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Mössbauer Studies of Z-Type $Sr_3Co_2Fe_{24}O_{41}$ Strontium Ferrite

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$Sr_3Co_2Fe_{24}O_{41}$ plocrystalline sample was synthesized by using a polymerizable complex method. We investigated the crystallographic and the magnetic properties of sample by using X-ray diffractometer, vibrating sample magnetometer, and Mössbauer spectrometer. Based on the Rietveld refinement, the crystal structure of the sample was found to be single-phased and to be hexagonal with space group of $P6_3/mmc$. The hysteresis curves of sample were measured under 15 kOe at various temperatures ranging from 4.2 and 295 K. From the temperature dependence of the magnetization curves under 100 Oe at temperatures between 4.2 and 740 K, three temperature-dependent magnetic transitions were found to have occurred in the $Sr_3Co_2Fe_{24}O_{41}$ sample. The Mössbauer spectra of the samples were obtained at various temperatures ranging from 4.2 and 295 K.

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