

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 band of red particles in the middle.

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

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PROGRAMME AND THE BOOK OF ABSTRACTS

**4th Conference of The Serbian Society for
Ceramic Materials**

June 14-16, 2017

Belgrade, Serbia

4CSCS-2017

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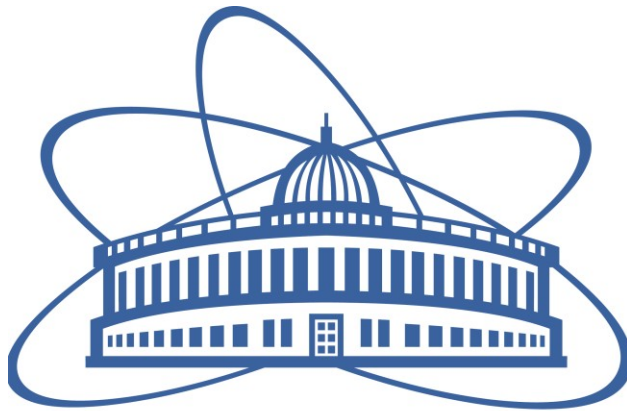
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WELCOME MESSAGE

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 than 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.

4CSCS-2017 President

Branko Matovic

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PZT-NICKEL FERRITE AND PZT-COBALT FERRITE COMPARATIVE STUDY: STRUCTURE, DIELECTRIC, FERROELECTRIC AND MAGNETIC PROPERTIES OF COMPOSITE CERAMICS

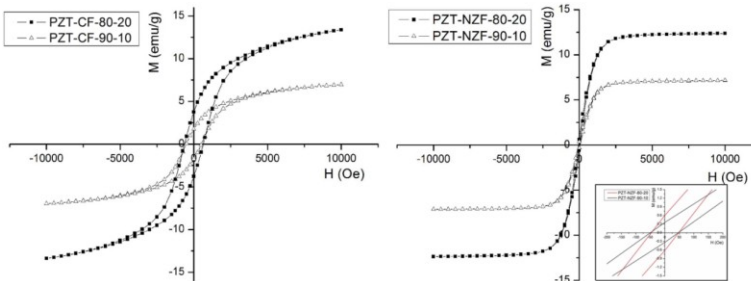
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Multiferroic (MF) materials with simultaneous magnetic and electric long range order and occasionally, mutual magnetoelectric (ME) coupling, have recently attracted considerable interest. These compounds present opportunities for potential applications in information storage, the emerging field of spintronics, sensors, and multistate memory devices [1]. The ME phenomenon is observed in both single-phase as well as composite materials. The challenge in preparing such materials is to find equilibrium ferroelectric and magnetic structures preserving both properties close to the room temperature [2].

The individual phases ($\text{Ni}_{0.7}\text{Zn}_{0.3}\text{Fe}_2\text{O}_4$, CoFe_2O_4 and $\text{PbZr}_{0.52}\text{Ti}_{0.48}\text{O}_3$) were prepared by citrate-nitrate combustion reaction method. Composites were prepared by mixing and homogenizing PZT and NZF/CF powders in a planetary ball mill in the ratio: (x) PZT + (1-x) CF/NZF (x = 0.8 and 0.9). XRD diagrams of a sintered composite confirm the presence of only two phases, ferroelectric PZT phase and ferrite phase. SEM analysis revealed a uniform grain arrangement of both phases. Similar values of saturation magnetization (M_s) for both types of composites were observed. M_s increases with increasing magnetic phase, as it was expected. Significantly higher values of coercive field (H_C) can be seen in the composite with a cobalt-ferrite, which belongs to the group of hard ferrite unlike NZF which is soft ferrite and characterized by low values of coercive field. The ferroelectric properties of all ceramic composites were also studied.



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