

Abstract Submitted  
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**Self-Heating and Non-Equilibrium Optical Phonons in Suspended Carbon Nanotubes** DAVID MANN, ERIC POP, JIEN CAO, HONGJIE DAI, Stanford University — Understanding of current-limited transport in single-walled carbon nanotubes (SWNTs) is vital to many potential nanotube applications. In this talk I will discuss the high bias electrical transport characteristics of well-contacted suspended SWNTs in various environments. Negative differential conductance at low bias (below 0.4V) appears as a result of extreme self-heating and the formation of non-equilibrium optical phonons. Various gas and molecular solid environments lead to the reduction or elimination of the non-equilibrium phenomenon. Finally I will discuss the ways in which we can use the data to directly and indirectly measure the nanotube's intrinsic properties and temperature.

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