

Tuesday Afternoon Poster Sessions

Scanning Probe Microscopy Focus Topic

Room: Central Hall - Session SP-TuP

Scanning Probe Microscopy Poster Session

SP-TuP1 Quantitative Barrier Height Measurements of Tryptanthrin Monolayers on HOPG. *K. Sriraman, J. Novak, J. Baum, A. Olson*, Florida Institute of Technology

Scanning tunneling spectroscopy (STS) was used to collect barrier height data on the molecule Indolo[2,1-b]quinazoline-6,12-dione (tryptanthrin) at the solution-graphite interface. Tryptanthrin and its analogues have shown good promise as potential therapeutic agents for a variety of pathogenic organisms. In this experiment, apparent barrier height ' Φ_{ap} ' (work function) values were collected at sub-molecular resolution. The STM topography and barrier height data are collected simultaneously so that the barrier height data can be compared with the topography of the molecule. Since a positive sample bias was used throughout the experiment, the topography corresponds to the lowest unoccupied molecular orbital (LUMO) of the molecule. These topography and barrier height image data are compared with the density functional theory (DFT) computed molecular orbital of tryptanthrin to ascertain the positions of various lobes of the molecule. These data from barrier height images correspond to the amount of energy required by electrons to enter or leave different parts of the molecule, which might be indicative of the likely locations of redox events.

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