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
Faculty of Technology and Metallurgy, University of Belgrade

PROGRAMME and the BOOK of ABSTRACTS

6CSCS-2022

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Branko Matović
Aleksandra Dapčević
Vladimir V. Srdić

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Prof. Vladimir V. Srdić

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ULTRASONIC SYNTHESIS AND CHARACTERIZATION OF MESOPOROUS MONOCLINIC $BiVO_4$ NANOPOWDER

Stefan T. Jelić[1], Jovana Ćirković[1], Jelena Jovanović[1], Aleksandar Radojković[1], Tatjana Novaković[2], Goran Branković[1], Zorica Branković[1]

[1]Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia
[2]Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

The $BiVO_4$ sample was successfully synthesized from a mixture of ammonium vanadate, bismuth(III) nitrate, and nitric acid exposed to ultrasound irradiation. Structure, microstructure and optical properties of the obtained $BiVO_4$ nanopowder were investigated. X-ray diffraction (XRD) analysis confirmed single phase monoclinic lattice system with average crystallite size of 50 nm in diameter. Scanning electron microscopy (SEM) micrographs revealed the tendency of crystallites to agglomerate forming larger irregular sub-micron spheres. Brunauer-Emmett-Teller (BET) method was used to estimate the specific surface area of the sample and determine pore shape and size. UV–vis spectroscopy measurements have revealed favorably high absorbance of the visible light with the calculated band-gap value of 2.48 eV. Calculated values of valence and conducting band energies are +2.77 eV and +0.29 eV respectively, suggested that $BiVO_4$ can be used for photocatalytic degradation under sunlight irradiation as evident from the UV–vis spectrum.