Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Carbon Nanotube Intra-connects With Conductive Polymers
SEON WOO LEE, HAIM GREBEL, Electronic Imaging Center at NJIT and the Electrical and Computer Engineering Department, New Jersey Institute of Technology (NJIT), Newark, NJ 07102, ANDREI SIRENKO, Physics Department, New Jersey Institute of Technology (NJIT), Newark, NJ 07102, DANIEL LOPEZ, AVI KORNBLIT, New Jersey Nanotechnology Consortium (NJNC), Lucent Technologies Bell Labs, Murray Hill, NJ 07974 — The electrical and optical properties of carbon nanotube (CNT) channels, electroplated with conductive polymers were measured. Individual, single-walled CNT (SWCNT) channels were grown by chemical vapor deposition (CVD) technique precisely between very sharp metal tips on a wafer. The conductive polymers, either polycarbazole (PCZ) or, polypyrrole (PPy) were then electroplated using the CNT as an electrode. Field effect transistors were fabricated and a gate-controlled, N-shaped negative differential resistance (NDR) was observed. A large photoconductance effect, which was associated with the NDR, was demonstrated, as well.

Seon Woo Lee
New Jersey Institute of Technology

Date submitted: 26 Nov 2008 Electronic form version 1.4