

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Gas detection mechanism for single-walled carbon nanotube networks¹ ANTHONY BOYD, ISHA DUBE, Georgetown University Washington, DC 20057, GEORGY FEDOROV, RRC Kurchatov Institute, Moscow, Russia 123182, MAKARAND PARANJAPE, PAOLA BARBARA, Georgetown University Washington, DC 20057, GEORGETOWN/RRC KURCHATOV COLLABORATION² — We study field-effect transistors fabricated with carbon nanotube (CNT) networks to determine whether the gas sensing mechanism is due to molecules adsorbed on the nanotubes, or changes at the interface between the nanotubes and the contacts. Our previous work showed that in devices made with isolated CNT, the response to nitrogen dioxide was mainly due to the contact interfaces [1]. Here, we focus on CNT networks and use SU-8 layers patterned with e-beam lithography to passivate the contact interfaces, while leaving the network exposed. We look to investigate possible differences in sensing mechanism for devices made with isolated tubes versus networks.

[1] J. Zhang, A. Boyd, A. Tselev, M. Paranjape, and P. Barbara, *Mechanism of NO₂ detection in carbon nanotube field effect transistor chemical sensors*, Applied Physics Letters **88**, 123112-123115 (2006)

¹Work funded by NSF, DMR 1008242

²Material World Network

Anthony Boyd
Georgetown University Washington, DC 20057

Date submitted: 29 Dec 2010

Electronic form version 1.4