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Remote Joule heating of crossed nanotube NORVIK VOSKANIAN, KAMAL H. BALOCH, Materials Science and Engineering, University of Maryland, College Park, Maryland, MERIJNTJE S. BRONSGEEST, Physics, University of Maryland, College Park, Maryland, JOHN CUMINGS, Materials Science and Engineering, University of Maryland, College Park, Maryland — The high thermal conductivity of carbon nanotubes makes them an excellent candidate for thermal management and thermal logic devices. We have studied the thermal characteristics of Joule-heated MWNTs in a crossed geometry, using an established thermal measurement technique that relies on the solid to liquid phase transition of indium islands [1]. Our experimental observations show the efficient transfer of heat from CNT to substrate but inefficient heat transfer past the crossing point. This supports the presence of a nonlocal joule heating phenomenon in which the hot electrons from the biased CNT directly transfer their energy to a nearby material. This talk will cover the developed thermal characterization technique, experimental results and simulations.

[1] T. Brintlinger, et al., Nano Lett. **8**, 582 (2008).

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