Abstract Submitted
for the FWS17 Meeting of
The American Physical Society

Experimental study of the conductive properties of high purity single-walled carbon nanotube networks ROGER MARTINEZ REYES, Cal Poly — The conductance of single-walled carbon nanotube (SWNT) networks near percolation is highly sensitive to changes in the tube composition, density, and size of the network. Networks of primarily semiconducting SWNTs show promise in biosensing applications due to their electrical sensitivity to the environment. Balancing the tube composition between semiconducting and metallic tubes is essential for these applications. In this study, we measure thin film SWNT network devices of high semiconducting purity to determine the impact that network size, tube density, and composition has on the overall conductance. This is done by electrostatically gating networks to determine their conductance. Our results indicate that when we are close to the percolation threshold for the metallic tubes the device properties vary significantly.

Roger Martinez Reyes
Cal Poly

Date submitted: 12 Oct 2017 Electronic form version 1.4