

## Crystallographic and Magnetic Properties of Sr-Ba Hexaferrite

Seung Iel PARK, Seung Wha LEE and Chul Sung KIM

*Department of Physics, Kookmin University, Seoul 136-702*

Young Jei OH

*Division of Ceramics, Korea Institute of Science and Technology, Seoul 130-650*

(Received 10 January 1997)

Synthesis of the Sr-Ba sample was accomplished by the citric sol-gel method. The green sheet of hexagonal  $\text{Sr}_{0.75}\text{Ba}_{0.25}\text{Fe}_{12}\text{O}_{19}$ , to which the oxide additives were introduced, were prepared by the Dr. Blade method. An x-ray diffractometer, a vibrating sample magnetometer, and a Mössbauer spectrometer were used to examine the influence of oxides additives, such as  $\text{TiO}_2$ ,  $\text{SiO}_2$ ,  $\text{Cr}_2\text{O}_3$ , and  $\text{Al}_2\text{O}_3$  (0.0 - 10.0 wt.%) on the crystallographic and the magnetic properties of Sr-Ba hexaferrite. The Mössbauer spectrum of the M-type Sr-Ba ferrite had a superposition of five subspectra associated with the five different sites of the Fe ions, which were in the ferric state. The crystal structure of  $\text{Sr}_{0.75}\text{Ba}_{0.25}\text{Fe}_{12}\text{O}_{19}$  is that of a magnetoplumbite of a typical M-type hexagonal ferrite. When the concentration of the additives was increased, the Curie temperature decreased. The addition of 0.25 wt.% of  $\text{Al}_2\text{O}_3$  produced the greatest increase in the saturation magnetization of the Sr-Ba hexaferrite compound.