Metal-Supported High Crystalline Bi\textsubscript{2}Se\textsubscript{3} Quintuple Layers  

JEONG HEUM JEON, WON JUN JANG, JONG KEON YOON, SANG-YOUN WEON, SE-JONG KAHNG, Dept. of Physics, Korea University — Atomically flat thin films of Bi\textsubscript{2}Se\textsubscript{3} were grown on Au(111) metal substrate using molecular beam epitaxy. Hexagonal atomic structures and quintuple-layer steps were observed at the surfaces of grown films using scanning tunneling microscopy. Multiple sharp peaks from (003) family layers were characterized by X-ray diffraction measurements. The atomic stoichiometry of Bi and Se was considered using X-ray photoemission spectroscopy. Moiré patterns were obtained at the surfaces of one quintuple layer films due to lattice mismatch between Bi\textsubscript{2}Se\textsubscript{3} and Au. Our experiments suggest that Au is a reasonable material for electrodes in Bi\textsubscript{2}Se\textsubscript{3} devices.