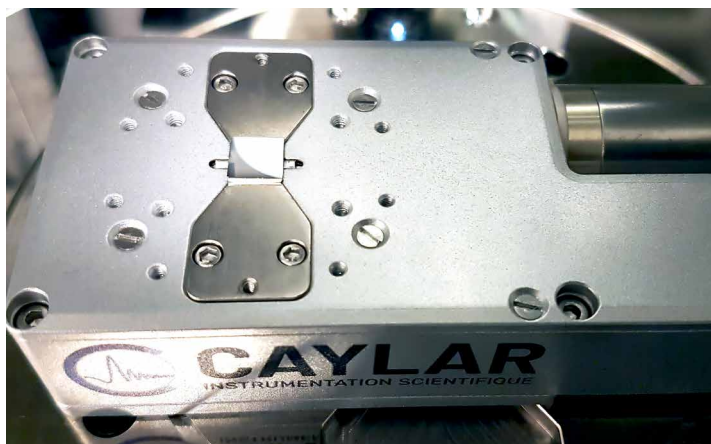


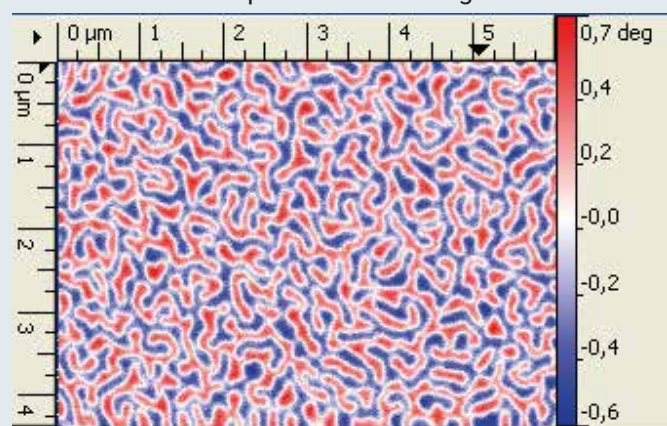
Purpose : This sample provides a common magnetic reference for comparing the **relative magnetic response of different MFM probes** and selecting the most appropriate probe sensitivity for subsequent measurements.



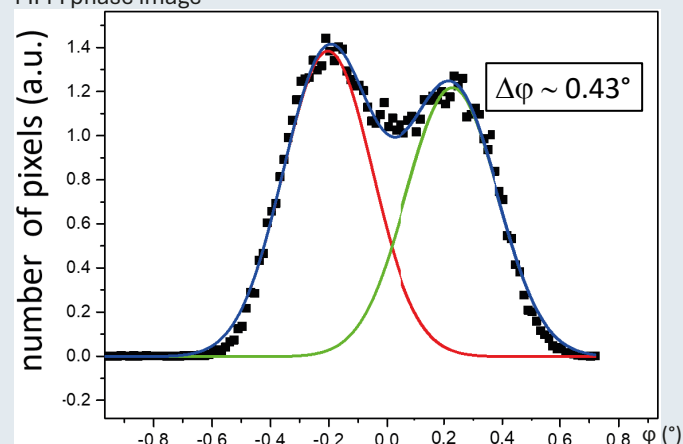
Reference sample positioned in the MFM sample area

Response Characterization

Fixed oscillation amplitude and lift height



MFM phase image



MFM phase distribution + Gaussian fitting

The two Gaussian peaks represent the main magnetic-domain populations. Their separation, $\Delta\phi$, reflects the relative magnetic response of the probe.

Important distinction :

This is a **comparative MFM probe reference sample**. It is not a magnetic-field sensor or a certified, traceable calibration standard. The measured phase response depends on both the probe and the acquisition conditions.

A Co/Pt multilayer benchmark

The sample is a magnetic multilayer manufactured by Laboratoire Albert Fert and deposited on a 0.3 mm-thick silicon (Si) substrate.

Its active stack consists of **15 repetitions of alternating cobalt and platinum layers :**

$$[\text{Co (0.6 nm) / Pt (1.0 nm)}] \times 15$$

The Co/Pt multilayer exhibits **perpendicular magnetic anisotropy** meaning that its preferred magnetization direction is oriented out of the sample plane.

In its zero-remanence state, **the sample provides reproducible magnetic-domain contrast** suitable for repeatable probe-to-probe comparisons.

For Meaningful comparison, The same oscillation amplitude, lift height and processing method must be used for all measurements.

MFM tips comparison

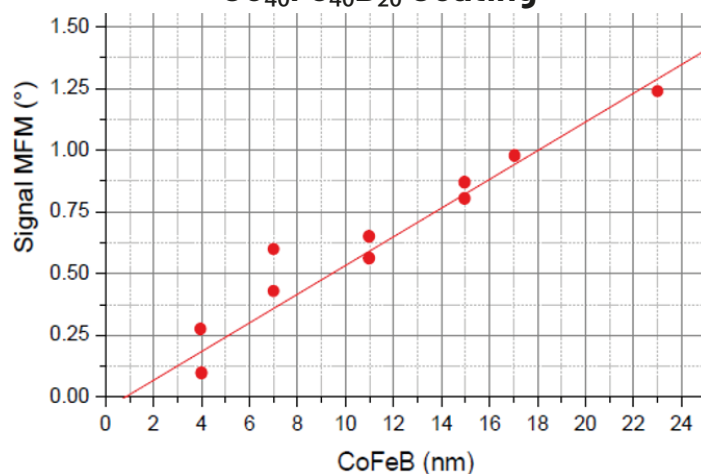
How to read the result :

Under identical measurement conditions, **a larger phase contrast indicates a stronger magnetic response of the probe**. Phase shift is expressed in degrees (°) and provides a **relative comparison**, not a direct measurement of magnetic force.

Conventional MFM tips

- Supplier 1 "High Moment" $\sim 10 \pm 2^\circ$
- Supplier 1 "Regular Moment" $\sim 3 \pm 1^\circ$
- Supplier 1 "Low Moment" $\sim 1 \pm 0.5^\circ$
- Supplier 2 "Low Moment" $\sim 3 \pm 1^\circ$

Ultra-Low-Moment MFM Tips Co₄₀Fe₄₀B₂₀ Coating



Handling :

Avoid touching or scratching the active surface. Store the sample in a clean, dry environment and handle it only with the tools supplied with the SlidePack.