

Abstract Submitted
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Photo-induced thermoelectric response in suspended single-walled carbon nanotube films BENOIT ST-ANTOINE, DAVID MENARD, Ecole Polytechnique de Montreal, RICHARD MARTEL, Universite de Montreal — A study was carried out on the position dependent photovoltage of suspended single-walled carbon nanotube films in vacuum. The photoresponse of such films was found to be driven by a thermal mechanism, rather than by direct photoexcitation of carriers. [1] A model was developed which establishes a relation between the photoresponse profile and the local Seebeck coefficient of the film, thus opening up new perspectives for material characterization. The technique was demonstrated by monitoring the doping changes in the nanotube films obtained by successive current conditioning steps. Since the Seebeck coefficient of carbon nanotubes spans a considerable range depending on their doping state, the photovoltage amplitude can be tuned and large responses have been measured (up to 0.75mV for 1.2mW).

[1] B. St-Antoine et al. Nano Lett. 9, 3503 (2009)

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