

# Suitability of Cations Substituted M -Type (Sr-Ba) Hexaferrites for High frequency applications

Hasan M. Khan

*The Islamia University, Pakistan*

**Copyright:** 2021 M. Khan H. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Abstract

Effect of rare earth and Divalent (InMn) substitution on the structural electrical and dielectric properties of  $Sr_{0.5-x}Ba_{0.5}In_xMn_yFe_{12-y}O_{19}$  ( $x = 0.00-0.10$ ;  $y = 0.00-1.00$ ) 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.

## References

1. Hasan M. Khan et al ; Degradation of highly chlorinated pesticide, lindane, in water using UV/persulfate: kinetics and mechanism, toxicity evaluation, and synergism by H<sub>2</sub>O<sub>2</sub>, 2020 Jul 25.
2. Hasan M. Khan et al ; Oxidative removal of brilliant green by UV/S<sub>2</sub>O<sub>8</sub><sup>2-</sup>, UV/H<sub>2</sub>O<sub>2</sub> and UV/H<sub>2</sub>O<sub>2</sub> processes in aqueous media: A comparative study, 2014 Nov 18.
3. Hasan M. Khan et al ; Kinetic and mechanism investigation on the gamma irradiation induced degradation of endosulfan sulfate, 2018 Jun 6..

**Citation:** Hasan M. Khan; Suitability of Cations Substituted M -Type (Sr-Ba) Hexaferrites for High frequency applications; Nanomat-2021; May 17; Dubai, UAE.