The Serbian Society for Ceramic Materials
Institute for Multidisciplinary Research (IMSI), University of Belgrade
Institute of Physics, University of Belgrade
Center of Excellence for the Synthesis, Processing and Characterization of Materials for use in Extreme Conditions "CEXTREME LAB" - Institute of Nuclear Sciences "Vinča", University of Belgrade
Faculty of Mechanical Engineering, University of Belgrade
Center for Green Technologies, Institute for Multidisciplinary Research, University of Belgrade
Faculty of Technology and Metallurgy, University of Belgrade
Faculty of Technology, University of Novi Sad


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# PROGRAMME AND THE BOOK OF ABSTRACTS

## 5th Conference of The Serbian Society for Ceramic Materials

**June 11-13, 2019**
**Belgrade, Serbia**
**5CSCS-2019**

Edited by:
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MWCNT and graphene oxide layers onto the substrates, samples were dried for 1 hour at 200 °C, and afterwards thermally treated in the vacuum at different temperatures, from 300 °C to 500 °C. Structural and morphological characterization of the films was analyzed with Raman spectroscopy and atomic force microscopy. Transmission of the samples was measured on UV/Vis spectrophotometer and FTIR. Transparency of the films in the infrared range was between 40 and 50%. Resistivity of the samples was measured, and it varied from 50 to 100 kΩ.

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## INFLUENCE OF ZnO NANOPARTICLES ON SLOW RELEASE OF ESSENTIAL OIL FROM POLYMERIC MATRIX

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Biopolymer emulsions were processed in the form of thin films for application in active food packaging. Active packaging is defined as material designed to release active components into food or absorb them from food in order to extend durability or to maintain/improve packaging conditions and extend shelf-life of food. We synthesized emulsion based on biodegradable polymers (pectin, gelatin, chitosan) with addition of active components -essential oils and ZnO nanoparticles (NPs). By introducing essential oils in the polymer matrix, with the addition of certain emulsifiers, it comes to encapsulation of oil droplets and the formation of a homogeneous emulsion. Thin films were fabricated by mold casting or spraying of the emulsions on a substrate. The slow release of an essential oil from the polymeric matrix was determined by UV-vis spectrophotometry. It was shown that polymers with addition of nanoparticles provided a prolonged action of active components. Surface morphology of the films was characterized by atomic force microscopy (AFM), and it was noticed that nanoparticles were mainly accumulated around oil droplets, which additionally contributed to a slow release of the active components.