The Serbian Ceramic Society
The Academy of Engineering Sciences of Serbia
Institute for Multidisciplinary Research - University of Belgrade
Institute of Physics - University of Belgrade
Vinča Institute of Nuclear Sciences - University of Belgrade

PROGRAMME and the BOOK of ABSTRACTS

2CSCS-2013

2nd Conference of the Serbian Ceramic Society
June 5-7.2013. Belgrade Serbia

Edited by:
Snežana Bošković
Vladimir V. Srdić
Zorica Branković

Programme and Book of Abstracts of The Second Conference of The Serbian Ceramic Society **publishes abstracts from the field of ceramics, which are presented at international Conference.**

Editors-in-Chief
Dr Snežana Bošković
Prof. Vlaimir V. Srdić
Dr. Zorica Branković

Publisher
Institute for Multidisciplinary Research, University of Belgrade
Kneza Višeslava 1, 11000 Belgrade, Serbia

For Publisher
Prof. Dr Sonja Veljović Jovanović

Printing layout
Vladimir V. Srdić

Press
FUTURA, Novi Sad, Serbia

CIP – Каталогизација у публикацији
Народна библиотека Србије, Београд

666.3/.7(048)
66.017/.018(048)

SERBIAN Ceramic Society. Conference (2nd ; 2013 ; Beograd)

Program ; and the Book of Abstracts / 2nd Conference of the Serbian Ceramic Society, 2CSCS-2013, June 5-7, 2013, Belgrade, Serbia ; [organizers] The Serbian Ceramic Society ... [et al.] ; edited by Snežana Bošković, Vladimir Srdić, Zorica Branković. - Belgrade : Institute Multidisciplinary Research, 2013 (Novi Sad : Futura). - 102 str. ; 24 cm.

Tiraž 120. – Registar.

ISBN 978-86-80109-18-3

1. Bošković, Snežana [уредник] 2. Serbian Ceramic Society (Beograd)
a) Керамика - Апстракти b) Наука о материјалима – Апстракти
c) Наноматеријали - Апстракти

COBISS.SR-ID 198593292

The Serbian Ceramic Society
The Academy of Engineering Sciences of Serbia
Institute for Multidisciplinary Research-University of Belgrade
Institute of Physics-University of Belgrade
Vinča Institute of Nuclear Sciences-University of Belgrade

PROGRAMME AND THE BOOK OF ABSTRACTS

2nd Conference of The Serbian Ceramic Society

June 5-7, 2013
Belgrade, Serbia
2CSCS-2013

Edited by:
Snežana Bošković
Vladimir Srdić
Zorica Branković

SPECIAL THANKS TO

Ministarstvo prosvete, nauke i tehnološkog razvoja Republike Srbije
Nemanjina 22-26
11000 Beograd, Srbija

Real S
Ulica Kralja Petra I bb,
22320 Inđija, Srbija
Direktor: Miodrag Stević,
office@real-s.net

Bomex Refractory
Gavrila Principa 57,
11000 Beograd, Srbija,
Direktor: Gorica Avramović, dipl.inž.,
gorica.avramovic@bomex.co.rs

NT-MDT Co.
Post Box 158 Building 317-A, Zelenograd,
Moscow 124482, Russia
Phone: +7 (499) 735-7777
Fax: +7 (499) 735-6410
E-mail: spm@ntmdt.ru
www.ntmdt.com

Mikrolux d.o.o.
Ljudevita Gaja 35
HR 10290 Zaprešić, Hrvatska
mob: +385 91 59 63 596
tel.-fax: +385 1 33 98 905
mail: mikrolux@email.t-com.hr
mikrolux.d.o.o@zg.t-com.hr

P-5

ANTIMICROBAL ACTIVITY OF SILIVER AND SILICON DOPED CALCIUM-PHOSPHATE SCAFFOLDS

Bojan Jokić, Ksenija Milicević, Suzana Dimitrijević, Rada Petrović, Djordje Janaćković

Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

In this study, spherical particles of silicon substituted hydroxyapatite (HA) doped with different amount of silver were synthesized by hydrothermal method. Thereby silicon addition decreased the phase transformation temperature of HA into silicon-substituted α-tricalcium phosphate (α-$Ca_3(PO_4)_2$; α-TCP) retaining the spherical morphology of the particles and could have an influence on the biological response of a material and invoke enhanced cell adhesion, differentiation and gene expression additional doping with silver ions was performed in order to improve antimicrobial activity. Synthesized powders were used for scaffold preparation. The scaffolds were prepared by replica foam method. The antimicrobial effects of doped hydroxyapatite powders against pathogen bacterial strains Escherichia coli, Staphylococcus aureus and pathogen yeast Candida albicans were tested on powders preheated at 1150 °C and scaffolds. X-ray diffraction analysis and scanning electron microscopy confirmed complete transformation into α-TCP-HA on all scaffolds and uniform pore distribution. Quantitative test of antimicrobial activity of scaffolds showed that silicon-substituted α-tricalcium phosphate doped with silver had viable cells reduction ability for Escherichia coli, Staphylococcus aureus and Candida albicans up to 30, 28 and 41 %, respectively, related to silicon doped scaffolds, and 69, 98 and 47 %, related to control sample.

P-6

HYDROTHERMAL TREATMENT OF NANOANATASE WITH ALKALI AND ALAKALINE EARTH HYDROXIDES

Bojana Simović[1], Ivana Veljković[1], Dejan Poleti[2], Goran Branković[1]

[1]*Institute for Multidisciplinary Studies, University of Belgrade, Serbia*
[2]*Faculty of Technology and Metallurgy, University of Belgrade, Serbia*

Nanoanatase powder was hydrothermally treated with LiOH, NaOH, KOH or $Ca(OH)_2$ at $T = 120$ ºC for 8 h. In all cases, the molar TiO_2 : hydroxide ratio was identical. The obtained samples were washed with distilled water, centrifuged and

dried at room temperature. Characterization of the samples was done by X-ray powder diffraction, TG/DTA/DSC and SEM analysis. Nanoanatase showed very diverse reactivity toward different alkali and alkaline earth cations. The final products showed different phase composition, crystallinity and microstructure. With Li^+ and Ca^{2+} anatase forms different titanate structures while with Na^+ and K^+ it mainly retain original anatase structure.

P-7

SYNTHESIS AND CHARACTERISATION OF Sr-SiO_2 POWDERS WITH ORDERED MESOPORES AND IT POTENTIAL APPLICATIONS IN DRUG DELIVERY

C. Stan, C. Andronescu, A. Rusu, J. Pandele, C. Munteanu, E.M. Anghel, D. Culita, I. Atkinson, V. Fruth

Institute of Physical Chemistry "Ilie Murgulescu" Romanina Academy, Spl. Independentei 202, Bucharest 060021, Romania

Mesoporous SiO_2 has a highly ordered structure, large surface area and pore volume – qualities that gives it an excellent drug release profile.

The aim of this study was to incorporate Sr^{2+} into mesoporous SiO_2 in order to develop a bioactive mesoporous material with an improved drug delivery profile.

A series of mesoporous SrO-SiO_2 species with different chemical compositions were prepared by a template-induced self-assambling method. As SiO_2 source, tetraethylortosilicate (TEOS) was used in the presence of Pluronic 123 template agent. The chemical and structural characterization of the obtained materials was realized by X-ray diffraction, scanning electron microscopy, transmission electron microscopy, thermal analysis, infra-red spectroscopy, specific surface measurements, pores size distribution and Raman and FTIR spectroscopy.

One described the effect of Sr cations on mesoporous structure and it suitable properties for drug delivery applications.

Keywords: mesoporous materials; SrO-SiO_2; drug delivery