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Long, Suspended Metallic and Semiconducting Carbon Nanotube Devices TODD BRINTLINGER, MICHAEL S. FUHRER, University of Maryland — We have fabricated devices consisting of individual suspended carbon nanotubes (CNTs) spanning trenches up to 120μm long and 500μm deep. The carbon nanotubes are grown via chemical vapor deposition over existing gold or platinum electrodes, forming complete electronically addressable devices without exposure of the CNTs to resists or etchants. These CNT devices allow study of the intrinsic transport properties of the nanotubes without disorder induced by the substrate or chemical residues from conventional lithography. The use of a mobile probe as a gate electrode allows identification of metallic and semiconducting nanotubes. We present the growth and fabrication procedures along with transport measurements on these long, suspended CNTs.

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