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# Mössbauer studies for La–Co substituted strontium ferrite

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## Abstract

La–Co substituted Sr ferrite  $(\text{La-Co})_x\text{Sr}_{1-x}\text{Fe}_{12-x}\text{O}_{19}$  ( $x = 0.0–0.4$ ) powders synthesized by sol–gel process were investigated for their magnetic properties. The crystalline structures were characterized by X-ray diffractometer (XRD), and magnetic properties were measured by vibrating sample magnetometer (VSM) and Mössbauer spectrometer. The crystalline structure of  $(\text{La-Co})_x\text{Sr}_{1-x}\text{Fe}_{12-x}\text{O}_{19}$  ( $x = 0.0–0.4$ ) was single *M*-type hexagonal phase. Magnetization under an applied maximum field of 15 kOe was measured 63.9 emu/g for  $x = 0.0$ , and decreased gradually for  $x = 0.2$ , and increased slightly over  $x = 0.2$ . Coercivity,  $H_C$ , measured 7.5 kOe of maximum value for  $x = 0.2$ . With increasing  $x$ , we interpret that it is closely related to La–Co occupation of  $4f_2$  and  $12k$  sites from the analysis of Mössbauer spectra.

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