

Abstract Submitted
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Electronic structure and metal-insulator transition in LaNiO_3 ultrathin films grown on LaAlO_3 substrates from separate oxide targets using laser MBE MARYAM GOLALIKHANI, QINGYU LEI, DONGYE YANG, LEILA KASAEI, Temple University, PASQUALE ORGIANI, UOS Salerno, CNR SPIN, DARIO ARENA, National Synchrotron Light Source, Brookhaven National Laboratory, ALEXANDER GRAY, XIAOXING XI, Temple University — Here we report on a novel approach of growing ultrathin LaNiO_3 films on LaAlO_3 substrate one atomic layer at a time using laser MBE with La_2O_3 and NiO targets. Reflection high energy electron diffraction (RHEED) spot intensity was used as the main technique to control stoichiometry and growth rate of alternating atomic layers with both LaO and NiO_2 surface termination. We studied the change in the thickness-dependent electronic structure of LaNiO_3 films across the metal-insulator transition. The techniques used in this study were the combination of temperature-dependent transport measurements, x-ray absorption spectroscopy (XAS) and x-ray linear dichroism (XLD) at the Ni $L_{3,2}$ and O K absorption edges. We will report on the effect of the growth technique on electronic structure of this material.

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