

**The Serbian Ceramic Society  
Vinča Institute of Nuclear Sciences, University of Belgrade  
Institute for Multidisciplinary Research, University of Belgrade  
Institute of Physics, University of Belgrade**

# **PROGRAM AND THE BOOK OF ABSTRACTS**

**1st Conference of the Serbian Ceramic Society  
March 17-18. 2011.  
Belgrade, Serbia  
1CSCS-2011**

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Publisher:

The Serbian Ceramic Society

Vinča Institute of Nuclear Sciences, University of Belgrade

Institute for Multidisciplinary Research, University of Belgrade

Institute of Physics, University of Belgrade

For Publisher:

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Technical editor:

Nikola Novaković

Design:

Nikola Novaković

**ISBN: 978-86-7306-107-8**

Print: "ALTA NOVA" Printing Comp.: 120 copies

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**Društvo za Keramičke Materijale Srbije  
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Institut za multidisciplinarna istraživanja, Univerzitet u  
Beogradu  
Institut za fiziku, Univerzitet u Beogradu**

**PROGRAM I KNJIGA APSTRAKATA  
Prva konferencija Društva za Keramičke  
Materijale Srbije  
17-18. Mart 2011, Beograd, Srbija  
1CSCS2011**

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Izdavači:

Društvo za Keramičke Materijale Srbije

Institut za nuklearne nauke Vinča, Univerzitet u Beogradu

Institut za multidisciplinarna istraživanja, Univerzitet u Beogradu

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Tehnički urednik:

Nikola Novaković

Dizajn:

Nikola Novaković

Štampa: "ALTA NOVA"

Tiraž

120 primeraka

**ISBN: 978-86-7306-107-8**

## INFLUENCE OF pH VALUE ON PARTICLE SIZE AND MORPHOLOGY OF ZINC OXIDE POWDERS OBTAINED BY SOLVOTHERMAL SYNTHESIS

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Zinc oxide powders have been synthesized from ethanolic zinc acetate solutions in the presence of lithium hydroxide by the solvothermal method. In this work we have considered the influence of pH value on morphology and size of ZnO particles for temperature 200°C and reaction time 2 h. The ZnO powder microstructure was controlled using X-ray diffraction and field emission scanning electron microscopy. Grain size of ZnO particles ranges in the interval (40–200) nm depending on pH value. Increasing of pH value result in decreasing of particle size, changing from hexagonal to round particle form and uniforming of particle shape and size.

## FRACTURE TOUGHNESS OF ALUMINA CERAMICS DETERMINED BY INDENTATION TECHNIQUE

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Fracture toughness ( $K_{IC}$ ) of high purity cold isostatically pressed alumina ceramics was determined from the size of cracks induced by Vickers hardness testing at the wide range of loads. The observed cracks appeared at following loads: 4.905, 9.81, 29.43 and 49.05 N. For the fracture toughness calculation different models were compared. It was found that fracture toughness increases by increasing applied load for all applied models, which is explained by indentation size effect. The fracture toughness overestimation can lead to product malfunction. Therefore, the use of the Anstis model, which gives the smallest fracture toughness values, is suggested.