Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Ionically Gated Hybrid Tandem Organic Photovoltaics[1] ALEXANDER COOK, JONATHAN YUEN, JOESEPH MICHELLI, ANVAR ZAKHIOV, Univ of Texas, Dallas, DEPARTMENT OF PHYSICS, THE UNIVERSITY OF TEXAS AT DALLAS TEAM, THE NANOTECH INSTITUTE, THE UNIVERSITY OF TEXAS AT DALLAS TEAM — In our work, 'Electrochemically gated organic photovoltaics with tunable carbon nanotube electrodes', recently published in Applied Physics Letters, and our previous APS presentation, we demonstrated a hybrid device comprised of an organic photovoltaic (OPV) monolithically attached to a supercapacitor via a common transparent carbon nanotube (CNT) electrode. This structure may also be viewed as an electrochemically gated OPV in which the gate voltage gradually shifts a resistor-like device into a high efficiency photovoltaic. We have extended this concept to an electrochemically-gated, parallel tandem, organic photovoltaic device, which features two photoactive layers in addition to the supercapacitive cell. This device can be produced entirely in ambient conditions via spin-coating and lamination, and avoids many processing difficulties associated with tandem architectures. Additionally, this architecture allows us to perform experiments to better understand the undelaying phenomena in this system such as whether the electrochemical charging in the OPV device extends to the semiconducting photoactive layers or is constrained entirely to the carbon nanotube electrodes.

[1]We acknowledge the support of The Welch Foundation Grant AT-1617

Alexander Cook
Univ of Texas, Dallas

Date submitted: 15 Nov 2013 Electronic form version 1.4