

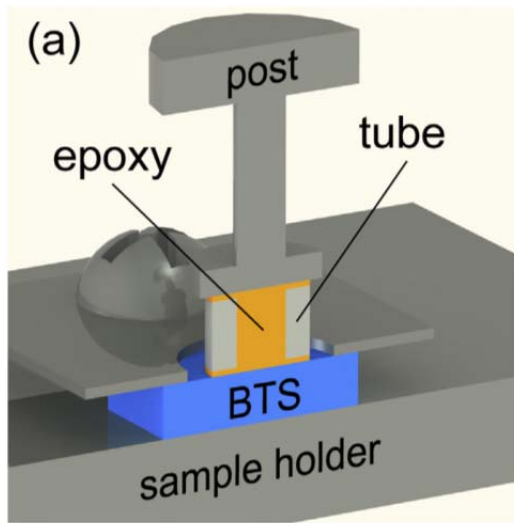
Growth of niobium on the three-dimensional topological insulator $\text{Bi}_2\text{Te}_{1.95}\text{Se}_{1.05}$

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Short Abstract

While applying a new cleaving method, we investigated the growth of niobium (Nb) on the three-dimensional (3D) topological insulator (TI) $\text{Bi}_2\text{Te}_{1.95}\text{Se}_{1.05}$ (BTS) using scanning tunneling microscopy and spectroscopy. After the deposition of nearly a full monolayer of Nb by high-energy electron-beam evaporation, we observed a downshift of the bands and the Dirac point on the TI surface. Nb grew in small 10 nm wide islands upon sub-monolayer growth and in a layer-by-layer growth mode up to an annealing temperature of 450°C.



Above. Nb growth on BTS substrate: (a) Scheme of the sample cleaving method: All parts of the sample holder and the post were made of stainless steel. The sheet is strongly tightened to the BTS surface. An alumina tube was used to confine the epoxy to a small region.