

عنوان مقاله:

Effect of Mn Doping on Fe₃O₄ Nanoparticles Synthesized by Wet chemical Reduction Technique

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خلاصه مقاله:

The effect of Mn doping on Fe₃O₄ nanocrystalline spinel particles is studied. Two doping concentrations of 10 and 15% Mn were employed. The nanoparticles synthesis was carried out by wet chemical reduction technique. The energy dispersive analysis of X-ray confirmed the stoichiometry of the samples. The X-ray diffraction technique was used to determine the crystal structure and particles size of the synthesized nanoparticles. The electron microscopy revealed that both the synthesized nanoparticles surfaces have flower-like patterns and the particles are spherical. The optical absorption study showed that the absorption is more in case of 10% Mn doped compared to 15% Mn doped Fe₃O₄ nanoparticles. The Fourier transform infra-red spectroscopy revealed that both the samples contain characteristics bands. The magnetization variation with temperature with zero field cooled and field cooling conditions for two different applied magnetic fields of 500 Oe and 1000 Oe as well as the hysteresis study was carried out by vibrating sample magnetometer technique. The obtained results are discussed in details

کلمات کلیدی:

,Fe₃O₄, Nanoparticles, Wet chemical reduction, Surface morphology, Magnetic properties

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