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Tunneling Microscopy and Spectroscopy of Semiconductor Nanocrystals SAMEH DARDONA, JIANFEI SHAO, ALEXANDER SCHILL, QUSAI DARUGAR, MOSTAFA EL-SAYED, PHILLIP N. FIRST, Georgia Institute of Technology — Semiconductor nanocrystals of different compounds have been imaged and partially characterized by tunneling based techniques. Our nanocrystals include CdSe, Au and CdS coated with organic molecules. Our initial studies show immobile and isolated single Au, CdSe, and CdS nanocrystals images. Crystals were attached chemically to a conducting substrates using different combinations of ligands and SAM binding layers. Nanocrystal samples have been prepared for Ballistic Electron Emission Spectroscopy (BEES) studies. BEES studies of single nanocrystals are expected to provide us with an understanding of size-dependent electronic structure at the level of single quantum states, and a basic knowledge of the dynamics of electronic excitations within the nanocrystal.

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