

Abstract Submitted
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Resolving Single Molecule Dynamics with a Point-Functionalized Single-Walled Carbon Nanotube¹ DANNY W. WAN, ISSA S. MOODY, BRETT R. GOLDSMITH, JOHN G. CORONEUS, GREGORY A. WEISS, PHILIP G. COLLINS, Departments of Physics and Astronomy, Chemistry, Molecular Biology and Biochemistry, University of California, Irvine, CA 92697-4576 — Outside of fluorescence measurements, there are currently few means of observing characteristic time constants of individual molecules. We describe the development of a single molecule technique utilizing a point-functionalized SWCNT electronic circuit [1]. Time-dependent components of the SWCNT conductance reveal real-time interactions between a covalently attached protein and the immediate electrolytic environment. We will demonstrate electronic transduction of protein-substrate interactions with single molecule resolution. On-line analysis based on normalization of the power spectrum helps to enhance the resulting signals, even to the extent of providing the user with real time feedback regarding the experiment status. [1] B. Goldsmith et al, Science 315 77 (2007)

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