



Chapman Instruments

DIE CRACK, EDGE CHIP AND ROUGHNESS

Using the MP2100 Non-Contact Surface Profiling System

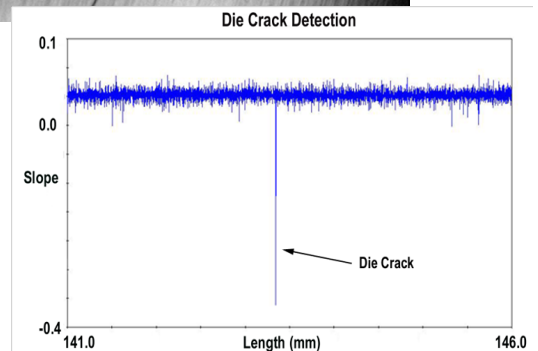
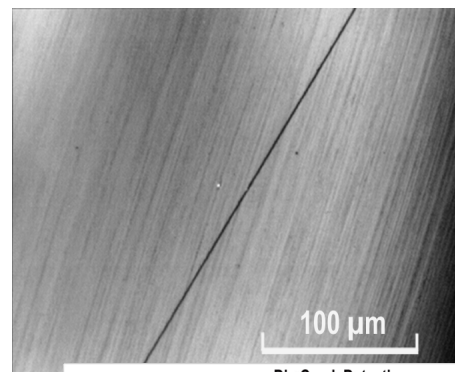


The MP2100 is Chapman Instruments' latest high resolution profiler. Specially designed for Wafer Die Crack/Edge Chip detection, surface measurements and analysis, it can be used as both a production tool for in-line quality inspection, as well as a research and development tool for establishing standards and researching tolerances. The MP2100 utilizes the same non-contact measurement technology as other Chapman profilers. Users can make either high-resolution linear or circular scans quickly. The powerful, yet user-friendly, Windows® based operational software can be programmed to execute a series of routines and report the data off-line for further analysis. Password security and event viewer/error logging are standard with Chapman software. Robotic handling for both 200 mm and 300 mm wafers is available as an option.

Die cracking is easily identified for further evaluation with the in-line Nomarski viewing system

MP2100 Features:

- Non-contact scanning
- 0.01 nm height resolution
- 50 nm data sampling
- 0.50 μm lateral resolution
- Fast, complete circular scans (360° around wafer surface)
- Nomarski Viewing System for high definition visual inspection
- Scan lengths ranging from μm to complete circumferences (200 or 300 mm wafer)
- Roughness and waviness data from a single scan
- Non-contact 3D scans
- Automated sample positioning (X, Y, theta)
- Customized measurement sequences with multiple scans implemented with a single keystroke
- Automated focus acquisition
- Closed loop auto-focus system allows focus to be maintained while scanning over samples with varying topography
- Optional robotic handling



A section of a 360 degree circular scan near the edge of a 200 mm wafer. The die crack is clearly detected and shown in this expanded section.

MP2100 SPECIFICATIONS

System Features

200 and 300 mm capability
Measurement at any location on backgrind wafer (200 or 300 mm)
Integrated CCD Nomarski Viewing System
PC Pentium computer
Windows® based operational software
Complete 360° Circular Scan on wafer surface
Autofocus/Autotracking
Programmable sample positioning
Automated notch or flat finder
Automated event logging and viewing
Password security
Vibration isolation table workstation

Performance Specifications

Vertical Resolution:	0.01 nm
Horizontal Resolution:	0.5 μm
Linear Scan Length:	Up to 100 mm
Circular Scan Length:	Complete circumference of wafer
X and Y Stage Resolution:	1 μm
Theta Stage Resolution:	0.001 Degree
Data Sampling	50 nm (minimum)

Options

Nomarski Viewing System Printer
Color Printer
NIST Roughness Standard
Robotic Handler (200 or 300mm wafer)

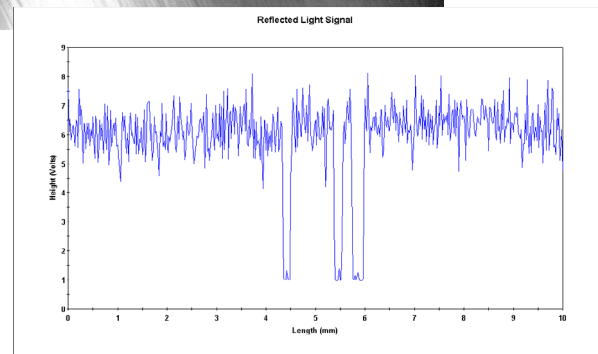
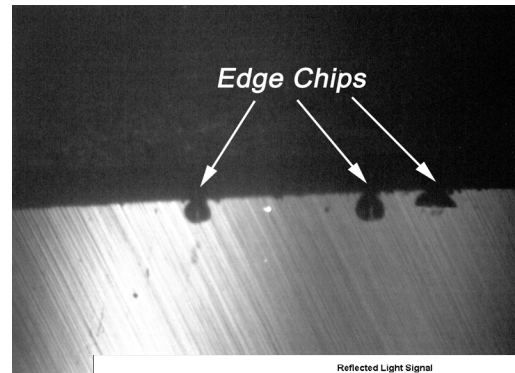
Software

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 SEMI, ANSI B46.1 and ISO standards

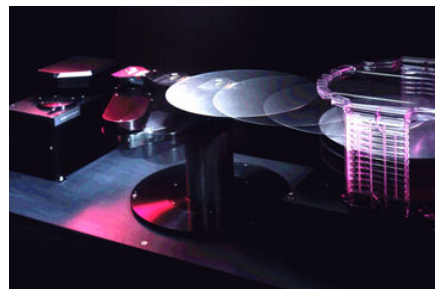
Die Crack, Edge Chip and Roughness

- Complete 360 degree circular scans at any radius
- Die Crack/Edge Chip Inspection by threshold analysis
- A single keystroke to implement a customized measurement sequence
- Rapid circular scan at outer edge of a 200 or 300 mm wafer
- Backgrind surface roughness at any location, linear or circular measurement geometry.

Edge Chips Shown with the in-line Nomarski viewing system as a visual inspection tool.



A circular scan at the edge of a 200 mm wafer. The Edge Chips are clearly detected in the scan.



Cassette-to-cassette robotic handling provides completely automated measurement

