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Probing Chemical Potentials in Solution with Carbon Nanotube Transistors LISA LARRIMORE, Laboratory of Atomic and Solid State Physics, Cornell University, SUDDHASATTWA NAD, Department of Chemistry and Chemical Biology, Cornell University, XINJIAN ZHOU, Laboratory of Atomic and Solid State Physics, Cornell University, HÉCTOR ABRUÑA, Department of Chemistry and Chemical Biology, Cornell University, PAUL MCEUEN, Laboratory of Atomic and Solid State Physics, Cornell University — We have used single-walled carbon nanotube transistors to sense redox-active transition metal complexes in a conducting liquid environment. The molecules shift the gate voltage dependence of the nanotube conductance. This shift depends logarithmically on the ratio of oxidized to reduced molecules, which is changed and measured using traditional electrochemical methods. We attribute this signal primarily to the changing electrostatic potential of the solution as set by the water-gate wire, and not to a local interaction between the molecules and the nanotube.

Prefer Oral Session

Prefer Poster Session

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