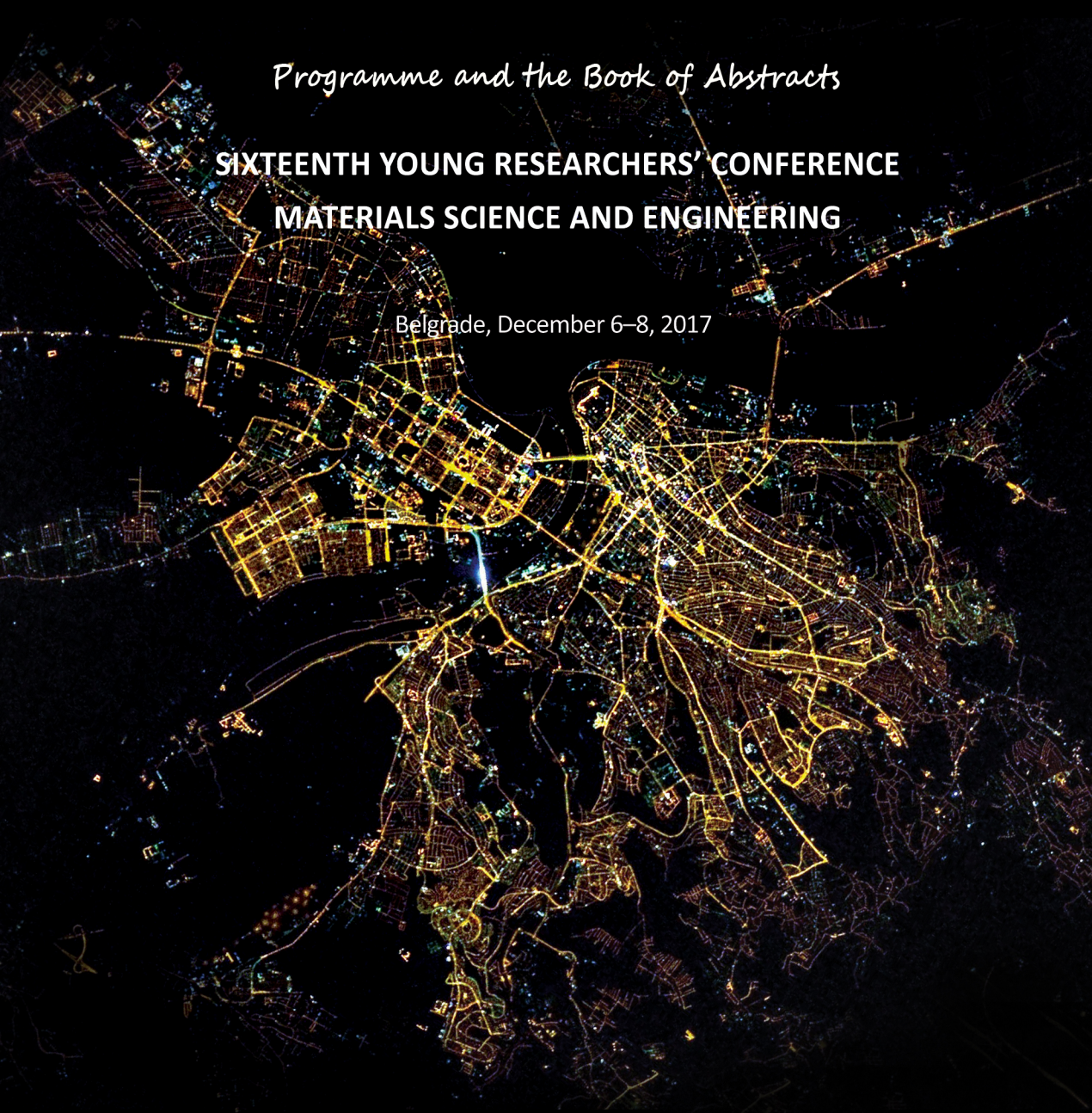


MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

**SIXTEENTH YOUNG RESEARCHERS' CONFERENCE
MATERIALS SCIENCE AND ENGINEERING**

Belgrade, December 6–8, 2017



**SIXTEENTH YOUNG RESEARCHERS' CONFERENCE
MATERIALS SCIENCE AND ENGINEERING**

December 6-8, 2017, Belgrade, Serbia

Program and the Book of Abstracts

**Materials Research Society of Serbia
&
Institute of Technical Sciences of SASA**

November 2017, Belgrade, Serbia

Book title:

Sixteenth 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, 2185263, <http://www.itn.sanu.ac.rs>

Editor:

Dr. Smilja Marković

Technical Editor:

Aleksandra Stojičić

Cover page: Aleksandra Stojičić and Milica Ševkušić

Front cover: Modified photo by Anatoly Alekseyevich Ivanishin, Exploration 30 ISS Mission, NASA;
Wikimedia Commons

(https://commons.wikimedia.org/wiki/File:Warp_Belgrade_Nightscene_April_2012spatial_subset.jpg);
Public domain

Back cover: Modified Photo by Hons084; Wikimedia Commons

(https://commons.wikimedia.org/wiki/File:Widoki_z_twierdzy_Forte_Mare_na_Herceg_Novi_03.jpg);
CC BY-SA 4.0

Printer:

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

Edition:

130 copies

CIP - Каталогизација у публикацији - Народна библиотека Србије, Београд

66.017/.018(048)

YOUNG Researchers Conference Materials Sciences and Engineering (16 ; 2017 ; Beograd)

Program ; and the Book of Abstracts / Sixteenth Young Researchers' Conference Materials Sciences and Engineering, December 6-8, 2017, 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, 2017 (Beograd : Gama digital centar). - XVIII, 78 str. ; 23 cm

Tiraž 130. - Registar.

ISBN 978-86-80321-33-2

1. Društvo za istraživanje materijala Srbije (Beograd) 2. Institut tehničkih nauka SANU (Beograd)

a) Наука о материјалима - Апстрактни b) Технички материјали - Апстрактни

COBISS.SR-ID 250864908

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

Biomaterials
Environmental science
Materials for high-technology applications
Nanostructured materials
New synthesis and processing methods
Theoretical modelling of materials

Scientific and Organizing Committee

Committee President

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

Vice-presidents

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

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

Dorđe Veljović Faculty of Technology and Metallurgy, Belgrade, Serbia

Members

Nadica Abazović Institute of Nuclear Sciences “Vinča”, Belgrade, Serbia

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

Jasmina Dostanić Institute of Chemistry, Technology and Metallurgy, Belgrade, Serbia

Branka Hadžić Institute of Physics, Belgrade, Serbia

Ivana Jevremović Norwegian University of Science and Technology, Trondheim, Norway

Ralph Kraehnert Technical University of Berlin, Germany

Snežana Lazić Universidad Autónoma de Madrid, Spain

Miodrag Lukić Institute of Technical Sciences of SASA, Belgrade, Serbia

Marija Milanović Faculty of Technology, Novi Sad, Serbia

Nebojša Mitrović Faculty of Technical Sciences, Čačak, Serbia

Željka Nikitović Institute of Physics, Belgrade, Serbia

Irena Nikolić Faculty of Metallurgy and Technology, Podgorica, Montenegro

Rafał Poręba Institute of Macromolecular Chemistry AS CR, v.v.i., Prague 6, Czech Republic

Srečo Škapin Institute Jožef Stefan, Ljubljana, Slovenia

Boban Stojanović Faculty of Sciences, Kragujevac, Serbia

Zoran Stojanović Institute of Technical Sciences of SASA, Belgrade, Serbia

Ivana Stojković-Simatović Faculty of Physical Chemistry, Belgrade, Serbia

Vuk Uskoković Chapman University, Irvine, CA, USA

Rastko Vasilić Faculty of Physics, Belgrade, Serbia

Siniša Vučenović
Marija Vukomanović

Faculty of Sciences, Department of Physics, Banja Luka, B&H
Institute Jožef Stefan, Ljubljana, Slovenia

Conference Secretary

Aleksandra Stojičić

Institute of Technical Sciences of SASA, Belgrade, Serbia

Conference Technical Committee

Milica Ševkušić, Vuk Radmilović, Miloš Milović, Sonja Jovanović, Ivana Dinić, Veljko Đokić.

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 journals “Tehnika – Novi Materijali” and “Processing and Application of Ceramics“. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony. Part of the award is free-of-charge conference fee at YUCOMAT 2018.

Sponsors



ANALYSIS
LABORATORY EQUIPMENT

Туристичка
организација
Београда



Tourist
Organization
of Belgrade

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 Sixteenth Young Researchers' Conference - Materials Sciences and Engineering, held in Belgrade, Serbia.

8-4

Synthesis and structural properties of sodium cobalt oxide

Jelena Aleksić,¹ Dragana Jugović,² Miloš Milović,² Miodrag Mitrić,³ Dragan Uskoković²
¹*Faculty of Sciences and Mathematics, Niš, Serbia,* ²*Institute of Technical Sciences of SASA, Belgrade, Serbia,* ³*Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia*

Sodium transition-metal oxides with general formula Na_xTMO_2 (TM = Co, Mn, Ni, etc.) have attracted a lot of interest in the battery community due to low cost of sodium in contrast to lithium. Sodium cobalt oxide is the most attractive of them for cathode application because of its conductive, thermic and magnetic characteristics. In this study, sodium cobalt oxide, Na_xCoO_2 , was synthesized by simple method which involves solid state reaction in air, at temperature of 900 °C; starting materials were Na_2CO_3 and Co_3O_4 in stoichiometric amounts. Additionally, fluorination of the synthesized sodium cobalt oxide was carried out in vacuum at 200 °C; NH_4HF_2 was used as a fluorine source. Then, structural and microstructural properties of the obtained powders were examined.