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Schottky Diodes using SWNT networks BRYAN HICKS, Brigham Young University, STEPHANIE GETTY, NASA GSFC, DAVID ALLRED, Brigham Young University — Schottky diode-like behavior was observed across a network of single-walled carbon nanotubes (SWCNTs) with asymmetric metal electrodes. The network of SWCNTs was grown on a SiO2/Si substrate using catalystassisted chemical vapor deposition (CVD). Using shadow masks, two sets of metal electrodes were deposited onto the SWCNT network. Each device was contacted using one gold electrode and one aluminum electrode. This technique, recently reported in the literature, has formerly only been implemented across well aligned, non-networked SWCNTs. Although no effort was made to align the SWCNTs in our devices or to eliminate metallic nanotubes, current rectification was observed in the source-drain bias range of -3V to +3V. The leakage current ranges between 5 and 22 percent of the current carrying capacities. Maximum forward-biased current capacities between 8 microamps and 22 microamps have been observed with 136,000 ohms to 375,000 ohms series resistances, respectively. Efforts to further characterize the electronic nature and optimize the diode response of the network devices will be discussed.

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