

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**2 dimensional electron gas in chemically stable SrSnO<sub>3</sub>/KTaO<sub>3</sub> interface** HYUKWOO KWON, CHULKWON PARK, KOOKRIN CHAR, Department of physics and astronomy, Seoul National University, MATERIALS & DEVICES PHYSICS LAB. TEAM — Recent 2DEGs are mostly formed at the interface of LaAlO<sub>3</sub>/SrTiO<sub>3</sub>(LAO/STO) system, which is explained by the polar catastrophe mechanism. Because of large propensity of oxygen vacancy formation in SrTiO<sub>3</sub>, there remains a possibility that the origin of 2DEG of LAO/STO system may stem from extra charge of oxygen vacancy of SrTiO<sub>3</sub>, not from the polar layer of LaAlO<sub>3</sub>. In this presentation, we report the realization of 2DEG at the interface of SrSnO<sub>3</sub>/KTaO<sub>3</sub>(SSO/KTO), which is chemically stable due to extremely stable oxygen stoichiometry. This SrSnO<sub>3</sub>/KTaO<sub>3</sub> heterostructure was epitaxially grown by pulsed laser deposition and the interface was found atomically matched by transmission electron microscope and reciprocal space mapping. We measured the magnetic property of SSO/KTO heterostructure and acquired a large ferromagnetic signal, which is unchanged in the temperature range of 4~300 K by SQUID magnetometer measurement. As SrSnO<sub>3</sub> and KTaO<sub>3</sub> are non-magnetic materials, this ferromagnetic signal may result from 2DEG at the interface of SSO/KTO. We hope our results can shed lights on the exact mechanism of 2DEGs that are formed at oxide interfaces.

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Date submitted: 15 Nov 2012

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