

Abstract Submitted
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Conductance of Molecular Wires Measured by STM- Break Junction¹ JONATHAN R. WIDAWSKY, MARIA KAMENETSKA, ADAM C. WHALLEY, JENNIFER E. KLARE, COLIN NUCKOLLS, MARK S. HYBERTSEN, LATHA VENKATARAMAN, Columbia University and CFN, Brookhaven National Laboratory — We present a comparison of the measured conductances of short molecular wires attached to gold electrodes in ambient conditions. The junctions are fabricated using a modified STM to repeatedly form and break Au point contacts, characterized by the quantum of conductance, in a solution of molecules. Specifically, we study how the conductance of three molecules – 4,4'-diaminoazobenzene, 4,4'-diaminostilbene, and bis-(4-aminophenyl)acetylene – depends on the voltage bias applied across the electrodes. In order to determine a statistically most-probable value of conductance, each measurement is obtained from data sets of approximately 10,000 individual conductance pull-out traces obtained over a few hours. In addition, we measure the conductance of solutions irradiated with ultraviolet light to induce photoisomerization of the azobenzene and stilbene from their *trans* to the *cis* configurations.

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