

Spin Orbit Torque in Pd/FePd/MgO System

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Recently, spin orbit torque (SOT) is actively studied due to its rich physics and possible applications in the magnetization switching or domain wall motion mechanism [1]. Since SOT have several possible physical origins including spin Hall effect (SHE) and Rashba effect, the careful measurements and analysis are require to obtain quantitative results. We investigate the SOT in Pd/FePd/MgO system, where the bulk perpendicular anisotropy (PMA) played important role. In order to investigate the thickness dependent SOT in bulk PMA Pd/FePd/MgO system, we varied the thickness of FePd. We used harmonics technique [2] in the SOT measurements with careful analysis method by considering possible artifacts such as planar Hall effect, Joule heating, and anomalous Nernst-Ettingshausen effects [3], and found the thickness dependent SOT for longitudinal and transverse directions. Our experimental results strongly suggest the SOT has a finite bulk term, which probably came from the structural gradient [4].

References

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