



Low temperature Synthesis, Structural and Magnetic Studies of Rare earth, element La substituted Ba-Hexa ferrite Nanoparticles Via Citrate Precursor Method

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Magnetic nanoparticles of Rare earth element Lanthanum (La) substituted Barium hexaferrite nanoparticles have been synthesized by citrate precursor method using Ferric nitrate, Barium nitrate, Lanthanum nitrate and Citric acid as starting materials. The citrate precursor was annealed at temperature 650°C and 700°C for an hour. The sample was characterized using X-ray diffraction (XRD) and Vibrating sample magnetometer (VSM). Using Scherrer formula, the crystallite size was found to be 51 nm and 89nm at temperatures 650°C and 700°C respectively. The Interplanar distance(d), Coercivity, Retentivity and Magnetization of the nanoparticles were observed to be 2.6394Å, 252 Oe, 1.17 emu/g and 3.53 emu/g at temperature 650°C and 2.7005 Å, 1389 Oe, 0.50 emu/g and 0.976 emu/g at temperature 700°C respectively . Insertion of La in hexa ferrite shows appearance of some additional phases.

Keywords : Ba-hexa ferrite, Lanthanum, Nanoparticles, Citrate Precursor Method.
