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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MAGNETIC PROPERTIES OF Fe_2TiO_5

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Iron(III) titanates are composed of earth-abundant elements and are attracting rapidly growing interest as highly promising candidates for solar-energy as well as optoelectronics applications. Fe_2TiO_5 is generally recognized as potential thermoelectric material. We studied the magnetic properties of pseudobrookite material Fe_2TiO_5 by means of Vibrating Sample Magnetometer and Superconducting Quantum Interferometer Device Magnetometer. The material was synthesized by the sol-gel method and characterized by powder x-ray diffraction. The diffractogram was refined with the help of Rietveld refinement on FullProf Suite. Temperature-dependent ZFC and FC magnetization was measured on SQUID for lower temperature down to 2 K and on VSM for higher temperatures up to 1000 K. A transition was observed at 815 K with a separation between the ZFC and FC curves. Parallelly the bifurcation in the isothermal hysteresis measurements indicates that the system exhibits dominant canted AFM (or weak FM) with a small amount of spin glass. The small value of the moment was also pointing towards the canted AFM ordering. Transmission electron microscopy (TEM) and the scanning electron microscopy (SEM) were used to determine the particle size and morphology.