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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STRUCTURAL, OPTICAL AND PHOTOCATALYTIC PROPERTIES OF $BiFeO_3$ NANOPARTICLES

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$BiFeO_3$ (BFO) precursor powder was synthesized by ultrasound asissted sol–gel route at relatively low temperature, starting from Bi-nitrate, Fe-nitrate, and ethylene glycol. Structural, optical, and photocatalytic properties of the obtained powder were investigated. X-ray diffraction analysis confirmed that thermal treatment of precursor powder at 500 °C led to formation of pure phase $BiFeO_3$. BFO is p-type semiconductor where determined band gap was 2.20 eV, indicating its potential application as visible-light-response photocatalyst. Mott-Schottky measurements were performed to determine flat band potential and position of valence and conduction bands. Obtained BFO powder is used for photocatalytic degradation of typical organic azo dye Mordant Blue 9 in concentration of 50 mg/l. Measurements were performed for different times of irradiation and *p*H of the dye solution. Photodegradation products were analyzied by HPLC technique, and mechanism of photocatalytic degradation of organic dye was proposed.