

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Multi-level Capacitive Memory Effect in Metal/Oxide/Floating-Schottky Junction**<sup>1</sup> GAHYUN CHOI, SUNGCHUL JUNG, HOON HAHN YOON, YOUNGEUN JEON, KIBOG PARK\*, Ulsan National Institute of Science and Technology — A memory computing (memcomputing) system can store and process information at the same physical location simultaneously. The essential components of memcomputing are passive devices with memory functionality, such as memristor, memcapacitor, and meminductor. We report the realization of a Schottky contact memcapacitor compatible with the current Si CMOS technology. Our memcapacitor is formed by depositing a stack of metal and oxide thin films on top of a Schottky contact. Here, the metal electrode of the Schottky contact is floating. The working principle of our memcapacitor is based on the fact that the depletion width of the Schottky contact varies according to the amount of charge stored in the floating metal electrode. The voltage pulse applied across the Metal/Oxide/Floating-Schottky junction controls charge flow in the Schottky contact and determines the amount of charge stored eventually. It is demonstrated experimentally that our memcapacitor exhibits hysteresis behaviors in capacitance-voltage curves and possesses multiple capacitance values that are switchable by the applied voltage pulse.

<sup>1</sup>Supported by NRF in South Korea (2013R1A1A2007070).

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Date submitted: 12 Nov 2014

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