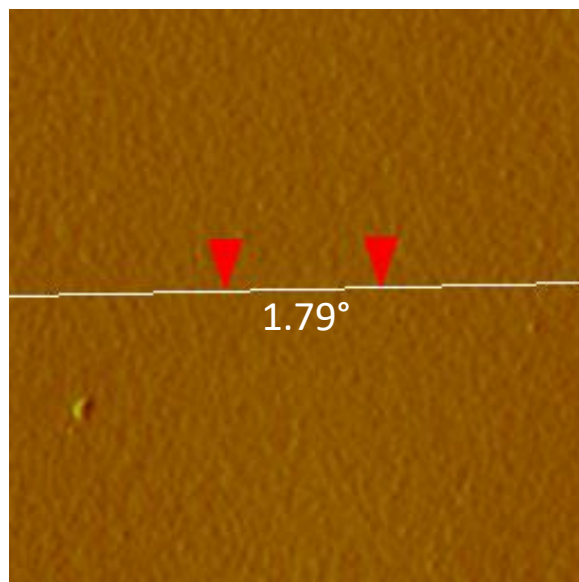
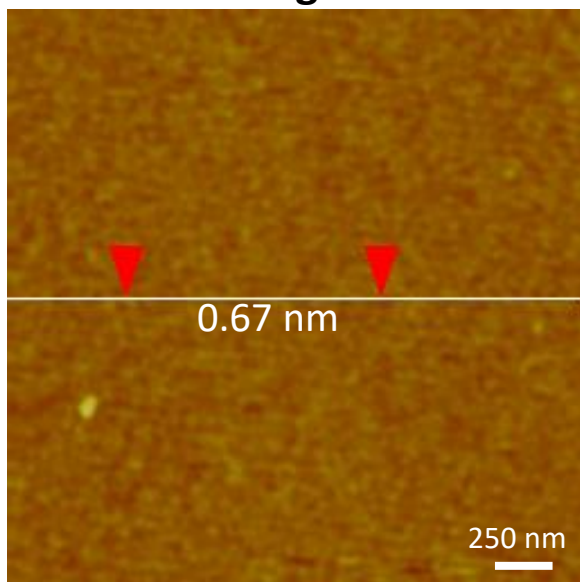


**Figure S1:** ID-AFM on silicon nitride windows (of thickness 10 and 20 nm as indicated) with DSPE-PEG2000 coated SPIONs immobilized on side B. Topography and phase images were acquired on side A using an AFM probe. Vertical distance between two points is indicated in corresponding section profile. No distinct phase signal (above noise level) was detected using an AFM probe.

**Height****Phase**

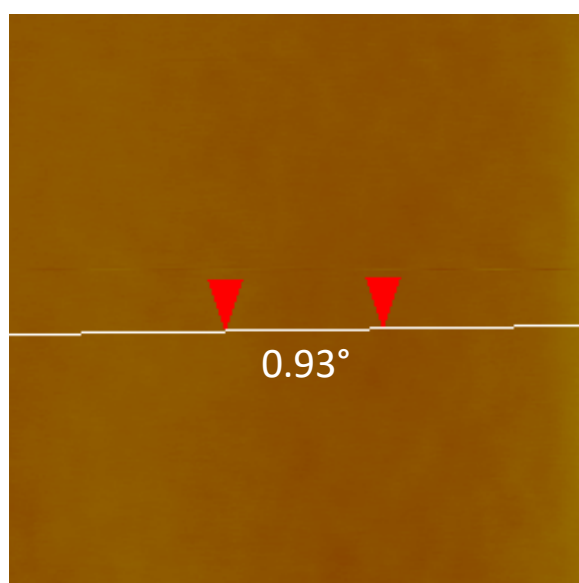
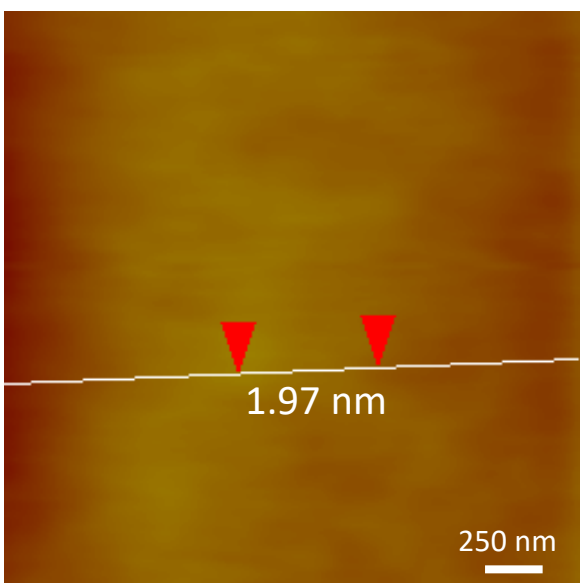
a

ID-AFM



b

ID-MFM



**Figure S2:** ID-AFM and ID-MFM on **50 nm** thick silicon nitride windows with DSPE-PEG2000 coated SPIONs immobilized on side B. Topography and phase images were acquired on side A using an (a) AFM probe and (b) MFM probe. Vertical distance between two points obtained using section profile is indicated on height and phase images in (a) and (b). No distinct height or phase signal (above noise level) was detected using either an AFM or MFM probe.