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New Frontiers in Multifunctional Material Science and Processing

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**The influence of temperature on microstructure contact surfaces
on BaTiO₃ ceramic doped with Ho₂O₃**

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The materials based on BaTiO₃ can be controlled using different technological parameters and different additives. We investigate the influence of different temperature levels of sintering (1320°C, 1350°C and 1380°C) on the size of contact area for 0.1% Ho₂O₃ doped BaTiO₃ ceramic. Microstructural investigations were carried out using scanning electron microscopy (JEOL-JSM 5300) equipped with EDS (QX 2000S) system. Grain size distribution was determined by quantitative metallography method.

The new correlation between microstructure and dielectric properties of doped BaTiO₃-ceramics based on fractal geometry and contact surface probability is recently developed. The presented results indicate that statistical model of contact surfaces is very important for the prognosis of BaTiO₃-ceramics microstructure and dielectric properties.

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**SEM and EDS investigation of contact surfaces for analysis of
advanced dielectric BaTiO₃ ceramics materials**

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BaTiO₃-ceramics are one of the most important group of functional ceramics that can be used in different applications. BaTiO₃-ceramics properties can be significantly changed by adding variety of additives. It is known that addition of various dopants to barium-titanate results in modification of grain-boundary region making possible the control of different electrical properties. The purpose of this paper is an investigation of the effects of different additives on the microstructure properties and contact surfaces.

The grain size and microstructure were investigated using SEM and EDS analysis. SEM and EDS studies were performed by scanning electron microscopy (JEOL-JSM 5300) equipped with EDS (QX 2000S) system.