Magnetic Properties of Sr-Ferrite Nano-Powder Synthesized by Sol-Gel Auto-Combustion Method

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Abstract : In this paper, strontium ferrite (SrO.6Fe2O3) was synthesized by the sol-gel auto-combustion process. The thermal behavior of powder obtained from self-propagating combustion of initial gel was evaluated by simultaneous differential thermal analysis (DTA) and thermo gravimetric (TG), from room temperature to 1200°C. The as-burnt powder was calcined at various temperatures from 700-900°C to achieve the single-phase Sr-ferrite. Phase composition, morphology and magnetic properties were investigated using X-ray diffraction (XRD), transmission electron microscopy (TEM) and vibrating sample magnetometry (VSM) techniques. Results showed that the single-phase and nano-sized hexagonal strontium ferrite particles were formed at calcination temperature of 800°C with crystallite size of 27 nm and coercivity of 6238 Oe.

Keywords : hard magnet, Sr-ferrite, sol-gel auto-combustion, nano-powder
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