

Abstract Submitted
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Field effect in perovskite heterostructures based on BaSnO₃ and BaHfO₃ YOUNG MO KIM, CHULKWON PARK, USEONG KIM, JUYEON SHIN, YOUJUNG KIM, KOOKRIN CHAR, Seoul National University — Perovskite La-doped BaSnO₃ (BLSO) was reported to possess high electron mobility and excellent oxygen stability [1]. We fabricated a field effect transistor on SrTiO₃ substrate using BLSO as a channel layer and BaHfO₃ (BHO) as a gate insulator. To reduce the threading dislocations and enhance the electrical properties of the channel, undoped BaSnO₃ (BSO) buffer layer was grown on SrTiO₃ substrates before the channel layer deposition. X-ray diffraction measurement confirms the epitaxial growth of BHO on BSO. We investigated optical and dielectric properties of the BHO gate insulator; the optical bandgap and the dielectric constant were measured to be 6.1 eV and 37.8, respectively. Using BHO as the gate insulator, we obtained the conductivity modulation in the channel by field effect. We will report on the electrical properties of the field effect transistor such as the output characteristics, the transfer characteristics, the $I_{\text{on}}/I_{\text{off}}$ ratio, the subthreshold swing and the field effect mobility. [1] H. J. Kim, U. Kim *et al.*, Appl. Phys. Express **5**, 061102 (2012).

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