

Particle morphology and magnetic properties of Ba_{0.5}Sr_{0.5}Fe₁₂O₁₉ powder calcined conventionally and by microwave heating

ABSTRACT

Barium strontium hexaferrite (Ba_{0.5}Sr_{0.5}Fe₁₂O₁₉-BSF) has been prepared by sol-gel process involving use of d-Fructose as a fuel. The prepared precursor was calcined in two different calcinations techniques conventional and microwave furnace. X-ray powder diffraction studies confirmed the formation of single phase Ba_{0.5}Sr_{0.5}Fe₁₂O₁₉. HR-SEM results show the morphology of the particles is hexagonal structures in platelet form. The average particle size of conventionally calcined BSF powder is 1006250 nm and that of microwave calcined powder is 306100 nm. The broad hysteresis loop reveals that powder is well crystallized and exhibits hard magnetic properties.

Keyword: Ceramics; Sol-gel processes; Magnetization; Scanning electron microscopy, SEM