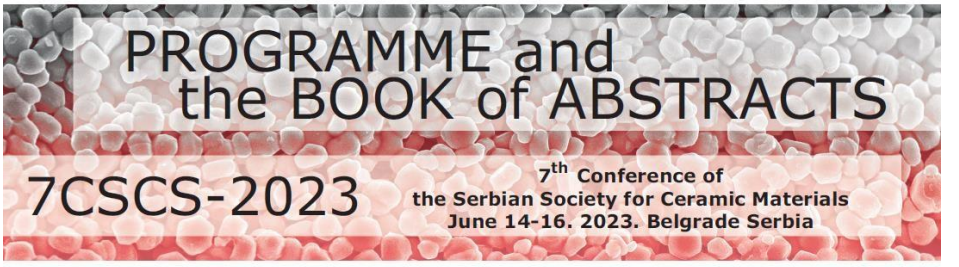
The Serbian Society for Ceramic Materials
Institute for Multidisciplinary Research (IMSI), University of Belgrade
Institute of Physics, University of Belgrade
Center of Excellence for the Synthesis, Processing and Characterization of Materials for use in Extreme Conditions "CEXTREME LAB" - Institute 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



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Branko Matović
Jelena Maletaškić
Vladimir V. Srdić

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P-45

SYNTHESIS, STRUCTURE AND MAGNETIC PROPERTIES OF Fe_2TiO_5

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Iron(III) titanates are attracting rapidly growing interest as very promising candidates for applications in solar energy and optoelectronics because they contain earth-rich elements. Potentially, Fe_2TiO_5 is a thermoelectric material. We used a Vibrating Sample Magnetometer and Superconducting Quantum Interferometer Device Magnetometer to study the magnetic properties of the pseudobrookite material Fe_2TiO_5. The material was synthesized by the sol-gel method. The structural parameters of the synthesized samples were investigated by X-ray analysis. 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. The size and morphology of the particles was determined using transmission electron microscopy (TEM) and scanning electron microscopy (SEM).