

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Record surface state mobility and quantum Hall effect in topological insulator thin films via interface engineering NIKESH KOIRALA, MATTHEW BRAHLEK, MARYAM SALEHI, Rutgers U., LIANG WU, JHU, JIXIA DAI, Rutgers Univ, JUSTIN WAUGH, THOMAS NUMMY, U. of Colorado, MYUNG-GEUN HAN, BNL, JISOO MOON, Rutgers U., YIMEI ZHU, BNL, DANIEL DESSAU, U. of Colorado, WEIDA WU, Rutgers U., N. PETER ARMITAGE, JHU, SEONGSHIK OH, Rutgers U. — Thin films of topological insulators (TIs) with conduction dominated by high mobility topological surface state (TSS) channel have been difficult to achieve due to increased material defects, thus making it difficult to probe TIs in quantum regime. Here by utilizing a structurally matched buffer layer based on In_2Se_3 , we have achieved Bi_2Se_3 films with low defect density resulting in ‘order of magnitude’ improvement in mobilities and carrier densities. This has led to TSS dominated transport and first observation of quantum Hall effect in Bi_2Se_3 .

Nikesh Koirala
Rutgers Univ

Date submitted: 03 Nov 2015

Electronic form version 1.4