

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Flexible, Transparent and Conductive Carbon Nanotube Aerogels /PEDOT:PSS Electrodes created by Top-bottom Fabrication PATRICIA M. MARTINEZ, Univ of Texas, Dallas, ANDREA CERDAN PASARAN, University of Guanajuato, ANVAR ZAKHIDOV, Univ of Texas, Dallas, UNIVERSITY OF GUANAJUATO, MEXICO COLLABORATION — The sheets of Carbon Nanotubes (CNT) have proven to be a good substitute for ITO. To improve their conductivity and increase optical transparency we have created composites which incorporate silver nanowires or other evaporated metals. Coating CNT/metals with PEDOT:PSS is important for creating hole transport/electron barrier layer functionality, but it is not easy to achieve using PEDOT:PSS solutions due to the hydrophobicity of CNT. We report a new top-to-bottom approach for the fabrication of highly flexible, transparent and conductive carbon nanotube-based electrodes using PDMS as a substrate. A uniform and smooth layer of approximately 50 nm of PEDOT:PSS was spin coated on top of a PDMS stamp followed by the deposition of vapor densified freestanding Multiwall Carbon Nanotube (MWNT) aerogels. An incorporation of silver nanowires, silver or Aluminum thin layer can be sprayed or evaporated on top of the freestanding MWNT aerogels in order to lower the sheet resistance even further. The PDMS substrate is drop cast on top of the configuration then the PDMS stamp is lifted-up. The PEDOT:PSS layer is selectively deposited on top of the MWNT only. The composite electrodes can be laminated on photovoltaic devices and on LEDs.

Patricia M. Martinez
Univ of Texas, Dallas

Date submitted: 25 Nov 2015

Electronic form version 1.4