عنوان مقاله:

Structural and physical properties of Co۱-xCdxFe۲O۴ /SiO۲ nanocomposites

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خلاصه مقاله:

The preparation of Co۱-xCdxFe۲O۴/SiO۲ nanocomposites with core/ shell structure involved the coating of SiO۲ using Stöber method on Co۱-xCdxFe۲O۴ and the use of facile thermal treatment method for synthesizing nanoparticles. The effect of cadmium substitution and SiO۲ coating on the degree of crystallinity, samples composition, microstructure, and phase composition were conducted by X-ray diffraction (XRD), energy dispersion X-ray analysis (EDXA), transmission electron microscopy (TEM), and fourier transform infrared spectroscopy (FT-IR), respectively. Magnetic properties were demonstrated by a vibrating sample magnetometer (VSM) which displayed that Co-Cd ferrite nanoparticles and coated silica samples exhibited magnetic behaviors. In investigating the influence of cadmium substitution and the SiO۲ coating on the band gap energy (Eg), a more accurate method was used in evaluating the band gap energy (Eg). The method of evaluation is a recently proposed one known as derivation of absorption spectrum fitting (DASF) which involves the direct absorption spectra of UV-Visible region, without any need for the concentration of powders or solutions.

کلمات کلیدی:

Nanocomposites, Magnetic properties, Ferrites, SiO۲

لینک ثابت مقاله در پایگاه سیویلیکا: