Applications of MRF

Case Study – Improving Thickness Uniformity of Coating

Presented By:

QED Technologies Applications and Engineering

Cabot Microelectronics

Thickness Uniformity Correction - SOI Wafer

- SOI (Silicon-on-Insulator) Wafer
  - Size: 200 mm Φ
  - Material: Silicon
- The Goal
  - Correct thickness uniformity of top Si layer
- The Configuration
  - Q22-X/Y
    - Rotational mode
  - 150 mm wheel
    - Large spot for minimize cycle time
  - D20 fluid
    - Low removal rate for such low removal

- Q22-X/Y
  - Rotational Mode
- 150 mm Wheel
- D20 Fluid

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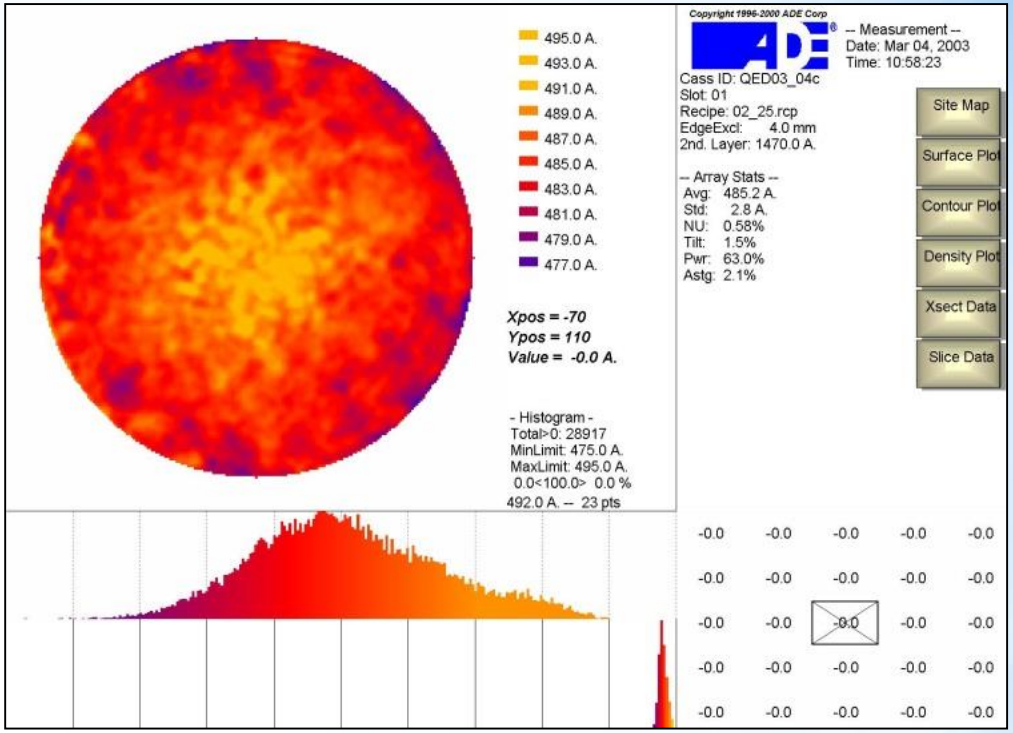
Measuring Thickness Uniformity

- ADE makes special tool to map thickness of to Si coating layer
  - Wafer flatness does not have to be perfect
- Measurement is extremely accurate and repeatable
  - Better than interferometric surface measurements



Thickness variation measured and corrected

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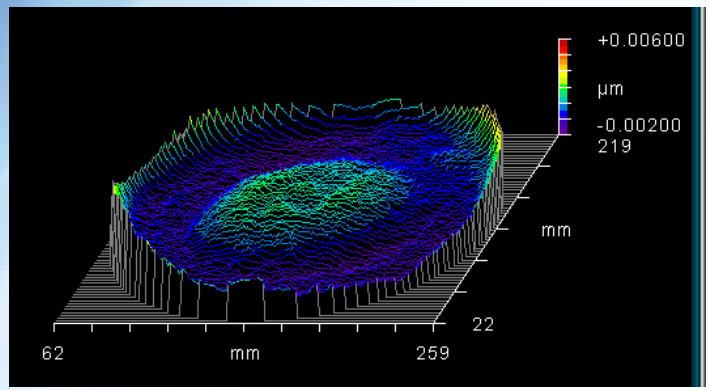
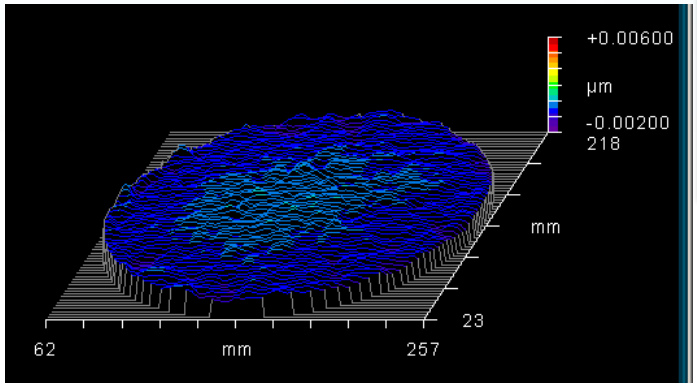
Thin film 200mm SOI Wafer

Ultimate MRF Correction - thickness variation

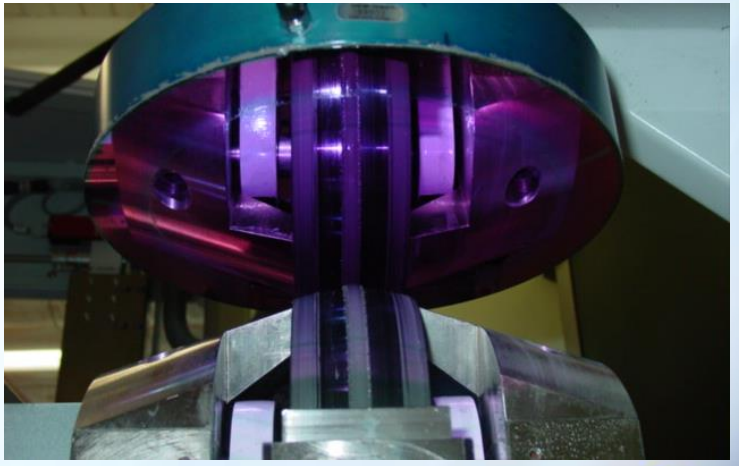




- Q22-X/Y
  - Rotational Mode
- 150 mm Wheel
- D20 Fluid

Before MRF:
Range (PV) = 70 A
Std (rms) = 9.0 A
Avg Thick = 694 A

After 2 Runs:
Range (PV) = 17 A
Std (rms) = 2.8 A
Avg Thick = 485 A



- *PV < 2 nm achieved!*
- *Shows MRF capable of polishing to metrology limit*

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