

MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

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

Belgrade, December 5–7, 2018

Materials Research Society of Serbia

<http://www.mrs-serbia.org.rs/index.php/young-researchers-conference>

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**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
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 2019.

Sponsors



ANALYSIS
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Structural, morphological and optical characteristics of ZnO particles synthesized in the presence of surfactants CTAB and Pluronic F-127

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Due to its optical and electrical properties, low toxicity, chemical and physical stability, as well as inexpensiveness, zinc oxide (ZnO) based materials have a great potential to be used as photoelectrode in photo(electro)catalysis. Photo(electro)catalytic activity of ZnO materials can be improved by modification of particles morphology and surface topology.

In this work, the influence of two different surfactants: cetyltrimethylammonium bromide (CTAB) and Pluronic F-127, on the crystal structure, morphology, optical and photo(electro)catalytic properties of ZnO particles, were examined. ZnO powders were synthesized by microwave processing of a precipitate which was previously prepared by "drop by drop" method in the presence of the surfactants. The crystal structure and phase purity of the ZnO particles were determined by X-ray diffraction and Raman spectroscopy. The effects of the surfactants on ZnO particles morphology were examined by the field emission scanning electron microscopy (FE-SEM). The optical properties were studied using UV-Vis diffuse reflectance and photoluminescence spectroscopy. Photocatalytic activity was examined *via* decolorization of methylene blue under direct sunlight irradiation. It was found that synthesized ZnO powders have a significant photocatalytic activity. Electrochemical properties were studied using linear sweep voltammetry and impedance spectroscopy in Na₂SO₄ electrolyte. ZnO powder synthesized in the presence of CTAB (ZnO/CTAB) showed the most significant reduction of potential and the fastest kinetic of oxygen evolution.