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Work function oscillations of atomic-layer-resolved Pb films JINFENG JIA, Institute of Physics, The Chinese Academy of Sciences, Beijing 100080, China, YUN QI, XUCUN MA, SHUAIHUA JI, YINGSHUANG FU, QIKUN XUE — By scanning tunneling microscopy, the local work function (LWF) dependence on thickness was studied on Pb quantum wedges with flattop grown on stepped Si(111) substrate. The oscillatory behavior of LWF was observed due to the quantum well state formation induced by the electrons confined in the [111] direction of Pb wedges. The electronic density of state, which is believed to play an important role in such physical property as LWF, was also obtained by scanning tunneling spectroscopy. It is found that the highest occupied quantum well state near Fermi level presented by dI/dV curve has great relationship with the LWF oscillating. Our results show good agreement with the theoretical predictions. This work directly proves that the local work function and the related physical properties are also modulated by quantum well state.

Prefer Oral Session

Prefer Poster Session

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