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 of Excellence for Green Technologies, Institute for Multidisciplinary Research, University of Belgrade
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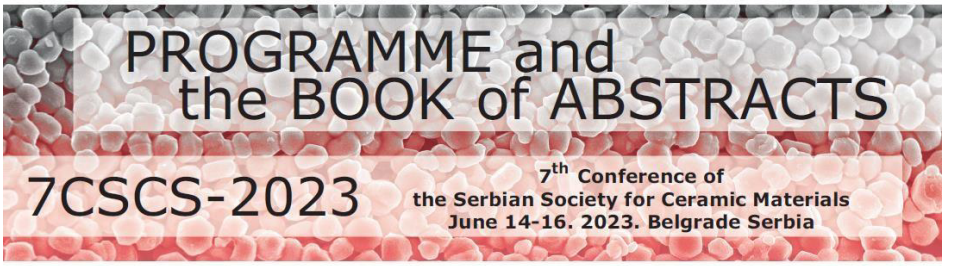

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P-4

Mg SUBSTITUTED HYDROXYAPATITE FOR APPLICATION IN BONE TISSUE ENGINEERING

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Magnesium (Mg) is an essential element in the human body primarily stored in bones. Mg ions have many potential benefits for bone tissue showing excellent osteogenic inductivity [1]. The aim of this study was to synthesize Mg substituted hydroxyapatite (Mg-HAP) for application in bone tissue engineering and to assess its behaviour in conditions mimicking physiological ones. Mg-HAP was synthesized using reflux method and its structural and morphological characterization was performed by XRD, FTIR and SEM. The changes in local structure and composition after irradiation and immersion in physiological solution and simulated fluid were assessed by electron paramagnetic resonance (EPR) spectroscopy. The results of EPR analysis pointed out that irradiation did not change the composition and structure of Mg-HAP. After immersion in model media (simulated body fluid and saline solution), the small amount of by-product of synthesis disappeared after 24 h and Mg-HAP remained the only phase. Also, the radical signals in EPR spectra faded away after 28 days in model media, showing that the structure and composition of Mg-HAP both went through a kind of stabilization in simulated physiological conditions. These results make the investigated Mg-HAP promising material for application in bone tissue engineering.

1. J.L. Wang, J.K. Xu, C. Hopkins, D.H. Chow, L. Qin, *Adv. Sci. (Weinh)* **7** (2020) 1902443.