

FOURTEENTH YOUNG RESEARCHERS' CONFERENCE MATERIALS SCIENCE AND ENGINEERING

**December 9-11, 2015, 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 2015, Belgrade, Serbia

Book title:

Fourteenth 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

Cover page: Aleksandra Stojičić and Milica Ševkušić

Cover: modified photo *Belgrade bridges* by mcveja; Flickr
(<https://www.flickr.com/photos/mcveja/2428406067/>); CC-BY 2.0 Generic

Printer:

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

Edition:

100 copies

CIP - Каталогизacija у публикацији
Народна библиотека Србије, Београд

66.017/.018(048)

YOUNG Researchers Conference Materials Sciences and Engineering (14th ;
2015 ; Beograd)

Program ; and the Book of Abstracts / Fourteenth Young Researchers'
Conference Materials Sciences and Engineering, December 9-11, 2015,
Belgrade, Serbia ; [organized by] Materials Research Society of Serbia
& Institute of Technical Sciences of SASA ; [editor Smilja Marković]. -
Belgrade : Institute of Technical Sciences of SASA, 2015 (Beograd :
Gama digital centar). - XVI, 58 str. ; 23 cm

Tiraž 100. - Registar.

ISBN 978-86-80321-31-8

1. Materials Research Society of Serbia (Beograd)

a) Наука о материјалима - Апстракти b) Технички материјали - Апстракти
COBISS.SR-ID 219496972

1-2

**Coated calcium phosphate scaffolds for bone tissue engineering
produced by foam replica method**

Nenad Filipović,¹ Miodrag Lukić,¹ Abirami Sengottuvelan,² Sonja Kaišarević,³
Nebojša Andrić,³ Aldo R. Boccaccini,² Magdalena Stevanović¹

¹*Institute of Technical Sciences of SASA, Serbia,* ²*Department of Materials Science and
Engineering, Institute of Biomaterials, University of Erlangen-Nuremberg, Germany,*

³*Department of Biology and Ecology, University of Novi Sad, Serbia*

Tissue engineering (TE) is a growing field which provides helpful alternative strategies for conventional treatments in medicine. TE involves the smart combination of cells, biomolecules and engineered porous biomaterials in the form of 3D scaffolds. When it comes to bone regeneration the use of 3D scaffolds made of calcium phosphate is a well-known concept with a great potential. Here we present the foam replica method as a procedure suitable for producing highly porous scaffolds with the pore size in the range of 100-500 µm and the mean porosity of >90%. The obtained scaffolds were further coated with selenium nanoparticles (SeNp) and SeNp immobilized within poly(epsilon caprolactone) microspheres (PCL/Se). The purpose of such coating is based on the potential anticancer activity of SeNp as well as on their prolonged release from a biodegradable polymeric carrier. Scaffolds were characterized by X-ray diffraction, scanning electron microscopy, optical microscopy, thermogravimetric/differential thermal analysis (TGA-DTA) as well as Fourier transform infrared spectroscopy (FTIR). The cytotoxicity was determined employing 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay and all the samples have shown good biocompatibility. Based on these preliminary results the obtained system can be considered as a candidate for the repair of bone lesions and damages.