Twelfth Young Researchers' Conference
Materials Science and Engineering

December 11-13, 2013, Belgrade, Serbia
Serbian Academy of Sciences and Arts, Knez Mihailova 36

Program and the Book of Abstracts

Materials Research Society of Serbia
Institute of Technical Sciences of SASA

December 2013, Belgrade, Serbia

Book title:
Twelfth Young Researchers' Conference - Materials Science and Engineering:
Program and the Book of Abstracts

Publisher:
Institute of Technical Sciences of SASA
Knez Mihailova 35/IV, 11000 Belgrade, Serbia
Tel: +381-11-2636994, fax: 2185263
http://www.itn.sanu.ac.rs

Editor:
Dr. Smilja Marković

Technical Editor:
Aleksandra Stojičić

Printer:
Gama digital centar
Autoput No. 6, 11070 Belgrade, Serbia
Tel: +381-11-6306992, 6306962
http://www.gdc.rs

Edition:
130 copies

Acknowledgement
The editor and the publisher of the Book of abstracts are grateful to the Ministry of Education, Sciences and Technological Development of the Republic of Serbia for its financial support of this book and The Twelfth Young Researchers' Conference - Materials Sciences and Engineering held in Belgrade, Serbia.

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

66.017/.018(048)(0.034.2)

YOUNG Researchers Conference Materials Sciences and Engineering (12 ; 2013 ; Beograd)
Program ; #and the #Book of Abstracts / Twelfth Young Researchers' Conference Materials Sciences and Engineering December 11-13, 2013, Belgrade, Serbia ; [organized by] Materials Research Society of Serbia [and] Institute of Technical Sciences of SASA; [editor Smilja Marković]. - Belgrade : Institute of Technical Sciences of SASA, 2013 (Beograd : Gama digital centar). - XVI, 56 str. ; 30 cm

Tiraž 130. - Registar.

ISBN 978-86-80321-28-8
1. Materials Research Society of Serbia (Beograd)
a) Наука о материјалима - Апстракти b) Технички материјали - Апстракти
COBISS.SR-ID 203232780

X/1

DSC-TG-MS study of hydroxyapatite nanopowders

Miodrag J. Lukić[1], Ljiljana Veselinović[1], Srečo Davor Škapin[2], Marjeta Maček-Kržmanc[2], Smilja Marković[1], Dragan Uskoković[1]

[1]Institute of Technical Sciences of SASA, Belgrade, Serbia
[2]Jožef Stefan Institute, Ljubljana, Slovenia

Hydroxyapatite nanopowders have been widely studied for biomedical application due to excellent biocompatibility. It attaches chemically to bone tissue providing fixation of artificial implant materials. Main research objectives during last few decades is to obtain hydroxyapatite based material which can withstand mechanical loadings generated in physiological conditions. One of the possible pathway is fabrication of dense nanostructured hydroxyapatite through approprate sintering process, which is strongly correlated with thermal behaviour of starting nanopowders.

In this study, extensive analyses of thermal behaviour of three hydroxyapatite nanopowders prepared with different methods will be presented. Differential Scanning Calorimetry (DSC), Thermo-Gravimetry (TG) with simultaneous Mass Spectrometry (MS) studies have been performed. The obtained results are discussed in the sense of energy-related events, mass loss and water and carbon dioxide molecules evolution to give better understanding of their thermal behaviour.

X/2

Hydroxylapatite synthesis and low temperature sintering methods

Miljana Mirković, Vesna Maksimović, Branko Matović and Anja Došen

Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia

Calcium phosphate (CaP) minerals are the most abundant biomineral group in the human body. Biologic hydroxylapatite differ in stochiometry from the ideal formula. The main inorganic component of teeth and bones is poorly-ordered carbonate-rich hydroxylapatite (CO_3Ap). Moreover, they usually have Na, K, Mg, Sr, Cl, F and other trace amounts of different ions incorporated in their lattice. Due to their similarity synthesized CaP have excellent biocompatibility, therefore they are widely used as biomaterials for hard tissue repair as implants and bone scaffolds. Bio-hydroxylapatite $Ca_5(PO_4)_3OH$ was synthesized by a simple precipitation method. Phase composition of the obtained powders was analyzed by X-ray powder diffraction (XRD), and the morphology was recorded by Scanning electron microscopy (SEM). In order to improve the properties of these biomaterials pressed powders were sintered at low temperatures in order to prevent the phase transitions and the alteration of their structures.