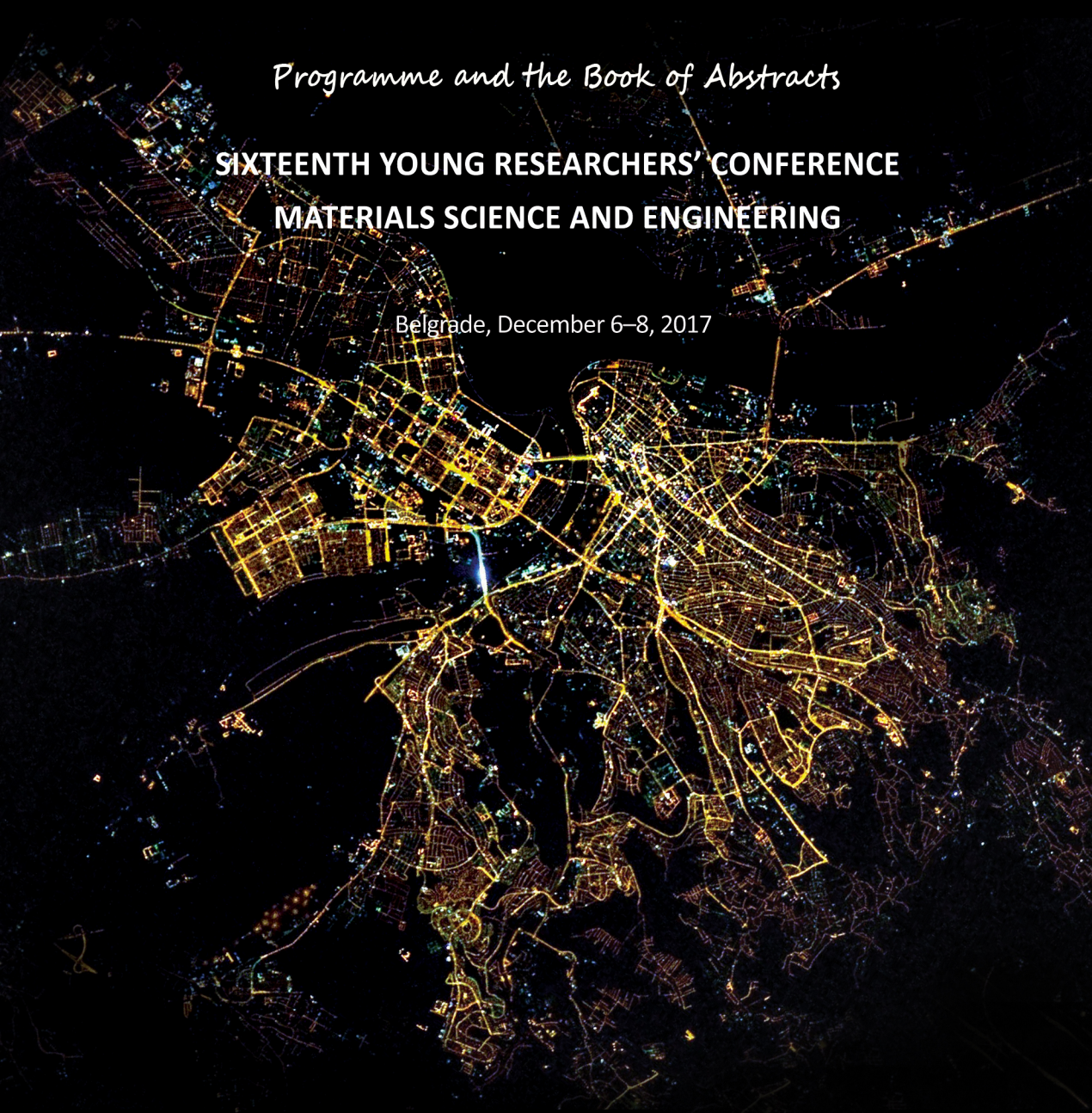


MATERIALS RESEARCH SOCIETY OF SERBIA  
INSTITUTE OF TECHNICAL SCIENCES OF SASA

*Programme and the Book of Abstracts*

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

Belgrade, December 6–8, 2017



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**Materials 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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13-3

### **Synergistic solid lubricants system based on selected sulfides of technology metals**

Nataša Gajić,<sup>1</sup> Zoran Anđić,<sup>2</sup> Jovana Đokić,<sup>2</sup> Željko Kamberović<sup>3</sup>

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Technology advances have resulted in a growing demand for the new tribology materials. In development of the properties of tribology materials, improvements can be achieved by combining materials in form of composites. The aim of this work was production of solid lubricants composites based on sulfides of technology metals. Selected solid lubricant powders, tin sulfides ( $\text{Sn}_x\text{S}_y$ ) and tungsten disulfide ( $\text{WS}_2$ ), were synthesized by pyrometallurgical method in rotary tilting tube furnace (ST-1200RGV). The chemical thermodynamic parameters of the synthesis were determined using HSC Chemistry software modeling package. Characterization of the obtained powders included analysis of chemical composition by optical emission spectroscopy, phase composition identification by X-ray diffraction (XRD) and microstructural examination by the scanning electron microscopy (SEM) and energy-dispersive spectroscopy (EDS). Finally, the tribological properties of the as-synthesized powders in composite mixture were estimated. It has been shown the beneficial synergistic effect due to unique combination of properties between tin sulfides and tungsten disulfide in composite. In addition, advantage of synergistic tribology material ( $\text{Sn}_x\text{S}_y/\text{WS}_2$ ) is simple method of synthesis and environmentally acceptable components of the composite.

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