Effect of pH variation on magnetic properties of strontium hexaferrite nanoparticles synthesized by sol gel process

ABSTRACT

A strontium ferrite (SrFe12O19) nanoparticle was prepared by sol gel auto combustion method at 800℃ and 900℃ and at various pH (pH 1, 3 and 5). The SrFe12O19 powder was characterized by using Thermogravimetric analyses (TGA), X-Ray Diffraction (XRD), Vibrating Sample Magnetometer (VSM), and Field emission Scanning Microscope (FeSEM) to investigate thermal behavior, crystalline structure, magnetic properties and morphology. To review, the single crystal size of SrFe12O19 was found at 900℃ has lower weight loss about 30.44%, crystalline size of 70.5 nm with Mr, Ms, and Hc were 64036 G, 44.188 emu/g and 27.593 emu/g. The average grain size was 80 ~ 100 nm. In brief, as pH increase, the Mr, Ms and Hc were increases.

Keyword: Sol gel auto combustion; Strontium ferrite (SrFe12O19)