**Abstract**

Nano-crystalline Cobalt ferrite doped with copper as an additive element Co0.8Cu0..2Fe2O4 is synthesized using co-precipitation method. Cobaltous Chloride [CoCl2.6H2O], Cupric Chloride [CuCl2.2H2O], anhydrous Ferric Chloride [FeCl3] along with sodium hydroxide [NaOH] is used as raw materials. Cobalt-Copper ferrite sample sintered at 600○C are subjected to X-ray diffraction to calculate the average nano-crystalline size using Debye – Scherrer formula. The FT-IR spectra of the sample are recorded to ensure the presence of the metallic compounds. The morphological analysis of the sample is studied using Scanning Electron Microscope (SEM).