

Effect of TbNi on structural, electrical and Dielectric properties of M-Type Hexaferrites for High frequency applications

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Abstract:

The effect of TbNi substitution on the structural and magnetic properties of Sr0.5Ba0.5-xTbxNiyFe12-yO19, (x = 0.00–0.10; y = 0.00–1.00) hexaferrites that are synthesized by sol-gel auto combustion method is investigated. After synthesis of the samples by sol-gel method they were characterized by (FTIR) Fourier transform infrared spectroscopy, (XRD) X-ray diffraction, (SEM) scanning electron microscopy, (TEM) transmission electron microscopy and (VSM) Vibrating Sample magnetometery. Single phase of M-type hexa-ferrite structure has been confirmed by X-ray diffraction analysis. The lattice parameters were found to increase by increasing TbNi contents, and is thought of due to ionic sizes of the cations implicated. The TbNi has been completely soluble in the lattice. The scanning electron microscopy

and transmission electron microscopy results clearly indicates that the grain size decreases with increase of TbNi substitution. The coercivity values (1640–2170 Oe) of all samples exhibits in the M-type hexaferrites range and

shows increased anisotropy by the substitution of TbNi, while the size of nanoparticles was drastically reduced between 20 and 30 nm. The fine nanoparticles with increased anisotropy are

very attractive in lot of applications, such as perpendicular recording media, high frequency applications and for improving signal to noise ratio.

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.

Recent Publications:

- Hasan M. Khan, J Hazard Mater.2018
- Hasan M. Khan, Environ Sci Pollut Res Int.2016
- Hasan M. Khan, Environ Sci Pollut Res Int.2016
- Hasan M. Khan, Chemosphere.2015
- Hassan M.Khan,J Food Sci Technol. 2011

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