

Quantitative electrostatic force microscopy-phase measurements of macromolecular networks

M. Elliott, C. H. Lei, A. Das and J. E. Macdonald

Department of Physics and Astronomy, Cardiff University, Cardiff, P.O.Box 913, CF24 3YB, United Kingdom.

Abstract

High-resolution Electrostatic Force Microscopy (EFM)-phase measurements are reported on molecular networks of semiconductor polymer poly-hexylthiophene (P3HT) which form naturally during spin-coating of sub-monolayer coverages. A lateral resolution of better than 20 nm is demonstrated in EFM-phase images of the P3HT network by detecting the phase shift of the tip along the molecules under electrical bias. The experimental EFM-phase data are fitted by an analytical expression, from which the surface potential and the capacitance between the tip and surface can be determined.

martin.elliott@astro.cf.ac.uk

Oral presentation preferred