

Preparation and magnetic behavior of $\text{Sr}_2\text{FeMo}_{1-x}\text{O}_6 / \text{SrMoO}_4$ composites

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A combustion method has been successfully developed for preparation $\text{Sr}_2\text{Fe}_{1-x}\text{Mo}_{1+x}\text{O}_6$ ($0 < x < 0.95$) double perovskites. Strontium nitrate, iron nitrate, Ammonia molybde, citric acid, and glycine are used as raw materials. The dependence of grain sizes of thus-obtained compounds on the annealing temperature are observed. The Curie temperatures increase as the amount of iron increases. However, a decrease in saturation magnetization is observed as the content of iron increases. The specific heat of samples was measured in the temperature range of 330-700K by means of differential scanning calorimetry (DSC). The possible reasons that are responsible for the composition dependence of main magnetic properties are discussed. Furthermore, dielectric constant (ϵ'), loss tangent ($\tan\delta$) and AC resistivity have been investigated in the frequency range 0.1kHz-5MHz. The variation of these parameters with composition, frequency and temperature is explained qualitatively.