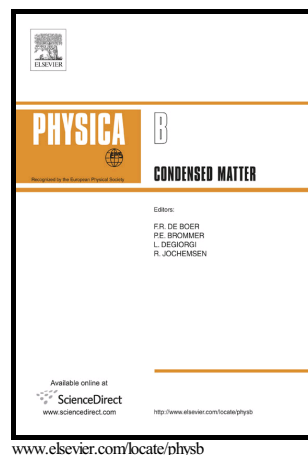


Temperature and composition dependent density of states extracted using overlapping large polaron tunnelling model in $\text{Mn}_x\text{Co}_{1-x}\text{Fe}_2\text{O}_4$ ($x = 0.25, 0.5, 0.75$) nanoparticles

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Temperature and composition dependent density of states extracted using overlapping large polaron tunnelling model in $\text{Mn}_x\text{Co}_{1-x}\text{Fe}_2\text{O}_4$ ($x = 0.25, 0.5, 0.75$) nanoparticles

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Abstract

We report detailed ac electrical and structural characterization of manganese cobalt ferrite nanoparticles, prepared by coprecipitation technique. X-ray diffraction (XRD) confirmed single-phase cubic spinel structure of the nanoparticles. Tetrahedral (*A*) and octahedral (*B*) group complexes were present in the spinel lattice as determined by Fourier Transform Infrared Spectroscopy (FTIR). Scanning Electron Microscope (SEM) images revealed presence of spherical shape nanoparticles having an average diameter ~ 50 nm - 80 nm. Composition, temperature and frequency dependent ac electrical study of prepared nanoparticles interpreted the role of cationic distribution between *A* and *B* sites. Overlapping large polaron tunnelling

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