

Supplementary material for **A study of Barkhausen avalanche statistics through the critical disorder in a ferromagnetic thin film : experimental investigation and theoretical modeling**

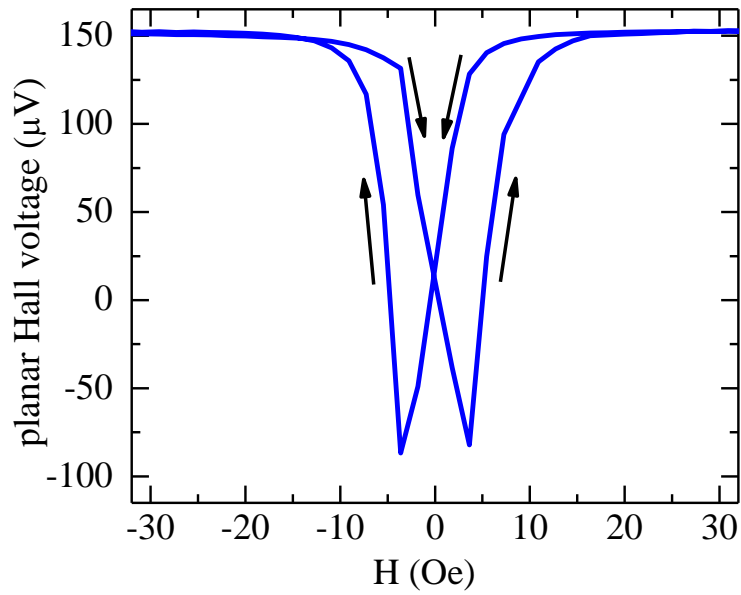


Figure 1 (Supplementary): PHE hysteresis curve for a Permalloy Hall bar of width $100\mu\text{m}$ and thickness 25nm (Sample C). $\alpha = 45^\circ$

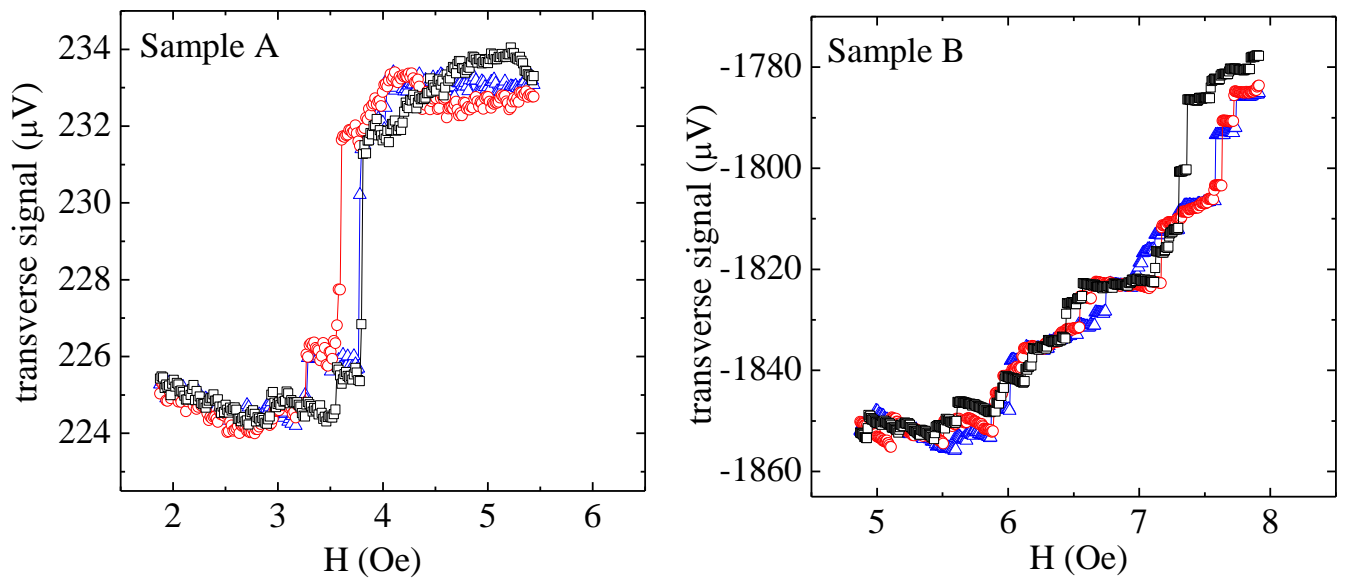


Figure 2 (Supplementary): 3 successive ‘zoomed in’ PHE switching curves for Sample A (sub-critical) and Sample B (critical).

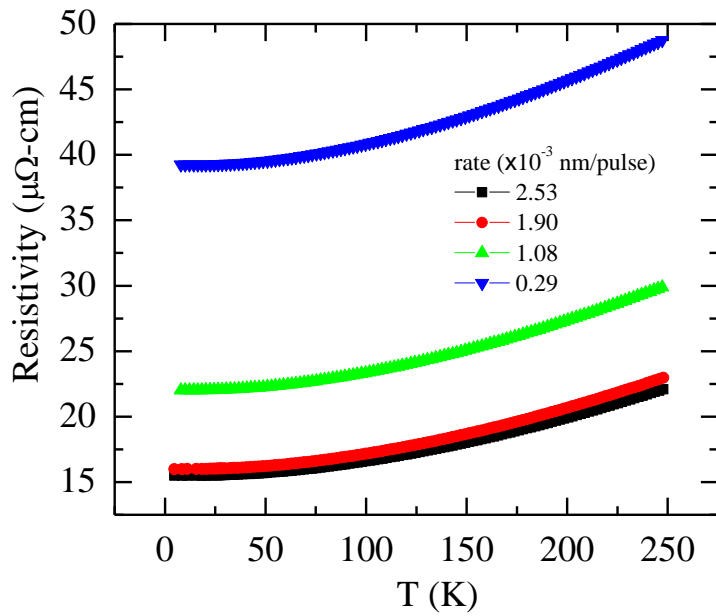


Figure 3 (Supplementary): Resistivity vs temperature curves for the 4 samples shown in Fig. 1 of the text.

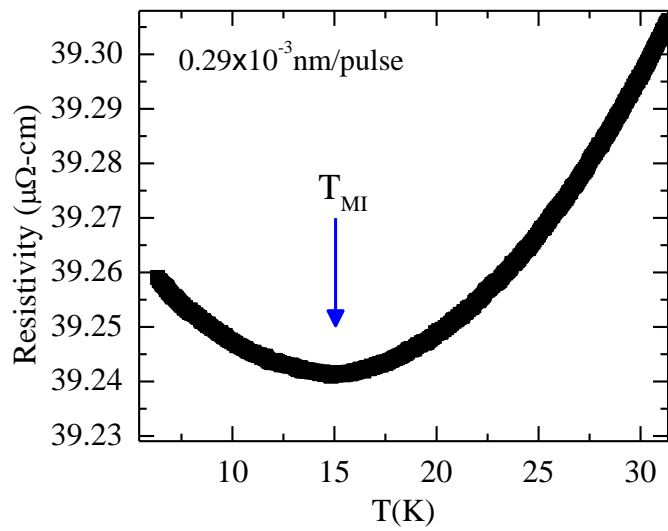


Figure 4 (Supplementary): The resistivity minimum (T_{MI}) for the Hall bar grown at 0.29×10^{-3} nm/pulse

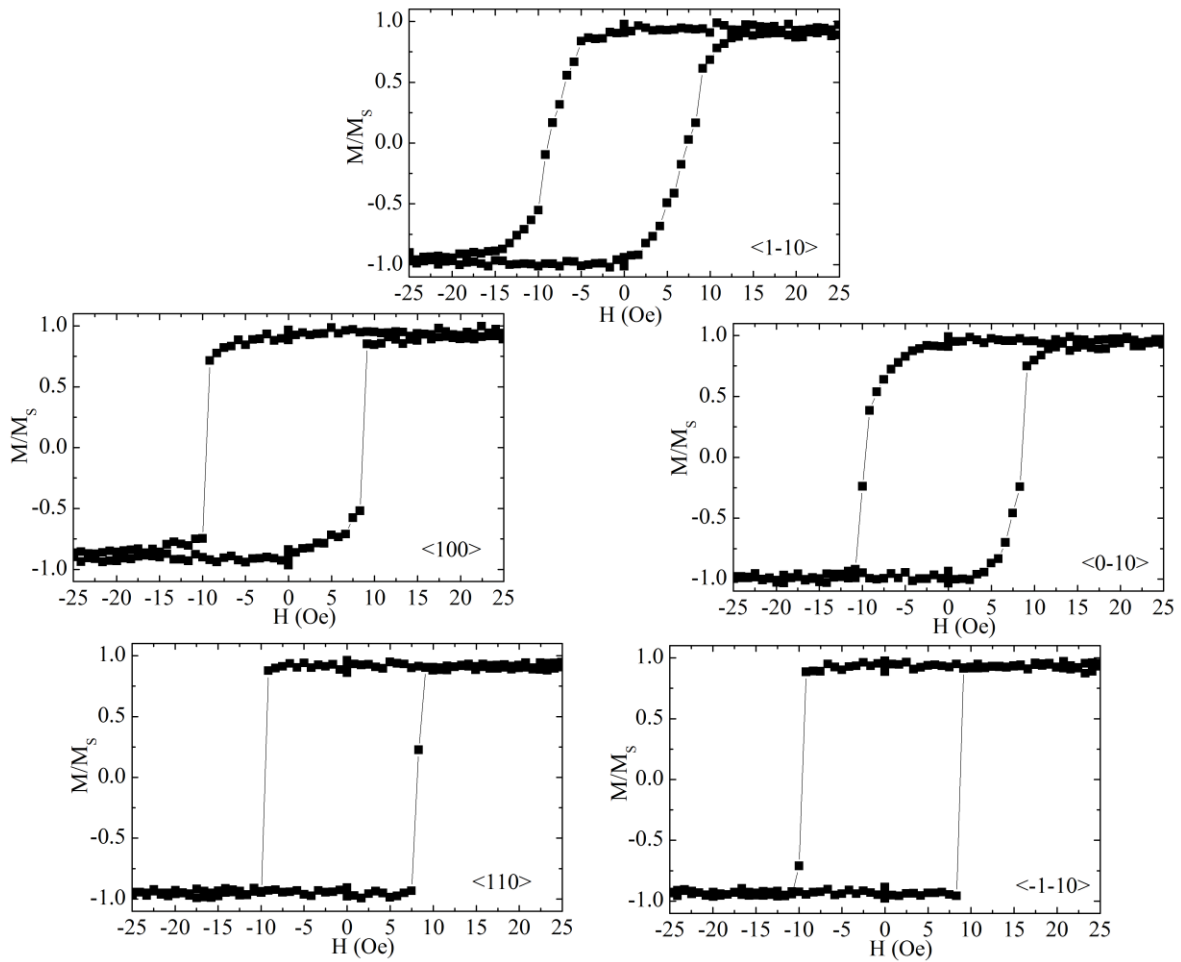


Figure 5 (Supplementary): MOKE hysteresis loops for a representative sample, for magnetic fields along different crystallographic directions of the Si substrate. Uniaxial anisotropy can be seen, with easy axis along $\langle 110 \rangle / \langle -1-10 \rangle$ and hard axis along $\langle 1-10 \rangle / \langle -110 \rangle$ directions.

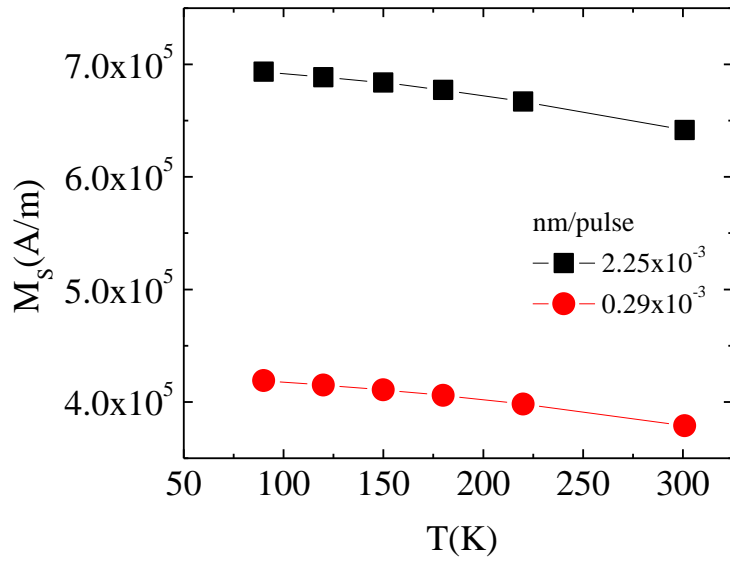


Figure 6 (Supplementary): Variation of saturation magnetization as a function of temperature from SQUID hysteresis loops.