**Abstract**

Copper substituted cobalt ferrite nano particles Co(1 − x)CuxFe2O4 (where x = 0, 0.2, 0.4, 0.6, 0.8, 1) are successfully synthesized using co-precipitation method and samples are sintered at 900 °C. The average nano crystalline sizes are found to be in the range of 37–52 nm. As the copper concentration increases, the magnetization of the octahedral sites and hence the net magnetization decreases. It is also observed that the saturation magnetization (*Ms*), remanent magnetization (*Mr*) and coercivity (*Hc*) decrease with increase in copper substitution. The frequency of the absorption band around 600 cm− 1 is shifted to a lower value. Plates and sponge like surface morphology of copper mixed ferrites are studied.