

XVI
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OF THE EUROPEAN CERAMIC SOCIETY**



ABSTRACT BOOK

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**POLITECNICO
DI TORINO**

S01 - INNOVATIVE PROCESSING AND SYNTHESIS - <i>Invited Lectures</i>	5
S01 - INNOVATIVE PROCESSING AND SYNTHESIS - <i>Oral Presentations</i>	18
S02 - HT PROCESSES AND ADVANCED SINTERING - <i>Invited Lectures</i>	135
S02 - HT PROCESSES AND ADVANCED SINTERING - <i>Oral Presentations</i>	144
S03 - MODELLING OF CERAMICS - <i>Invited Lectures</i>	185
S03 - MODELLING OF CERAMICS - <i>Oral Presentations</i>	195
S04 - ADVANCED STRUCTURAL CERAMICS, COMPOSITES AND REFRACTORIES <i>Invited Lectures</i>	225
S04 - ADVANCED STRUCTURAL CERAMICS, COMPOSITES AND REFRACTORIES <i>Oral Presentations</i>	241
S05 - CERAMICS AND GLASSES FOR HEALTHCARE - <i>Invited Lectures</i>	340
S05 - CERAMICS AND GLASSES FOR HEALTHCARE - <i>Oral Presentations</i>	352
S06 - CERAMICS FOR ENERGY CONVERSION AND STORAGE - <i>Invited Lectures</i>	395
S06 - CERAMICS FOR ENERGY CONVERSION AND STORAGE - <i>Oral Presentations</i>	405
S07 - FUNCTIONAL CERAMICS - <i>Invited Lectures</i>	467
S07 - FUNCTIONAL CERAMICS - <i>Oral Presentations</i>	476
S08 - SILICATE CERAMICS - <i>Invited Lectures</i>	544
S08 - SILICATE CERAMICS - <i>Oral Presentations</i>	556
S09 - CERAMICS IN CULTURAL HERITAGE AND ART - <i>Invited Lectures</i>	616
S09 - CERAMICS IN CULTURAL HERITAGE AND ART - <i>Oral Presentations</i>	620

POSTER SESSION 1

647

POSTER SESSION 2

768

POSTER SESSION 3

886

ABS 330

BaTiO₃-CERAMICS AND GRAIN GROWTH ENGINEERING USING FRACTAL NATURE APPROACH

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Grain size and morphology of BaTiO₃-ceramics are very important characteristics in developing new dielectric devices. Samples with different additives were sintered at different temperatures and times. The microstructure of the samples was observed using scanning electron microscope (SEM). Experimental results indicated well-developed morphology of BaTiO₃-ceramics from nano- to micro- scales, with the standard ceramics consolidation procedure. It is observed that the morphology of grains is the function of additives, sintering temperature and sintering time. However, image analysis of grain growth indicated that sintering temperature has a strong impact on the morphology and grain size of the samples in the temperature range 1240 °C to 1380 °C. Kinetic exponents and grain growth fractal dimensions were obtained with the collecting the parameters of same grain exposed to five magnifications by SEM imaging and using appropriate processing software for grain-shape fractal reconstruction. The main results in this paper established the relation between sintering consolidation process and fractal nature influence, as well as complex fractal correction on sintering temperature.

Keywords: BaTiO₃-Ceramics, Grain Growth, Fractal Nature



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