

INSTITUTE OF TECHNICAL SCIENCES OF SASA
MATERIALS RESEARCH SOCIETY OF SERBIA

Programme and the Book of Abstracts

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

Belgrade, November 30 – December 2, 2022



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

2022

Book title:

Twentieth Young Researchers' Conference - Materials Science and Engineering:
Programme 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 and Dr. Ivana Dinić

Cover page: Ivana Stojković Simatović and Smilja Marković

Cover: Nebojša Labus

Printing:

Gama Digital Centar doo
Adresa: Otona Zupančiča 19 - Grafičko medijska škola, 11070 Belgrade, Serbia
Tel: +381-62 880 06 71
<http://www.gdc.rs>

Publication year: 2022

Print-run:

120 copies

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

YOUNG Researchers' Conference Materials Science and Engineering (20 ; 2022 ; Beograd)

Programme ; and the Book of Abstracts / Twentieth Young Researchers' Conference Materials Science and Engineering, November 30 % December 2, 2022, 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, 2022 (Beograd : Gama digital centar). - XXI, 98 str. ; 23 cm
Tiraž 120. - Registar.
ISBN 978-86-80321-37-0

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

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

COBISS.SR-ID 80584457

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 «Programme 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 2023.

Sponsors



ANALYSIS
LABORATORY EQUIPMENT

Acknowledgement

The editor and the publisher of the Book of abstracts are grateful to the Ministry of Science, Technological Development and Innovation of the Republic of Serbia for its financial support of this book and The Twentieth Young Researchers' Conference - Materials Sciences and Engineering, held in Belgrade, Serbia.

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The biocorrosion activity of ZnO-based materials as biosensors

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Due to their biocompatibility, chemical stability, high isoelectric point, electrochemical activity, high electron mobility and ease of synthesis by diverse methods, ZnO-based materials have attracted much interest as materials for biosensors. Its unique properties allow it to be used for single-molecule detection and determining various biomolecules, so it can be potentially utilized as biosensor for medical diagnosis. The materials being used as biosensors require special characteristics including high corrosion resistance. The aim of this research was to investigate biocorrosion properties of ZnO materials in Ringer's physiological solution as a function of immersion time. ZnO powders were prepared by microwave (MW) processing of a precipitate in the presence of a different amount (5, 10 and 20 wt.%) of two different surfactants, CA and CTAB. The particles crystallinity and phase purity were investigated by X-ray powder diffraction (XRD) and Raman spectroscopy. Fourier-transform infrared (FTIR) spectroscopy was used to analyze surface chemistry. The particles morphology and textural properties were observed with field emission scanning electron microscopy (FE-SEM) and BET. The biocorrosion activity of the materials was measured by potentiodynamic polarization technique. Prepared samples were immersed in Ringer solution for different immersion times ranging from 30 min to 7 days. We found that all examined ZnO samples have low biocorrosion activity. Slight differences in biocorrosion activity between the samples are determined by particles morphology, textural properties and surface chemistry influenced by used surfactants.