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Effect of doping on electro-optical properties of thin carbon nanotube membranes MATTHEW GARRETT, University of Tennessee, ILIA IVANOV, BIN ZHAO, ALEX PURETZKY, DAVID GEOHEGAN, Oak Ridge National Laboratory — Nanotube membranes can prove to be a practical alternative to the current transparent conductors, such as ITO, that are in touch screen displays and photovoltaic devices. ITO with a transmittance of 80% in the visible spectrum has a resistance of 10ohms/square. Similar transmittance could be obtained only with very thin membranes with nanotube loadings below the percolation threshold and would have very high resistance. Doping of membranes changes transmittance at the S11 and S22 transitions of semiconducting nanotubes, but does not change the transmission in the visible spectrum, while decreasing the resistance. Membranes of different thicknesses have been produced and characterized. Post-production doping of the membranes has been achieved and the change in resistance and in transmission spectrum has been examined. We will discuss effect of donor and acceptor dopants on the conductivity and transmittance of the nanotube membranes.

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