TENTH YOUNG RESEARCHERS' CONFERENCE
MATERIALS SCIENCE AND ENGINEERING

December 21–23, 2011, Belgrade, Serbia
Serbian Academy of Sciences and Arts, Knez Mihailova 35 & 36

PROGRAM AND THE BOOK OF ABSTRACTS

Materials Research Society of Serbia

Institute of Technical Sciences of SASA

December 2011, Belgrade, Serbia

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Book title:
Tenth 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:
Prof. Dr. Nenad Ignjatović

Technical Editor:
Aleksandra Stojičić

Printer:
Copy Planet
Brankova 12, 11000 Belgrade, Serbia
Tel: +381-11-3036545, fax: 3036546
http://www.copyplanet.rs

Edition:
130 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

66.017/.018(048)

YOUNG Researchers' Conference Materials Science and Engineering (10 ; 2011 ; Beograd)

Program ; and the Book of Abstracts / Tenth Young Researchers' Conference Materials Science and Engineering, December 21-23, 2011, Belgrade, Serbia ; [organized by] Materials Research Society of Serbia and Institute of Technical Sciences of the Serbian Academy of Sciences and Arts ; [editor Nenad Ignjatović]. - Belgrade : Institute of Technical Sciences of SASA, 2011 (Belgrade : Copy Planet). - XV, 62 str. ; 30 cm
Tiraž 130. - Registar.

ISBN 978-86-80321-27-1
1. Materials Research Society of Serbia (Beograd) 2. Institute of Technical Sciences of SASA (Beograd)

a) Наука о материјалима - Апстракти b) Технички материјали - Апстракти
COBISS.SR-ID 188165900

Aim of the Conference

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

Topics

Nanostructured materials

New synthesis and processing methods
Materials for high-technology applications
Biomaterials

Scientific and Organizing Committee

Results of the Conference

Beside printed «Program and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in the journals Tehnika – Novi Materijali and Chemical Industry. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony.

III/1

Mechanochemical synthesis of the copper-doped calcium titanate

Piotr Dulian[1], Krystyna Wieczorek-Ciurowa[1], Wojciech Bąk[2], Czesław Kajtoch[2]

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It is shown that mechanochemical treatment of calcium and titanium oxides simultaneously with certain amount of copper oxide allows synthesizing doped materials such as $Ca_{1-x}Cu_xTiO_3$ ($0<x\leq0.75$) as well as $CaTi_{1-x}Cu_xO_{3-\delta}$ ($0<x\leq0.6$) with perovskite structure. Presence of copper ions improves the electrical properties of $CaTiO_3$.

Mechanical treatment was realized by high-energy milling using laboratory planetary ball mill (Activator 2S, Novosibirsk). The characteristics of milling products were determined using X-ray powder diffraction patterns (XRD) and scanning electron microscopy (SEM).

The results of dielectric measurements for different amount of Cu ions, as a function of temperature, are presented.

III/2

Sintering of mechanically activated $MgO\text{-}TiO_2$ system

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Mixtures of $MgO\text{-}TiO_2$ powders were mechanically activated in planetary ball mill for time interval from 0 to 120 minutes. The influence of mechanical activation on phase composition and crystal structure was analyzed by XRD, while the effect of activation and sintering process on microstructure was investigated by scanning electron microscopy. Using a data obtained by XRD microstructure parameters, values of crystallite size (D), density of dislocation (ρ_D) and lattice strain (e_{hkl}) were calculated. Dielectric measurements are performed in order to show difference in dielectric constant as a function of time of mechanical activation.