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Abstract

Vanadium ions substituted BaFe₁₂O₁₉ nanohexaferrites, BaFe_{12-x}V_xO₁₉ (0.0 ≤ x ≤ 0.1), were produced through the sol-gel auto-combustion route. The structure, morphology and the elemental compositions of various products were examined using X-ray powder diffraction, scanning electron microscopy coupled with EDX and EDS elemental mapping. These techniques confirmed the formation of the desired Ba-nanohexaferrite phases. The crystallites size was found to be 55-58 nm range for all products. The magnetic properties of BaFe_{12-x}V_xO₁₉ nanohexaferrites were investigated by Mossbauer spectroscopy, ZFC-FC magnetizations and AC susceptibility. The evolutions in the values of hyperfine magnetic field, isomer shift, quadrupole splitting, and line width were

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