

## **Particle morphology and magnetic properties of Ba<sub>0.5</sub>Sr<sub>0.5</sub>Fe<sub>12</sub>O<sub>19</sub> powder calcined conventionally and by microwave heating**

### **ABSTRACT**

Barium strontium hexaferrite (Ba<sub>0.5</sub>Sr<sub>0.5</sub>Fe<sub>12</sub>O<sub>19</sub>-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<sub>0.5</sub>Sr<sub>0.5</sub>Fe<sub>12</sub>O<sub>19</sub>. 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