior of (x)$Ni_{0.7}Zn_{0.3}Fe_2O_4$-(1-x)$BaTiO_3$ ((x)NZF-(1-x)BT) multiferroic composites is not very well know. Based on this, (x)NZF-(1-x)BT powders whit different ratio of NZF/BT (x= 0.1, 0.3, 0.5, 0.7, 0.9) were synthesized by auto-combustion method. After that, the PL property of the composites was explored through measurements carried out using as excitation source a krypton laser with wavelength of 350 nm. The presence of PL emission suggests that the structures of the materials are medium range disordered. Oxygen vacancies (anion vacancies), metal vacancies (cation vacancy) and lattice distortion are responsible by PL emission due to formation of structural defects which are essential to promote the electronic transitions inside band gap. Emission at low energy (green/yellow/red) occurs due to deep defects which modify the Fermi level generating intermediary levels near the conduction band. On the other hand, PL emission at high energy region (violet/ blue) is originated by the presence of shallow defects which generate states next to the valence band. In the present work, all samples showed a broad band emission centered around 450 nm (Figure 1), being a region characteristic of contribution of shallow defects for photoluminescence emission. In addition, the PL broad band emission is an evidence of structural disorder in the lattice of materials which promotes the formation of numerous states within the band gap.

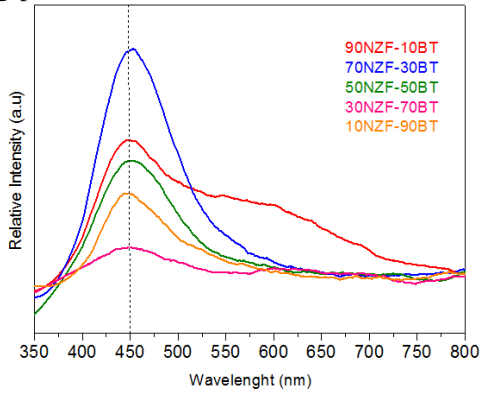

Figure 1. Photoluminescence spectra of (x)NZF-(1-x)BT multiferroic composites