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Fe-doped Topological Crystalline Insulator SnTe Thin Films STEPHEN D. ALBRIGHT, Center for Research on Interface Structures and Phenomena and Department of Physics, Yale University, K. ZOU, F.J. WALKER, C.H. AHN, Center for Research on Interface Structures and Phenomena and Department of Applied Physics, Yale University — Substitution doping by magnetic elements may induce novel ground states in topological insulators (TIs) or topological crystalline insulators (TCIs). We have grown thin films of TCI SnTe with varying concentrations of Fe using molecular beam epitaxy and have characterized them using atomic force microscopy, scanning electron microscopy, and x-ray diffraction. Films doped with Fe exhibit a decreasing carrier density with increasing doping, indicating that bulk states due to Sn vacancies in our films are largely suppressed, with the topological surface states becoming dominant. We discuss the nature of the ground state of SnTe induced by Fe-doping as determined by magnetization and magneto-transport measurements.

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