

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/5

### **Oxidation dynamics of the graphite during the graphite oxide synthesis**

Alexander G. Bannov, Anastasia A. Timofeeva

*Department of Chemistry and Chemical Technology, Novosibirsk State Technical University,  
Pr. K. Marx 20, Novosibirsk, 630092, Russia*

The synthesis of the graphite oxide using various reaction parameters was carried out. The stepwise evaluation of the graphite oxidation dynamics was carried out during the synthesis using the sampling method and thermogravimetric analysis. Thermally expanded graphite with high textural characteristics was obtained using graphite oxide. The properties of graphite oxide and expanded graphite were determined using scanning electron microscopy, X-ray diffraction, thermogravimetric analysis, differential scanning calorimetry, energy dispersive spectroscopy and low temperature nitrogen adsorption.

III/6

### **The influence of mechanical activation on the structure of ZnO**

Adriana Peleš<sup>1</sup>, Suzana Filipović<sup>1</sup>, Vera P. Pavlović<sup>2</sup>,  
Miodrag Mitrić<sup>3</sup>, Nina Obradović<sup>1</sup>, Vladimir B. Pavlović<sup>1</sup>

<sup>1</sup>*Institute of Technical Sciences of SASA, Knez Mihailova 35/IV 11000 Belgrade, Serbia*

<sup>2</sup>*Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia*

<sup>3</sup>*Institute of Nuclear Sciences Vinca, Laboratory of Solid State Physics, 11001 Belgrade, Serbia*

In this paper, the authors investigated the influence of mechanical activation of ZnO powder on crystal and micro structure. Because of its structure, ZnO could be used like filler in polymer ceramics nanocomposites. Performances of these material depend on filler morphology, surfaces, texture and size particle. According to this, ZnO powder was activated in a planetary ball mill for 2, 5, 10 and 30 minutes. Changes in crystal and micro structure were observed by SEM, XRD, Raman spectroscopy and UV-Vis Reflection. SEM micrographs show increase of agglomerates size with prolonged milling time. XRD patterns indicate that the peak intensities getting lower and expend with activation time. UV-Vis reflection shows that there is a clear difference in the spectra with increasing activation time. The results we got by the investigation of dynamical structure by Raman spectroscopy are in correlation with the other results of structures analysis. Results presented here enable further optimisation of the polymer nanocomposite based on ZnO and PVDF making process.