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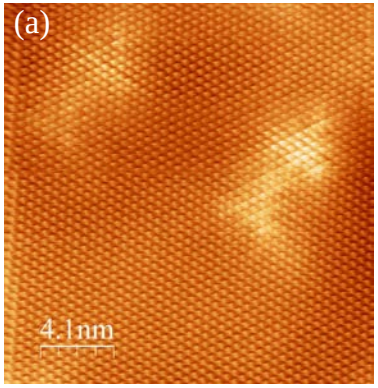
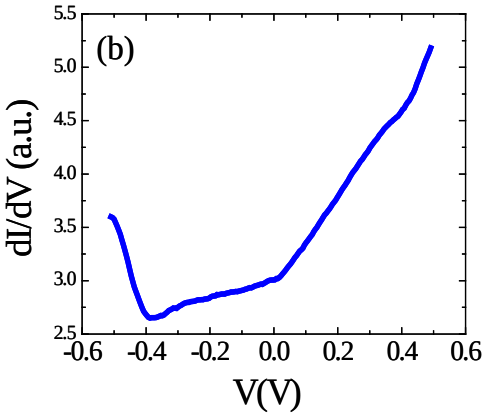
Electronic Properties of 2D materials





(a) STM topography and (b) tunneling spectroscopy of a Bi_2Se_3 single crystal at T=4.2 K

Keys features

•UHV-STM (300 mK, 9Tesla)
• in-situ LEED/Auger characterization
• in situ e-beam evaporators and heaters

Scope of effort

- Produce 2D crystals with clean surfaces and large areas
- Compare spatially-resolved electronic structure and low energy excitations between 2D and 3D materials
- Compare the STM results with transport measurements and Raman spectroscopy

Challenges to address

- How interlayer interactions and dimensionality affect the ground state
- Effect of interfacial e-e and e-ph coupling on the electronic density of states
- Nature and the impact of defects and the effect of strain