

The Serbian Society for Ceramic Materials
The Academy of Engineering Sciences of Serbia
Institute for Multidisciplinary Research - University of Belgrade
Institute of Physics - University of Belgrade
Vinča Institute of Nuclear Sciences - University of Belgrade



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

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Dr Branko Matović
Dr. Zorica Branković
Dr. Dušan Bučevac
Prof. Vladimir V. Srdić

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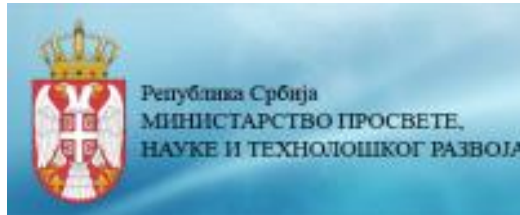
PROGRAMME AND THE BOOK OF ABSTRACTS

**3rd Conference of The Serbian Society for
Ceramic Materials**

**June 15-17, 2015
Belgrade, Serbia
3CSCS-2015**

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

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BST CERAMICS OBTAINED BY HYDROTHERMALLY ASSISTED COMPLEX POLYMERIZATION METHOD

Jovana Ćirković¹, Katarina Vojisavljević¹, Predrag Vulić², Zorica Branković¹, Biljana Dojčinović³, Tatjana Srećković¹, Goran Branković¹

¹*Institute for multidisciplinary research, University of Belgrade, Serbia*

²*Faculty of Mining and Geology, University of Belgrade, Department of Crystallography, Serbia*

³*Institute of Chemistry, Technology and Metallurgy, Center of Chemistry, University of Belgrade, Serbia*

Barium strontium titanate powder $\text{Ba}_{0.8}\text{Sr}_{0.2}\text{TiO}_3$ (BST) has been obtained by hydrothermal treatment of precursor solution containing titanium citrate, previously prepared by complex polymerization method, and barium and strontium acetates. The powders were calcined at 700 °C, pressed into pellets and further sintered at 1280 °C for a various sintering times (from 1 to 32 h), and structural parameters, phase composition, dielectric and ferroelectric properties were investigated. Rietveld refinement analysis of BST ceramics showed that predominant phase was tetragonal BST with monoclinic $\text{Ba}_6\text{Ti}_{17}\text{O}_{40}$ (B6T17) as a secondary phase. Phase contents determined by Rietveld refinement match well with the results of energy dispersive X-ray analysis and ICP analysis. SEM micrographs of sintered samples revealed the abnormal grain growth where elongated twinned grains of BST grow in a matrix of smaller B6T17 grains. Dielectric and ferroelectric properties of BST ceramics have been correlated with density of sintered compacts, phase composition, structural parameters and microstructure. The sample sintered for 16 h showed the highest density (93% ρ_t), as well as the highest value of dielectric constant (~ 2300) and remanent polarization – Pr ($2 \mu\text{C}/\text{cm}^2$) among investigated samples.