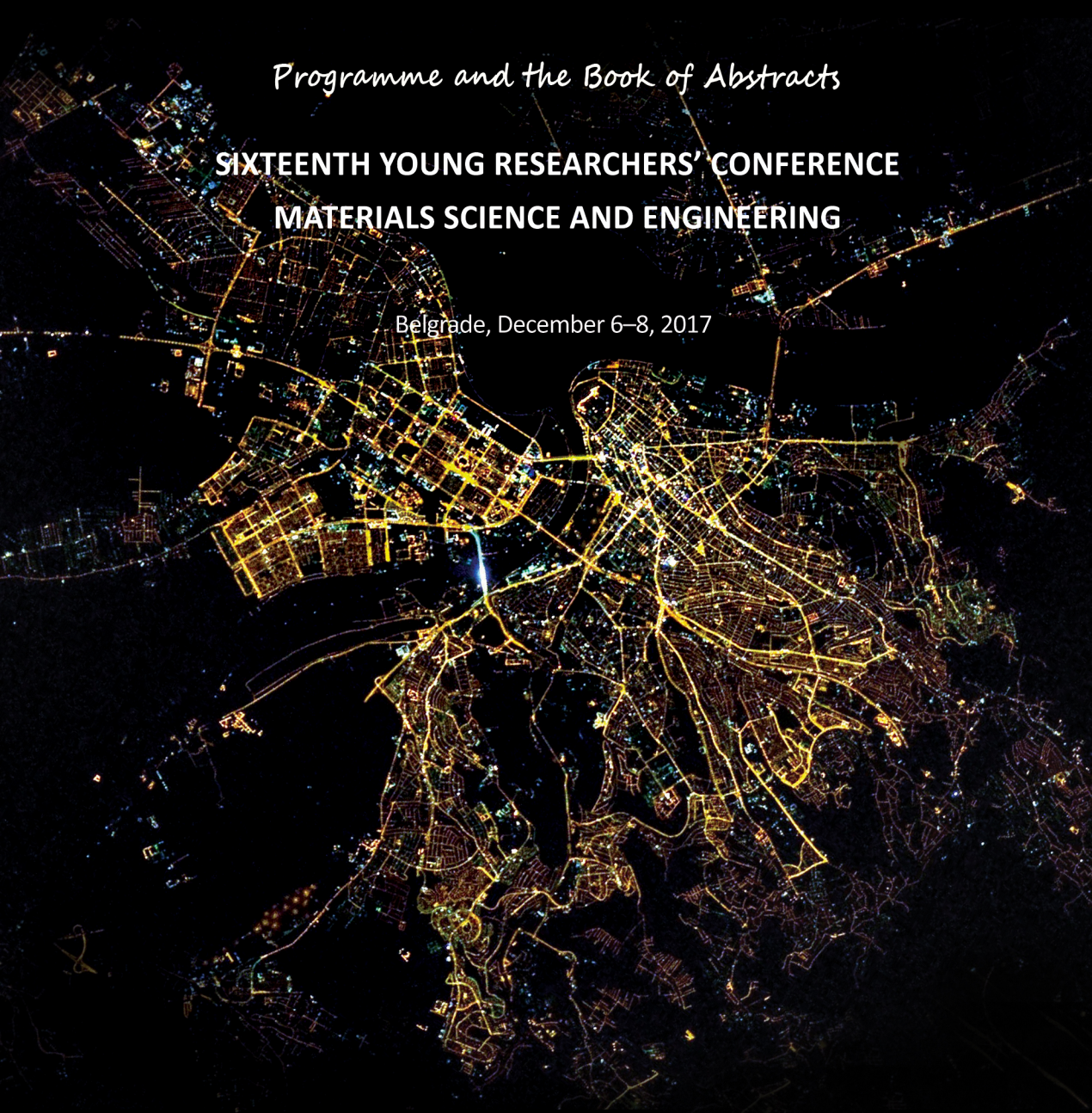


MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

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

Belgrade, December 6–8, 2017



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Program and the Book of Abstracts

**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
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 journals “Tehnika – Novi Materijali” and “Processing and Application of Ceramics“. 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 2018.

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**Photo-driven upconversion in NaYF₄:Yb,Er@chitosane particles
for cancer cells bioimaging**

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Lanthanide doped up-converting nanoparticles (UCNPs) have significant role in biomedical field, especially in cell imaging and target drug delivery, due to their convenient luminescent properties. For that purpose UCNPs should have the specific morphological and luminescent characteristics. In this study the biocompatible NaYF₄:Yb,Er@Chitosane particles were synthesized through one-step hydrothermal synthesis. Obtained particles were characterized in detail using X-ray powder diffraction (XRPD), Fourier-transform infrared (FTIR) spectroscopy, field emission scanning and transmission electron microscopy (FESEM and TEM) and photoluminescence measurement (PL). Structural refinement data show the presence of cubic (Fm-3m) phase in spherical shaped nanoparticles size up to 200 nm, while the FTIR analysis revealed the presence of chitosan on the particle surface which have no influence on the luminescence efficiency of the UCNPs. Cytotoxicity as well as cell labeling capability of synthesized UCNPs were tested in vitro on the human gingival fibroblasts (HGF) and head and neck squamous carcinoma cells (HNSCC). The results show excellent biocompatibility against HGF, and successful in- vitro visualization of HNSCC cell cultures upon 980 nm laser irradiation.