

Abstract Submitted
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Single-Walled Carbon Nanotube Transparent Electrodes JEREMY D. BERGESON, JEFFREY L. BLACKBURN, PATRICK R. BROWN¹, BRIAN A. LARSEN, MATTHEW O. REESE, TERESA M. BARNES, NREL, Golden, CO — Transparent conducting electrodes made from thin-film networks of single-walled carbon nanotubes (SWCNTs) are an alternative to transparent conducting oxides in many optoelectronic device applications. However, we have shown the electrical conductivity of SWCNT electrodes is limited by energy barriers at the nanotube-nanotube interfaces throughout the thin-film network [Barnes, et al., ACS Nano 2, 1968 (2008)]. We investigate various fabrication and treatment conditions to improve the electrical and optical properties of these SWCNT films. One potential pathway to improvement is to change the distribution of metallic-to-semiconducting tube types within the SWCNT network. We report the thorough characterization of SWCNT network electrodes with highly enriched metallic or semiconducting tube content through optical transmission and electrical transport measurements, as well as their performance in both organic and inorganic thin-film photovoltaic devices.

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