# Thermophysical Properties and Structure Evolution of Mechanically Activated $BaTiO_3$

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It is well known that mechanical activation is often used for modification of physico-chemical properties of sintered materials. As a result of this process disordering of the crystal structure, plastic deformation of the powder particles and generation of different structural defects may occur, thus changing the final thermophysical properties of a sintered material. Having this in mind, thermophysical properties and structure evolution of mechanically activated $BaTiO_3$ was investigated in this paper. Investigations were carried out on high purity $BaTiO_3$ that was mechanically activated in a planetary ball mill in a continual regime up to 120 minutes and sintered up to 1380$^oC$. Thermophysical properties of mechanically activated $BaTiO_3$ were investigated by the photoacoustic method, while structure investigations were carried out using scanning electron microscopy (SEM) and the X-ray powder diffraction method. The values of thermal diffusivity calculated from obtained photoacoustic spectra were a function of the mechanical activation time and sintering temperature and were between $0.32 \cdot 10^{-6}$ and $0.26 \cdot 10^{-5}$ $m^2/s$. The results obtained enabled establishment of sintering parameters indispensable for processing materials with required properties.