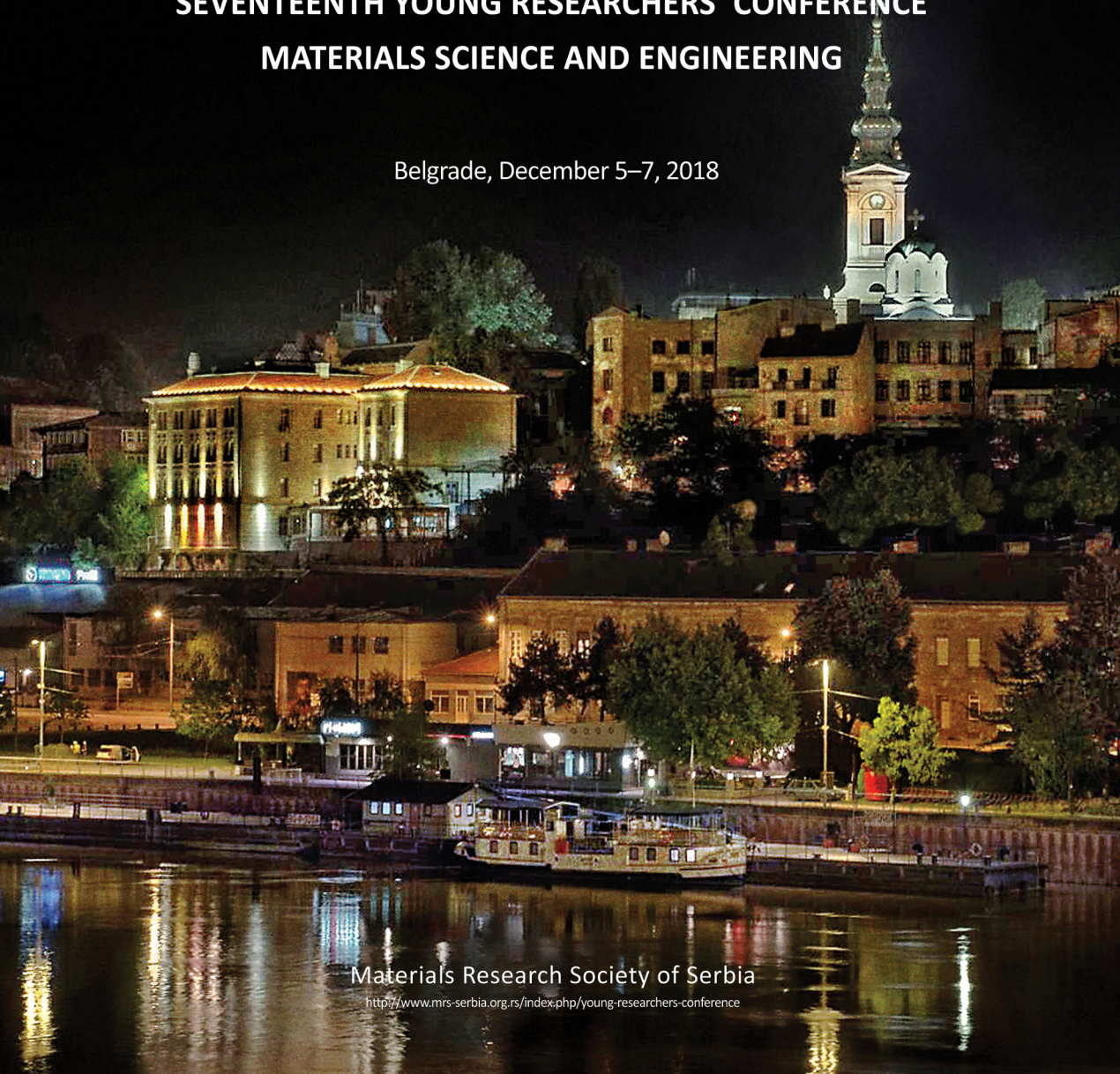
MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

SEVENTEENTH YOUNG RESEARCHERS' CONFERENCE MATERIALS SCIENCE AND ENGINEERING

Belgrade, December 5–7, 2018



Materials Research Society of Serbia
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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
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.

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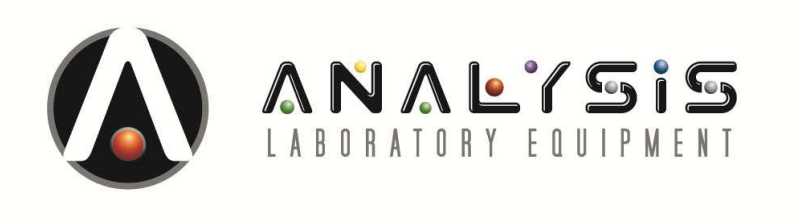

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5-1

Comparative properties of composite poly(lactic-*co*-glycolic acid)/poly(acrylic acid) implants synthesized using ultraviolet and gamma irradiation

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Composite implants comprising a biodegradable hydrophobic polymer matrix and crosslinked hydrogel with fixed ion exchange groups are promising materials for the construction of controlled drug delivery systems. Poly(lactic-*co*-glycolic acid)/poly(acrylic acid) (PLGA/PAA) composite implants in our study were synthesized using the sequential application of irradiation and immersion precipitation. Precursor solutions with all functional components were dispensed into a disc-shaped non-stick mold and cured either by ultraviolet (UV) or gamma irradiation. Cured disks were subsequently immersed in the phosphate buffer saline bath to finalize phase separation and solidification of the implants. The synthesized implants were characterized by FTIR-ATR and DSC, and their basic properties such as ion exchange capacity, swelling degree, and swelling kinetics were examined. Synthesis using gamma irradiation resulted in implants with similar ion exchange capacity, but the greater swelling degree and faster swelling kinetics compared to the implants prepared with UV irradiation. Gamma irradiation also resulted in altered and less homogeneous chemical composition compared to the implants synthesized with UV irradiation. Further investigations are required to determine the differences in drug release kinetics and degradation behavior of the synthesized implants.