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Magnetic characterization of La^{3+} and Li^{1+} co-substituted M-type strontium hexaferrite

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ABSTRACT

Effects of stoichiometric La^{3+}–Li^{1+} co-substitution on magnetic properties of M-type strontium hexaferrites $Sr_{1-x}La_xFe_{12-x/2}Li_{x/2}O_{19}$ (x = 0, 0.25, 0.4, 0.5, 0.6) have been studied by using crystallographic and magnetic measurements. Samples were prepared thru conventional ceramic technique and their powder X-ray diffraction profiles were checked by the Rietveld method using GSAS package. Field emission scanning electron microscopy images show that lithium addition derives the enhanced degree of grain separation, which significantly affects the coercivity and anisotropy constant as examined by vibrating sample magnetometer measurement. ^{57}Fe Mössbauer spectra of the samples show that Li^{1+} ions preferentially occupy the 2*a* sites, which causes the decrease of M_S with lithium addition.