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Studies on different properties of LNSMO nanoparticle

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The structural, morphological, electrical, magneto-transport properties of manganese based and Nd doped ($\text{La}_{1-x}\text{Nd}_x$) $0.7\text{Sr}_{0.3}\text{MnO}_3$ perovskite with different concentrations are presented. The materials were prepared by the citrate precursor method of sintering at 1000 °C for 2 hrs. The samples were characterized by X-ray diffraction (XRD), atomic force microscopy (AFM), electrical & magneto-transport measurements. The phase contents and lattice parameters were studied by XRD. XRD patterns of the samples indicate that they change from monoclinic to orthorhombic after doping with the particular concentration of Nd. The crystallite size was calculated by Debye Scherrer's formula through XRD patterns and the values are in the range of 21 – 43 nanometer (nm) for all the samples. The grain size, surface roughness & morphology were studied by atomic force microscopy. Electrical & magneto-transport data were carried out using a physical property measurement system (PPMS). The electrical resistivity was measured as a function of temperature in different magnetic fields. The insulator-metal transition temperature shifted to a higher temperature with the application of the magnetic field. The magneto-resistance (MR) as a function of applied magnetic field up to 14 Tesla for the above samples, which is the best effect for colossal magneto-resistance (CMR) materials.

Biography:

Dr. Jessica R. Chocha, had completed her Ph.D. in physics. Her research had been completed in the field of materials science especially in CMR nano-structured manganites thin films and bulk foam were prepared by different synthesized methods and characterized with different measurement techniques. At present she is an assistant professor, on an ad-hoc basis in Government Science College, India.