# Magnetoresistive Properties of La−Pb−Mn Perovskites

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The $La_{1-x}Pb_xMnO_3$ perovskites, with $0.24 \leq x \leq 0.40$, crystallize in a rhombohedral−type structure having $R\overline{3}c$ space group. The resistivities increase from 5 K, up to temperatures $T_m$, situated in the range 184 K (x=0.2) and 240 K (x=0.4). At these temperatures there is a transition from metallic to semiconducting type behaviour. The $T_m$ values are by $\cong$ 100 K smaller than the Curie points, $T_c$. The activation energies at $T > T_m+50$ K can be described by an adiabatic hopping conduction mechanism. The activation energies increase from 0.112 eV (x=0.24) to 0.123 eV (x=0.4). Possible mechanisms for the metal to semiconducting transition, at lower temperatures than $T_c$, are analysed. The field and temperature dependences of the magnetoresistivities, MR, were studied. At 5 K and in field of 7 T, the MR values are situated between 46 % and 49 % and decrease up to 25−30 % at room temperature. The intergrain tunneling magnetoresistance as well as the intragrain contribution, respectively were analysed as function of temperature and external field. The polarizations at 5 K are situated between 0.73 and 0.85 and decrease up to $\cong$ 0.2 at room temperature. The involved mechanisms in describing magnetoresistive behaviour are discussed.

9.7 cm

13.4 cm

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