Abstract Submitted for the MAR15 Meeting of The American Physical Society

Properties of thin film SnTe grown by molecular beam epitaxy K. ZOU, Department of Applied Physics and CRISP, Yale University, New Haven CT 06520, STEPHEN D. ALBRIGHT, Department of Physics and CRISP, Yale University, New Haven CT 06520, G.H. SIMON, Department of Mechanical Engineering & Materials Science, Chemical & Environmental Engineering, and CRISP, Yale University, New Haven CT 06520, M.D. MORALES-ACOSTA, Department of Applied Physics and CRISP, Yale University, New Haven CT 06520, ERIC ALT-MAN, Department of Chemical & Environmental Engineering and CRISP, Yale University, New Haven CT 06520, F.J. WALKER, Department of Applied Physics and CRISP, Yale University, New Haven CT 06520, C.H. AHN, Department of Applied Physics, Mechanical Engineering & Materials Science, and CRISP, Yale University, New haven CT 06520 — The topological crystalline insulator SnTe exhibits multiple surface states protected by crystal symmetry. Thin films of SnTe have been grown by physical vapor deposition techniques on several substrates; these films tend to consist of a heterogeneous collection domain structures. In this talk, we report systematic studies of the structure and transport properties of SnTe films grown by molecular beam epitaxy (MBE). Combining atomic force microscopy and x-ray diffraction measurements, we find that the domains consist of crystallites with 100 and 111 surfaces. When the thickness of SnTe exceeds 400 u.c., the 100 surface becomes dominant. Transport measurements show that conduction in the films can be attributed to both Sn vacancies in bulk SnTe and the surface topological states of SnTe.

> Ke Zou Yale University

Date submitted: 12 Nov 2014

Electronic form version 1.4