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**Variation of the conductance enhancement at  $\text{BaSnO}_3/\text{LaIn}_x\text{Ga}_{1-x}\text{O}_3$  polar Interface<sup>1</sup>**

YOUNG MO KIM, JUYEON SHIN, YOUJUNG KIM, KOOKRIN CHAR, Seoul National University — We have recently reported that La-doped  $\text{BaSnO}_3$  (BLSO) displayed conductance enhancement by more than  $10^4$  times when  $\text{LaInO}_3$  (LIO) layer was grown on top of the BLSO layer. The conductance enhancement implies the two-dimensional electron gas (2DEG) formation at the interface. To identify the origin of the conductance enhancement, we developed other heterostructures based on different overlayers. Since  $\text{LaGaO}_3$  is also a polar perovskite like the LIO with its band gap of 4.4 eV and its lattice constant of 3.9 Å, we investigated the variation of the conductance enhancement at  $\text{LaIn}_{1-x}\text{Ga}_x\text{O}_3$  (LIGO)/BLSO interface while varying the Ga ratio. We first checked the interfacial epitaxial growth of LIGO on BSO by x-ray diffraction measurement and transmission electron microscopy. The sheet conductances of BLSO layer before and after the deposition of LIGO layer were measured. Putting together the structural and electrical properties of the LIGO/BLSO interfaces with various Ga compositions, we will discuss the origin of the conductance enhancement in terms of the strain-induced polarization in the LIGO layer.

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