

Article Abstract

Title:	Mössbauer and magnetization studies of nanosize chromium ferrite
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Abstract:	Nanosize chromium ferrite (CrF) powder samples were synthesized by citrate precursor route in the size range of 6 to 35 nm. The structural and magnetic behaviour of these samples were studied using X-ray diffraction (XRD), vibrating sample magnetometer (VSM) and Mössbauer spectroscopic techniques. Synthesized chromium ferrite powders were in good phase and showed spinel structure in the XRD pattern. Nanocrystalline CrF powder samples interact with the laboratory magnet strongly and show large magnetization in the VSM measurement. In these CrF samples, maximum magnetization sensitively depends on the particle size of synthesized powders. We observed about 12 A-m ² /kg of magnetization in 35 nm chromium ferrite samples. In spite of this much magnetization in the chromium ferrite nanoparticles, no hyperfine splitting was observed even down to a temperature 16 K.
Keywords:	Mössbauer spectroscopy, Ferrites, nanophase iron, magnetic nanoparticles.