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**Local electronic structures and 2D topological phase transition of ultrathin Sb films**<sup>1</sup> SUNGHWAN KIM, Center for Artificial Low Dimensional Electronic Systems, Institute for Basic Science, Korea, KYUNG-HWAN JIN, JOONBUM PARK, JUN SUNG KIM, SEUNG-HOON JHI, Department of Physics, Pohang University of Science and Technology, Korea, HAN WOONG YEOM, Center for Artificial Low Dimensional Electronic Systems, Institute for Basic Science, Korea — We investigate local electronic structures of ultrathin Sb islands and their edges grown on Bi<sub>2</sub>Te<sub>2</sub>Se by scanning tunneling microscopy/spectroscopy (STM/STS) and density functional theory (DFT) calculations. The Sb islands of various thickness are grown with atomically well ordered edge structure over the 3 bilayers (BL). On the surfaces and edges of these islands, we clearly resolve edge-localized electronic states by STS measurements, which depend on the thickness. The DFT calculations identify that the strongly localized edge states of 4 and 5 BL films correspond to a quantum spin Hall (QSH) states while the edge states of 3 BL are trivial. Our experimental and theoretical results confirm the 2D topological phase transition of the ultrathin Sb films from trivial to QSH phase.

<sup>1</sup>Center for Artificial Low Dimensional Electronic Systems, Institute for Basic Science and Department of Physics, Pohang University of Science and Technology, Korea

SungHwan Kim  
Center for Artificial Low Dimensional Electronic Systems, Institute for Basic Science, Korea

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