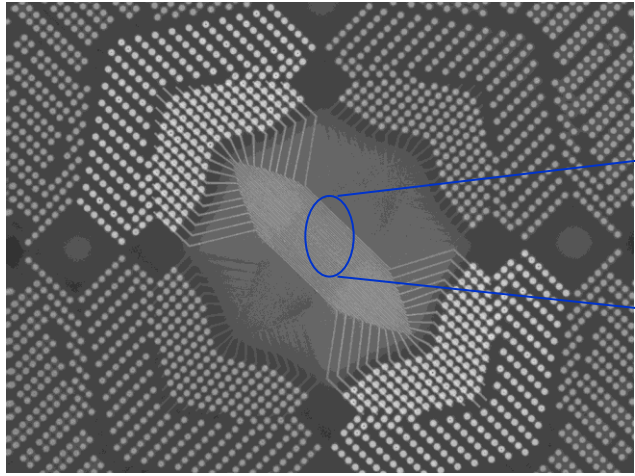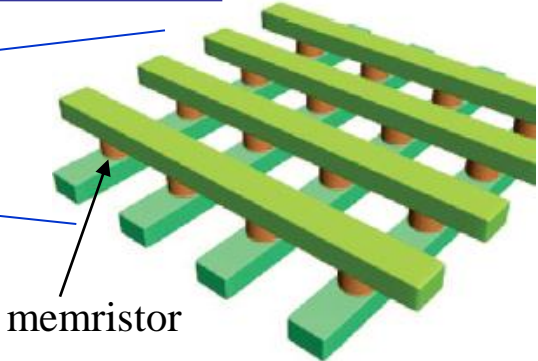# Memory and Logic Based on Nanoscale Two-Terminal Switches

Crossbar array based on memristors

Memristor (resistor w/ memory):

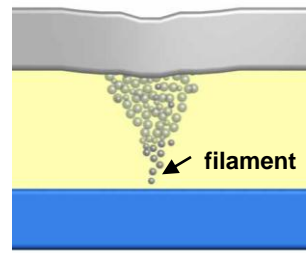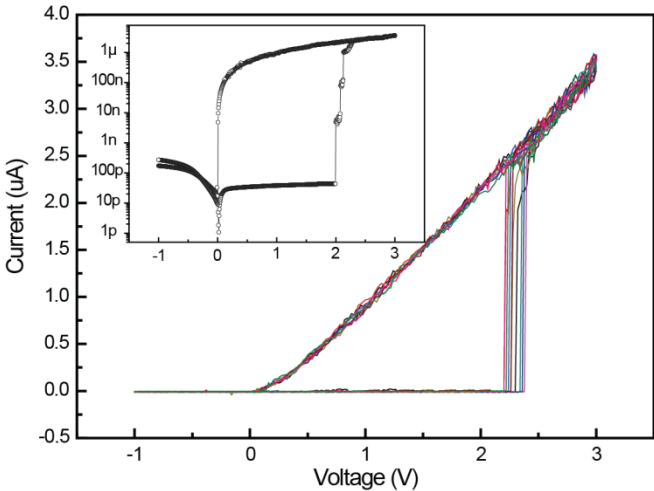n^2 memristors in a nxn array

memristor

High density memory

- Potentially 10^{12}bits/cm^2 density
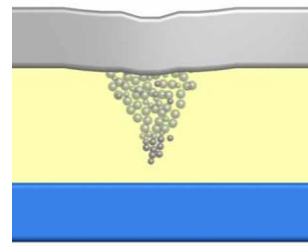- High speed, endurance, on/off, retention, random access

Hybrid memristor/CMOS logic

- FPGA-type reconfigurable logic circuits
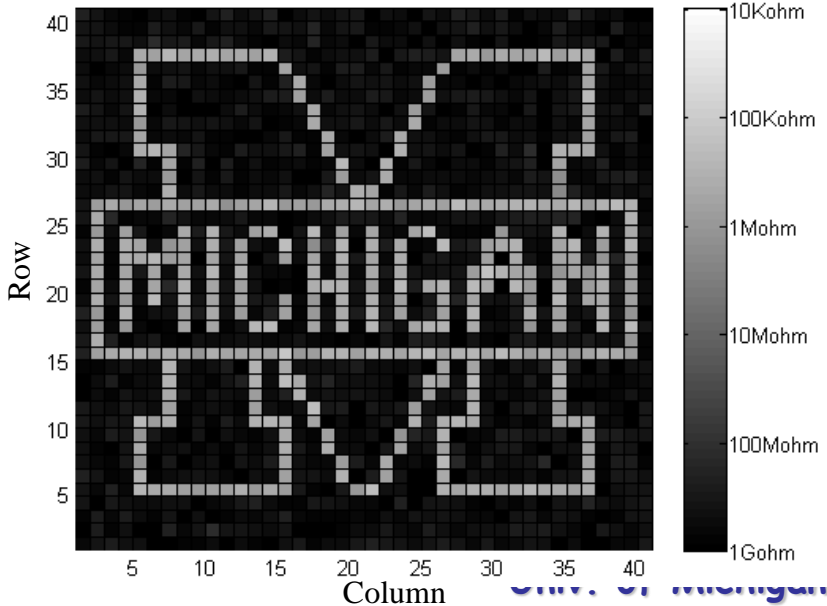- Biology inspired neuromorphic circuits

$$G(\varphi) = \frac{dq}{d\varphi}$$

$$\varphi = \int v dt$$

"digital" switches

filament

Low Resistance

High Resistance

Row

Column