# The role of $Ru^{5+}$ in increasing $T_C$ of Cr-doped $SrRuO_3$ system

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## Abstract

Two series of samples with nominal composition $Sr_{1-x}La_xRu_{1-x}Cr_xO_3$ (SLRC) and $Sr_{1-x}Ca_xRu_{1-x}Cr_xO_3$ (SCRC) ($x$= 0.04, 0.08 and 0.12) have been prepared and investigated in order to explore the mechanism of the Curie temperature increase in Cr-doped $SrRuO_3$. The magnetic experiment results demonstrate that the Curie temperature ($T_C$) of SLRC decreases with an increase in $x$ while in SCRC, $T_C$ slightly increases with Cr doping. It indicates that the enhancement of the ferromagnetism by Cr doping is more significant in the system containing $Ru^{5+}$. We suggest that the exchange interaction between $Ru^{5+}$ and $Cr^{3+}$ plays an important role in enhancing the ferromagnetism in the system.



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