Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

AFM and XPS Studies of Oligodeoxyribonucleotides associated with Single Walled Carbon Nanotubes ROYA R. LAHIJI, B. D. DOLASH, D. ZEMLYANOV, D. E. BERGSTROM, R. REIFENBERGER, Birck Nanotechnology Center, Purdue University — Oligodeoxyribonucleotides (ODN) disperse single wall carbon nanotubes (SCWNTs) in aqueous solution *via* sonication.[1] By developing procedures that produce ODN:SWCNT hybrids uniformly dispersed in an aqueous solution, new biological applications will emerge. We have studied ODN T30:SWCNT hybrids that form after different preparation techniques. Deposition of the resulting ODN T30:SWCNT hybrids onto both insulating and conducting substrates have been studied. AFM under ambient conditions reveals localized features decorating individual SWCNTs having an approximate height consistent with the dimensions of single stranded T30 ODN. XPS confirmed the decorative features are ODN.[2] Taking advantage of the ODN negative charge, we studied the deposition of ODN:SWCNT hybrids on Au substrates using electrodeposition techniques. Electrodeposition has advantages since it does not require fuctionalization of ODN or the substrate prior to deposition. Applying a positive potential to the Au substrate can produce a uniform deposit of T30 ODN:SWCNT hybrids. The electrodeposited ODN:SWCNTs were further studied using AFM and XPS. .[1] M. Zheng et al, *Nat Mater* **2003**, 2, 338. [2] R. R. Lahiji et al, *Small* **2007**, 3, 1912.

Roya R. Lahiji

Date submitted: 27 Nov 2007 Electronic form version 1.4