

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Increasing Transport Efficiencies of Polymer Based Solar Cells by Electrophoresis TERRENCE WONG, CSUEB — Organic polymer photovoltaic (PV) cells are an active area of Applied Physics research because of four unique characteristics: (1) relatively inexpensive costs, (2) transparent properties, (3) flexibility, and (4) ease of mass production. We are studying the effects of incorporating single-walled carbon nanotubes (SWCNs) into a mixture of poly-(3-hexylthiophene) (P3HT), to test the affects on transport characteristics. The experiment will be segregated into parallel trials, with fixed volume ratios of P3HT:SWCNs to test the effects of (1) random orientation of SWCNs or the control, and (2) an aligned orientation of SWCNs. An electrophoresis-based technique, similar to gel electrophoresis, used to separate DNA fragments of variable masses, is used for partial alignment of the SWCN. Fixed geometry metalized substrates in a four striped copper patternare used for the transport studies and the P3HT:SWCN film's resistivity is monitored in-situ. The oriented films show enhanced conductivity, indicating this plays a major role in the increased efficiencies found in P3HT:SWCN based polymer solar cells.

Terrence Wong
CSUEB

Date submitted: 17 Nov 2010

Electronic form version 1.4