

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Evidences for Metal-Insulator Phase Coexistence Below T_c in Self-doped Manganite Films PENG GAO, TREVOR A. TYSON, MICHAEL DELEON, New Jersey Institute of Technology, CATHERINE DUBOURDIEU, LMGP-Minatec, France, ZHENXIAN LIU, Brookhaven National Laboratory — We present evidence for the existence of a significant insulating phase component more than 100 K below the magnetic ordering temperature in the self-doped system $\text{La}_{0.80}\text{MnO}_3$. Reflectivity measurements were made over the range 100 to 8000 cm^{-1} . Using the Drude-Lorentz Model, we convert reflectivity spectra into optical conductivity spectra. The insulating phase was evident as sharp resonances corresponding to atomic vibrational modes which disappeared deep in the metallic phase at low temperature. A significant component of the insulating phase exists down to 200 K below T_c . Between 200 K and 150 K, the metallic phase becomes the dominant phase. Comparisons are made with the $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ samples measured under the same conditions.

Peng Gao

Date submitted: 03 Dec 2006

Electronic form version 1.4