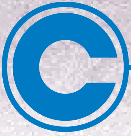
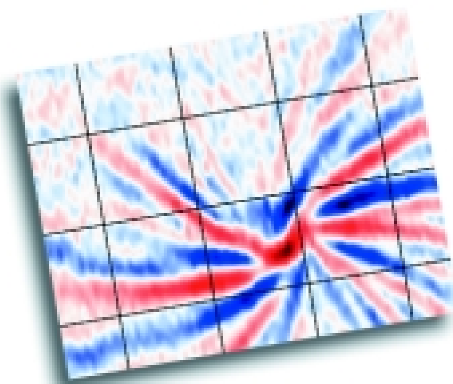


Chapman Instruments

MP3100 Non-Contact Surface Profiling System

Fully Automated Wafer Topography Measurements

The MP3100 is designed to meet the exacting needs of the silicon-wafer manufacturing industry. It features fully-automated, multi-axis positioning combined with optional cassette-to-cassette robotic handling. It accommodates both 200 and 300 mm wafers. There is no increase in footprint for processing larger wafers. The operating software is Win/NT 4.0 compatible. Users can create a customized measurement sequence, then implement it with one quick touch of a button. Surface measurements are simple with this powerful, yet user-friendly instrument interface. The MP3100 achieves maximum process throughput, without sacrificing accuracy of the measurement result.



A 3D scan of the polished front side of a 300 mm wafer; the spiral pattern is actually the backgrinding emanating through to the front of the wafer.

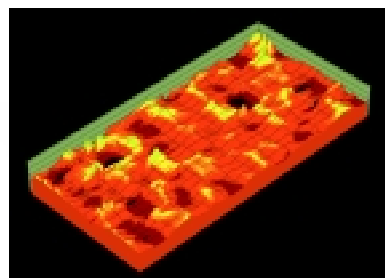
MP3100 Features:

- Automated flat and notch finding for wafer orientation
- Automated edge locating and bevel angle finding allows for multiple scans at maximum lengths
- Event logging capability
- Roughness and waviness measurements in a single scan
- Recipes/macros can be assigned to programmable function keys on the instrument control panel
- Complete edge and bevel measurement both along and across the wafer
- Automated multiple scan routines of entire wafer surface area: edge bevel, edge crown, notch (or flat) and both wafer surfaces (front side, back side)
- Scan Lengths from sub micron to 100 mm.
- S2 Compliance and CE certification
- Four levels of operator security

MP3100 Specifications

Cassette-to-cassette robotic handling provides completely automated measurement

Single-keystroke operation with the use of programmable function keys



A 3D scan of an acid-etched wafer backside (X Y=200 µm x 100 µm, Ra = 0.3030 µm)

System Features

200 and 300 mm capability
Measurement at any location on wafer surface or edge
Integrated CCD Nomarski Viewing System
PC Pentium Computer
NT 4.0 (32 bit applications)
Macro and Template Editor
Up to 500,000 data points per scan
CE Certified
S2 & S8 Ready
Autofocus/Autotracking
Programmable Wafer Stage
Automated Notch and Flat Finder
Automated Bevel Angle Optimization
Automated Bevel or across edge scanning
Automated Scanning on wafer surface or any edge location
Wafer Notch or Flat Roughness Measurement Capability
Automated Event Logging and Viewing
Password Security
Integrated Vibration Isolation

Performance Specifications

Vertical Resolution:	Better than 1 Angstrom
Horizontal Resolution:	0.5 µm
Roughness Repeatability:	2% (2 sigma)
Spatial Measurement Range:	0.5 µm to 100 mm
X and Y Axis Stage Resolution:	1 µm
Theta Stage Resolution:	0.001 Degree
Tilt Axis (90 degrees to wafer apex):	0 to 90 Degrees
Edge Orientation:	0 or 90 Degrees

Options

Robotic Handler for 200 mm and 300 mm wafers
Video Printer
Color Printer
Standard Silicon Reference Flat

Software

Roughness Parameters	Ra, Rq, Rp, Rv, Rpm, Rvm, Rt, Rz, Rsk, Rku, and more
Waviness Parameters	Wa, Wq, Wp, Wv, Wt
Other Parameters:	Histogram, Cumulative Distribution, Power Spectrum, Slope, etc.
Programmable Cutoff Filter:	Conforms to ANSI B46.1 and ISO standards

Chapman Instruments

175 Research Blvd.
Rochester, NY 14623
USA
800-876-9125
716-424-1380–Phone
716-424-2142–Fax
www.chapinst.com
sales@chapinst.com
support@chapinst.com