Twelfth Young Researchers’ Conference
Materials Science and Engineering

December 11-13, 2013, Belgrade, Serbia
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Program and the Book of Abstracts

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
Nanostructured materials
New synthesis and processing methods
Materials for high-technology applications
Biomaterials

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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.
12.45 – 13.00 A comparative study of dissolution behavior of bioactive glass ceramics in SBF-K9 and r-SBF
Muhammad Usman Hashmi¹, Saqlain Abbas Shah²
¹Department of Applied Sciences, Superior University Lahore 54000, Pakistan
²Physics Department, F. C. College University, Lahore 54000, Pakistan

13.00 – 13.15 Pectin and poly(ethylene glycol) based films: mechanical and structural properties
Sanja Šešlija¹, Aleksandra Nešić², Roberto Avolio³, Maria Errico³, Mario Malinconico³, Sava Veličković⁴
¹Innovation Centre of the Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia,
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³Institute on Polymer Chemistry and Technology, Pozzuoli (Na), Italy,
⁴University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia

13.15 – 13.30 Effect of starch gels preparation on the supercritical impregnation of Thymol
Stoja Milovanović, Jasna Ivanović, Irena Žizović
University of Belgrade, Faculty of Technology and Metallurgy, Knežev trg 46, 11000 Belgrade, Serbia

13.30 – 13.45 Partial characterization of levan from Brachybacterium sp. CH-KOV3
Aleksandra Djurići¹, Branka Kekez¹, Jovana Stefanović-Kojić¹, Dragica Jakovljević², Gordana Gojić-Cvijović², Ljubiša Ignjatović³, Vladimir P. Beškoski¹,², Miroslav M. Vrvić¹,²
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13.45 – 14.00 Microbial polysaccharides as a prospective base for new materials
Branka Kekez¹, Marija Lješević¹, Aleksandra Djurići¹, Jovana Stefanović-Kojić², Dragica Jakovljević², Gordana Gojić-Cvijović², Vladimir P. Beškoski¹,², M.M. Vrvić¹,²
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14.00 – 14.15 Lunch break with refreshments

15.15 – 17.15 3rd Session – Nanomaterials I: Synthesis and Characterization
Chairpersons: Dr. Smilja Marković, Prof. Dr. Nebojša Mitrović and Jelena Zagorac
Partial characterization of levan from *Brachybacterium sp. CH-KOV3*

Aleksandra Djurić¹, Branka Kekez¹, Jovana Stefanović-Kojić¹, Dragica Jakovljević², Gordana Gojić-Cvijović², Ljubiša Ignjatović³, Vladimir P. Beškoski¹,², Miroslav M. Vrvić¹,²

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Microbial polysaccharides are characterized by high structural diversity leading to their applications in various fields: food industry, agriculture, pharmacy and medicine. In recent years, much attention was given to bacterial exopolysaccharide levan, due to specific physical and chemical properties and non-toxicity, for which it could be applied as an emulsifier, flavor and fragrance carrier, prebiotic, antioxidant and antitumor agent.

The aim of this work was to investigate structure of exopolysaccharide produced by *Brachybacterium sp.* CH-KOV3 by planar chromatography, elemental analysis, FTIR, NMR and conduct basic rheological characterization. It has been shown that the investigated biopolymer belongs to levan-type polysaccharide.

Microbial polysaccharides as a prospective base for new materials

Branka Kekez¹, Marija Lješević¹, Aleksandra Djurić¹, Jovana Stefanović-Kojić², Dragica Jakovljević², Gordana Gojić-Cvijović², Vladimir P. Beškoski¹,², M. M. Vrvić¹,²

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Microbial polysaccharides (MPs) have high structural variety which leads to a wide diversity of their applications. Main characteristics of these polymers produced by microorganisms are non-toxicity, biocompatibility and biodegradability, which is a significant advantage compared to synthetic polymers. Many of the MPs show a number of attractive properties. Among the most studied MPs is the β-glucan from *S. cerevisiae*, due to its antitumor/antiviral activity and possessing a *bifidogenic effect*. Pullulan from *A. pullulans* has excellent properties as the result of its unique structure. Levan from *B. licheniformis* strain has potential for many applications, including synthesis of nanoparticles.