

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Electroluminescence from individual single-wall carbon nanotube transistors and suspended films ELYSE ADAM, BENOIT CARDIN ST-ANTOINE, Departement de Genie Physique, Ecole Polytechnique de Montreal, PIERRE LEVESQUE, Departement de Chimie, Universite de Montreal, DAVID MENARD, Departement de Genie Physique, Ecole Polytechnique de Montreal, RICHARD MARTEL, Departement de Chimie, Universite de Montreal — We performed electroluminescence experiments in the near infrared from individual single-walled carbon nanotube (SWNT) transistors and from suspended films of bulk SWNT. For SWNT transistors, we observed that the light emission intensity and the drain voltage (at constant current) follow a similar behavior during a gate voltage sweep. Also, the electroluminescence spectra for those devices present multi-peaks. The results are discussed using a simple electron-hole pair recombination mechanism and generation of heat. For thick (100-500 nm) and suspended films of SWNT, the light emission spectra present a shape that fits well with the Planck's law. This well-known spectral shape allows us to extract the temperature of the film as a function of the input power.

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Date submitted: 28 Nov 2009

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