



Figure| (a) and (b) Pt Hall bars along and perpendicular to the [0001] direction, respectively. (c) and (d) Spin Hall magnetoresistance with magnetic field along the [0001] direction in Hall bars (a) and (b), respectively at different temperatures. n and σ and the Néel vector and accumulated spin in the Pt layer, respectively. The arrows show the corresponding directions before and after the spin-flop transition in α - Fe_2O_3 . Spin-flop transition in α - Fe_2O_3 is only observed below the Morin temperature in the antiferromagnetic state. (e) and (f) Hall magnetoresistance with magnetic field along the [0001] direction in Hall bars (a) and (b), respectively at different temperatures. Below Morin transition, α - Fe_2O_3 shows change in the sign of Hall resistance.