

## **Study of structure, microstructure and electrical properties of La<sub>0.8</sub>Na<sub>0.2</sub>MnO<sub>3</sub> in bulk and thin film**

### **ABSTRACT**

In this study, polycrystalline of La<sub>0.8</sub>Na<sub>0.2</sub>MnO<sub>3</sub> bulk and thin films deposited on MgO (100) and corning 7059 glass have been prepared via solid-state and pulsed laser deposition method (PLD), respectively. From the Rietveld analysis, all samples are in trigonal crystal structure with space group of R-3C (167). Bulk and thin films showed different microstructure and structure, where thin film have relatively much smaller average grain size as compare bulk sample and the lattice parameter differ when deposited in different types of substrate. Bulk exhibits a metal insulator transition temperature (T<sub>p</sub>) at 228K. However, the T<sub>p</sub> of thin film on MgO (100) and corning 7059 glass samples shifted to higher value of 244 K and 252 K, respectively. The resistance for film is relatively higher due to its smaller crystalline size and hence increased its magnetically disordered state at the surface of grains. Hence, structure and electric property of the film is affected by the type of substrate used.

**Keyword:** Colossal magnetoresistance; Manganites oxide; Polycrystalline; Pulsed laser deposition; Thin film