

Synthesis of nickel doped cobalt ferrite in presence of SDS with different heat treatment by co-precipitation method

Abstract

Structural properties of nickel doped cobalt ferrite were synthesized by co-precipitation method with sodium dodecyl sulfate (SDS) as a surfactant at different temperatures. The particle size was estimated by the full width half maximum (FWHM) of the strongest X-ray diffraction (XRD) peak. The average particle size was in the range of 21-36 nm. The particles size was controlled via controlling calcination temperature which was in the range of 600 to 900°C. The morphology of nickel doped cobalt ferrite was investigated. The results showed that a well crystalline single cubic structure of nickel doped CoFe_2O_4 phase was formed through precipitation precursors at pH value of 11. The pH was adjusted by the use of ammonium hydroxide solution.

Keyword: Co-precipitation; Nanoparticle and cobalt ferrite; SDS; SEM; Surfactant; XRD.