

## Abstract

**Observation of surface behavior and Topography Imaging of the HOMO and LUMO of Indolo [2,1-b] quinazoline-6,12-dione (Tryptanthrin) at the Solution-Graphite Interface via Scanning Tunneling Microscopy.** Krishnan Sriraman, Mark J. Novak, J. Clayton Baum, Andrew Heron, Joel A. Olson Florida Institute of Technology, Department of Chemistry, 150 West University Boulevard, Melbourne, FL 32901.

Scanning tunneling microscopy (STM) was used to collect topography images of Indolo[2,1-b] quinazoline-6,12-dione (Tryptanthrin) at the solution-graphite interface. These images were collected at both positive (corresponds to lowest unoccupied molecular orbital (LUMO)) and negative sample bias (corresponds to highest occupied molecular orbital (HOMO)). Sub-molecular resolution was achieved. A comparison with the density functional theory (DFT) calculated model of the molecular orbital's (MOs) revealed molecular lobe-to-lobe correlations. An interesting characteristic of the tryptanthrin monolayer was the arrangement of the molecular dipoles which was observed to be parallel to each other. This is unusual considering electrostatic interactions.