# Sample Certificate (non-traceable) for 292nm High Resolution AFM Reference Standard; #643-1 thru #643-1R

## CERTIFICATION

The standards are produced by recording a precision, laser-generated, interference pattern using photosensitive materials and other processing steps. This fabrication technique provides an accurate measure of the period of the line-space pattern you will see under the microscope. In addition, an independent measurement of the period is made with visible-light diffraction techniques after the piece is fabricated. We find that these two determinations of the period are consistent to within 0.5 nm.

**Serial Number:** 2334B0125 **Pitch Period:** 292 nm

## Instructions

### Background Information

The Universal Calibration Specimen consists of a silicon wafer substrate with Titanium ridges (line-space pattern). This structure provides a durable specimen and a good electrically conductive path to ground.

The array of ridges covers the entire chip (approximately parallel to the shorter edge). The ridge height is normally in the range 30-40 nm. This specimen can be scanned in SEM, AFM, FIB (focused ion beam), SAM (scanning Auger microscope) and other instruments.

### Appearance and usage

**If you received an unmounted specimen, please see the Mounting Instructions below.**

There may be a number of visible defects on the surface of this specimen, such as pits and scratches. Defects can help you focus on the surface of the specimen. After focusing, for best results, make images that exclude such defects. Defects are more common close to the edges. We recommended imaging areas at least 0.5 mm from any edge.

Most defects can be seen in an optical or scanning electron microscope at magnifications in the range 50-1000x. These defects are normal in the production of this class of specimen and do not affect the accuracy of the pattern elsewhere. It is normal for a 10x10 um image to include one or a few sub-micron defects, such as a low or high spot, corresponding to a missing or tall post in a 2-D pattern, or a stray bump in a 1-D pattern.

To see diffracted light, view the short edge of the sample with light coming over your shoulder. Tilt and rotate the sample until you see colored light. The 700-nm specimens diffract all colors, at moderate angles. The 300-nm specimens diffract blue and green light when viewed nearly edge on (about 20° from the horizontal).

### Storage and handling

Store in a dry environment at room temperature or below.

CAUTION:

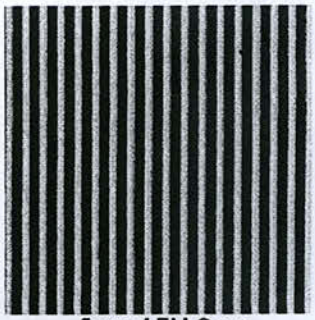
- Do not touch the surface.
- Do not put any liquid on the surface.
- Do not expose the specimen to any solvent vapors, including acetone or alcohol.

### Cleaning

We recommend "do not try to clean the specimen." There is sufficient usable area on the calibration standard to make tens of thousands of measurements without reusing any areas altered or contaminated by previous scans. Therefore, we recommend that you do not attempt to remove any contamination which occurs during normal use.

### Durability

Strict adherence to the storage, handling and cleaning procedures outlined above should preserve the standard for a period of years. However, since we cannot control the conditions of use, neither Advanced Surface Microscopy, Inc. nor its distributors assume any responsibility for damage to this standard by improper handling and storage or by attempts to clean or refurbish it.



5 um AFM Scan