Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

STS and BEES Study of Semiconductor Nanocrystals JIANFEI SHAO, SAMEH DARDONA, ALEXANDER SCHILL, QUSAI DARUGAR, MOSTAFA EL-SAYED, PHILLIP FIRST, Georgia Institute of Technology — Semiconductor nanocrystals CdS/ZnS and CdSe/HgS with core/shell structure are investigated theoretically and experimentally. 8-band envelope function approximation is used to calculate energy levels of these nanocrystals. After binding to the Au(111) surface by organic self-assembled monolayer, dI/dV is measured using STM. The positions of dI/dV peaks are compared with eigen energies of theoretical calculation. This provides a test of envelope function approximation in the scale of several nanometers. In order to investigate the relaxation processes inside nanocrystals, we use our home build UHV low-temperature STM to do ballistic electron emission spectroscopy.

Phillip First

Date submitted: 01 Dec 2004 Electronic form version 1.4