

Abstract Submitted
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Sign reversal of Hall signals in $\text{Tm}_3\text{Fe}_5\text{O}_{12}$ /Pt with perpendicular magnetic anisotropy¹ YAWEN LIU, CHI TANG, YADONG XU, University of California - Riverside, ZHONG SHI, Tongji University, JING SHI, University of California - Riverside — Robust interface strain-induced perpendicular magnetic anisotropy is produced in atomically flat ferromagnetic insulator $\text{Tm}_3\text{Fe}_5\text{O}_{12}$ (TIG) films grown with pulsed laser deposition on both substituted- $\text{Gd}_3\text{Ga}_5\text{O}_{12}$ and $\text{Nd}_3\text{Ga}_5\text{O}_{12}$ (NGG). In TIG/Pt bilayers, we observe large hysteresis loops over a wide range of Pt thicknesses and temperatures. Both the ordinary Hall effect and anomalous Hall effect undergo a sign reversal as the temperature is lowered. The temperature dependence of the Hall signals in bilayers with different thickness of Pt indicates the existence of exchange interaction at the interface. Our results provide a clue to further understand the origin of the anomalous Hall effect in ferromagnetic insulator/normal metal bilayer systems.

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Yawen Liu
University of California - Riverside

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