Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Electrical properties and memory effects of field-effect transistors from networks of single and double-walled carbon-nanotubes[1] ANTONIO DI BARTOLOMEO, Salerno University, MOHAMED RINZAN, ANTHONY BOYD, YANFEI YANG, PAOLA BARBARA, Georgetown University, GEORGETOWN UNIVERSITY - PHYSICS DEPARTMENT TEAM, SALERNO UNIVERSITY - PHYSICS DEPARTMENT TEAM — We study field-effect transistors made of single and double-walled carbon nanotube networks for applications as memory devices. The transfer characteristics of the transistors exhibit a reproducible hysteresis which enables their use as nano-sized memory cells with operations faster than 10 ms, endurance longer than 10^{+4} cycles and charge retention of few hours in air. We propose water enhanced charge trapping at the SiO_2/air interface as the dominant mechanism for charge storage. We show that charge storage can be improved by limiting device exposure to air.

[1]This work was supported by NSF grant no. DMR-0907220 and AFOSR grant no. NE-301

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Date submitted: 19 Nov 2009 Electronic form version 1.4