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Hexaferrites for High Frequency Applications

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Abstract

Effect of rare earth and Divalent (InMn) substitution on the structural electrical and dielectric properties of Sr0.5-x Ba0.5InxMnyFe12-yO19,(x = 0.00–0.10; y= 0.00–1.00) Hexaferrites prepared by sol–gel auto combustion is reported. The synthesized samples were characterized by Fourier transform infrared spectroscopy, X-ray diffraction, scanning electron microscopy electrical and dielectric properties (resistivity and conductivity). The X-ray diffraction analysis confirmed single phase M-type hexa-ferrite structure. The lattice parameters were found to increase as In Mn contents increases, which is attributed to the ionic sizes of the implicated cations. The InMn seems to be completely soluble in the lattice. The results of scanning electron microscopy shows that the grain size decreases with increase of In Mn substitution. The increased anisotropy and fine particle size are useful for many applications, such as improving signal noise ratio of recording devices.

Biography

Dr. Hassan Mehmood Khan has completed his PhD at the age of 30 and is working as assistant professor at the Institute of Physics, The Islamia University of Bahawalpur, Pakistan. The fields of interest include Condensed matter Physics. Magnetic Materials, Nanomaterials. (synthesis, characterization and their application studies), nanocrystalline soft ferrites, nanostructured hard ferrites. Microwave and other high frequency applications of Ferrites.

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