



FTIR and Magnetic studies of Cu Substituted Cobalt Ferrite Nanomaterials, annealed at 650°C

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Abstract : *Magnetic nanomaterials (69nm-87nm) of $Cu_xCo_{1-x}Fe_2O_4$ ($X=0.01, 0.03, 0.05, 0.07$ and 0.09) annealed at 650°C were synthesized by chemical based citrate precursor method. The crystalline sizes of these materials were calculated from X-ray diffraction peaks (XRD). The bands observed in Fourier transform infrared spectroscopy (FTIR) confirmed the presence of ferrite phase. The hysteresis M-H loops for these materials were traced using the vibrating sample magnetometer (VSM) and it indicated a significant change with Cu substitution in the magnetization, retentivity, and intrinsic coercivity of the sample. $Cu_{0.07}Co_{0.03}Fe_2O_4$ ferrite nanomaterials have larger particle size (87nm) with larger retentivity and magnetization (68.35 emu/g and 29.73 emu/g) respectively in comparison with other nano ferrite samples.*

Key words: *Ferrite, Nanomaterials, FTIR, Magnetic studies, Coercivity.*