

**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**

**Edited by:  
Snežana Bošković  
Zorica Branković  
Jasmina Grbović Novaković**

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:

Snežana Bošković

Jovan Nedeljković

Sonja Veljović-Jovanović

Aleksandar Belić

Editors:

Snežana Bošković

Zorica Branković

Jasmina Grbović Novaković

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  
Institut za nuklearne nauke Vinča, Univerzitet u Beogradu  
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**

**Urednici:  
Snežana Bošković  
Zorica Branković  
Jasmina Grbović Novaković**

Izdavači:

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

za izdavača:

Snežana Bošković  
Jovan Nedeljković  
Sonja Veljović-Jovanović  
Aleksandar Belić

Urednici:

Snežana Bošković  
Zorica Branković  
Jasmina Grbović Novaković

Tehnički urednik:

Nikola Novaković

Dizajn:

Nikola Novaković

Štampa: "ALTA NOVA"

Tiraž

120 primeraka

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

## MECHANICAL PROPERTIES OF BIOMORPHIC SILICON CARBIDE CERAMICS

Milan V. Gordic<sup>1</sup>, Biljana M. Babić<sup>1</sup>, Jelena M. Stasić<sup>1</sup>, Milan S. Trtica<sup>1</sup>, Tanja Volkov-Husović<sup>2</sup>, Milica B. Posarac<sup>1</sup>, Branko Z. Matović<sup>1</sup>

<sup>1</sup>VINČA Institute of Nuclear Sciences, P.O. Box 522, 11001 Belgrade

<sup>2</sup> Faculty of Technology and Metallurgy, University of Belgrade, P.O. Box 137, 11001 Belgrade, Serbia

Biomorphous  $\beta$ -SiC ceramics were produced from linden wood by impregnation with tetraethyl orthosilicate (TEOS), followed pyrolysis and high temperature treatment at 1580 °C. Six specimen groups included charcoal and five groups with different number of impregnation were analyzed. Flexural and compressional strength of charcoal and woodlike SiC ceramic were characterized using three-point and compression testing. Mechanical properties increased slightly with number of impregnation cycles. Ultrasonic pulse velocity testing (UPVT) was used to determine dynamic young modulus of elasticity. Laser surface modification was studied by interaction with Nd:YAG laser, operating at two wavelengths and pulse duration of 150 ps.

## SURFACE PROPERTIES OF Fe<sup>3+</sup> DOPED TITANIUM DIOXIDE NANOPOWDERS

Jelena Gulicovski, Dušan Bučevac, Branko Matović, Biljana Babić

Department of material science, INN Vinca, Serbia

Titanium dioxide powders, doped with different amounts of Fe<sup>3+</sup> ions (0.2 – 5 mass %), were synthesized by acid-catalyzed sol-gel method in a non-aqueous medium. The obtained powders were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM). The isoelectric point of samples was investigated in KNO<sub>3</sub> solution. Careful investigation of porous structure was provided by application of nitrogen adsorption-desorption method. Structure analysis showed that the obtained nanopowders exhibited the anatase crystal structure, independent of the amount of iron dopant. Unlike crystal structure, porosity parameters are strongly affected by the amount of iron ions incorporated in TiO<sub>2</sub> lattice.