Molecular binding to carbon nanotube

Anton E. Frise,† Eran Edri,‡ István Furó,† and Oren Regev‡

‡Department of Chemical Engineering and the Ilse Katz Institute for Meso and Nanoscale Sci & Techno, Ben-Gurion University of the Negev, 84105 Beer-Sheva, Israel and †Division of Physical Chemistry, Department of Chemistry, Royal Institute of Technology, SE-10044 Stockholm, Sweden.

Carbon nanotubes can be dispersed by a variety of molecules. We investigate the dynamics of protein-dispersed nanotube process in water. We find that in equilibrium, only a small fraction of the dispersants is indeed adsorbed to the nanotube surface while there is a fast exchange process between the adsorbed and free protein molecules. Self-diffusion NMR spectroscopy in combination with cryo-transmission electron microscopy imaging are employed.