

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Multi-walled carbon nanotube sheets as transparent anodes in organic light-emitting diodes** CHRISTOPHER WILLIAMS, RAQUEL OVALLE ROBLES, MEI ZHANG, The University of Texas at Dallas, SERGEY LI, Plextronics, Inc., RAY BAUGHMAN, ANVAR ZAKHIDOV, The University of Texas at Dallas — Carbon nanotubes have emerged as useful components for next-generation electronic devices. We have investigated one such area by producing organic light-emitting which use transparent multi-walled carbon nanotube sheets as a replacement for indium tin oxide (ITO). These sheets offer high optical transparency with the additional advantage of being very flexible with no loss in conductivity, making them ideal candidates for devices built on plastic substrates. We have produced devices on both high quality display glass and plastic substrates and have observed bright emission with efficiencies which are comparable to those obtained from ITO-based devices. We also present results for devices which combine ITO and nanotube sheets. Such devices take advantage of the planar conductivity of the ITO and improved injection from the nanotube sheets. We show improved efficiency in plastic devices which use this bilayer anode structure. Our results also demonstrate the importance of using a planarization layer on top of the carbon nanotube sheet to eliminate sources of leakage current. Lastly, we propose alternative device architectures such as transparent and inverted structures.

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Date submitted: 20 Nov 2006

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