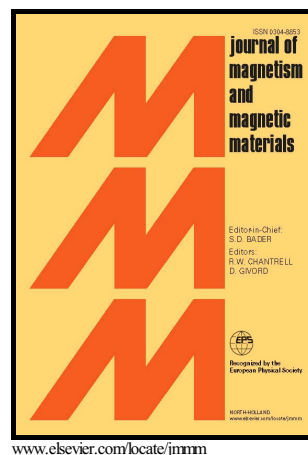


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Structural and magnetic characterization of co-precipitated $\text{Ni}_x\text{Zn}_{1-x}\text{Fe}_2\text{O}_4$ ferrite nanoparticles

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Abstract

A series of $\text{Ni}_x\text{Zn}_{1-x}\text{Fe}_2\text{O}_4$ ($x = 0.5, 0.6$ and 0.7) ferrite nanoparticles have been synthesized using co-precipitation technique, in order to understand the doping effect of nickel on their structural and magnetic properties. XRD and FTIR studies reveal the formation of spinel phase of ferrite samples. Substitution of nickel has promoted the growth of crystallite size (D), resulting the decrease of lattice strain (η). It was also observed that the lattice parameter (a) increases with the increase of Ni^{2+} ion concentration. All particles exhibit superparamagnetism at room temperature. The hyperfine interaction increases with the increase of nickel substitution, which can be assumed to the decrease of core-shell

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