

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

UV-vis and Transport Characterization of Degradation in Polymer Blend Photovoltaics¹ EMILEE SENA, JUSTIN PEEL, SHREYA NATHAN, DEVIN WESENBERG, MARIANNE WALLIS, THORSTEINN ADALSTEINSON, BRIAN MCNELIS, RICHARD BARBER, Santa Clara University — Organic photovoltaic cells are prepared using an active layer containing a functionalized C60 molecule, [6-6]-phenyl C61 butyric acid octadecyl ester (PCBOD); and a conjugated polymer, poly(3-hexylthiophene) (P3HT). PCBOD functions as an electron acceptor in conjunction with P3HT, the electron donor. Both current-voltage (IV) transport data of solar cells and spectroscopic absorption data of the corresponding active layer are collected at regular time intervals for periods up to several days. IV data show changes in power conversion efficiency which are strongly dependent on device preparation (stoichiometry, annealing, etc.). Ultraviolet and visible light absorption exhibits similar time dependence. Recent results show that annealing the active layer up to 200 °C substantially improves device performance. Further spectroscopic studies, such as Carbon-13 NMR spectroscopy, are ongoing.

¹Supported by a Santa Clara University Science, Technology and Society Grant, a grant from IntelliVision and the SCU BIN-REU: funded in part by the UC Santa Cruz BIN-RDI, NASA Grant NNX09AQ44A.

Richard Barber
Santa Clara University

Date submitted: 22 Nov 2010

Electronic form version 1.4