

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Structural characterization and molecular dynamics within low-coverage films of *p*-terphenyl adsorbed onto graphite EDWARD KINTZEL, KENNETH HERWIG, Oak Ridge National Laboratory — Neutron scattering experiments have been carried out on low-coverage films of *p*-terphenyl molecules physisorbed onto the surface of graphite. The molecular arrangement within these films has been determined as a function of temperature and coverage. Analysis of the diffraction data reveals two-dimensional film structures where the molecules prefer a parallel orientation relative to the underlying substrate. Further examination provides evidence for an order-disorder phase transition within a monolayer film, temperature-dependent structural evolution within bilayer films, and structural variations based on film coverage. Initial dynamics results indicate a structural phase change in the temperature range 275-325 K. Below this temperature range, the scattering is consistent with phenyl ring reorientations around the long molecular axis. At elevated temperatures, the quasielastic signal is stronger and consistent with translational motion in combination with the phenyl ring reorientations.

Edward Kintzel
Oak Ridge National Laboratory

Date submitted: 18 Nov 2005

Electronic form version 1.4