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

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

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PROGRAMME AND THE BOOK OF ABSTRACTS

5th Conference of The Serbian Society for Ceramic Materials

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

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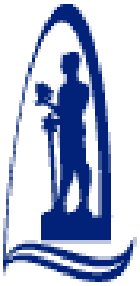

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WELCOME MESSAGE

The 5th Conference of the Serbian Society for Ceramic Materials: 5CSCS-2019 aims to review the knowledge, experience and share new ideas among the professionals, industrialists and students from research areas of ceramic materials and by taking an active part in discussions and technical sessions at the conference. The conference provides exhibitor booths for the companies and the institutions to showcase their services, products, innovations, innovative ideas and research work & results.

The conference includes all aspects of ceramics: modelling, synthesis, properties, processing and applications of bulk, films, powders, nanomaterials, composites providing 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 a new direction for future development. The conference has an elemental feature to the distinguished motive speakers, plenary speeches, young investigators, poster presentations, oral presentations, technical workshop, and scientific sessions.

The conference is hosted and organized by the Serbian Society for Ceramic Materials, and co-organized by the Institute for Multidisciplinary Research - 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, Institute of Physics - University of Belgrade, Faculty of Mechanical Engineering - University of Belgrade, Center for Green Technologies of the Institute for Multidisciplinary Research - University of Belgrade, Faculty of Technology and Metallurgy - University of Belgrade, Faculty of Technology - University of Novi Sad.

We are grateful for the support of the Ministry for education, science and technological development of the Republic of Serbia. We would also like to express our sincere thanks to the conference organizers, session chairs, presenters, exhibitors and all the conference attenders for their efforts and enthusiastic support in this exciting time in Belgrade. I look forward to meeting you and interacting with you at Conference.

Branko Matovic,
President of the Serbian Society for Ceramic Materials

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FERROELECTRIC, MAGNETIC AND RAMAN SPECTRA MEASUREMENTS OF $Bi_5Ti_3FeO_{15}$ AURIVILLIUS-BASED MULTIFERROIC MATERIALS

J.D. Bobić[1], M. Deluca[2], N.I. Ilić[1], M.M. Vijatović Petrović[1], A.S. Dzunuzović[1], V.K. Veerapandiyan[2], B.D. Stojanovic[1]

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One of the most important single-phase multiferroic materials with Aurivillius structure is $Bi_5Ti_3FeO_{15}$ (BFT) which generally yields a magnetoelectric coupling above room temperature with a magnetoelectric coefficient of 10 mV/cmOe [1]. It has a special interest in this family of compounds because it is a combination of multiferroic $BiFeO_3$ and ferroelectric $Bi_4Ti_3O_{12}$ and can be used as new magnetoelectric material for different devices. Years of intensive research have shown that the main lack of this material is high electrical conductivity and hence the low ferro-electromagnetic properties. This is a common problem in single-phase multiferroics, in general. Although they are expected to produce an applications breakthrough, they show poor properties at room temperature. Since BFT has the capability to host ions of different size, multiferroic properties could be improved by using dopants or ionic substitutions on different A and B-sites within the perovskite-like layers [2]. Insertion of magnetic ion such as Co^{3+} at B-sites could increase the remnant magnetization in BFT ceramics while Y^{3+} could enhance the dielectric and ferroelectric properties.

To this respect, Co^{2+} and Y^{3+} doped BFT were prepared by the solid state reaction method according to formulas: $Bi_{1-x}Y_xTi_3FeO_{15}$ (x = 0.1, 0.2, 0.3) and $BiTi_3Fe_{1-y}Co_yO_{15}$ (y = 0.1, 0.3, 0.5). XRD data confirm the formation of single-phase Aurivillius compounds. SEM micrographs show an evident decrease in grain size of Co modified ceramics in comparison with pure BFT while there is no particular change of the grain size with Y doping. The ferroelectric and magnetic properties of all ceramic composites were also studied. Raman spectroscopy in dependence of temperature was used to give an insight to the possible ferroelectric character of BFT and also the way that dopants could influence the structural mechanism affecting the material's properties at the main magnetic and ferroelectric transitions.

1. E. Jartych, *Nanoscale Res. Lett.*, **11** (2016) 234
2. J.D. Bobić, *J. Mater. Sci. Mater. Electron.*, **27** (2016) 2448