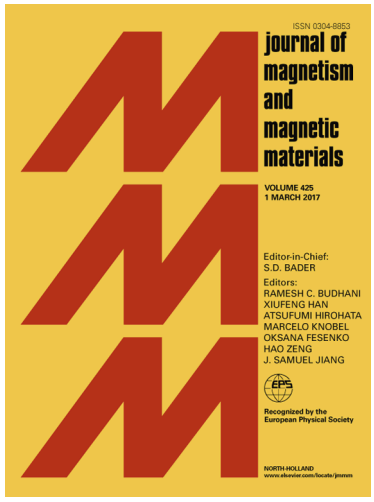

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ABSTRACT

In this research, inverse spinel Copper ferrite nanoparticles ($CuFe_2O_4$ NPs) were synthesized via citrate-nitrate combustion method. The crystal structure, particle size, morphology and magnetic studies were investigated using various instrumental tools to illustrate the formation of the inverse spinel structure. Mossbauer spectrometry identified Fe is located both in the tetrahedral and octahedral site in the ratio (40:60) and the observed magnetic parameters values such as saturation magnetization (M_s = 20.62 emu g^{-1}), remnant magnetization (M_r= 11.66 emu g^{-1}) and coercivity (H_c = 63.1 mTesla) revealed that the synthesized $CuFe_2O_4$ NPs have a typical ferromagnetic behaviour. Also tested $CuFe_2O_4$ nanoparticles as a photocatalyst for the decolourisation of methylene blue (MB) in the presence of peroxydisulphate as the oxidant.

KEYWORDS Ferrites; Magnetic materials; Mössbauer spectroscopy; Catalytic properties