patnawomenscollege.in/journal

Physics

Explore, 2010, Page No. 01-03
Vol. II No. I

Magnetic properties of Zinc and Nickel substituted Cobalt Ferrite Nanoparticles synthesized using Citrate precursor method, annealed at 450°C.

Sonam Parween*, Neha Kumari*, Puja Pandey* , Rakesh Kumar Singh**

*B.Sc III Year (Session 2007-10), Department of Physics, Patna Women's College, Patna

**Lecturer, Department of Physics, Patna Women's College, Patna University, Patna

Corresponding author, E-mail : rakeshpu@yahoo.co.in

Zinc and Nickel substituted Cobalt ferrite Magnetic nanoparticles of having formula $M_{0.01}Co_{1.99}Fe_2O_4$, (where, M= Zn, Ni) have been synthesized by Citrate precursor method using ferric nitrate, cobalt nitrate and Citric acid as starting materials. The nanoparticles were prepared by annealing a citrate precursor at temperatures 450°C only 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 29nm, 58 nm and 87 nm respectively. Magnetic parameters were measured using Vibrating Sample Magnetometer (VSM). The maximum magnetization was observed 43 emu/g and coercivity 1325 G.

Key words: *Cobalt Ferrite, Nanoparticles, Magnetic Properties, Citrate precursor method.*