

Abstract Submitted
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Simulation of tunneling I-V curves from gold nanocrystals JIANFEI SHAO, PHILLIP FIRST, Georgia Institute of Technology — Tunneling current versus voltage (I-V) spectra were simulated for model double junction systems where the central electrode has a discrete energy spectrum, chosen to approximately model gold nanocrystals in the diameter range of 1-3 nm. The interplay between Coulomb charging and the discrete energy states introduces interesting features in the I-V curves. Electron-hole excited configurations of the nanocrystal, with up to two e-h excitations, have been included in the calculations. As compared with the orthodox theory, features in the dI/dV spectra can be modified substantially as a consequence of the nanocrystal excited states, depending on the energy spacing between states relative to both the HOMO-LUMO gap and the charging energy.

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