

Abstract Submitted  
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**Microwave Conductivity of Single Wall Carbon Nanotube Arrays**  
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D.B. ROBINSON, P.M. DENTINGER, Sandia National Laboratories — We have developed a coplanar waveguide (CPW) platform compatible with both broadband (0.01 to 50 GHz) microwave scattering parameter measurements and directed assembly of carbon nanotubes (CNTs) and semiconductor nanowires. Utilizing AC dielectrophoresis and lithographic masking techniques, single-wall CNTs prepared with single-stranded DNA as a surfactant were assembled in localized parallel arrays between CPW signal and ground electrodes. This places the CNTs parallel to the electric field in the propagating region where coupling to the CNT conductivity alters the impedance of the CPW. The conductivity of the CNT arrays is deduced from scattering parameter measurements before and after assembly of the CNTs. Preliminary measurements show that at least some types of CNT material have a small but definite high-frequency loss that increases with frequency. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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