

**Serbian Ceramic Society Conference  
ADVANCED CERAMICS AND APPLICATION**

Organized by  
**Serbian Ceramic Society  
&  
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**PROGRAM AND THE BOOK OF ABSTRACTS**

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### **Structural Changes, Dielectric and Ferroelectric Properties of Tribophysically Activated BaTiO<sub>3</sub>**

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In order to obtain nanocrystalline material which can be used in MLCC production, the investigations of the influence of BaTiO<sub>3</sub> powder tribophysical activation (TPA) on its structural changes, dielectric and ferroelectric properties have been performed. Microstructure development and crystal structure have been studied by mercury porosimetry method, SEM, EDS and X-ray powder diffraction analyses. The modifications of dielectric and ferroelectric properties of sintered samples have been examined and correlated with observed structural changes induced by TPA of starting powders. It has been found that dielectric and ferroelectric properties of tribophysically activated BaTiO<sub>3</sub> could be tuned by controlling the grain size and lattice strain of activated nanostructured material.

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### **Obtaining of Ceramic Materials by the Method of the Thermal Transformation of Cation Exchanged Zeolites**

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The method of the thermal treatment of cation exchanged zeolites (ZTIT) is shown as very acceptable for synthesis of alkaline earth and alkaline framework aluminosilicates. In this work, are presented the results of the thermally induced phase transformation of Ba, K, Ag and Pb-exchanged LTA zeolites. The phase conversions in the temperature range from room temperature to 1300 °C were investigated and followed by thermal (DTA/TGA), X-ray powder diffraction and SEM/EDAX analyses. Also, we investigated the XRD pattern line broadening and influence of the different cations to the microstructure parameters. The crystal structure and microstructural parameters were refined using Rietveld method. It is concluded that the type and valence state of the extraframework cations give rise to recrystallization of amorphous substances to the different framework topologies.  
**Keywords** - Ceramics, ZTIT synthesis, X-ray powder diffraction, microstructure.