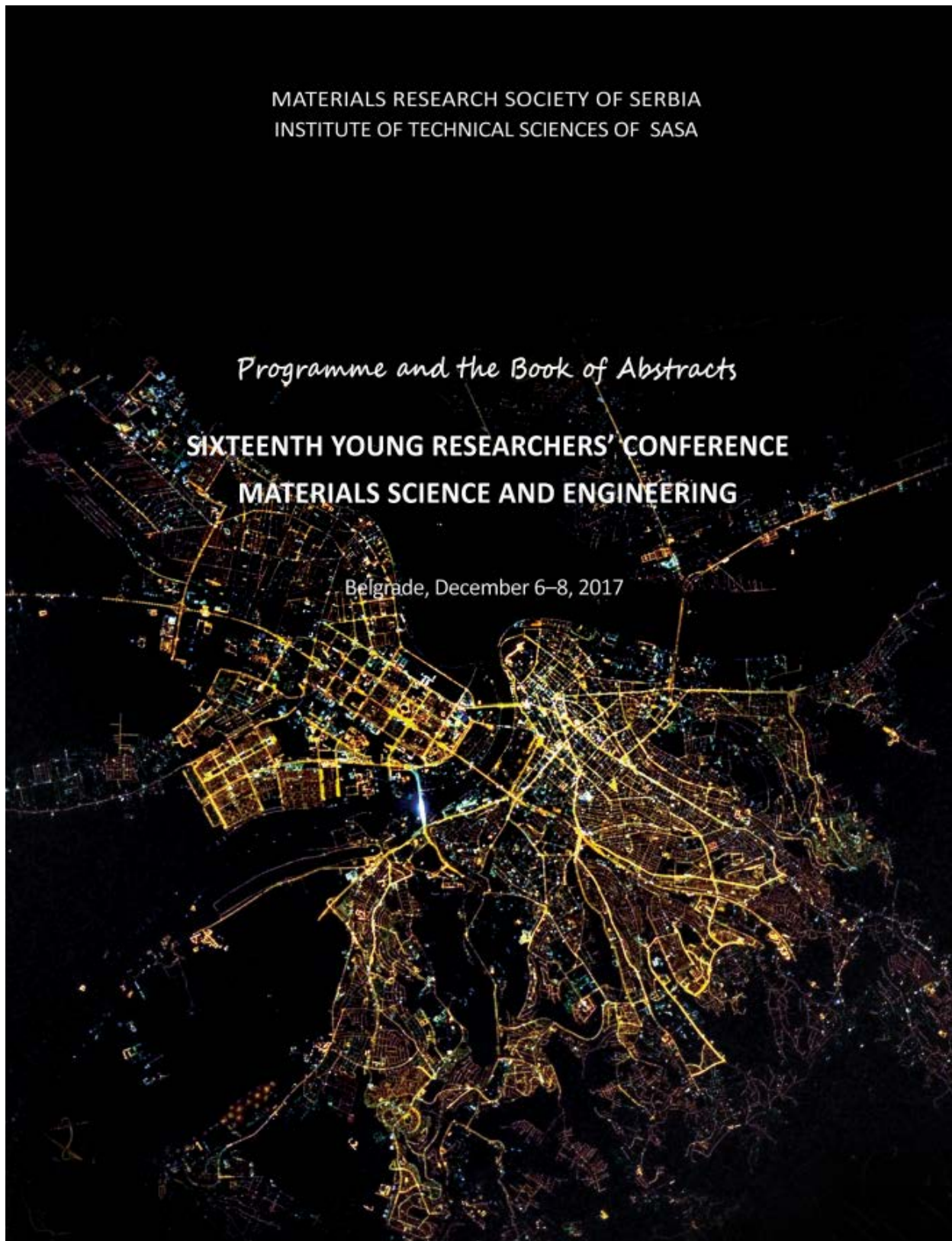


MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

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

Belgrade, December 6–8, 2017



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13-1

Monitoring oxidation of cellulose fibers using zeta potential measurements

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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 glucopyranose 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.