

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

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

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 - Каталогизacija 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 - Апстрактни b) Технички материјали - Апстрактни

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

Committee President

Nenad Ignjatović Institute of Technical Sciences of SASA, Belgrade, Serbia

Vice-presidents

Dragana Jugović Institute of Technical Sciences of SASA, Belgrade, Serbia

Smilja Marković Institute of Technical Sciences of SASA, Belgrade, Serbia

Members

Zorica Ajduković Medical Faculty, Niš, Serbia

Nikola Cvjetičanin Faculty of Physical Chemistry, Belgrade, Serbia

Gordana Ćirić-Marjanović Faculty of Physical Chemistry, Belgrade, Serbia

Kemal Delijić Faculty of Metallurgy and Technology, Podgorica, Montenegro

Miroslav Dramićanin Institute of Nuclear Sciences “Vinča”, Belgrade, Serbia

Jasmina Grbović Novaković Institute of Nuclear Sciences “Vinča”, Belgrade, Serbia

Đorđe Janačković Faculty of Technology and Metallurgy, Belgrade, Serbia

Ralph Kraehnert Technical University of Berlin, Germany

Nebojša Mitrović Technical Faculty, Čačak, Serbia

Željka Nikitović Institute of Physics, Belgrade, Serbia

Nebojša Nikolić Institute of Chemistry, Technology and Metallurgy, Belgrade, Serbia

Srečo Škapin Institute Jožef Stefan, Ljubljana, Slovenia

Vladimir Srđić Technological Faculty, Novi Sad, Serbia

Magdalena Stevanović Institute of Technical Sciences of SASA, Belgrade, Serbia

Edin Suljovrujić Institute of Nuclear Sciences “Vinča”, Belgrade, Serbia

Vuk Uskoković University of California in San Francisco, CA, USA

Marija Vukomanović Institute Jožef Stefan, Ljubljana, Slovenia

Conference Secretary

Aleksandra Stojičić Institute of Technical Sciences of SASA, Belgrade, Serbia

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 Dulian¹, Krystyna Wieczorek-Ciurowa¹, Wojciech Bąk², Czesław Kajtoch²

¹*Faculty of Chemical Engineering and Technology, Cracow University of Technology, Cracow, Poland,* ²*Faculty of Physics, Pedagogical University, Cracow, Poland*

It is shown that mechanochemical treatment of calcium and titanium oxides simultaneously with certain amount of copper oxide allows synthesizing doped materials such as $\text{Ca}_{1-x}\text{Cu}_x\text{TiO}_3$ ($0 < x \leq 0.75$) as well as $\text{CaTi}_{1-x}\text{Cu}_x\text{O}_{3-\delta}$ ($0 < x \leq 0.6$) 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-TiO₂ system

Suzana Filipović¹, Nina Obradović¹, Darko Kosanović¹,
Vladimir Pavlović¹, Antonije Djordjević²

¹*Institute of Technical Science of SASA, Belgrade, Serbia*
²*School of Electrical Engineering, University of Belgrade, Belgrade, Serbia*

Mixtures of MgO-TiO₂ 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 (ϵ_{hkl}) were calculated. Dielectric measurements are performed in order to show difference in dielectric constant as a function of time of mechanical activation.