

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Current tunable electroresistance and magnetothermal cooling with a phase separated manganite**<sup>1</sup> RAMANATHAN MAHENDIRAN, ALWYN REBELLO, National University of Singapore — We investigate the effect of dc current on the field dependence of the magnetoresistance in the phase separated manganites  $\text{Nd}_{0.5}\text{Ca}_{0.5}\text{Mn}_{0.93}\text{Ni}_{0.07}\text{O}_3$ . We show that temperature of the sample in presence of a magnetic field (H) and dc current ( $I = 20$  mA) decreases abruptly as much as  $\Delta T = 45$  K (7 K) accompanied by a step like decrease in the magnetoresistance at a critical value of H when the base temperature is 40 K (100 K). The magnitude of  $\Delta T$  and the position of magnetoresistance step decrease towards lower H with decreasing amplitude of the current. In addition, the applied current significantly modifies the irreversible behavior of magnetoresistance observed at lower currents ( $I < 1$  mA). We discuss possible origins of the current and magnetic -field driven temperature change which may find applications in magnetothermal refrigeration besides magnetocaloric effect.

<sup>1</sup>This work was supported by DPRT, NUS grant no R144000197123.

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Date submitted: 30 Sep 2009

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