International Journal of ChemTech Research
CODEN(USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.12, pp271-277,2017

The effect of doping Au on the magnetic properties of Fe_3O_4 NPs that prepared via photolysis and co-precipitation methods

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Abstract:Fe_3O_4 without Au was fabricated via photolysis method and then Au was doped with concentration 3 wt.% using co–precipitation method.The samples of Fe_3O_4 without/with Au doping were characterized by XRD, EDX, and TEM whilethe magnetic hysteresis loops of the samples were determined using PPMS.The results obtained a ferromagnetic demeanor at room temperature and fabrication of Fe_3O_4-Aunanoparticles as well as the resistance and the magnetic demeanor of the samples decrease with the doping of Au and that indicating semiconducting behavior.The saturation magnetization (MS) of the sample without doping (94.72 emu/g) is much higher than that (66.78 emu/g) of the sample with doping.
Key words: Doping, magnetite, nanoparticles, photolysis, co-precipitation.

Zaid Hamid Mahmoud *al*/International Journal of ChemTech Research**,** 2017,10(12): 271-277.

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