

Abstract Submitted
for the OSS11 Meeting of
The American Physical Society

Incident Angle Dependence of Organic Solar Cells VINCENT DE-GEORGE, John Carroll University, BRENT VALLE, KENNETH SINGER, Case Western Reserve University — We have recently been studying the use of interference effects to enhance optical absorption in polymer photovoltaic cells. These interference effects are expected to be angle dependent. We measure here the absorption incident angle dependence and compare it with numerical simulations. The cells used were P3HT/PCBM active layer, organic photovoltaic cells. The angular dependence of the cells' reflection was measured using an Ocean Optics light source and spectrophotometer and a precision rotary stage apparatus. The experimental results were compared to a Matlab simulation of the electrodynamic system. Analysis showed that the absorption peaks predicted by the simulation largely coincided in wavelength to those observed in experiment. Blueshift is minimal for most features of the absorption curves, however the absorption peak exhibited the largest shift, 40nm, due change in incidence angle. No additional cavity resonance can be attributed to incidence angle.

Vincent DeGeorge
John Carroll University

Date submitted: 24 Mar 2011

Electronic form version 1.4