

MR ratio Behavior along the Shape of Micro Patterned MTJs

D.Y.Jang , T.W.Lim , H.G.Kim , D.H.Lee , S.J.Suh
Magnetic Material Lab ,Department of Advanced material engineering
Sungkyunkwan Univ. Suwon, Korea
E-mail : wwkdeeo@skku.edu

Until very recently, MRAM is the one of the most important device due to its nonvolatile property, high speed operation, high bit density, and infinite rewriting performance. In this paper, we tried to fabricate the tunnel junction with micron size by using a self-aligned micro-process, which contains photo lithography, ion milling, and lift off processes, defining junction areas between 2×2 and $46 \times 46 \mu\text{m}^2$.

Si/SiO₂(200)/Ta(25)/NiFe(5)/MnIr(8)/CoFe(4)/barrier(2)/CoFe(2)/NiFe(7)/Ta(5) multilayer were deposited by a magnetron sputtering machine. The films are deposited in a 30Oe magnetic field in the plane of the substrate, which induces the initial magnetization of the layers. The aluminum oxide tunnel barrier is formed by deposition of aluminum followed by the plasma oxidation before the next deposition step. We used four photo masks to fabricate tunnel junction.

