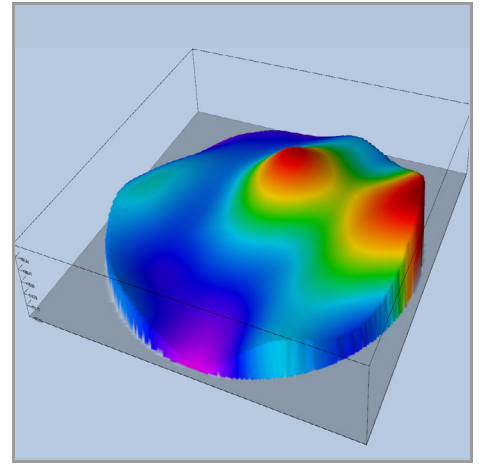


CORNING



Tropel® FlatMaster® MSP Wafer Surface Metrology System Advanced Optical Measurement System for Wafer Flatness and Thickness Variation

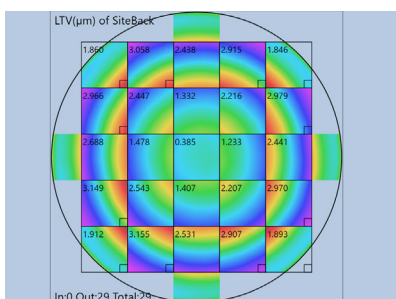
The ability to measure flatness, thickness, and thickness variation of semiconductor wafers is critical for wafer processing.

Traditional contact probes or conventional interferometry systems are too slow or do not have the necessary accuracy over the full wafer surface.

The Tropel FlatMaster® MSP-Wafer (Multi-Surface Profiler) is a frequency stepping interferometer that provides fast and accurate metrology for wafers up to 300mm. In seconds over 3 million data points are collected with sub-micron accuracy enabling total thickness and flatness characterization over the entire wafer surface.

Measurement Parameters

Global	Local (site)
Thickness	SBIR (LTV)
GBIR (TTV)	SBID (LDOF)
GF3R (TIR)	SF3R (LTIR)
GFLR (NTV)	SSF3D (LFPD)
GFLD (NTD)	SFLR (LTIR)
Bow, Warp, SORI	SFQR (LTIR)
	SFQD (LFPD)



Key Benefits

Improves product quality, manufacturing yield and throughput

Lowers manufacturing costs

Increases process awareness and understanding

Reduces time-to-market

Increases customer satisfaction

Power

High resolution and accuracy on thickness across the entire wafer surface

Capable of mapping submicron thickness changes in the wafer after processing (i.e. CMP, Epi)

Large dynamic range

Fast measurements

Excellent reproducibility results from operator to operator

Flexibility

Measures a variety of material types

Measures a wide range of surface finishes

Easy to Use

Place the part and measure, little or no fixturing required

Intuitive recipe driven operation

Suitable for production, quality control, or development environments

Tropel® FlatMaster® MSP Wafer System Specifications

Performance

	FlatMaster MSP 150	FlatMaster MSP 300
Field of view	150 mm (5.9 in)	305 mm (12.0 in)
Z-Resolution	1 nm (0.04 μin)	1 nm (0.4 μin)
Lateral resolution	0.15 mm (0.006 in)	0.17 mm (0.0006 in)
Measurement range (Z-Axis)	Up to 300 mm (11.8 in)	Up to 300 mm (11.8 in)
Measurement method	Frequency scanning interferometry	
Measurement time	30 seconds typical	
Measurement parameters	Flatness, depth/height, parallelism, line profile, surface profile	
Data analysis	3-D contour, slice: x, y circumferential and radial, and wafer analysis plots	

Materials and Surfaces

Materials	Metals, glass, polymers, ceramics, and many others
Surfaces	Fine-ground, lapped, polished, super-finished and others

Accuracy and Repeatability

	Accuracy*	Repeatability*
Bow, warp, SORI	500 nm (19.7 μin)**	200 nm (7.9 μin)
TTV	100 nm (3.9 μin)	20 nm (0.8 μin)
Thickness >2 mm	300 nm (11.8 μin)	100 nm (2.9 μin)
Thickness <2 mm	100 nm (3.9 μin)	40 nm (1.6 μin)

Environmental and Facility

Temperature	15 °C to 25°C (59 °F to 77 °F)
Rate of temperature change	< 1.0 °C per hour
Humidity	5% to 95% relative humidity, non-condensing
Power	100-240 VAC, 50/60 Hz, 4 Amp
Air/Vacuum	n/a
FlatMaster 40 System dimensions/weight	103 cm x 57 cm x 26 cm / 60 Kg (41 in x 22 in x 10 in / 132 lb)
FlatMaster 40 System dimensions/weight	76 cm x 65 cm x 34 cm / 75 kg (30 in x 26 in x 13 in / 165 lb)

*Refers to instrument limited Accuracy and Repeatability (1σ) as based on measurement traceable artifact

**On wafers with less than 10 μm of bow

This product is covered by one or more U.S. patents.

All specifications are subject to change.

Tropel® is a registered trademark of Corning Incorporated.

FlatMaster® is a registered trademark of Corning Incorporated.

For more information about the Tropel® FlatMaster product line, or any other of our Tropel® Metrology Instruments, please contact:

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