


# Electronic ceramics fractal microstructure analysis - Minkowski Hull and grain boundaries


Vojislav V. Mitic , Goran Lazovic, Vesna Paunovic, Sandra Veljkovic, Branislav Randjelovic, Branislav Vlahovic & ...Show all

Pages 184-194 | Received 17 Jun 2018, Accepted 01 Apr 2019, Published online: 22 Aug 2019

 Download citation

 <https://doi.org/10.1080/00150193.2019.1621704>

 Check for updates

 Full Article

 Figures & data

 References

 Citations

 Metrics

 Reprints & Permissions

Get access

## Abstract

Consolidation parameters have influence and can be used to control structure of BaTiO<sub>3</sub> based materials. Microstructure and dielectric properties of Yb<sub>2</sub>O<sub>3</sub> doped BaTiO<sub>3</sub>-ceramics, sintered from 1320 °C to 1380 °C have been investigated. The correlation between microstructure, capacity and dielectric properties of doped BaTiO<sub>3</sub>-ceramics, based on fractal geometry and micro-contact surfaces, has been developed. Using the fractal descriptors of the grains contact surface, the microstructure reconstruction constituents, as grains and pores shapes or intergranular contacts, has been successfully done. Obtained results indicated that fractal analysis contact surfaces descriptors of different shapes are very important for the prognosis of BaTiO<sub>3</sub>-ceramics microstructure and capacity and dielectric properties. The morphology of ceramics grains pointed out the validity of developing new structure analytical methods, based on different grains' shape geometries. The grains contact structure based on Minkowski hull is presented as a new tool for BaTiO<sub>3</sub>-ceramics materials structure research. The materials properties prognosis are determined according to the correlations synthesis–structure–property, within Minkowski hull fractal frame.

Keywords: grains, ceramics, Minkowski hull, microelectronic

## Login options

- Log in
- Shibboleth
- OpenAthens

Restore content access


## Purchase

Save for later

### Online

Article Purchase

24 hours to view or download: USD 51.00

 Add to cart