# Comparative Study of Phase Transitions in Ga-, Zn-, Ni-, Ti-substituted La-Sr Manganites

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The aim of the study is to examine the influence of substituting ion on the position of phase boundaries "rhombohedral-orthorhombic structure" and "semiconductor-metal" in comparison with classical phase diagrams established earlier for $La_{1-c}Sr_cMnO_3$ system.

9.7 cm

Experimental data are shown for ceramic samples of La-Sr manganites with substitution of Mn by Ga-, Zn-, Ni-, and Ti in specifically designed systems: $La_{1-c}Sr_cMn_{1-x}Ga^{3+}{}_xO_3$, $La_{1-c+x}Sr_{c-x}Mn_{1-x}Me^{2+}{}_xO_3$ (Me=Zn, Ni), $La_{1-c-x}Sr_{c+x}Mn_{1-x}Ti^{4+}{}_xO_3$. Under the condition that concentration of oxygen is stoichiometric, the content of $Mn^{4+}$ (f.u.) is equal to the value of "c", and is independent of x in these systems.
Bulk manganites (c=0.15, 0.17, 0.19, 0.20; $0.025 \leq x \leq 0.125$ were prepared by solid state reactions in air. Then, in order to provide stoichiometric oxygen content, the samples were processed at 1223 K and corresponding partial pressure of oxygen. It was found that divalent substituting ions shifted boundary "rhombohedral-orthorhombic structure" to higher values of "c", while $Ga^{3+}$ and $Ti^{4+}$ shifted it in opposite direction. The regularities of the influence of substituting ions concentrations on saturation magnetization, Curie point, resistivity and magnetoresistance were established.

13.4 cm

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