Theoretical Study on Conductance Switching of Single-Molecule Devices

Molecules that exhibit conductance switching have gained a lot of research interest in the recent years since they can be used as memory elements. There are some debates regarding the physics behind the conductance switching in some molecules. In this paper, we proposed a possible explanation for the conductance bistability exhibited by a single-molecular device. The explanation supports previous analytical and experimental attempts for identifying the sources of switching in the same testbed molecule. Moreover, it can be generalized to explain the memristive phenomenon observed in transition-metal oxides.