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Sn-doped $Bi_{1.1}Sb_{0.9}Te_2S$: An ideal bulk topological insulator[1] SK KUSHWAHA, I PLETIKOSIC, T LIANG, A GYENIS, Princeton University, USA, SH LAPIDUS, Argonne National Laboratory, USA, Y TIAN, University of Toronto, Toronto, Canada, H ZHAO, KS BURCH, Boston College, Boston, USA, J LIN, W WANG, H JI, Princeton University, USA, AV FEDOROV, Lawrence Berkeley National Laboratory, USA, A YAZDANI, NP ONG, Princeton University, USA, T VALLA, Brookhaven National Lab, USA, RJ CAVA, Princeton University, USA — In the recent decade the topological insulators have been of significant importance for the condensed matter community. However, so far no real materials could fulfill all the requirements. Here, we present the Bridgman growth of slightly Sn-doped $Bi_{1.1}Sb_{0.9}Te_2S$ (with bulk band gap of ˜350) single crystals and characterization by electronic transport, STM and ARPES. The results on the crystals exhibit an intrinsic semiconducting behavior with the Fermi level and Dirac energies lie in bulk gap and high quality 2D surface states are detangled from the bulk states, and it fulfils all the requirements to be an ideal topological insulator. Reference: S K Kushwaha et al., NATURE COMM., 7:11456 (2016).

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Satya Kushwaha
Princeton Univ

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