Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Spectroscopic ellipsometry study on metal-insulator transition for ultrathin La-doped $SrTiO_3$ films YUNSANG LEE, YUNKYUNG SEO, DONGJAE LEE, Soongsil University, E. CHOI, J.W. SEO, J. LEE, Sungkyunkwan University — We investigated the metal-insulator transition for ultrathin La-doped $SrTiO_3$ (LSTO) films by using spectroscopic ellipsometric technique. As the film thickness decreased below 10 unit cells, phase transition from metal to insulator occurred through interplay of charge, spin, orbital, and lattice degrees of freedom. The optical spectra below the charge transfer gap near 3 eV changed significantly through the insulator-metal transition, exhibiting the coherent-incoherent crossover behavior. We detail our spectroscopic results on the LSTO ultrathin films, and compare them with the transport and structural properties of the films.

Yunsang Lee
Soongsil University

Date submitted: 13 Nov 2013 Electronic form version 1.4