Title: Resistivity, I–V characteristics and Hall effect in $Dy_{0.5}(Sr_{1-x}Ca_x)_{0.5}MnO_3$ manganites

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Resistivity, I–V characteristics and Hall effect in $Dy_{0.5}(Sr_{1-x}Ca_x)_{0.5}MnO_3$ manganites

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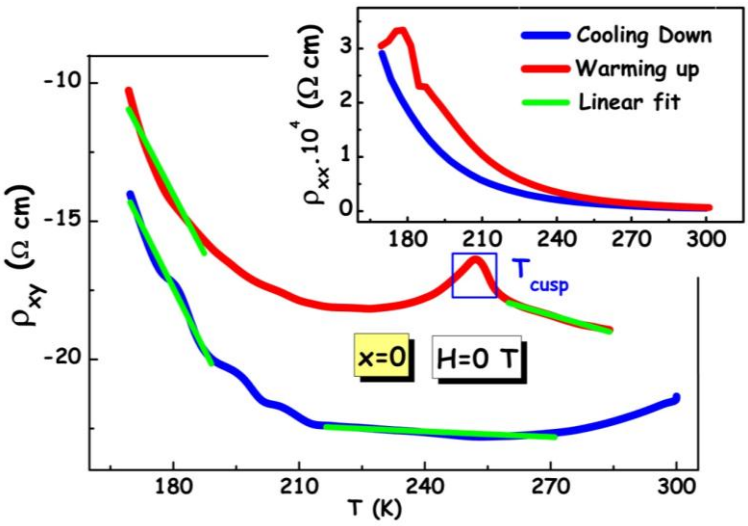
Graphical abstract



Highlights

- $Dy_{0.5}(Sr_{1-x}Ca_x)_{0.5}MnO_3$ (x = 0 and x = 0.3) manganites were prepared using sol-gel method.
- Thermal variation resistivity of both systems has been studied and showed that these samples exhibited an insulating behavior.
- The application of 5 T magnetic fields does not change the insulating state.
- I–V characteristics of the two samples deviate from the Ohmic behavior.
- Magnetoresistance and electroresistance provided negative values.
- Hall resistivity ρ_{xy} of the $Dy_{0.5}Sr_{0.5}MnO_3$ sample was carried out in the cooling down and warming up processes revealing electron-like type of the charge carriers.
- The temperature coefficient of resistance (TCR) shows very significant values for both systems making them good candidates for bolometer applications.

Abstract

$Dy_{0.5}(Sr_{1-x}Ca_x)_{0.5}MnO_3$ (x = 0 and x = 0.3) manganites were synthesized using sol-gel method. Both samples exhibited an insulating behavior in the whole temperature range. Even