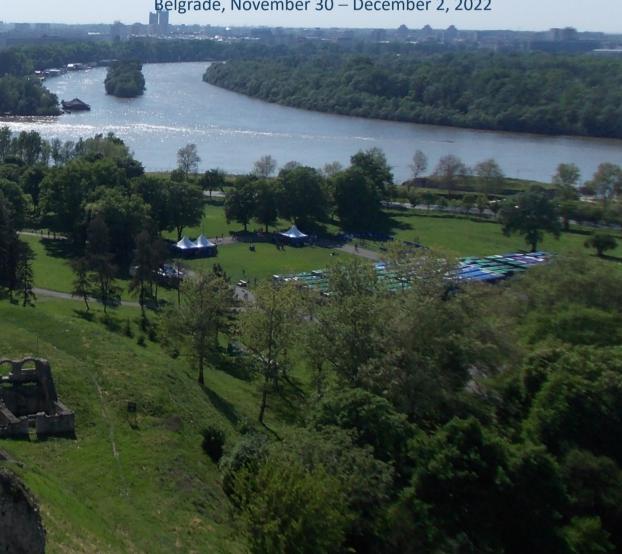
# INSTITUTE OF TECHNICAL SCIENCES OF SASA MATERIALS RESEARCH SOCIETY OF SERBIA

Programme and the Book of Abstracts

# TWENTIETH YOUNG RESEARCHERS' CONFERENCE MATERIALS SCIENCE AND ENGINEERING

Belgrade, November 30 – December 2, 2022



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# Programme and the Book of Abstracts

Materials Research Society of Serbia &

Institute of Technical Sciences of SASA

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#### 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**



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#### The biocorrosion activity of ZnO-based materials as biosensors

<u>Katarina Aleksić<sup>1</sup></u>, Ana Stanković<sup>1</sup>, Ljiljana Veselinović<sup>1</sup>, Ivana Stojković Simatović<sup>2</sup>, Smilja Marković<sup>1</sup>

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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.