

**Serbian Ceramic Society Conference**  
**ADVANCED CERAMICS AND APPLICATION III**  
**New Frontiers in Multifunctional Material Science and Processing**

**Serbian Ceramic Society**  
**Institute of Technical Sciences of SASA**  
**Institute of Chemistry Technology and Metallurgy**  
**Institute of Physics**  
**Institute for Technology of Nuclear and Other Raw Mineral Materials**  
**Institute for Testing of Materials**  
**Archeological Institute of SASA**

**PROGRAM AND THE BOOK OF ABSTRACTS**

**Serbian Academy of Sciences and Arts, Knez Mihailova 35**  
**Sep 29<sup>th</sup> - Oct 1<sup>st</sup>, 2014, Belgrade, Serbia**

**Book title:** Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION III: Program and the Book of Abstracts

**Publisher:**

Serbian Ceramic Society

**Editors:**

Prof.dr Vojislav Mitić

Prof. dr Olivera Milošević

Dr Nina Obradovic

Dr Lidija Mančić

**Technical Editor:**

Prof. dr Olivera Milošević

**Printing:**

Serbian Academy of Sciences and Arts,

*Knez Mihailova 35, Belgrade*

Format

*Pop Lukina 15, Belgrade*

**Edition:**

150 copies

**Sculptural Concretes:** Rajko D. Blažić, High School-Academy for Arts and Conservation, Serbian Orthodox Church, Belgrade, Serbia

CIP - Каталогизacija у публикацији

Народна библиотека Србије, Београд

666.3/.7(048)

66.017/.018(048)

SERBIAN Ceramic Society (Belgrade). Conference (3rd ; 2014 ; Beograd) Advanced Ceramics and Application : new frontiers in multifunctional material science and processing : program and the book of abstracts / III Serbian Ceramic Society Conference, 29th September - 1st October, Belgrade, 2014 ; [organized by] Serbian Ceramic Society ... [et al.] ; [editors Vojislav Mitić ... et al.]. - Belgrade : Serbian Ceramic Society, 2014 (Belgrade : Serbian Academy of Sciences and Arts). - 139 str. ; 30 cm

Tiraž 150.

ISBN 978-86-915627-2-4

1. Serbian Ceramic Society (Belgrade)

a) Керамика - Апстракти b) Наука о

материјалима - Апстракти c) Наноматеријали

- Апстракти

COBISS.SR-ID 209985036

**OR8**

### **The Fractal Nature Grains Shape Reconstruction on the Way to Microstructure Prognosis**

Filip Bastic<sup>1</sup>, Danijel Sirmić<sup>1</sup>, Miloš Cvetanović<sup>1</sup>,  
V.V. Mitić<sup>1,2</sup>, V. Lj.Kocić<sup>1</sup>, V. Paunović<sup>1</sup>

<sup>1</sup>*University of Niš, Faculty of Electronic Engineering, Niš, Serbia*

<sup>2</sup>*Institute of Technical Sciences of SASA, Belgrade, Serbia*  
*filip.bastic@gmail.com*

The structure of BaTiO<sub>3</sub> based ceramics materials, can be controlled by using different pressing pressures, sintering temperatures and different additive concentrations. In this paper, microstructure properties of Ho<sub>2</sub>O<sub>3</sub> doped BaTiO<sub>3</sub>-ceramics have been investigated. Different concentrations have been used, as well as different sintering temperatures. The ratio of dopant concentration ranges from 0.05% to 1%. Also, three different sintering temperatures are applied (1320°C, 1350°C and 1380°C). For selected contacted grains, the SEM (Scanning Electron Microscope), equipped with EDS (energy dispersive spectrometer) microphotographs are taken providing suitable configuration for structural and electrical model study. Analysis of SEM are twofold. The first one is based on conversion of 2D digital gray photos into numerical data, which represent 3D surface defined over dimensions of the microphotograph. The second analysis of fractal (box-counting) dimension direct calculation by using gray microphotographs graphical analyzing program is done. From above analysis, the important conclusions, are taken concerning the considered materials, from the frontiers view points, the ceramics structures prognosis within the electronic properties designing.

Keywords: BaTiO<sub>3</sub>-ceramics; fractals; microstructure; microphotograph