Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Electronic transport of low concentrations of P3HT molecules across nanogap source-drain electrodes. JEFF WORNE, Electrical and Computer Engineering, Rice University, BEHRANG HAMADANI, NIST, Washington DC, DOUGLAS NATELSON, Physics and Astronomy, Rice University — Poly 3-hexothiophene (P3HT) is a widely studied, versatile material used in organic electronics. Little is known, however, about the electronic transport properties of individual or small groups of P3HT molecules. Initial experiments suggest that the behavior of low concentrations of molecules differ significantly from bulk P3HT. We have fabricated nanoscale P3HT transistors using electromigrated nanogap structures as source-drain electrodes and the underlying silicon/SiO_2 substrate as a gate. We present preliminary transport data on these devices as a function of temperature and electrode material.

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Date submitted: 17 Nov 2006 Electronic form version 1.4