

Abstract Submitted  
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**Heat Treatments In Situ and Noise Reduction in Metallic Single-Walled Carbon Nanotubes (SWCNTs)** ALEXANDER KANE, PHILIP COLLINS, Department of Physics and Astronomy, University of California Irvine, Irvine, CA 92697-4576 — As fabricated, small diameter metallic SWCNTs have anomalously high contact resistances and noise amplitudes. High temperature treatments have been found to decrease both the resistance and noise through undetermined mechanisms. This work investigates this high temperature processing through in situ measurements in a UHV environment, focusing on small metallic SWCNTs contacted by Ti, Pt, or Pd electrodes. The role of the contact resistance and contaminants in the device fluctuations or noise is studied. The two mechanisms affect device noise differently, with the net effect that room temperature noise decreases can be more than proportional to resistance decreases. Annealing temperatures for improving device performance are determined for all three contact metals.

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