Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

A biomimetic functionalization approach to integration of carbon nanoutbes into biological systems XING CHEN, UN CHONG TAM, CAROLYN BERTOZZI, ALEX ZETTL, Departments of Chemistry and Physics, University of California, Berkeley and Materials Sciences Division, Lawrence Berkeley National Laboratory — Due to their remarkable structural, electrical, and mechanical properties, carbon nanotubes (CNTs) have potential applications in biology ranging from imaging and tissue engineering. To realize these applications, however, new strategies for controlling the interaction between CNTs and biological systems such as proteins and cells are required. Here we describe a biomimetic approach to functionalize CNTs and therefore render them biocompatibility in order to facilitate their integration into biological systems. CNTs were coated with synthetic gycopolymers that mimic cell surface mucin gycoproteins. The functionalized CNTs were soluble in water, resisted non-specific protein binding and bound specifically to biomolecules. The coated CNTs could then be integrated onto mammalian cell surface by virtue of glycan-receptor interactions. Furthermore, the functionalized CNTs are non-toxic to cells. This strategy offers new opportunities for development of biosensor to probe biological processes. References: 1. X. Chen, G. S. Lee, A. Zettl, C. R. Bertozzi, *Angewandte Chemie-International Edition* **43**, 6111 (2004). 2. X. Chen, U. C. Tam, J. L. Czlapanski, G. S. Lee, D. Rabuka, A. Zettl, C. R. Bertozzi, *submitted*.

Haibing Peng
UC Berkeley

Date submitted: 04 Dec 2005 Electronic form version 1.4