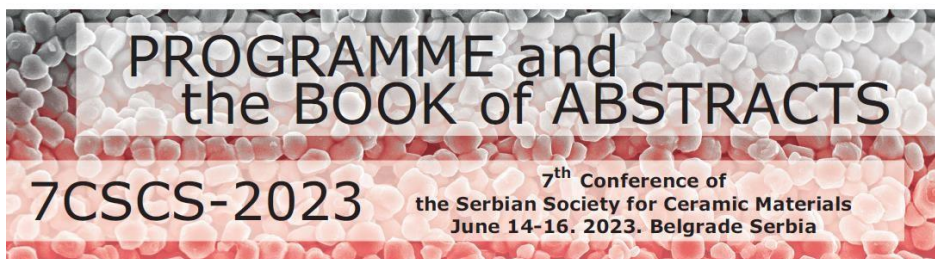


The Serbian Society for Ceramic Materials
Institute for Multidisciplinary Research (IMSI), University of Belgrade
Institute of Physics, University of Belgrade
Center of Excellence for the Synthesis, Processing and Characterization of
Materials for use in Extreme Conditions "CEXTREME LAB" - Institute of
Nuclear Sciences "Vinča", University of Belgrade
Faculty of Mechanical Engineering, University of Belgrade
Center of Excellence for Green Technologies, Institute for Multidisciplinary
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Faculty of Technology and Metallurgy, University of Belgrade



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PROGRAMME AND THE BOOK OF ABSTRACTS

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P-40

INFLUENCE OF GD-DOPING ON ELECTRICAL PROPERTIES IN $\text{Ca}_{1-x}\text{Gd}_x\text{MnO}_3$ ($x=0.05, 0.1, 0.15, 0.2$) PEROVSKITES

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$\text{Ca}_{1-x}\text{Gd}_x\text{MnO}_3$ ($x = 0.05\text{--}0.20$) nanostructured perovskites were successfully synthesized by modified glycine nitrate procedure (MGNP). Temperature intervals of sintering and phase transition during heating were revealed during dilatometric measurements. In order to determine the band gap values of the tested samples, ellipsometric measurements were performed in the UV-VIS spectral range. Decrease of band gap values with increase of Gd dopant content was attributed to n-type doping and upward shifting of the Fermi level in the conduction band. The investigation of the crystal structure and phase content of nanocrystalline $\text{Ca}_{1-x}\text{Gd}_x\text{MnO}_3$ powders was continued using micro-Raman spectroscopy. The electrical conductivity of Gd^{3+} doped sintered samples CaMnO_3 as a function of temperature was measured by electrochemical impedance spectroscopy (EIS), in the temperature range of 400–700 °C. The corresponding activation energies of conductivity, measured in the investigated temperature range, were also discussed. The obtained research results showed that the highest hardness values of 7.58 GPa respectively, were achieved and that these nanostructured materials can be used as a high-density ceramic material for various industrial applications.

1. M. Rosić, Lj. Kljajević, D. Jordanov, M. Stoiljković, V. Kusigerski, V. Spasojević, B. Matović, *Ceram. Int.*, **41** [2] (2015) 14964–14972.