

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Carbon Nanotube p-n Junction Diodes JI UNG LEE, GE Global Research — We describe the formation of p-n junctions along individual single-walled carbon nanotubes (SWNTs) using electrostatic doping techniques. The electrostatic doping preserves the pristine nature of CVD grown SWNTs, and when suspended, these diodes can be described by the ideal diode equation. The low background leakage currents coupled with a built-in electric field region to transport the quasi particles also makes these diodes ideal for studying the optical responses of SWNTs. We will describe several characteristics of SWNT diodes such as the quantum efficiency, origin of the quasi-particles (electrons and holes) currents, and effects due to excitons.

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Date submitted: 30 Nov 2005

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