Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

**Novel conduction behavior in nanopores coated with hydrophobic molecules** VENKAT BALAGURUSAMY, GUSTAVO STOLOVITZKY, ALI AFZALI-ARDAKANI, IBM T.J.Watson Research Center, Yorktown Heights, NY — Nanopores that are hydrophilic either by the nature of their pore surface or after suitable treatment are well studied in the context of solid-state nanopores. The ionic conduction in these nanopores typically exhibit a near no-concentration-dependence region low concentrations of salt (<1 mM salt concentrations), followed by the high concentration region where it is proportional to the concentration. A simple cylindrical model for pore conduction can explain these behaviors based on surface and bulk conduction of the ions in the buffer solution [Smeets et al 2006 Nano Letters **6**, 89]. However, in nanopores coated with hydrophobic pores we find that the pore conductance is $\sim c^{0.5}$ (c: concentration). This behavior is in shark contrast with the behavior of hydrophilic pores. We will present these results for different hydrophobic molecular coatings that exhibit this behavior.

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Date submitted: 14 Nov 2014 Electronic form version 1.4