Flexible Organic Memory Device Fabricated with Printing Method

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We have developed novel ferroelectric materials with helical biopolymers such as polypeptides and DNA. Using the materials, a memory device of ferroelectric field-effect transistor was fabricated with a printing method. This technology will accelerate the development of all-printed fabrication of ubiquitous information terminal such as a flexible display.

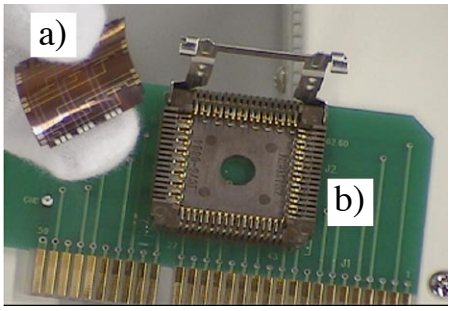

Figure 1: a) 3x3 memory devices fabricated with printing process on flexible substrate and b) measuring socket.

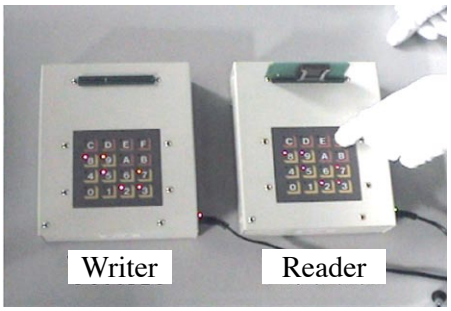

Figure 2: Checking of operations of printed memory devices. Each memory device corresponds to numbered LED. Writer (right): LED light when the device is applied gate bias. Reader (left): LED light when drain current is increased.

A double-gate MOSFET with an ultrafine upstanding Si-fin

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We have developed a damage-free neutral-beam etching technology for the fabrication of Si-MOSFETs. A double-gate MOSFET with an upstanding Si-fin was fabricated using the technology. The MOSFET showed improved performance. We expect that this technology will be widely used in the 32nm technology node.

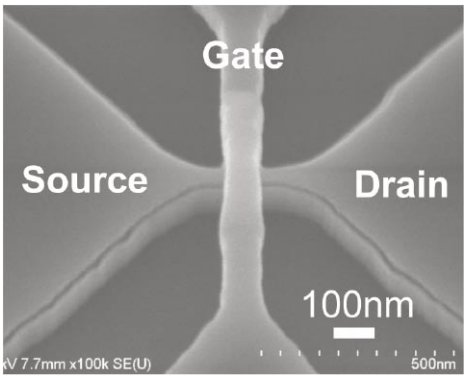

Figure 1: SEM image of the fabricated double-gate MOSFET.

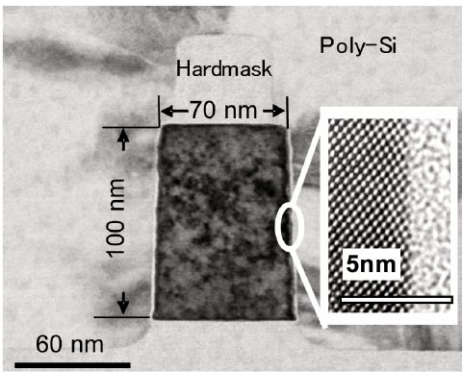

Figure 2: TEM cross-sectional image of the upstanding Si-Fin.