

Current induced magnetization switching in Ag/Bi bilayer

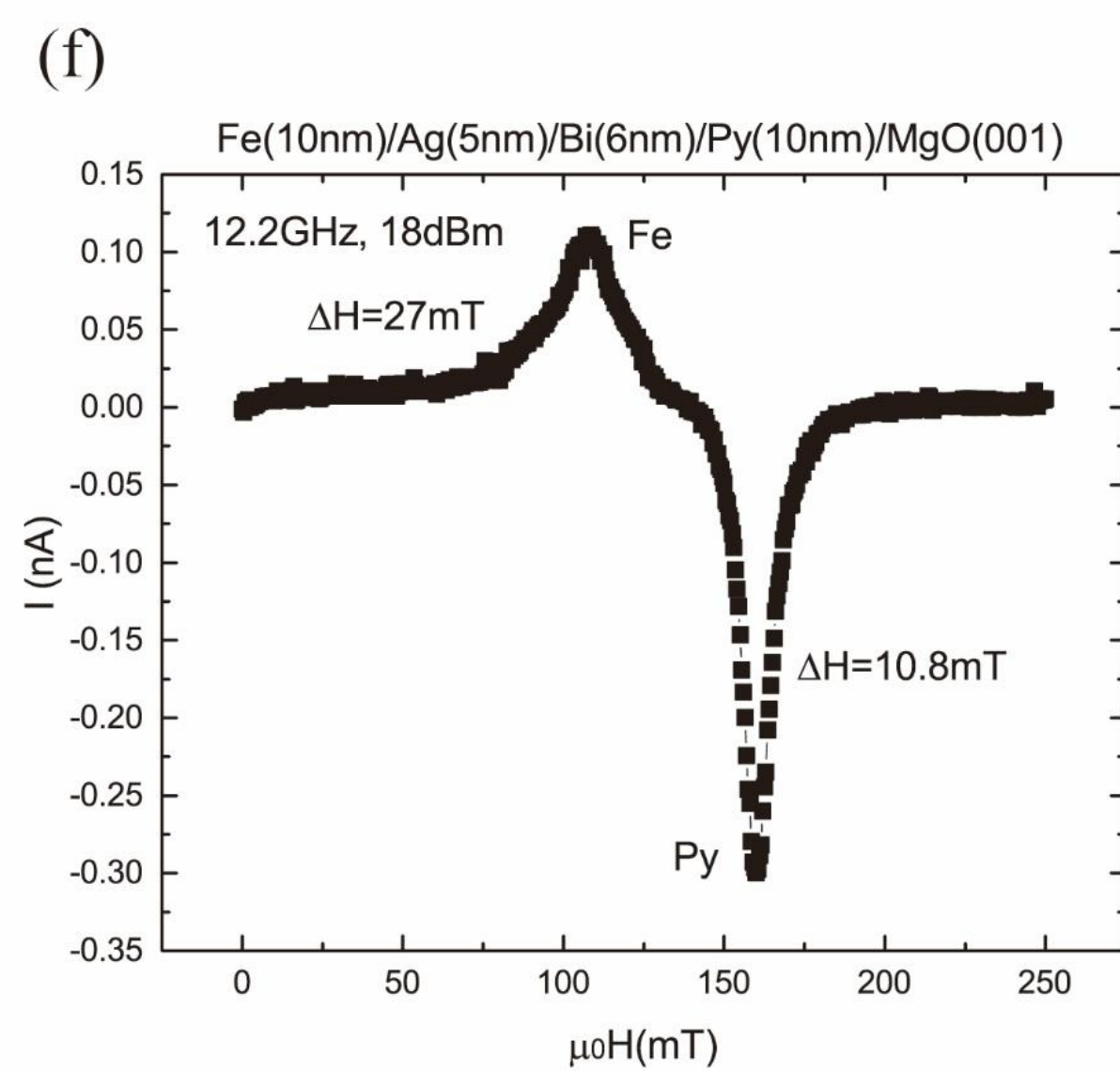
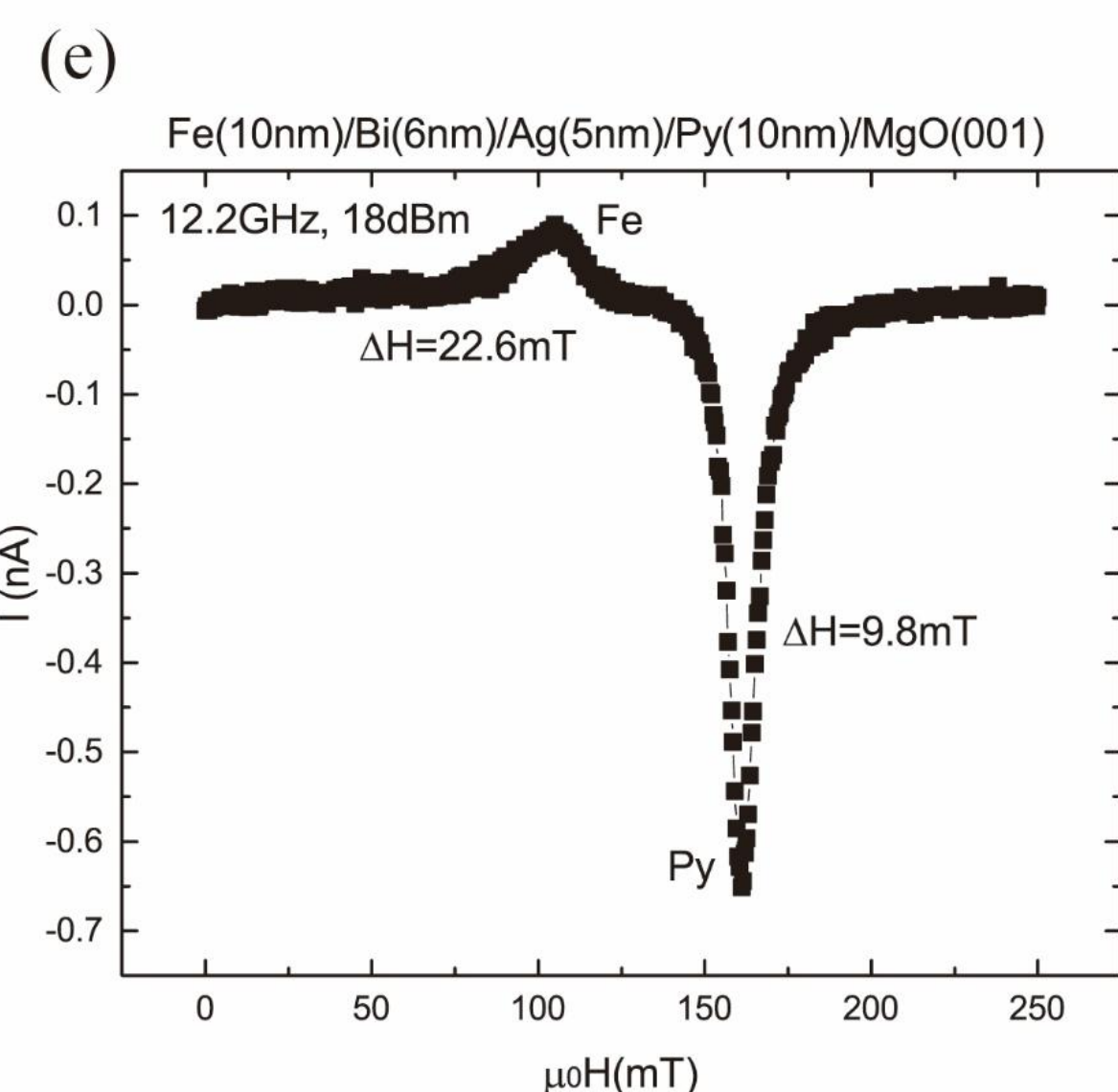
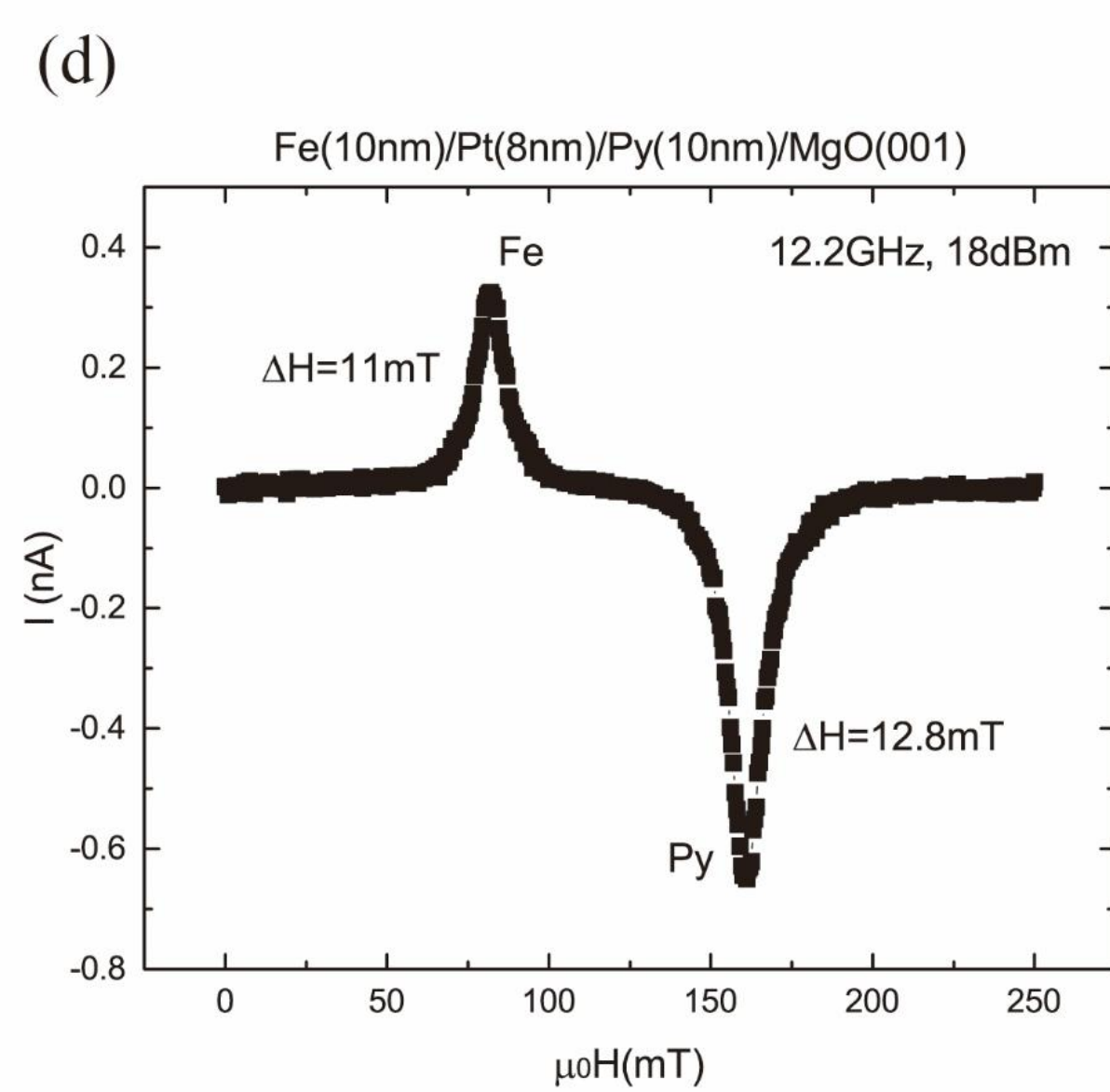
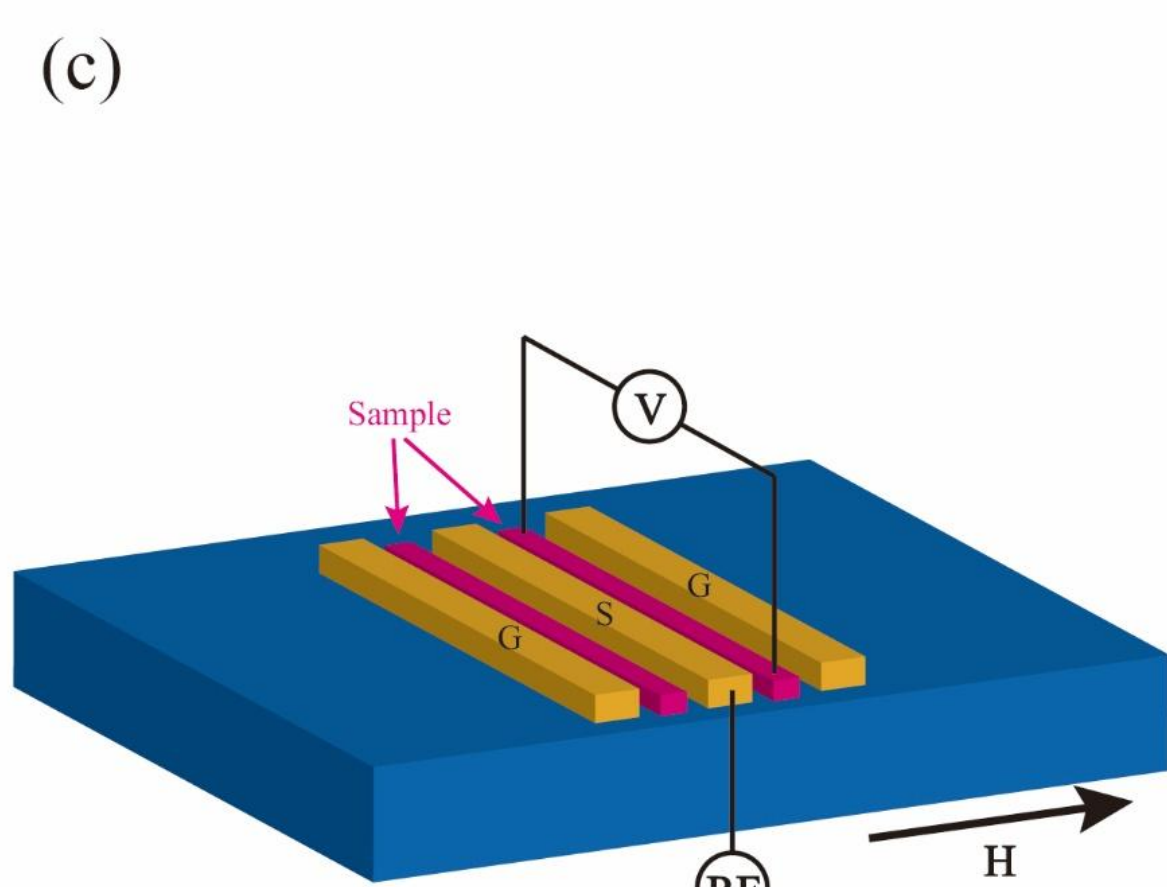
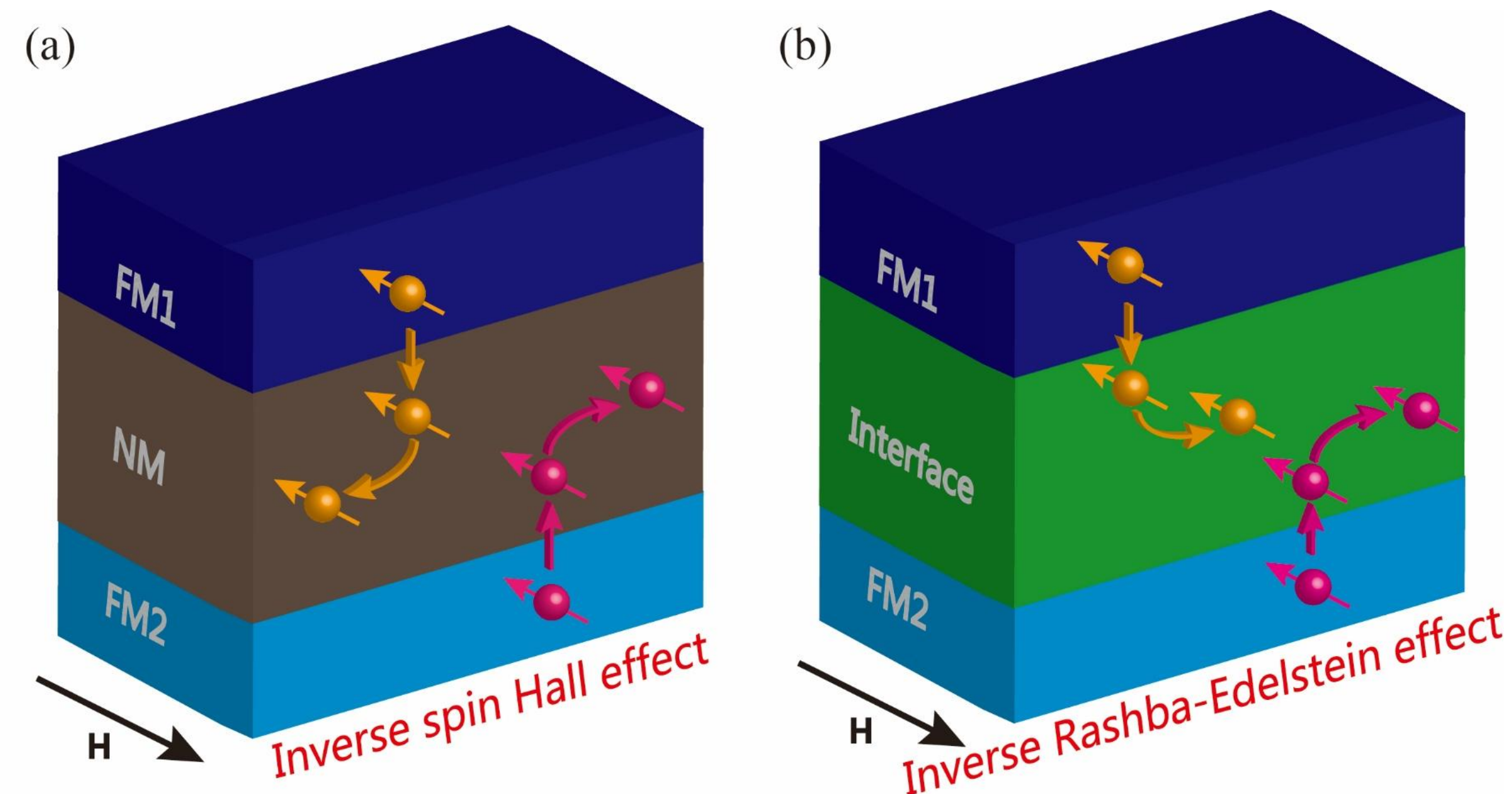
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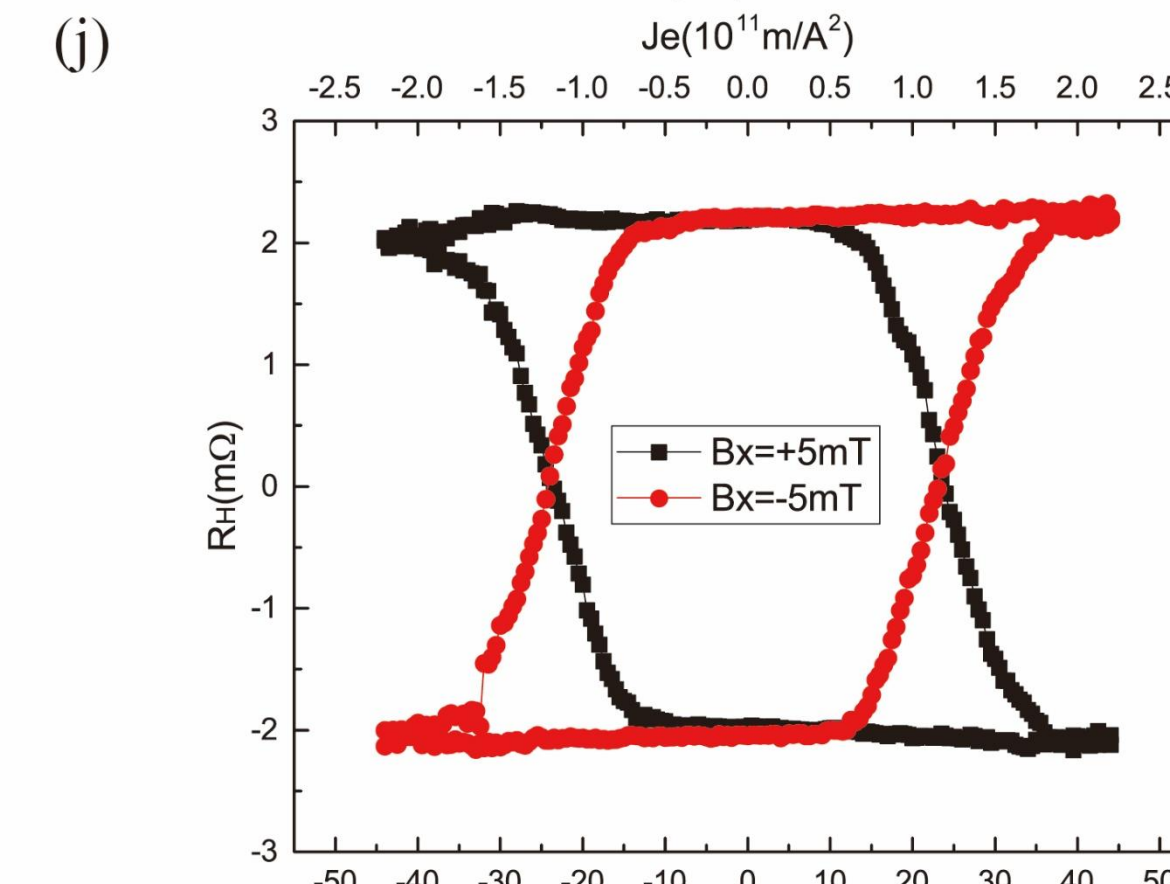
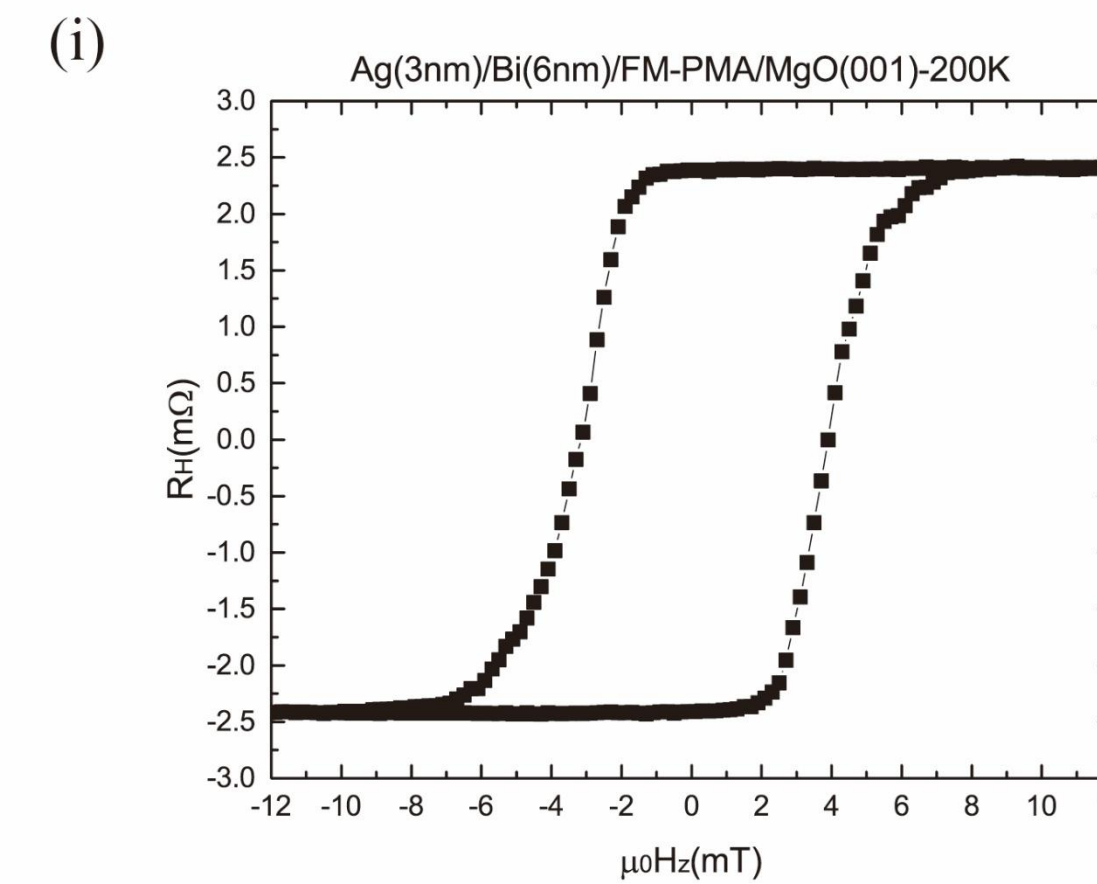
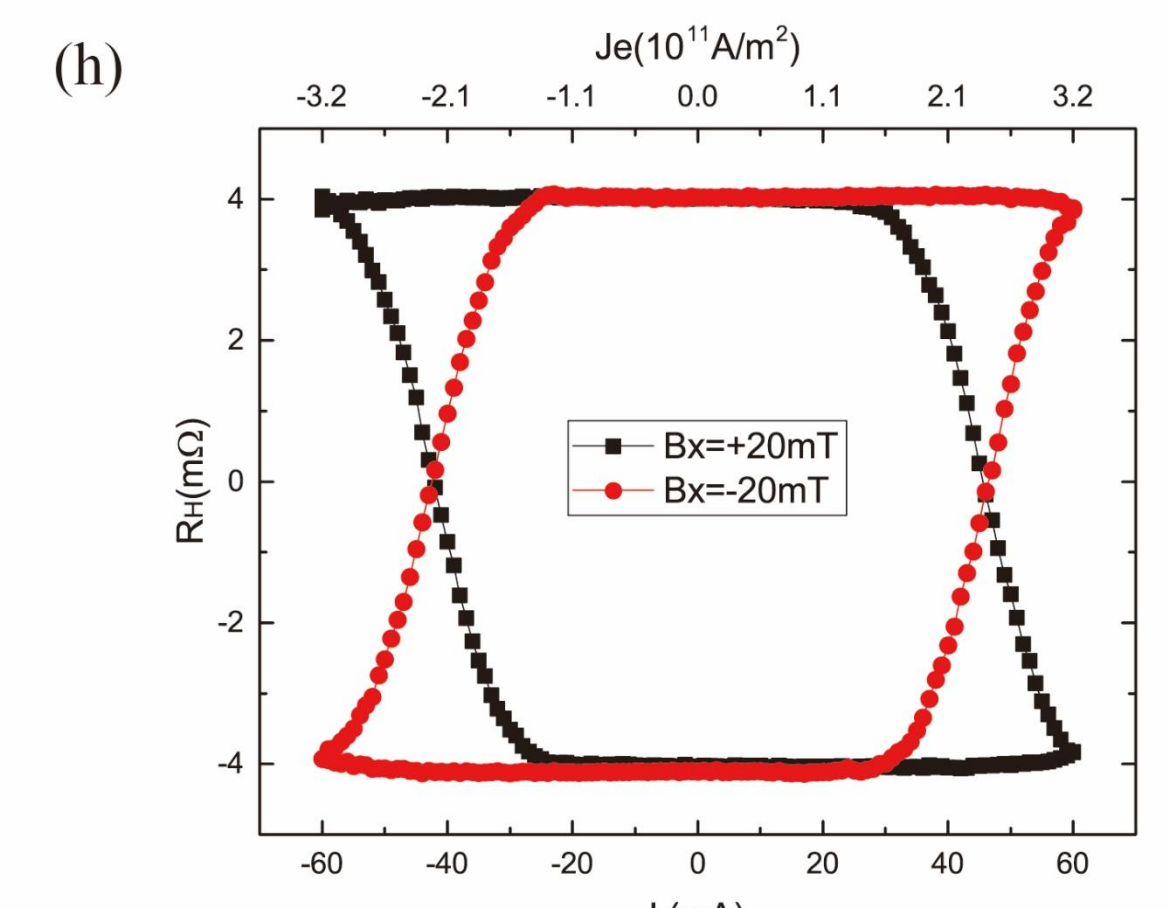
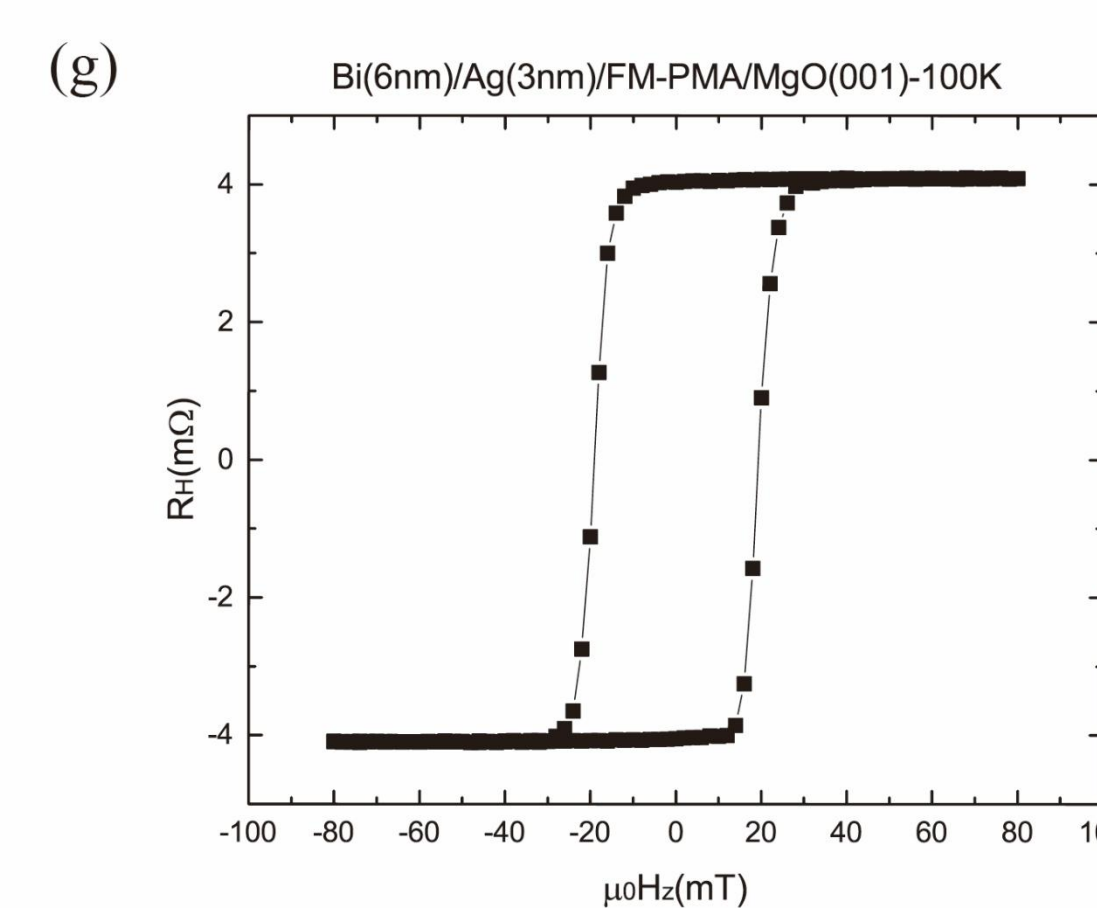
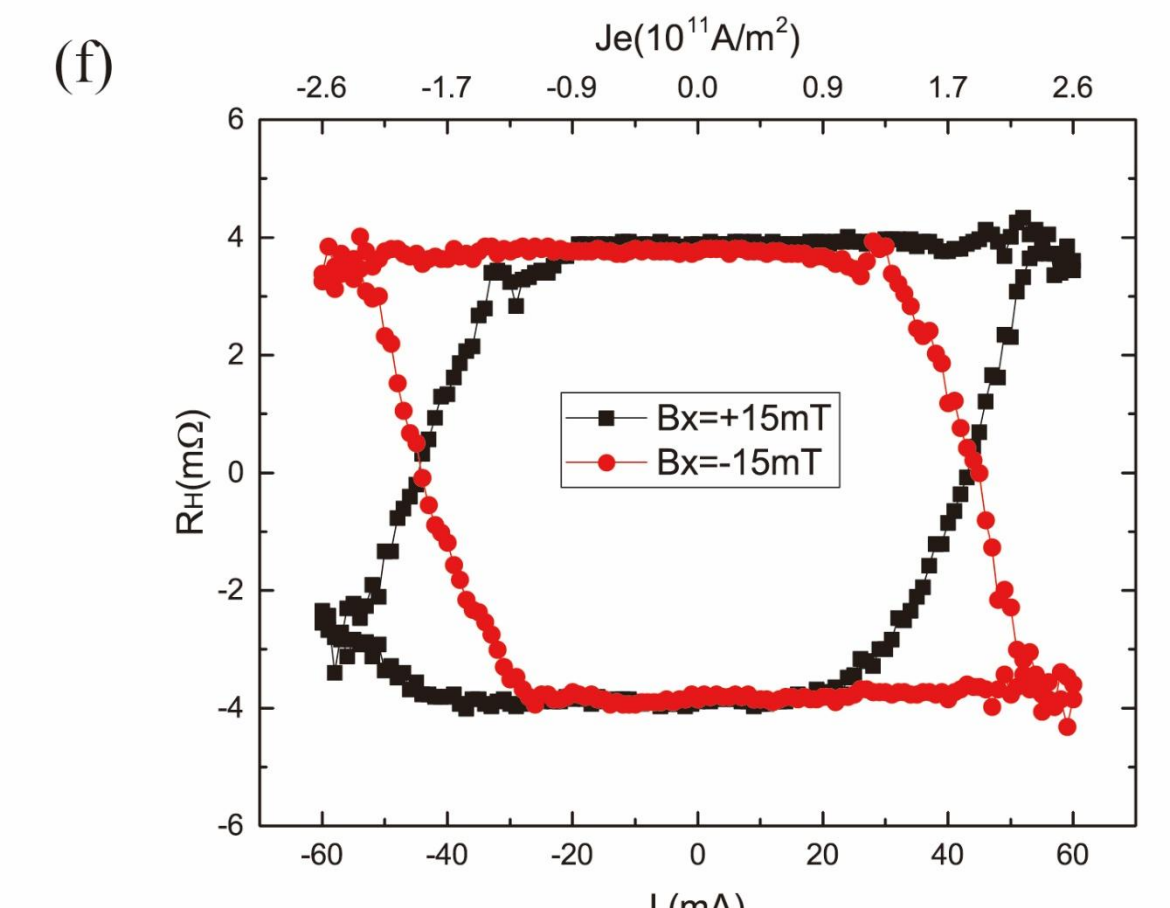
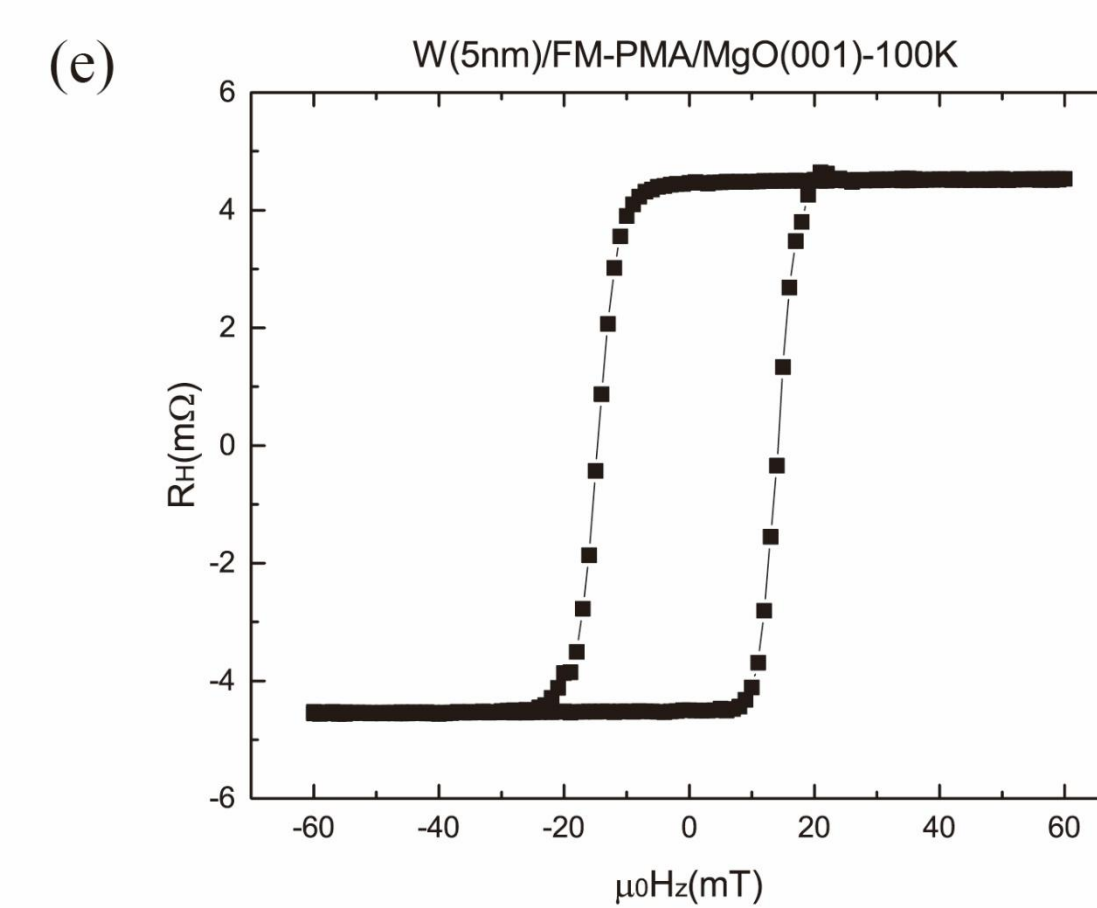
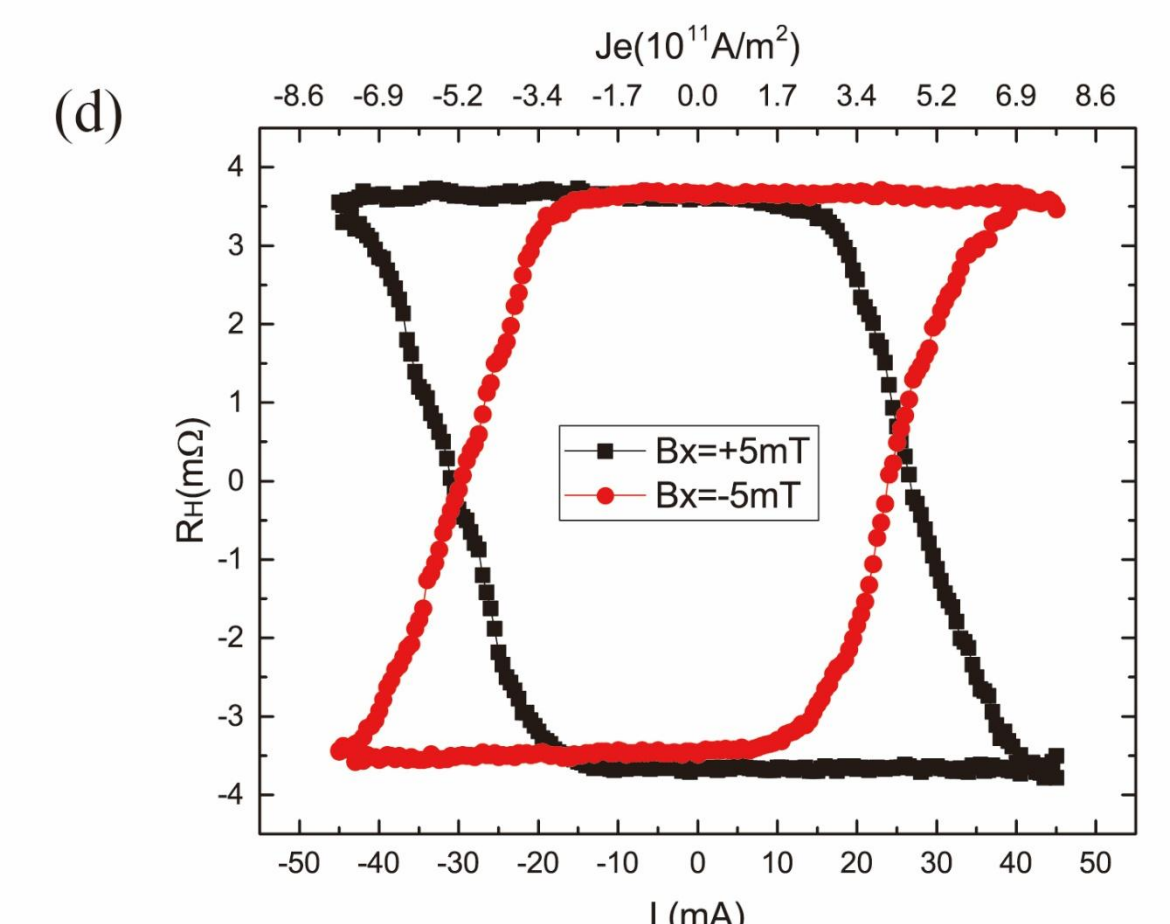
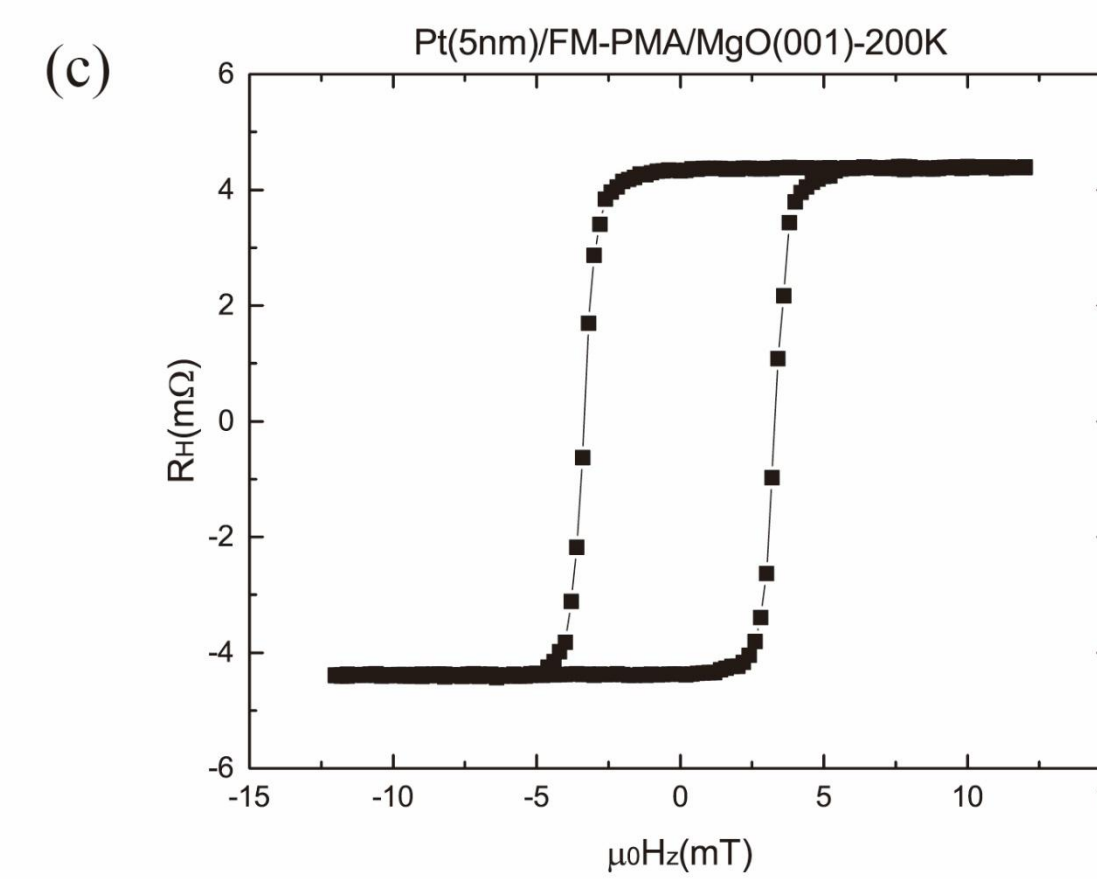
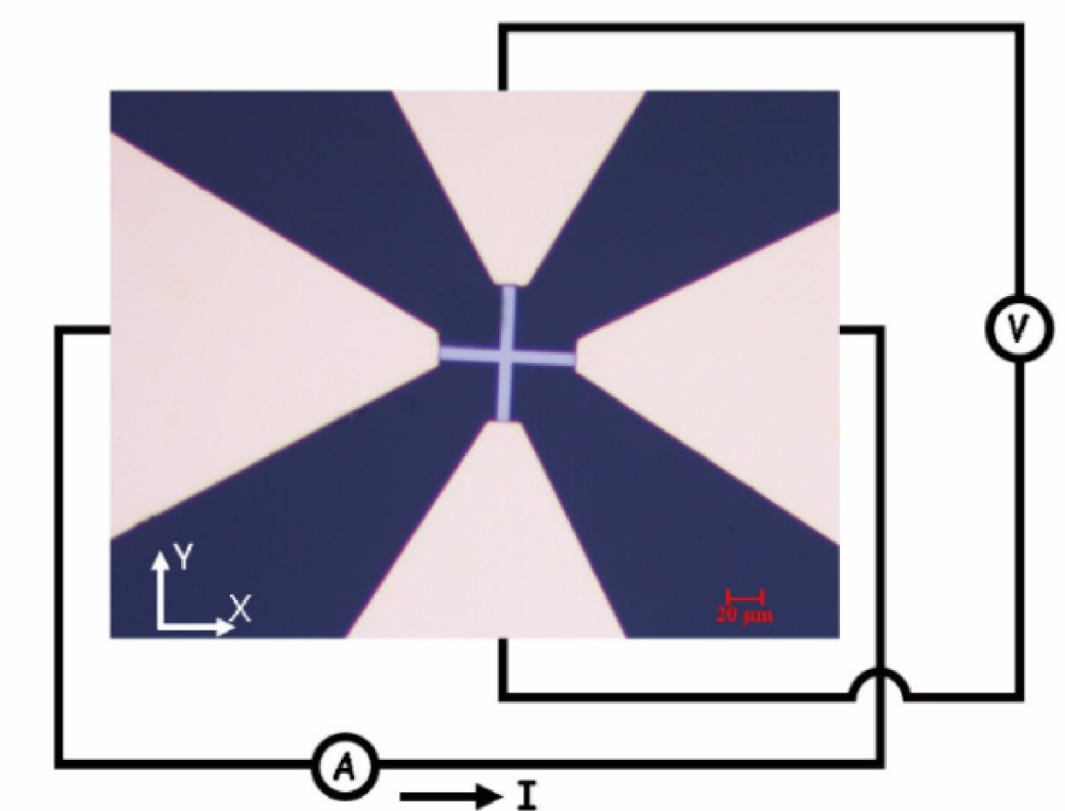
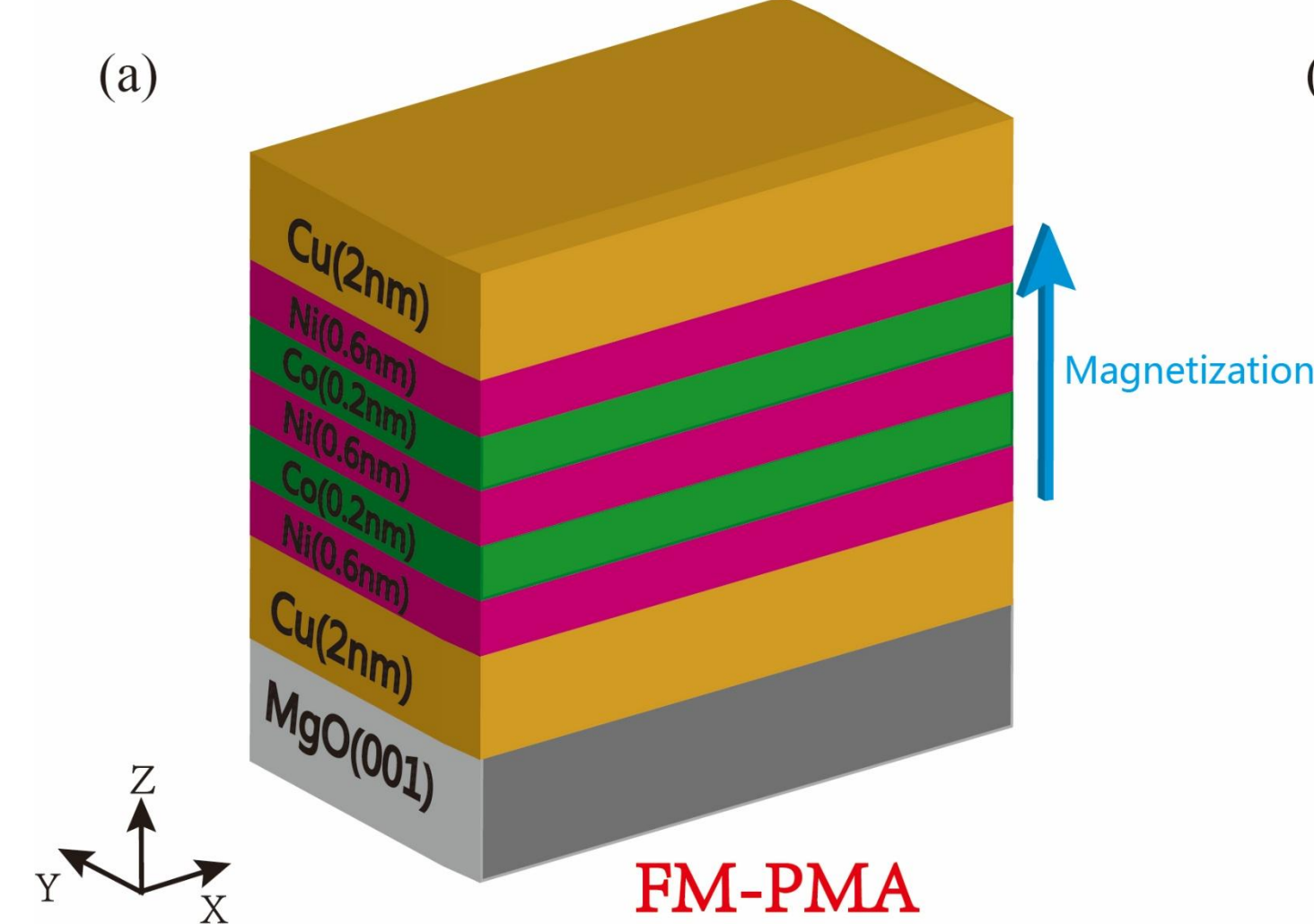
Introduction

Spin-charge conversion in Ag/Bi bilayer system has raised much attention. A novel mechanism was proposed to account for the spin to charge conversion at the Ag/Bi interface, that is the inverse Rashba-Edelstein effect(IREE)[1]. In this work, we inject the spin current from both sides of the Ag/Bi bilayer by using spin-pumping FMR. We find that the mechanism of spin-charge conversion in Ag/Bi bilayer is inverse spin Hall effect(ISHE) like Platinum. Meanwhile, we switch the Co/Ni multilayer magnetization with perpendicular magnetic anisotropy(PMA) by using Ag/Bi bilayer. This indicates strong spin to charge conversion in Ag/Bi bilayer. Spin Hall angle in Ag/Bi bilayer is 9.7% with second harmonic measurement.

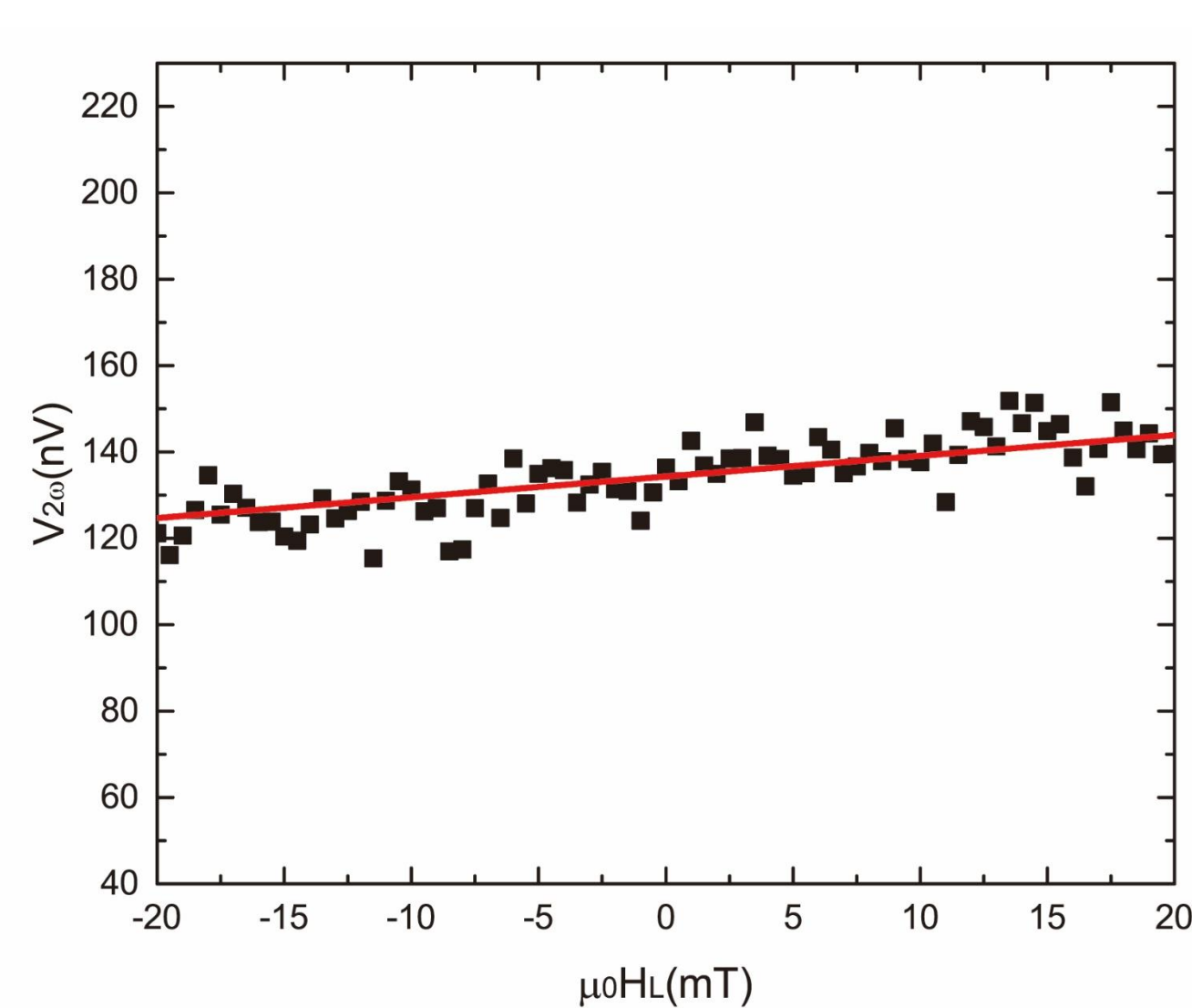
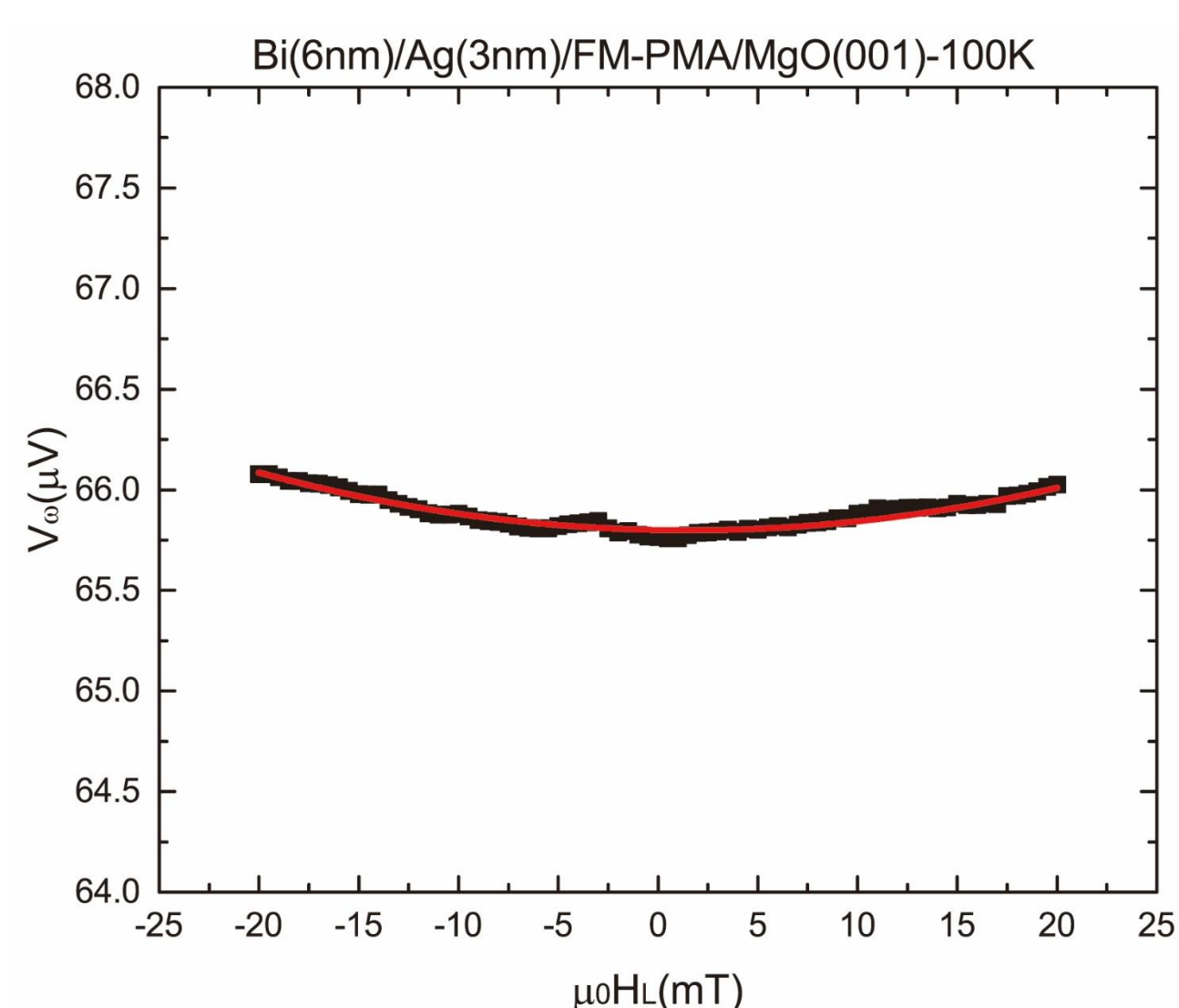
Spin Current injected via spin-pumping FMR



Magnetization switched by Ag/Bi bilayer



Second harmonic measurement in Ag/Bi bilayer



References

[1] J.-C. Rojas-Sánchez *et al.*, Nat. Commun. **4**, 2944 (2013).

Conclusion

In our work, we find that the mechanism of spin to charge conversion in Ag/Bi bilayer is ISHE. Magnetization with PMA can be switched by Ag/Bi bilayer. Giant spin Hall angle is obtained to be 9.7%.