

Characteristics of nitrogen doped CoFeB ferromagnetic electrode for high efficient magnetic tunnel junction

Jae Yoon An, Ki Woong Kim, Ja Bin Lee, Jin Pyo Hong

Novel Functional Material and Device Lab, Department of Physics, Hanyang University, Seoul Korea

Magnetic tunnel junctions(MTJs) with CoFeB electrode and MgO tunnel barrier have been becoming strategic importance due to the large tunneling magnetoresistance{TMR} ratio. The nitrogen doping effect on crystal structure and magnetic properties of CoFeB thin film at various annealing temperature was investigated. The CoFeB film doped with various nitrogen content was annealed at different temperature. Structure and magnetic properties of the films were systematically investigated with X-Ray Diffraction (XRD) and Vibrating Sample Magnetometer (VSM), respectively. Nitrogen doping was proved to be one of the effective method that accelerate the crystallization of CoFeB layers at lower annealing temperature.