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Atomic migration in $Co_{0.9}Zn_{0.1}Fe_2O_4$

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Abstract

$Co_{0.9}Zn_{0.1}Fe_2O_4$ ferrite has been studied with Mössbauer spectroscopy and X-ray diffraction. Mössbauer spectra of $Co_{0.9}Zn_{0.1}Fe_2O_4$ measured at various absorber temperatures of 20–830 K. Its Néel temperature T_N is found to be 790 K. Atomic migration of $Co_{0.9}Zn_{0.1}Fe_2O_4$ starts near 295 K and increases rapidly with increasing temperature to such a degree that 78% of the ferric ions at the A sites have moved over to the B sites by 700 K.

Keywords: Atomic migration; Ferrite; Mössbauer spectroscopy; Sol–gel