Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Strain-modified thermopower of ultrathin $LaNiO_3$ films[1]
NARAYAN PRASAI, JOSHUA COHN, University of Miami, EUN JU MOON, JIAN LIU, MICHAEL KAREEV, BENJAMIN GRAY, JAK CHAKHALIAN, University of Arkansas, JAMES RONDINELLI, Advanced Photon Source, Argonne National Laboratory — The influence of epitaxial strain on electronic transport in the correlated metal $LaNiO_3$ is investigated through measurements of thermopower (TEP) in the temperature range 5K $\leq$ T $\leq$ 330K on a series of fully-strained, 10-unit-cell-thick films grown by pulsed-laser deposition on (100)-oriented $YAlO_3$, $LaAlO_3$, $SrTiO_3$, and $GaScO_3$ substrates. The TEP exhibits an electron-like, linear-T contribution for $T \geq 150$ K with a slope approximately independent of strain, but a magnitude that varies systematically with strain. A peak in the TEP at $T \approx 25$ K also correlates with strain and is unaffected by a 9-T magnetic field. The implications of these results for strain-modified charge-carrier diffusion and phonon drag contributions to the TEP will be discussed.

[1]Work at the Univ. Miami was supported by an award from the Research Corporation, and at Univ. Ark. by the DOD-ARO under Contract No. 0402-17291 and NSF Contract No. DMR-0747808.

Joshua Cohn
University of Miami

Date submitted: 18 Nov 2010 Electronic form version 1.4