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Metal-insulator transition characteristics of epitaxial and polycrystalline SmNiO_3 thin films SIEU HA, GULGUN AYDOGDU, SHRIRAM RAMANATHAN, Harvard University — SmNiO_3 (SNO) is known to exhibit a sharp insulator to metal transition at 130 °C in bulk form and is a candidate material for utilization in advanced electronic devices such as memory and neuromorphic circuits. We present growth and characterization of SNO thin films deposited on LaAlO_3 and Si single crystals. Structural properties such as crystallinity, strain, and stoichiometry are examined with x-ray diffraction and x-ray photoelectron spectroscopy. Temperature-dependent resistance measurements are performed, and a metal-insulator transition is observed for films on both substrates. We investigate how resistance changes are affected by thermal cycling and the role of surface oxygen loss on electrical characteristics.

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