

**TWENTY-SECOND YOUNG RESEARCHERS'
CONFERENCE
MATERIALS SCIENCE AND ENGINEERING**

December 4 – 6, 2024, Belgrade, Serbia

Program and the Book of Abstracts

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

2024

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Program and the Book of Abstracts

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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 2025.

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Impact of Silver Nanoparticles (AgNPs) on the Piezoelectric Properties of Electrospun PVDF Nanomats

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Poly(vinylidene fluoride) (PVDF) is a polymer widely recognized for its biocompatibility, mechanical resilience, and piezoelectric properties - largely dependent on its β -phase content. This β -phase content can be enhanced through methods such as electrical poling and mechanical stretching, both of which occur during the electrospinning process. Given the antibacterial properties of silver, combining silver nanoparticles (AgNPs) with biocompatible PVDF offers promising applications in biomedical composite fabrication. This study investigates the impact of AgNPs on the β -phase content of PVDF in electrospun nanomats, analyzed through Fourier transform infrared (FTIR) spectroscopy. A comparison between PVDF fabricated by electrospinning and the casting method revealed that electrospinning significantly increased the β -phase fraction. Additionally, incorporating AgNPs (at concentrations of 0.1% and 0.3% w/w) into electrospun fibers further enhanced the β -phase fraction; however, with further concentration increase (0.5% w/w), a reduction in β -phase was observed.