

Cobalt effects on the structure, electrical and magnetic properties of
 $\text{La}_{0.7}\text{Ca}_{0.3}\text{Mn}_{1-x}\text{Co}_x\text{O}_3$ ($x=0\sim 0.05$) manganite oxide

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The substitution of Co on the Mn site in $\text{La}_{0.7}\text{Ca}_{0.3}\text{Mn}_{1-x}\text{Co}_x\text{O}_3$ has been studied in order to probe into the physical properties of colossal magnetoresistance (CMR) behavior. $\text{La}_{0.7}\text{Ca}_{0.3}\text{Mn}_{1-x}\text{Co}_x\text{O}_3$ ($x=0.01 \sim 0.05$) powders were prepared by solid state reaction method. Compositional and structural characterizations were carried out using X-ray diffractometer (XRD) and scanning electron microscopy (SEM). The optimum structure of LaCaMnO_3 and LaCaMnCoO_3 were obtained at 900°C . Magnetic properties were examined by vibrating sample magnetometer (VSM). Curie temperature (T_C) of LaCaMnO_3 was 240K. Electrical properties were measured by physical property measurement system (PPMS). In the composition of $x=0.03$, the highest MR ratio value of 16.9% was observed at 120K.

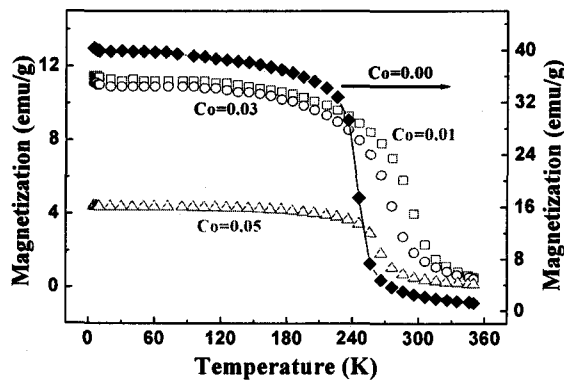


Fig. 1. Magnetization-Temperature graph of $\text{La}_{0.7}\text{Ca}_{0.3}\text{Mn}_{1-x}\text{Co}_x\text{O}_3$ ($x=0.00\sim 0.05$)