

## MAGNETIC PROPERTIES OF $\text{Sr}_{0.75}\text{Ba}_{0.25}\text{Fe}_{12}\text{O}_{19}$ HEXAFERRITE

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$\text{Sr}_{0.75}\text{Ba}_{0.25}\text{Fe}_{12}\text{O}_{19}$  has been studied by x-ray, TEM, Mössbauer spectroscopy and vibrating sample magnetometry. The crystal structure is the M-type hexagonal and lattice parameters are found to be  $a_0 = 5.878 \text{ \AA}$  and  $c_0 = 23.111 \text{ \AA}$ . Mössbauer spectra of  $\text{Sr}_{0.75}\text{Ba}_{0.25}\text{Fe}_{12}\text{O}_{19}$  have been taken at various temperature ranging from 13 to 780 K. A fitting model employing five independent components, each a sextet, yielded the magnetic hyperfine field and quadrupole splitting of each site as a function of sample temperature. The isomer shifts indicate that the charge states of the Fe ions have ferric characters. The Curie temperature,  $T_c$ , are determined to be 765 K, which is in fairly good agreement with that determined from VSM data. This  $T_c$  is higher than the typical M-type hexaferrites ( 730 K ).