

MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA



Programme and the Book of Abstracts

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

Belgrade, December 4–6, 2019

<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
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 2020.

Sponsors



ANALYSIS
LABORATORY EQUIPMENT

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**Osteogenic differentiation of dental pulp stem cells
influenced by synthesized calcium phosphate-based nanomaterial *in vitro***

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Dental pulp stem cells (DPSCs) are mesenchymal stem cells that may have a versatile and abundant application in regenerative medicine and dentistry due to their availability, possibility of isolation from different types of teeth and potential to differentiate into several cell types. In recent years, there is an emerging trend of the use of nanomaterials in medicine and dentistry that, by virtue of their unique properties, have become very attractive as a tool for the treatment of bone tissue defects. The aim of our study was to examine the potential of synthesized nanomaterial, intended for bone tissue engineering and regenerative applications, biphasic calcium phosphate coated with poly-D,L-lactide-co-glycolide (CP/PLGA), to influence the osteogenic differentiation of DPSCs. Cells were obtained from the mature healthy teeth by outgrowth of the cells from undigested pulp pieces during culturing, in standard cell culture conditions. Cells were subjected to osteogenic differentiation for seven and 14 days by culturing the cells with two concentrations of CP/PLGA nanoparticles in the presence or absence of osteogenic supplements in the media. Osteogenic differentiation was assessed by phase contrast microscopy as well as by Von Kossa and Alizarin Red S staining of formed inorganic deposits. The results showed that CP/PLGA influenced osteogenesis in concentration-dependent manner and differently in osteogenic and standard cell culture media. The use of calcium phosphate-based nanomaterials in combination with DPSCs, under certain conditions, could be a promising approach in regenerative medicine and dentistry.

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