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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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.

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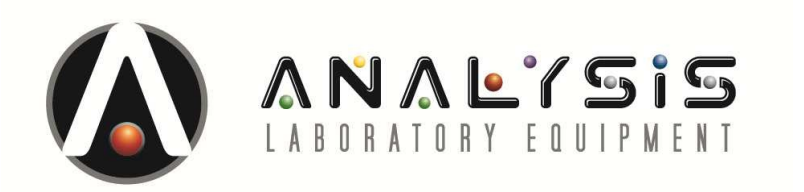

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13-3

Investigation of photo(electro)catalytic efficiency of $BaTi_{1-x}Sn_x$, ZnO and ZnO@$BaTi_{1-x}Sn_x$ (x = 0, 0.05, 0.10) powders

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The aim of this research was to improve photo(electro)catalytic properties of $BaTi_{1-x}Sn_x$ (BTS, x = 0, 0.05, 0.10) powders. For that purpose we employed ZnO to prepare ZnO@BTS composite. *In situ* microwave processing of a ZnO precipitate on previously synthesized BTS particles was used to produce ZnO@BTS composites. The phase composition and crystal structure of BTS, ZnO and ZnO@BTS were examined by X-ray powder diffraction (XRD) and Fourier-transform infrared spectroscopy (FTIR). The powders particles morphology was investigated by field emission scanning electron microscopy (FESEM). The optical properties were studied using UV-Vis diffuse reflectance (DRS) and photoluminescence spectroscopy (PL). Linear voltammetry was used to examine the photoelectrochemical properties of the materials. Photocatalytic properties were tested based on the decolorization of methylene blue (MB) dye in the presence of powder particles, under the influence of simulated sunlight radiation. BTS powders have good electron transfer properties, which has been shown in their function as electrocatalysts, where they have shown better properties than ZnO and ZnO@BTS composites. In contrast, they showed poor photocatalytic efficacy. The precipitation of ZnO particles on BTS, by the method of microwave processing, significantly improves the photocatalytic efficiency of the formed composites, concerning the starting BTS powders. Among the composites, ZnO@BT composite proved to be the most effective photocatalyst.