

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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**Biosorption of Cu<sup>2+</sup> from aqueous solution by alkali modified waste jute woven fabrics**

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Waste jute fabrics (raw and alkali modified), acquired as waste from different industries were used as an efficient biosorbent for removal of Cu<sup>2+</sup> ions from aqueous solution. All woven jute fabrics (raw as well as alkali modified) were characterized by determination of their chemical composition and amount of carboxyl groups. The effect of solution pH, contact time and initial metal ion concentration on the biosorption were studied. The alkali modifications lead to hemicelluloses removal and an increased amount of carboxyl groups. The maximum biosorption capacity for Cu<sup>2+</sup> was observed at pH 5.5. Concerning the contact time, more than 80% of total Cu<sup>2+</sup> uptake by the raw jute fabric was removed within 1 h. On the other hand, in the case of alkali modified jute fabrics, between 70-75% of the total Cu<sup>2+</sup> uptake was removed within 3 h. Increased initial ion concentration from 10 to 20 mg/l caused an increase in the total uptake capacity of alkali modified jute fabrics for 42-55%. It was found that the biosorption properties of waste jute fabrics are predominantly influenced by the amount of carboxyl groups, while fabric chemical composition (i.e. hemicelluloses content) has a secondary role in the biosorption of Cu<sup>2+</sup> ions. The best biosorption performance possesses alkali modified jute fabric with 58% higher amount of carboxyl groups; its total uptake capacity towards Cu<sup>2+</sup> ions (at 20 mg/l) is about 2 times higher compared to the raw jute fabric.

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