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Neutron diffraction and magnetotransport properties in sulphur spinel

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Abstract

Magnetic properties and magnetotransport of FeCr_2S_4 , $\text{Co}_{0.1}\text{Fe}_{0.9}\text{Cr}_2\text{S}_4$ and $\text{Cu}_{0.5}\text{Fe}_{0.5}\text{Cr}_2\text{S}_4$ have been studied using X-ray and neutron diffraction, Mössbauer spectroscopy, magnetization, and magnetoresistance measurements. Neutron diffraction above 10 K shows that there is no static Jahn–Teller distortion. Mössbauer spectra for $\text{Co}_{0.1}\text{Fe}_{0.9}\text{Cr}_2\text{S}_4$ were recorded from 12 K to room temperature. Below the Néel temperature the asymmetric line broadening was observed and considered to be dynamic Jahn–Teller effect. © 2002 Elsevier Science B.V. All rights reserved.

Keywords: Mössbauer spectroscopy; Neutron diffraction; Magnetoresistance; Dynamic Jahn–Teller effect
