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Structural characterization of $LaInO_3/BaSnO_3$ interface via synchrotron scattering CLAUDIA LAU, Yale University, YOUJUNG KIM, KOOKRIN CHAR, Seoul National University, CHARLES AHN, FRED WALKER, Yale University — The alkaline earth stannate $BaSnO_3$ has one of the highest measured room-temperature mobilities of the conducting perovskite oxides. FETs based on $BaSnO_3$ display a large on/off ratio, I_{on}/I_{off} =10^7, and high field effect mobility, μ =90 cm^2/Vs. [1] It has been suggested that in these polar devices, which use a $LaInO_3$ dielectric, the polar discontinuity between the polar $LaInO_3$ dielectric and the nonpolar $Ba_{0.93}La_{0.07}SnO_3$ channel leads to an electronic reconstruction. $LaInO_3$ remotely dopes $Ba_{0.93}La_{0.07}SnO_3$ with electrons, creating the high observed mobility. Using synchrotron radiation, we measure crystal truncation rods (CTRs) of thin film LIO/BSO/STO grown by pulsed-laser deposition. Fitting these CTRs, we determine a layer-resolved atomic structure for the LIO/BSO interface. We observe octahedral rotations and polarization in the LIO layer for films as thin as 6 unit-cells, similar to the rotations observed in bulk LIO. We discuss how these rotations may be coupled to the polarization near the interface. [1] Kim et al. APL Mater. 3, 036101 (2015)

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