

MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

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

Belgrade, December 1-3, 2021



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&
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2021

Book title:
Nineteenth 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>

Conference organizers:
Materials Research Society of Serbia, Belgrade, Serbia
Institute of Technical Sciences of SASA, Belgrade, Serbia

Editor:
Dr. Smilja Marković

Technical Editor:
Aleksandra Stojičić

Cover page: Aleksandra Stojičić and Milica Ševkušić
Cover: Milica Ševkušić

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

Publication year: 2021

Print-run:
120 copies

CIP - Каталогизacija у публикацији
Народна библиотека Србије, Београд
66.017/.018(048)

YOUNG Researchers Conference Materials Sciences and Engineering (19 ; 2021 ; Beograd)
Program ; and the Book of abstracts / Nineteenth Young Researchers' Conference Materials
Science and Engineering, December 1-3, 2021, 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, 2021 (Belgrade : Gama digital centar). - XVIII, 86 str. : ilustr.
; 23 cm

Tiraž 120. - Registar.

ISBN 978-86-80321-36-3

а) Наука о материјалима -- Апстракти б) Технички материјали -- Апстракти

COBISS.SR-ID 51231241

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
Materials for new generation solar cells
Nanostructured materials
New synthesis and processing methods
Theoretical modelling of materials

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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 journal “Tehnika – Novi Materijali”. 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 2022.

Sponsors



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

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Effect of different cobalt loadings on the electrochemical performance of aluminum pillared clay-supported cobalt towards glucose oxidation

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This work is focused on our further efforts to improve the electrochemical performance of cobalt oxide supported on aluminum pillared clay (CoAP) towards glucose oxidation. To this end, the effect of different cobalt loadings onto the electrochemical performance of CoAP was investigated. Four CoAP samples, with theoretical cobalt loadings corresponding to 1, 3, 5, 10 wt% introduced to the pillared clay (x%CoAP), were prepared using the incipient wetness impregnation method. Furthermore, electrodes based on the obtained materials were prepared in the form of carbon paste electrode (CP-x%CoAP) with the same x%CoAP to carbon black (CB) mass ratio. The electrochemical performance of each of CP-x%CoAP was investigated using the cyclic voltammetry in alkaline solution with different glucose concentrations. The electrochemical measurements were carried out in a three-electrode system with an Ag/AgCl and platinum rod as the reference and counter electrodes, respectively. Preliminary results revealed that cobalt content in the pillared clay (AP) significantly affected both the intensity of the current peak of glucose oxidation and sensitivity. It should be emphasized that it was previously shown that CB and AP are not electroactive toward glucose oxidation. The electrode with the lowest cobalt content exhibited the highest current response and the highest sensitivity in the concentration range up to 5 mM. These results indicate that the variation of cobalt content could be used for fine-tuning of the electrocatalytic performance of CP-CoAP. The characterization of the synthesized materials required for establishing the correlation between the physical-chemical properties and the corresponding electrochemical performance of CP-CoAP is ongoing.