Proceedings of SPIE - The International Society for Optical Engineering 1997 vol.3239, pages 438-440

Line form of Mossbauer spectra as an evidence of electron exchange in system CuO-Fe2O3

Liberman A., Zakirov L., Nazipov R.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Investigations of line form and hyperfine structure parameters of Fe 57 nuclei in copper ferrites were carried out by Mossbauer spectroscopy. It is shown that increasing of synthesis temperature leads to redistribution of copper and iron ions among lattice sites. This results in changing of local magnetic fields at iron nuclei and varying of relative intensities of spectrum components. However, detailed study of Mossbauer spectrum line forms for all samples did not allow to detect the influence of nearest cations environment of iron ions in octohedral sites on local field value, which is the case in other spinel structure ferrites. One of possible reasons is strong electron exchange between Cu and Fe ions in octahedral sublattice.

http://dx.doi.org/10.1117/12.287717

Keywords

Cation distribution, Ferrites, Hyperfine fields, Line form, Mossbauer spectrum, Synthesis temperature