

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Effect of the undoped BaSnO_3 space layer on the high mobility $\text{LaInO}_3/\text{Ba}_{1-x}\text{La}_x\text{SnO}_3$ polar interface JUYEON SHIN, CHULKWON PARK, YOUNG MO KIM, YOUJUNG KIM, KOOKRIN CHAR, Seoul national university — We have recently reported on the sheet conductance enhancement at the interface between two band insulators: LaInO_3 (LIO) and BaSnO_3 (BSO) [1, 2]. The advantages of the two-dimensional electron gas-like (2DEG) state at the LIO/ $\text{Ba}_{1-x}\text{La}_x\text{SnO}_3$ (BLSO) polar interface are its stability, the controllability of the local carrier concentration, and the high electron mobility of BLSO [3]. The origin of enhanced conductance at the interface is still under investigation, but the doping level of BSO is a critical parameter for the polar charge contribution. [2] We have investigated a new structure using an undoped BSO space layer at the LIO/BLSO interface. On one hand, this new structure will improve the mobility of the LIO/BLSO structure by reducing La impurity scattering. On the other hand, through this new structure we can answer the issues related with La diffusion at the LIO/BLSO polar interface and trace the origin of the 2DEG-like charge. This new modified structure of the LIO/BSO polar interface looks promising for higher electron mobility devices. [1] U. Kim *et al.*, APL Mat. **3**, 036101 (2015). [2] U. Kim *et al.*, preprint. [3] H. J. Kim, U. Kim *et al.*, Appl. Phys. Express **5**, 061102 (2012).

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Date submitted: 07 Nov 2015

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