Abstract Submitted
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Towards a 160 kBit molecular electronic memory at 10^{11} Bits/cm^{2}[1] JONATHAN GREEN, J.W. CHOI, E. JOHNSTON-HALPERIN, E. DEIONNO, Y. LUO, A. BOUKAI, Y. BUNIMOVICH, B.A. SHERIFF, J.R. HEATH, Division of Chemistry and Chemical Engineering, The California Institute of Technology, Pasadena, CA — Since its inception by Avirim and Ratner in 1974, molecular-based electronics has emerged as a promising alternative to scaled CMOS technology and its eventual integration limit. Here we present progress towards an electronically configurable, molecule-based 160,000 Bit random access memory at a Bit density approaching 10^{11} Bits/cm^{2}. This device is based on a cross-bar architecture in which the active switching elements are bi-stable [2]-rotaxane supramolecules sandwiched between perpendicular arrays of SNAP-fabricated [1] metallic and n-Si nanowires at 34 nm pitch. Challenges in memory fabrication and testing will be discussed. [1] *Science* **300**, 112 (2003); *J. App. Phys.* **96**, 5921 (2004).

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