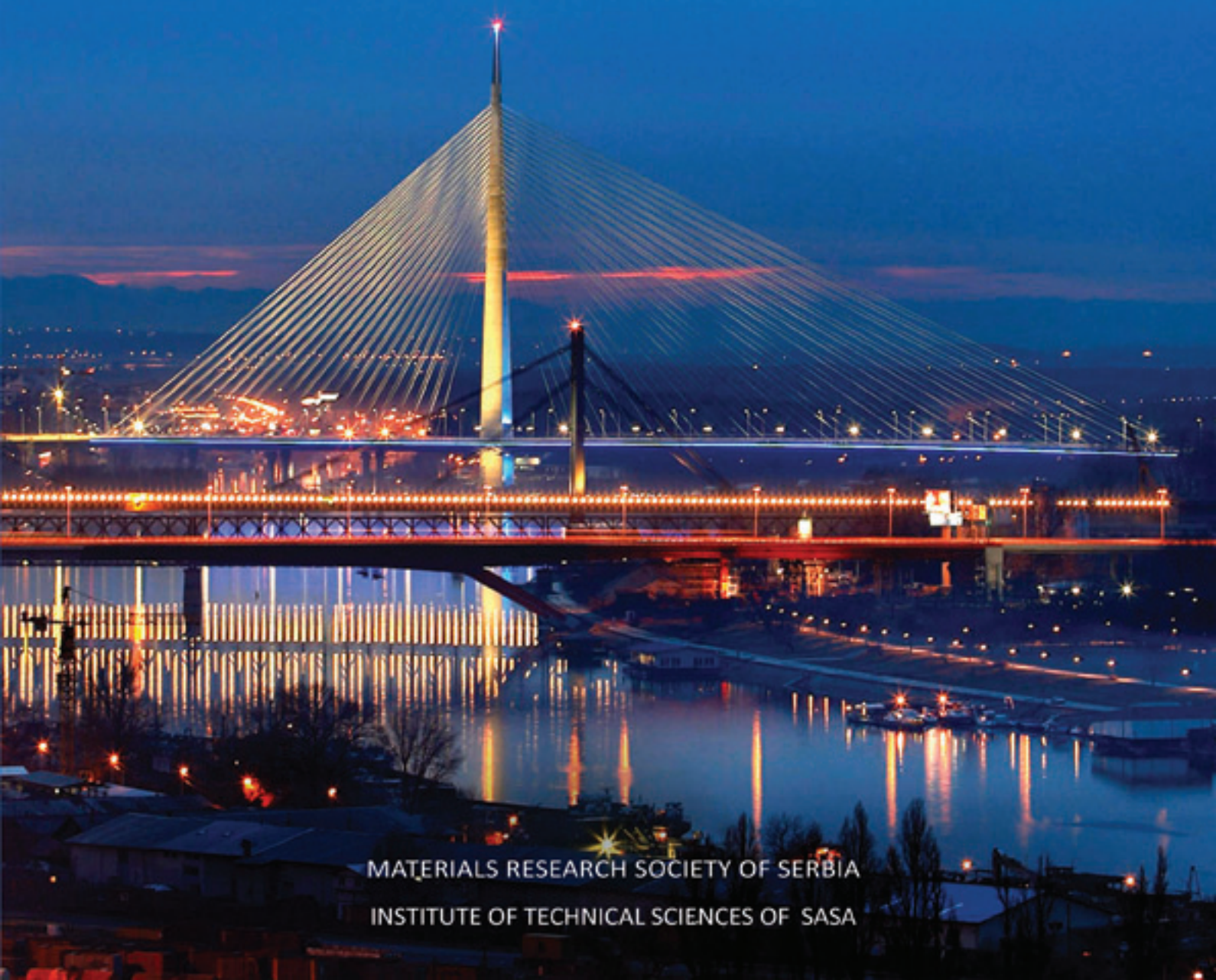


# TWELFTH YOUNG RESEARCHERS' CONFERENCE MATERIALS SCIENCE AND ENGINEERING

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

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 - Каталогизacija 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 - Апстрактни b) Технички материјали - Апстрактни

COBISS.SR-ID 203232780

III/1

### **Synthesis and characterization of cesium aluminosilicate phases from LTA zeolites as a precursor**

Mia Omerašević<sup>1</sup>, Maria Čebela<sup>1</sup>, Andrija Savić<sup>2</sup>, Vesna Maksimović<sup>1</sup>,  
Nikola Vuković<sup>4</sup>, Slavko Mentus<sup>3</sup>, Ana Radosavljević-Mihajlović<sup>1</sup>

<sup>1</sup>Laboratory for Material Science, Institute of Nuclear Sciences "Vinča", University of Belgrade, Belgrade, Serbia, <sup>2</sup>Laboratory of Chemical Dynamics and Permanent Education, Institute of Nuclear Sciences Vinča", University of Belgrade, Belgrade, Serbia, <sup>3</sup>Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia, <sup>4</sup>Faculty of Mining and Geology, University of Belgrade, Djušina 7, Belgrade, Serbia

<sup>137</sup>Cesium is considered as one of the most hazardous radiotoxic elements for the environment. The aim of this study is to find out the best method to remove radio-active cesium from nuclear waste streams and safely store in non-leaching solids. Cs<sup>+</sup> exchanged forms of two synthetic zeolites (4A and 5A) were prepared by standard procedure and investigated by SEM/EDS analysis. Thermal-transformations of Cs<sup>+</sup> exchanged zeolites (LTA) have been studied by means of differential thermal analysis (DTA), thermo-gravimetric analysis (TGA) and x-ray powder diffraction. Based on obtained data, it was concluded that above 1000 °C Cs-LTA (4A and 5A) frameworks recrystallized in a stabile pollucite phase.

III/2

### **Investigation of the yttrium doped CaMnO<sub>3</sub> nanopowders**

Jelena Zagorac<sup>1</sup>, Aleksandra Zarubica<sup>2</sup>, Ana Radosavljević-Mihajlović<sup>1</sup>,  
Dejan Zagorac<sup>3</sup>, Branko Matović<sup>1</sup>

<sup>1</sup>Institute of Nuclear Sciences Vinča, Materials Science Laboratory, Belgrade University, Belgrade, Serbia, <sup>2</sup>Department of Chemistry, University of Niš, Niš, Serbia, <sup>3</sup>Max Planck Institute for Solid State Research, Stuttgart, Germany

Nanostructured compounds with general formula Ca<sub>1-x</sub>Y<sub>x</sub>MnO<sub>3</sub> (0 ≤ x ≤ 1) were synthesized by modified glycine nitrate procedure. Afterwards, we have investigated crystal structure and microstructure of the synthesized samples using X-ray methods and Rietveld analysis. The main focus of this research was the structural stability of the yttrium doped CaMnO<sub>3</sub> perovskite phases, which crystallize in orthorhombic space group *Pnma*. We observed that the unit cell volumes of the investigated compounds increase proportionally with yttrium amount. Furthermore, we investigated the influence of yttrium amount on Mn–O bond angles and distances, tilting of MnO<sub>6</sub> octahedra and deformation due to the presence of Jahn-Teller distortion around Mn cation. Finally, the photoelectron spectroscopy (XPS) method was applied in order to follow yttrium concentration in the perovskite phases.