

Abstract Submitted  
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**Probing Vapor Phase Analytes with Single Walled Carbon Nanotube Biopolymer Hybrid Devices.**<sup>1</sup> SAMUEL KHAMIS, University of Pennsylvania Dept. of Physics and Astronomy, MICHELLE CHEN, University of Pennsylvania Dept of Materials Science and Engineering, A.T. CHARLIE JOHNSON, University of Pennsylvania Dept. of Physics and Astronomy — Covalent and non-covalent functionalization schemes have been investigated in order to tune the chemical affinity of Single Walled Carbon Nanotube (SWNT) Field Effect Transistors (FET's). Non-covalent means are preferable since they have minimal impact on the electronic structure of pristine nanotubes. We present work involving the non-covalent adsorption of both ss-DNA and ss-RNA strands to SWNT FET's in order to obtain a class of devices that respond electrically to the presence of gaseous odors. We present a database representing measurements of hundreds of such devices, involving ten different sequences of ss-DNA, two different sequences of ss-RNA, and five different chemical vapors. We show that these responses are determined by the sequence of the adsorbed species of biopolymer, and we explore the performance limits of these devices.

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Samuel Khamis  
University of Pennsylvania Dept. of Physics and Astronomy

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