COLLOQUIUM

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Strained α-Sn Thin Films on Highly Lattice-Mismatched GE Substrates

Abstract

With the demonstration of strained *a*-Sn as a topological insulator (TI) in 2013, strained *a*-Sn thin films have attracted significant attentions. Most of the *a*-Sn thin films reported to date were deposited on nearly lattice-matched InSb or CdTe substrates, using molecular beam epitaxy (MBE). We deposited Sn thin films on highly lattice-mismatched Ge substrates through physical vapor deposition (PVD) of solid Sn sources. X-ray diffraction (XRD) characterization indicated that *a*-Sn thin films with high crystalline quality were formed on Ge substrates. Dielectric force microscopy (DFM) measurement revealed that our *a*-Sn thin films were n-type semiconductors. We also observed a zero-bias anomaly (ZBA) in the DFM responses of our samples which could be a signature of the gapless metallic surface state of a TI. These *a*-Sn thin films therefore might be promising candidates for low-dissipation next generation electronics.

3:00 p.m. – 4:00 pm Friday, September 18th Virtual
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