Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION X
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 26-27. September 2022.

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INV10

The analysis of the crystal growth process of the lithium germanium phosphate glass

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The crystal growth rate of lithium germanium-phosphate glass was studied. The glasses have been homogenized using the previously established temperature-time conditions, which make it possible to remove a volatile substances from the glass melt. The AAS was used to determine the chemical content of obtained glass, the differential thermal analysis (DTA), and scanning electron microscope (SEM) were used to reveal the isothermal process of crystal growth, respectively. It has been found that the experimental determined crystal growth rate has a tendency toward of exponentially increase with an increase the temperature.

INV11

Electrical characteristics of Sb doped $BaTiO_3$ ceramics

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In this paper, the microstructural and dielectric characteristics of Sb doped $BaTiO_3$ ceramics were investigated. The concentrations of Sb ranged from 0.1 to 5.0 at%. The conventional solid-state sintering method at temperatures of 1290 °C - 1350 °C was used to obtain samples. SEM analysis of ceramics doped with a lower concentration of additives (0.1 and 0.5 at%) showed fine-grained and uniform microstructure with grain size from 0.5 μm to 3.0 μm. In samples doped with a higher concentration of additives (1.0 and 5.0 at%), the characteristic grain size ranged from 2.0 μm to 5.0 μm.
Measurement of electrical characteristics was performed at room temperature in the frequency range from 100 Hz to 1 MHz. In the sample doped with 0.1 at% Sb and sintered at 1290 °C, the value of the dielectric constant is ε_r=2800. Whit increase of dopant concentrations the dielectric constant value decreases. The sample doped with the same concentration (0.1 at% Sb), but sintered at a temperature of 1350°C, has a higher value of the dielectric constant of ε_r=8010.
The changes in electrical resistivity with frequency are also analyzed in this paper. Samples sintered at the highest temperature have the lowest value of electrical resistivity, and with increasing frequency, it decreases. At the same sintering temperature, and with increasing impurity concentration, the resistance increases.