

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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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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Antibiotic loaded bioactive orthopedic implant coating

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A single-step electrophoretic deposition (EPD) process from aqueous suspension was used to assess novel composite coating of hydroxyapatite (HAP) with natural polymer chitosan (CS) and antibiotic, gentamicin (Gent). EPD was carried out at constant voltage on pure titanium plates. In order to investigate the gentamicin influence on physico-chemical and biological properties of composite coatings, detailed characterization was performed. For that purpose X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), and field-emission scanning electron microscopy (FE-SEM) were used. Obtained results confirmed the formation of a new composite HAP/CS/Gent coating. Potential application was examined through biological assays. The gentamicin addition strongly improved the antibacterial activity of HAP/CS/Gent coating that was confirmed by agar diffusion method and test in suspension. Obtained results indicated more pronounced antibacterial effect against *Staphylococcus aureus* compared to *Escherichia coli*. MTT and DET tests indicated low cytotoxicity against MRC-5 and L929 tested cell lines, indicating good biocompatibility of obtained composites. MRC-5 human cell line responded better in cytotoxicity testing, pointing to encouraging results for potential application. The ability of biomineralization promotion was noticed through the ALP assay. Therefore, HAP/CS/Gent coating can be considered as perspective material for bone tissue engineering as hard tissue implant.

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