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- 나노 기술 및 응용 -

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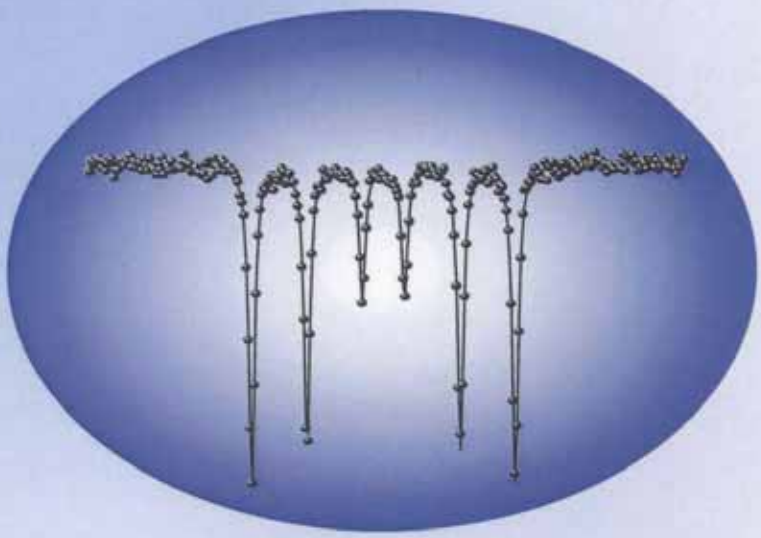

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Exchange interactions on magnetic materials by Mössbauer study

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The crystallographic and magnetic structure for Ga, Cu substituted Cr based chalcogen spinel, Al substituted Co-ferrite, Ce doped garnet systems have been studied with x-ray and neutron diffraction. Macroscopic magnetic properties were determined from magnetization measurements. Mössbauer data were collected in the temperature range of 14-850 K. Microscopic properties such as isomer shifts, electric quadrupole splittings, were obtained from the Mössbauer spectroscopy. Finally, phonon interactions from the Debye temperatures, the strengths of the superexchange interactions between magnetic ions were determined from molecular field theory.

The studied materials are as follow.
1. Al doped cobalt ferrite spinel
2. Ce, Al doped garnet
3. Ga, Cu doped chalcogen spinel