

Fabrication and magnetic properties of Fe-doped SrTiO₃ nanoparticles

Fe-doped SrTiO₃ nanoparticles were fabricated by sol-gel method using a solution that contained poly(vinyl pyrrolidone) (PVP), iron oxide (Fe₂O₃), strontium dinitrate (N₂O₆Sr), and titanium(diisopropoxide) bis(2, 4-pentanedionate) 75 wt% in 2-propanol. The precursor of SrTiO₃ and Fe-doped SrTiO₃ are acquired from sol-gel method. The SrTiO₃ and Fe-doped SrTiO₃ nanoparticles were successfully obtained from calcination of all precursors at 800 oC in argon for 2 h. The SrTiO₃ and Fe-doped SrTiO₃ nanoparticles were characterized by SEM, XRD, TEM and VSM. Room temperature magnetization results revealed ferromagnetic behavior for the Fe-doped SrTiO₃ samples. The origin of ferromagnetism observed in the Fe-doped SrTiO₃ nanofibers was also discussed.

Keywords : Strontium titanate, nanoparticles, ferromagnetic and diluted magnetic oxide.

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