



**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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Dear colleagues and friends,

We have great pleasure to welcome you to the Advanced Ceramic and Application X Conference organized by the Serbian Ceramic Society in cooperation with the Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy, Institute for Technology of Nuclear and Other Raw Mineral Materials and Institute for Testing of Materials. This Conference is dedicated to Prof. Dr. Vojislav Mitić, president of Serbian ceramic society, who passed away in September 2021.

It is nice to host you here in Belgrade in person. As you probably know, Serbia launched a vaccination campaign at the beginning of last year, so up to date more than 70 percent of the adult population has been vaccinated. Since there is no one statistic to compare the COVID19 outbreaks and fears for loved ones in different countries, we believe that we all suffer similarly during this pandemic. That is why we appreciate even more your positive attitude and readiness to travel in this uncertain time. We deeply hope that the ACA X Conference will be worth remembering, that you will respect all COVID-19 safety measures at SASA building, that you will have a nice time here and that ultimately you will return to your home safely. We are very proud that we succeeded in bringing the scientific community together again and fostering the networking and social interactions around an interesting program on emerging advanced ceramic topics. The chosen topics cover contributions from fundamental theoretical research in advanced ceramics, computer-aided design and modeling of new ceramics products, manufacturing of nano-ceramic devices, developing of multifunctional ceramic processing routes, etc.

Traditionally, ACA Conferences gather leading researchers, engineers, specialists, professors and PhD students trying to emphasize the key achievements which will enable the widespread use of the advanced ceramics products in the High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, etc.

Serbian Ceramic Society was initiated in 1995/1996 and fully registered in 1997 as Yugoslav Ceramic Society, being strongly supported by American Ceramic Society. Since 2009, it has continued as the Serbian Ceramic Society in accordance with Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in South-East Europe, with members from more than 20 Institutes and Universities, active in 9 sessions. Part of our members are also members of the Serbian Chapter of ACerS since 2019. Their activities in the organization of this conference is highly recognized. To them and all of you thanks for being with us here at ACA X.

Dr. Nina Obradović  
*President of the Serbian Ceramic Society*

Dr. Suzana Filipović  
*President of the General Assembly of the Serbian Ceramic Society*

## Conference Topics

- Basic Ceramic Science & Sintering
- Nano-, Opto- & Bio-ceramics
- Modeling & Simulation
- Glass and Electro Ceramics
- Electrochemistry & Catalysis
- Refractory, Cements & Clays
- Renewable Energy & Composites
- Amorphous & Magnetic Ceramics
- Heritage, Art & Design

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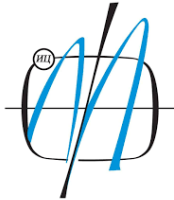
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## INV10

### **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<sub>3</sub> ceramics**

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University of Nis, Faculty of Electronic Engineering, Nis, Serbia

In this paper, the microstructural and dielectric characteristics of Sb doped BaTiO<sub>3</sub> 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  $\epsilon_r=2800$ . With 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  $\epsilon_r=8010$ .

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.