

AFM Probes: Silicon Nitride Probes

This data sheet summarizes the basic physical and dimensional specifications for NanoInk's silicon nitride probes. NanoInk silicon nitride probes can be used on any commercial AFM to perform standard contact mode imaging. You may also optimally use them with the NSCRIPTOR™ DPN® System for contact imaging or Dip Pen Nanolithography® (DPN) deposition experiments.

Figure 1 illustrates the probe layout for Wafer 1. Table 1 details their specifications.

Figure 1: Wafer Layouts for Types A and B - AFM Probes (seen from above).

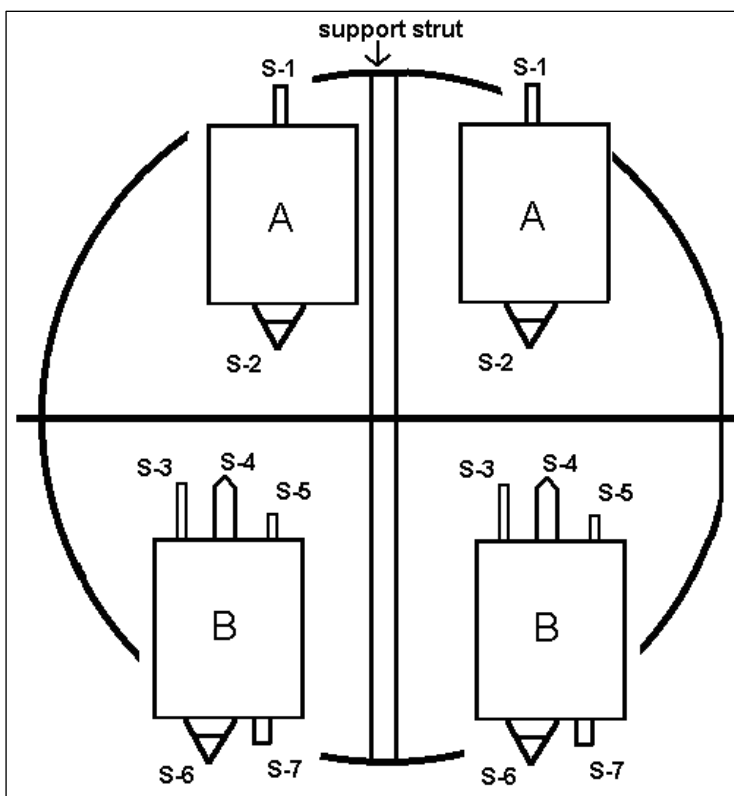


Table 1: Nominal Dimensions and Spring Constants (k) of AFM Probes

Probe Type	Reader k (N/m)	Reader Length (μm)	Reader Width (μm)
A half			
S-1	0.041	200	45
S-2	0.100	200	55
B half			
S-3	0.004	300	15
S-4	0.016	300	60
S-5	0.032	150	15
S-6	0.046	200	25
S-7	0.190	120	45

The following are SEM images of the different probes types available.

Figure 3: Type A - AFM Probe
 (a) Probe Type S-1; (b) Probe Type S-2

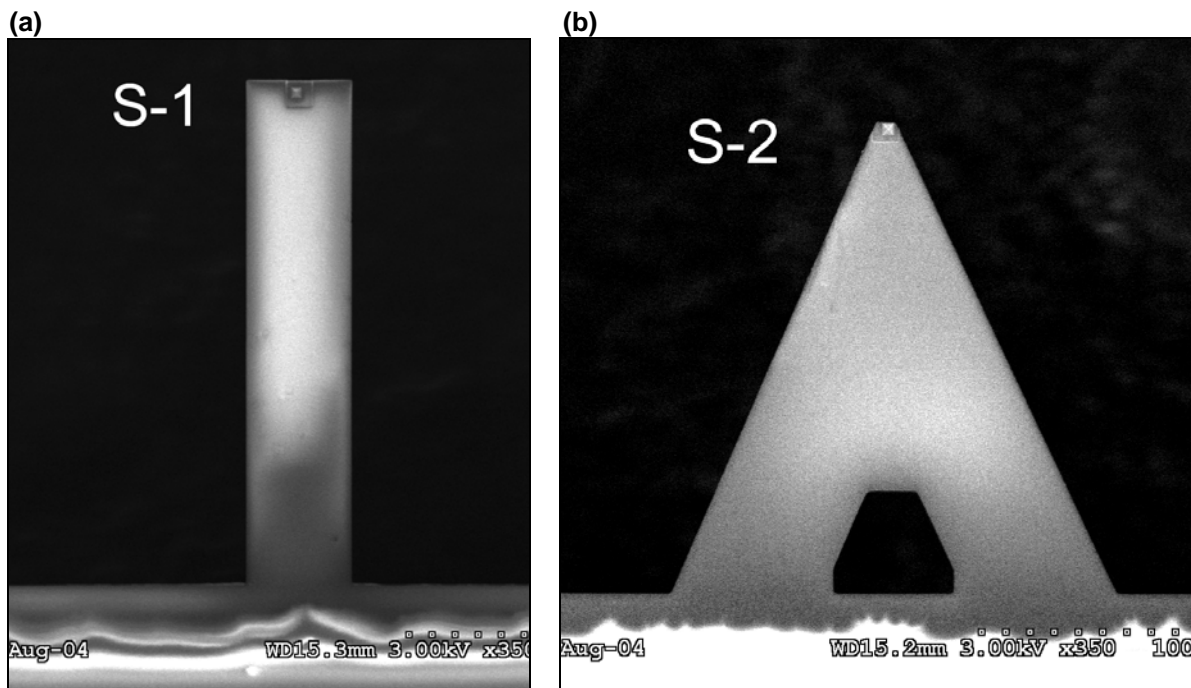


Figure 4: Type B - AFM Probes

(a) Probe Types S-3, S-4, S-5; (b) Probe Types S-6, S-7

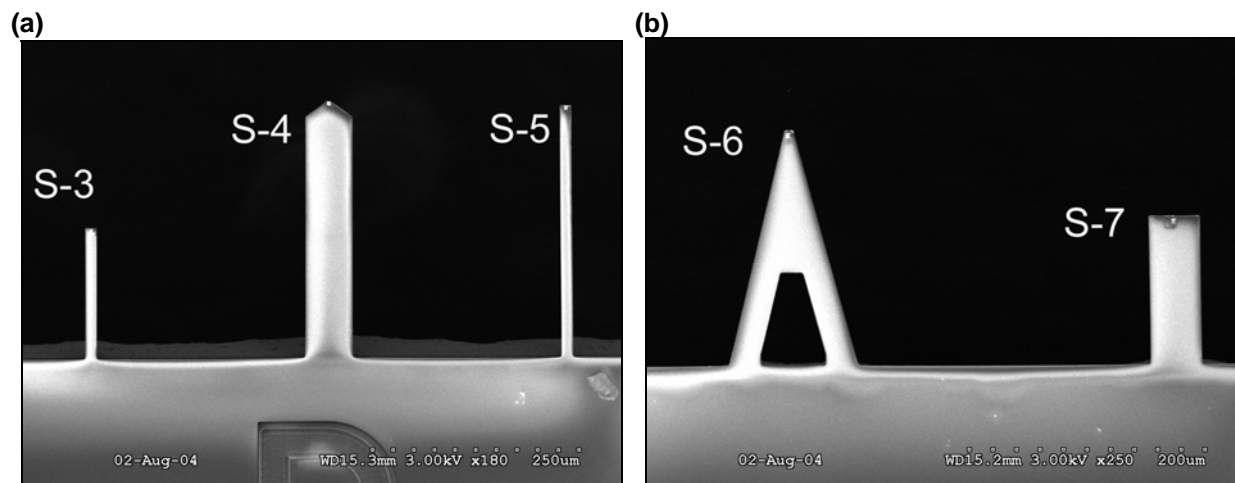


Table 3: Description of Possible Uses of AFM Probes

Probe Type	Description
S-1	A standard diving-board cantilever with an “average” spring constant for contact mode.
S-2	An A-frame cantilever with very wide arms and a large “laser landing area,” allowing for easy beam alignment. This probe has a higher spring constant (k) than for probe type S-1, thus offering the user more variety on the A-half of Wafer 2.
S-3	A very thin, long, and flexible, low-k diving-board cantilever for very soft materials. <i>Note:</i> This probe is prone to breakage during fabrication, and is not guaranteed to be present.
S-4	This very wide diving-board cantilever ensures that this probe will survive manufacturing, while still offering a low k, similar to S-3. The tapered end helps in locating the probe tip.
S-5	A short, thin cantilever that produces little drag with viscous inks, and has a high k-value.
S-6	A standard A-frame cantilever with an “average” spring constant for contact mode.
S-7	A short, wide, and stiff probe to accommodate “sticky” DPN inks, in which tip-lift is used.

For more information including pricing, please contact NanoInk Sales Department at sales@nanoink.net or 1-847-679-NANO.

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