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Investigations of Carbon Nanotube Networks for use as Transparent Conductors MARK TOPINKA, Stanford University — Recently there has been increasing interest in the physics of conduction through carbon nanotube networks and the possibility of using carbon nanotube networks as transparent conducting layers for solar cells and other optoelectronic applications(1). Conductivities as high as 30 ohm/square with transparencies of about 80% have been reported(2). Here we present results of our work on understanding the underlying physics behind the real-world behavior of these systems and identifying the bottlenecks which are currently limiting their performance. We focus in particular on their possible use in solar cells as a low-cost alternative to more expensive transparent conductor technologies such as Indium Tin Oxide (ITO). We include numerical simulations of conduction through nanotube networks and scanning probe microscopy studies of transport through these systems. (1) L.Hu, D.S.Hecht, G.Gruner, *NanoLetters* **4**, 2513 (2) Z.Wu, et al, *Science* **305**, 1273

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