

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Infrared studies of Phase Separated  $(\text{La}_{1-y}\text{Pr}_y)_{0.67}\text{Ca}_{0.33}\text{MnO}_3$  Thin Films**<sup>1</sup> NAVEEN MARGANKUNTE, TARA DHAKAL, AMLAN BISWAS, D.B. TANNER, Dept of Physics, University of Florida — We report optical spectroscopy studies of phase separated  $(\text{La}_{1-y}\text{Pr}_y)_{0.67}\text{Ca}_{0.33}\text{MnO}_3$  thin films grown on the substrate  $\text{NdGaO}_3$ . Reflectance measurements in the far and mid infrared were performed for a range of temperatures from 10 to 300 K. Particular attention was given to the narrow temperature range where the insulator-metal transition occurs. The optical constants were extracted by fitting the measured reflectance to a Drude-Lorentz dielectric function in conjunction with thin film optics and the measured properties of the substrate. Spectral weight analyzes show that the growth of low energy oscillator strength occurs well above the Curie temperature, indicating phase coexistence in the hysteresis regime seen in resistivity measurements. The optical conductivity results are contrasted with existing models for free carrier electrodynamics in manganites.

<sup>1</sup>Supported jointly by NSF grant DMR-0305043 and DOE contract DE-AI02-03ER46070.

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Date submitted: 30 Nov 2007

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