

The Effect of Manganese Substituted *M*-type Hexagonal Ba-ferrite

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The Mn-substituted *M*-type Ba-ferrite ($\text{BaFe}_{12-x}\text{Mn}_x\text{O}_{19}$; $x = 0, 2, 4, 6$) powders were prepared by the HTTD (High Temperature Thermal Decomposition) method. The effect of Mn^{3+} Jahn-Teller ions on the magnetic properties has been studied by x-ray diffraction, vibrating sample magnetometry, and Mössbauer spectroscopy. With increasing Mn substitution, the lattice parameter a_0 increases while c_0 decreases. The magnetocrystalline anisotropy constants (K_1) were determined as 2.9, 2.2, 1.8, and, 1.3×10^6 erg/cm³ for $x = 0, 2, 4,$ and 6, respectively, by the LAS method. We have studied the change of cation distribution by Mössbauer spectroscopy which is closely related to K_1 .

Keywords : Ba-ferrite, Mössbauer spectra, magnetocrystalline anisotropy, cation distribution