

Abstract Submitted
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Three-dimensional images of contact geometry between carbon nanotubes and metal contacts using electron tomography JUDY CHA, MATTHEW WEYLAND, School of Applied and Engineering Physics, Cornell University, JAMES SETHNA, Physics Department, Cornell University, DAVID MULLER, School of Applied and Engineering Physics, Cornell University — A significant barrier to the widespread application of carbon nanotube transistors is the variability in contact resistance between metallic leads and nanotubes. Varying by orders of magnitude, the contact resistance has recently been reported to depend on the size of the nanotube. To understand why, we study the three-dimensional contact geometry between metal contacts and nanotubes using electron tomography. Spatially resolved core-level electron energy-loss spectroscopy reveals a change in the local electronic structure of the nanotube in contact with gold-palladium. We report successful three-dimensional reconstructions of the metal-nanotube interface for gold, gold-palladium and titanium contacts that explain the change in the electronic structure of the nanotube.

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