Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Competition between Magnetocaloric and Elastocaloric effect in Phase Separated Manganites under pressure Y.J. CHOI, Rutgers Center for Emergent Materials and Department of Physics & Astronomy, Rutgers University, T. FISHER, A.L. LIMA SHARMA, Departament of Physics and Astronomy, San Jose State University, Z. QIN, T. ZHOU, Department of Physics, New Jersey Institute of Technology, S.-W. CHEONG, Rutgers Center for Emergent Materials and Department of Physics & Astronomy, Rutgers University — We investigated the hydrostatic pressure and magnetic field dependent entropy changes in single crystal samples of the phase separated manganite $La_{0.25}Pr_{0.375}Ca_{0.375}MnO_3$. Magnetization measurements combined with the Maxwell relations were used to compute the magnetocaloric and elastocaloric effects. The coexistence of ferromagnetic (FM) metallic and charge ordered (CO) insulating regions are related to the proximity of their respective free energies. The phase separated state changes under applied field and pressure due to the interplay between the rates at which the system is generating and releasing heat, forming FM and CO regions respectively. The measurements also allow an estimate of the magnetic viscosity in the sample.

Troy Fisher
Departament of Physics and Astronomy, San Jose State University

Date submitted: 22 Nov 2009 Electronic form version 1.4