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Carbon Nanotube Low Power Integrated Circuit. ZHIHONG CHEN, JOERG APPENZELLER, YU-MING LIN, IBM T.J. Watson Research Center, JENNIFER SIPPEL-OAKLEY, ANDREW G. RINZLER, University of Florida, Physics Department, JINYAO TANG, Columbia University, Department of Chemistry , SHALOM J. WIND, Columbia University, Department of Applied Physics and Applied Mathematics , PAUL M. SOLOMON, PHAEDON AVOURIS, IBM T.J. Watson Research Center — Identifying a material that can outperform silicon in terms of device density, power consumption and performance is one of the main goals of today's nano-electronics effort. Carbon nanotubes are considered to offer the greatest potential in this context. So far, the emphasis has been on fabricating and characterizing individual nanotube devices. A critical next step is the construction of integrated circuits. Complementary metal-oxide semiconductor (CMOS) technology is the dominant approach for microprocessors, memories, and many other applications, in particular due to its small power consumption. Here, we demonstrate the first CMOS-type, high performance, multiple components logic circuit based on a single carbon nanotube molecule.

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