Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Growth and Characterization of PEDOT:PSS and Carbon Nanotube Composite Structures for Excitonic Solar Cells CONSTANCE OWENS, Houston Baptist University, CHAMINDA HETTIARACHCHI, DOMINGO MATEO-FELICIANO, Universtity of South Florida, ROBERT HYDE, SARATH WITANACHCHI, University of South Florida — Harnessing solar energy is one of the most promising ways to tackle today's energy issues. Though solar cells are comprised of many different layers, our focus is on a single layer. The main goal of this study is to create thin film composite structures of poly(3,4-ethylenedioxythiophene) poly(styrenesulfonate) (PEDOT:PSS) and carbon nanotubes (CNT), more specifically with multiple wall carbon nanotubes (MWCNT) by employing a spray method that utilizes Bernoulli's principle. We believe that a spray method will produce a better uniform layer than other methods that are utilized for creating thin films. Uniformity within a thin film is of the upmost importance because as uniformity is improved, many properties are enhanced. PEDOT:PSS was mixed separately with both dimethylformamide (DMF) and water. By the Dektak 3030ST, a profilometer device, it was discovered that the PEDOT:PSS containing DMF dispersed better than the PEDOT:PSS mixed with water, thus creating a more uniform film. Also it is well known that CNTs possess many excellent properties that can make them very useful in the field of solar technology. In this study we also combine MWCNTs into our thin films to see how they affect thickness, transparency and conductivity by using the Lambda 950, a UV/VIS spectrometer, and a four point probe.

Constance Owens
Houston Baptist University

Date submitted: 07 Nov 2012 Electronic form version 1.4