

Abstract Submitted
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CN-VFET Based Organic Nonvolatile Memory Elements Using a Floating Gate PO-HSIANG WANG, BO LIU, MITCHELL MCCARTHY, ANDREW RINZLER, Dept. of Physics, UNIVERSITY OF FLORIDA, GAINESVILLE FL 32611 TEAM — We have demonstrated organic nonvolatile memory elements based on carbon nanotube enabled vertical field effect transistors (CN-VFETs) with a hybrid dielectric embedded floating metal gate used for charge storage. The electric field concentration around the high aspect ratio carbon nanotubes (acting as the source electrode in the vertical transistor) makes them excellent sources of charge injection of both polarities into the floating gate. This results in a large, fully programmable, hysteresis in cyclic transfer curves without sacrificing carrier mobility in the vertical organic channel layer. These features may provide for cost-effective, relatively high-density organic memory devices compared to more conventional TFT architecture organic devices.

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