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New Frontiers in Multifunctional Material Science and Processing

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**Statistical Analysis of the Influence of Temperature on Microstructure
Contact Surfaces on BaTiO₃ -ceramics 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.