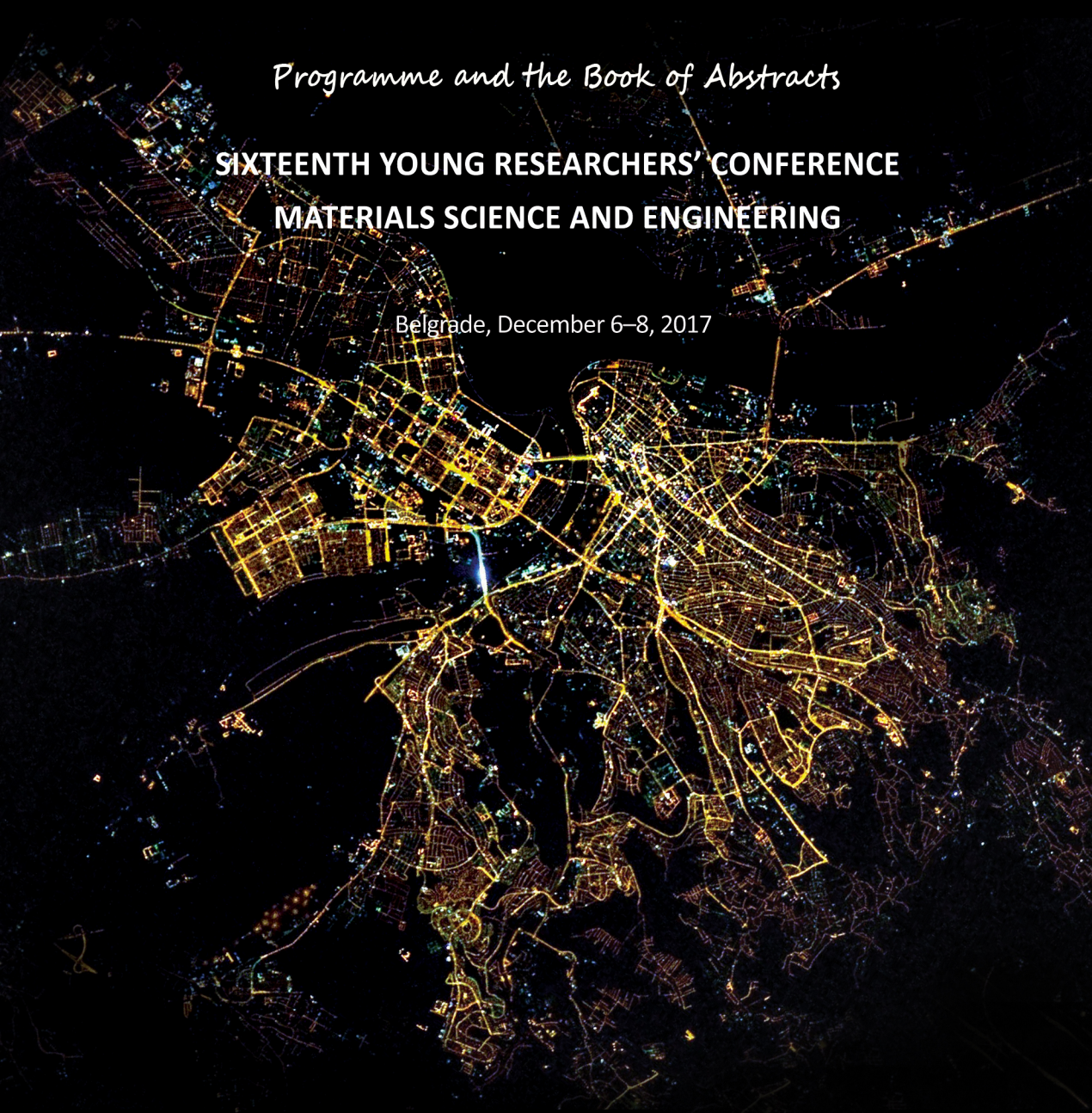


MATERIALS RESEARCH SOCIETY OF SERBIA  
INSTITUTE OF TECHNICAL SCIENCES OF SASA

*Programme and the Book of Abstracts*

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

Belgrade, December 6–8, 2017



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MATERIALS SCIENCE AND ENGINEERING**

**December 6-8, 2017, Belgrade, 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 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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**Electrochemically obtained bioactive nanocomposite coating  
based on hydroxyapatite and chitosan loaded with gentamicin**

Milena Stevanović,<sup>1</sup> Ana Janković,<sup>1</sup> Marija Đošić,<sup>2</sup>

Maja Vukašinović-Sekulić,<sup>1</sup> Vesna Mišković-Stanković<sup>1</sup>

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A broad spectrum antibiotic-gentamicin was loaded in a composite coating of hydroxyapatite (HAP) with natural polymer chitosan (CS) using electrophoretic deposition (EPD) technique. EPD was carried out at the constant voltage on pure titanium plates from an aqueous suspension. The aim was to assemble porous homogenous coating with improved mechanical strength and favourable antibacterial properties. HAP/CS/Gent coating was characterized by X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), thermogravimetric analysis (TGA) and field emission scanning electron microscopy (FE-SEM). Obtained results confirmed the formation of a new composite coating HAP/CS/Gent. In the XRD spectrum of HAP/CS/Gent only characteristic crystal planes of HAP were detected. FTIR analysis confirmed the formation of intermolecular and intramolecular hydrogen bonds in the composite coating. TGA analysis was employed to investigate the thermal stability of HAP/CS/Gent. The bioactivity of HAP/CS/Gent composite coating was proved by SEM analysis. The obtained SEM micrographs indicate the biomimetic growth of a new apatite layer after immersion in SBF. The antibiotic loaded coating (HAP/CS/Gent) exhibited good antibacterial activity against *Staphylococcus aureus* and *Escherichia coli*, indicating the high potential for biomedical applications. Additionally, the results have shown that the antibacterial effect of HAP/CS/Gent was more pronounced against *S. aureus* compared to *E. coli*.

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