

MetroChip

Microscope Calibration Target

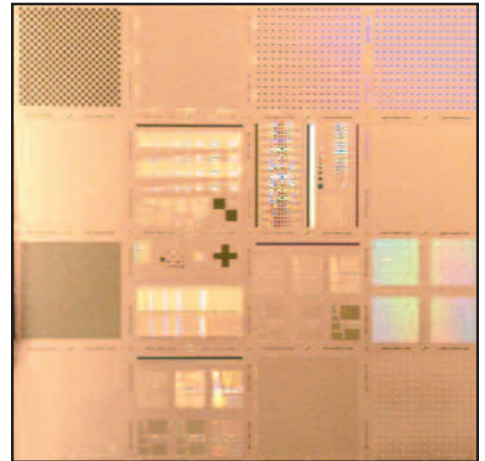
For SEM, AFM and Light Microscopes



The Metro Chip Microscope Calibration Standard for SEM, AFM, Light Microscopy and Metrology Systems provides an extensive range of targets with periodic features for enhanced calibration down to the 100nm range. The Metro Chip standard is produced with today's nanotechnology demands in mind. It is designed for a long life use and presents a stable calibration platform. The standard is produced on a 20x20mm chip with a thickness of 750 μ m. It delivers high contrast images for analytical SEM with minimal charging and combines a huge calibration range from 4mm down to 100 μ m.

Target calibration for SEM features include alignment marks, linear microscale, distortion measurements, par-axial calibration (image shift), resolution measurements, focus star, stigmator calibration, gratings, concentric circles and squares. The combination of these targets on one standard makes the MetroChip ideal as an all-in-one standard for setting up and regular calibration checks of the SEM or FESEM. For Light Microscopy and AFM, there are a number of targets to check linearity, distortion and scan length. This standard is NIST traceable.

- Suitable for light microscopy, SEM, AFM and other metrology systems
- Large range of calibration, from a 4mm ruler down to 100nm geometrics
- Large array of features in both positive and negative structures
- 150nm feature depth with 90° wall angles
- Ease of navigation with dimension labels on most features
- High contrast images in Analytical SEM
- Minimal Charging
- Long Sample Life
- Sample size is 20 x 20mm
- Sample thickness is 750 microns, approximately
- The finished product has patterns of etched poly-crystalline silicon over a thin oxide on silicon substrate
- Polysilicon thickness is 150nm \pm 10%
- Oxide thickness under the polysilicon features is less than 5nm, typically 2.5 to 3nm



632 MetroChip Microscope Calibration Target

www.tedpella.com/metro_html/metrochip.htm



Ted Pella Inc.

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MetroChip - Microscope Calibration Target

For SEM, AFM and Light Microscopes

Arrows on borders of all 5mm x 5mm tiles point towards sample center.

A Checkerboard 300µm Pitch Grating Filled

B Array of Disks 100µm Pitch Grating Filled

E Sea of Squares 300µm Pitch Grating Filled

H Array of Disks 300µm Pitch Grating Filled

D Array of Disks 100µm Pitch Solid

F Sea of Squares 100µm Pitch Solid

G Array of Disks 100µm Pitch Grating Filled

I Sea of Squares 100µm Pitch Grating Filled

J Sea of Squares 300µm Pitch Solid

Linear Microscales (Rulers) Denoted in Green

Example of small labels for Scatterometry targets

SM1 SM3 SM5
Smaller Size
SM2 SM4 SM6
Orientation Mark

LG1 LG3 LG5
Larger Size
LG2 LG4 LG6

LG1 Array of Disks solid
LG2 Array of Disks grating

SM1 Array of Disks solid

LG3 Sea of Squares solid
LG4 Sea of Squares grating

SM2 Array of Disks filled with gratings

LG5 Grid Array

SM3 Array of Squares solid

LG6 Array of Crosses

SM4 Array of Squares filled with gratings

SM5 Arrays of Checkerboards solid

SM6 Array of Squares filled with gratings

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- ◆ Large range of calibration, from a 4mm ruler down to 100nm geometrics
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- ◆ Ease of navigation with dimension labels on most features
- ◆ High contrast images in Analytical SEM
- ◆ Minimal Charging
- ◆ Long Sample Life

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◆ Sample size is 20 x 20mm

◆ Sample thickness is 750 microns, approximately

◆ The finished product has patterns of etched poly-crystalline silicon over a thin oxide on silicon substrate

◆ Polysilicon thickness is 150nm ±10%

◆ Oxide thickness under the polysilicon features is less than 50nm, typically 2.5 to 3nm

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