

Structural, Optical and Dielectric properties of Barium Hexa ferrite

N. Raghu Ram¹ and T. Subba Rao¹

**¹Department of Physics, Sri Krishnadevaraya University, Ananthapuramu,
Andhra Pradesh, India – 515 0 03.**

Abstract

The objective of present work is to synthesize nano powder of M-type Barium hexa ferrite ($\text{BaFe}_{12}\text{O}_{19}$) by low temperature hydrothermal method. The phase analysis was characterized by X-ray diffraction. XRD reveals the structure of $\text{BaFe}_{12}\text{O}_{19}$ as hexagonal structure. The average crystalline size was 16.24nm employing the scherrer method. The presence of two prominent peaks, at 3276.41cm^{-1} and 1477.47cm^{-1} in Fourier Transform Infrared spectroscopy. FT-IR spectra gives idea of formation of M-type hexa ferrites. The band gap dependency on temperature was studied using Uv-vis NIR spectroscopy. The dielectric properties of the resulting barium hexa ferrite have been studied. Electrical conduction mechanism and relaxation time are reported from impedance analysis.

Keywords: hydrothermal method, Hexagonal ferrite, Fourier Transform Infrared spectroscopy (FT-IR).