Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Supported Lipid Bilayer/Carbon Nanotube Hybrids[1] XINJIAN ZHOU, Laboratory of Atomic and Solid-State Physics, Cornell University, JOSE MORAN-MIRABAL, HAROLD CRAIGHEAD, Applied and Engineering Physics, Cornell University, PAUL MCEUEN, Laboratory of Atomic and Solid-State Physics, Cornell University — We form supported lipid bilayers on single-walled carbon nanotubes and use this hybrid structure to probe the properties of lipid membranes and their functional constituents. We first demonstrate membrane continuity and lipid diffusion over the nanotube. A membrane-bound tetanus toxin protein, on the other hand, sees the nanotube as a diffusion barrier whose strength depends on the diameter of the nanotube. Finally, we present results on the electrical detection of specific binding of streptavidin to biotinylated lipids with nanotube field effect transistors. Possible techniques to extract dynamic information about the protein binding events will also be discussed.

[1]This work was supported by the Nanobiotechnology Center (NBTC), an STC Program of the National Science Foundation under Agreement No. ECS-9876771. JM thanks CONACyT for support through its graduate fellowship program.

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Date submitted: 20 Nov 2006 Electronic form version 1.4