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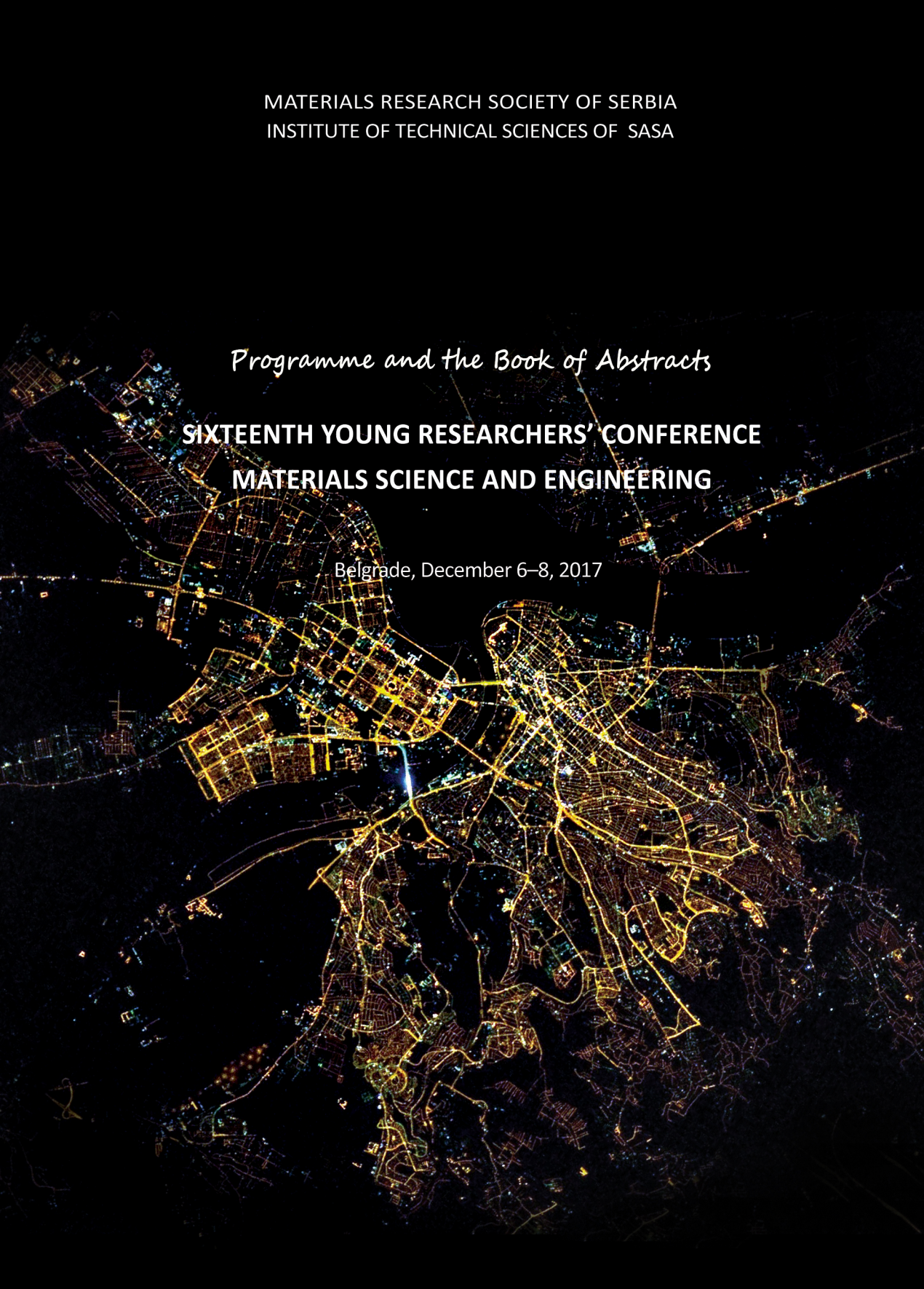

Programme and the Book of Abstracts

SIXTEENTH YOUNG RESEARCHERS' CONFERENCE
MATERIALS SCIENCE AND ENGINEERING

Belgrade, December 6–8, 2017

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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.

Sponsors

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13-1

Monitoring oxidation of cellulose fibers using zeta potential measurements

Ana Kramar, Marina Knežević, Teodora Hajnrih, Matea Korica,
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Oxidation of cellulose fibers is usual procedure for surface cleaning and introducing new functionalities in their structure. Due to the presence of three hydroxyl groups on each glucopiranose unit, cellulose is very susceptible to oxidation. The most desirable and positive effect of oxidation is introduction of acidic carboxyl groups in cellulose structure. Acidic groups contribute to the surface charge of fibers and have influence on streaming potential of fibers. In this work cellulose fibers (cotton and viscose) with different amounts of COOH groups were prepared via oxidation with $KMnO_4$, $NaIO_4$ and $NaClO_2$ under various treatment conditions. Carboxyl group content and zeta potential measurements were carried out in order to investigate influence of acidic groups' quantity on surface charge of fibers. Results could help to anticipate how processing technique such as oxidation would influence further textile fibers processing, since surface charge is directly related to the reactivity of cellulose to a different agents, e.g. dyes, finishing agents, drug compounds for wound treatment, etc.

13-2

Air permeability of differently softened cotton and cotton/elastane knitted fabrics

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The influence of different amount of elastane and different processing stages on the structural properties and air permeability of knitted fabrics have been studied. Samples made of 100% cotton yarn; elastane yarn in alternating courses (half plating) and elastane yarn in every course (full plating) were scoured, bleached or dyed with reactive dyes, finished or not finished with cationic or silicone softener in industrial conditions. Elastane in blends increased the fabric weight and thickness and decreased the air permeability. Considerable differences in structural properties and air permeability after different finishing stages were found. Bleached knitted fabrics which were not softened have smaller thickness compared to softened. Softened knitted fabrics have higher weight compared to not softened. Air permeability of 100% cotton bleached and dyed knitted fabrics increases in the following way: not softened < softened with cationic softener < softened with silicone softener. Air permeability of cotton/elastane bleached and dyed knitted fabrics increases in the opposite direction of 100% cotton knits.