**Study of AC Susceptibility of La0.8Sr0.2MnO3 at Different Frequencies**

Nikita Karma\*, Disha Harinkhere, Poornima Karil, Netram Kaurav and H.S. Dager

Department of Physics, Government Holkar (Model, Autonomous) Science College, Indore Madhya Pradesh India

**\*Corresponding Author E-mail:** [**nikita.karma@gmail.com**](mailto:nikita.karma@gmail.com)

**Abstract:** In the present work, the structural and ac magnetic susceptibility as a function of temperature at different frequencies of perovskite type La0.8Sr0.2MnO3 compound have been discussed. Conventional solid state route was used to synthesize La0.8Sr0.2MnO3 compound. Crystal structure of the compound was witnessed from the analysis of X-ray diffractograms by Rietveld refinement. The real (*χꞌ*) and imaginary (*χꞌꞌ*) part of the ac susceptibility of the compound have been studied. The real part of magnetic susceptibility (*χ′*) of La0.8Sr0.2MnO3 sampleincreases as temperature decrease. This indicates that the paramagnetic-ferromagnetic phase transition occurs. At different frequencies, i.e 100Hz and 500Hz the Curie temperature Tc are 326K and 336K respectively. Peaks observed in the imaginary part (*χꞌꞌ*) of magnetic susceptibility plot indicates the presence of sample inhomogeneity.

**Keywords:** Magnetic Susceptibility, Solid State Reaction, Rietveld Refinement, Phase Transition.