

# Structural and Electrical Properties of CMR Nanomaterials $\text{La}_{0.67}\text{Sr}_{1-x}\text{K}_x\text{MnO}_3$ ( $x = 0 - 0.5$ )

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**Abstract**—The Mn-based perovskite oxides  $\text{R}_{1-x}\text{A}_x\text{MnO}_3$ , where R is a trivalent rare-earth ion (La, Pr, Nd, etc.) and A is a divalent alkaline earth (Ca, Sr, etc.), have been a renewed subject of numerous investigation in recent years. In this paper we report the structural and electrical properties of nanophasic  $\text{La}_{0.67}\text{Sr}_{1-x}\text{K}_x\text{MnO}_3$  ( $x=0, 0.05, 0.1, 0.15$ ) samples, prepared by sol-gel method and then sintered at 700°C. The characterization of the grown samples were made using X-ray diffractometer, the results are demonstrated in Fig. 1. From the Rietveld refinement of XRD data by FullProf Suite program, we have found that the samples have crystallized in single-phase. The experimental data (Fig. 2) of temperature dependent resistivity show that electrical properties of these samples strongly depend on the doping percentage. A substantial increase in  $T_{MI}$  and a decrease in resistivity are found on raising the doping percentage. In order to understand the conduction mechanism of these samples a theoretical analysis of electrical resistivity data has been carried out using two phase model.

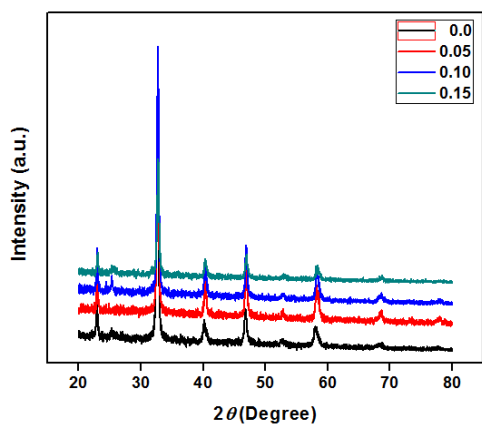


Fig. 1

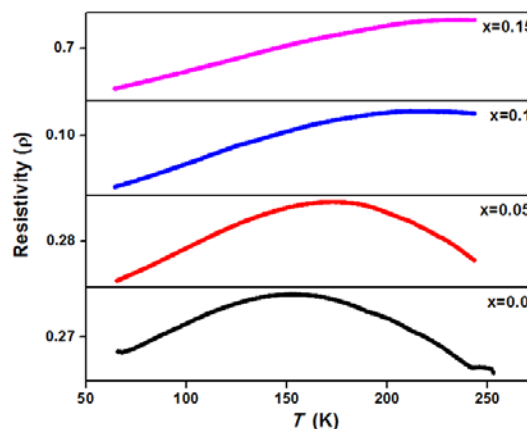


Fig. 2