

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Coulomb blockade and current-induced switching in single molecular devices IVAN OLEYNIK, University of South Florida, MORTKO KOZHUSHNER, Institute of Chemical Physics, RAS, VLADIMIR POSVYANSKII, Institute of Chemical Physics, RAS — Electron transport properties of single organic molecules exhibit intriguing and unusual features due to reduced dimensionality of the single molecular structures and their unique electronic properties. We will discuss the particular aspect of electron transport that is characterized by dominance of many-electron effects. The interplay between Coulomb and exchange interactions in the course of electron transfer through the molecule results in modification of the energy spectrum of the tunneling electron. We predict dynamical evolution of the energy spectrum as applied bias is increased which results in current-induced switching in single molecular devices.

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Date submitted: 01 Dec 2004

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