



Synthesis together with Structural & Magnetic Studies of Nickel Substituted Cobalt Ferrite Nanomaterials ($\text{Ni}_{0.07}\text{Co}_{0.93}\text{Fe}_2\text{O}_4$) Via Citrate Precursor Method

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Nickel substituted cobalt ferrite Magnetic nanoparticles of having formula $\text{Ni}_{0.07}\text{Co}_{0.93}\text{Fe}_2\text{O}_4$ have been synthesized by citrate precursor method using Ferric nitrate, Cobalt nitrate, Nickel nitrate and Citric acid as starting materials. The nanoparticles were prepared by annealing a citrate precursor at two different temperatures 650°C and 700°C for an hour. The samples were characterized using X-ray diffraction (XRD) and Vibrating sample magnetometer (VSM). Using Scherrer formula, the crystallite size was found to be 69 nm and 87 nm and lattice constants as 8.360\AA and 8.333\AA respectively. Magnetic parameters were measured using Vibrating Sample Magnetometer (VSM). The maximum magnetization, retentivity was observed equal to 61.80 emu/g , 30.89 emu/g and coercivity as 808 Oe.

Keywords : Ferrite, Nanoparticles, Magnetic properties, Citrate Precursor method.
