

Spin Torque Transfer Random Access Memory (STT-RAM)

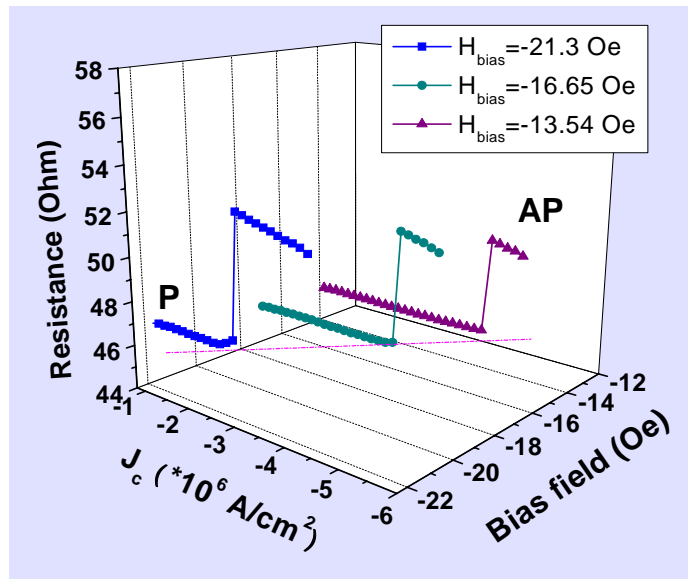
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NNIN Facility utilized: Characterization Facility & Nanofabrication Center

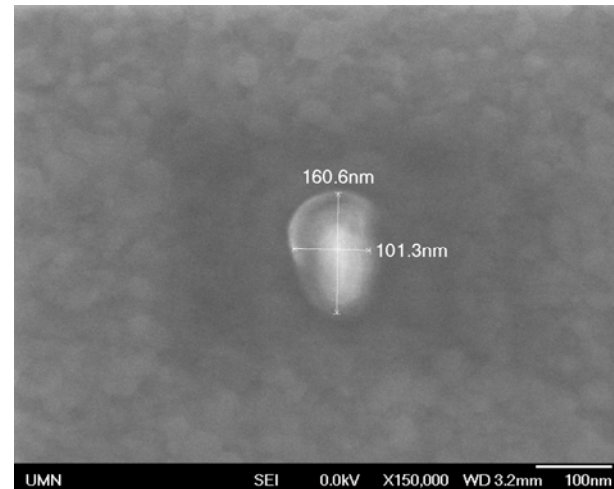
DESCRIPTION OF WORK

- ◆ Magnetic Random Access Memory (MRAM) is non-volatile, radiation hard, high speed, and high density. Spin Torque Transfer based MRAM has advantages of device scaling compared with traditional field-driven MRAM.
- ◆ Perpendicular STT RAM
- ◆ Multi-level STT-RAM



MAJOR OBSERVATIONS

- ◆ MgO based Magnetic Tunnel Junction (MTJ) has been fabricated and patterned down to 100 nm \diamond 160 nm. (Bottom SEM image).
- ◆ Multi-stage of switching of MTJ cells.



X. Yao, H. Roger, R. Rajan, J. P. Wang, "Observation of intermediate states in large magnetic tunnel junctions with composite free layer", IEEE International Magnetism Conference, Madrid, Spain, May 4-8, 2008, FC-03, IEEE Transaction on Magnetic, submitted

X. Yao, H. Meng and J. P. Wang, "New Switching Mechanism by using Nano-Current-Confined Structure for SpinRAM Application", Accepted, IEEE Device Research Conference, June, 2008