

Microwave sintering of Ni-Co doped barium strontium hexaferrite synthesized via sol-gel method

ABSTRACT

Microwave energy is highly efficient for heating and processing ceramic materials. Microwave sintering of doped barium strontium ceramics led to higher densification and the fine microstructure and improved magnetic properties. Effects of the substituted amount of Ni²⁺ and Co²⁺ on structure and magnetic properties of Ba_{0.5}Sr_{0.5}Fe_{12-x}Ni_xCo_xO₁₉ compounds have been systematically investigated by X-ray diffraction (XRD), high resolution scanning microscope (HR-SEM) and vibrating sample magnetometer (VSM). In our results, the suitable amount of Ni²⁺+Co²⁺ substitution slight decreased saturation magnetization. For Substitution of Ni-Co content of x=0.4 the saturation magnetization varied from a range of 60.58 to 63.59 Am²/kg and while coercivity decreased from 805.37 to 280.28 Gauss respectively.

Keyword: Ceramics; X-ray diffraction; Microstructure; Magnetic properties