Your AI Metrology Company

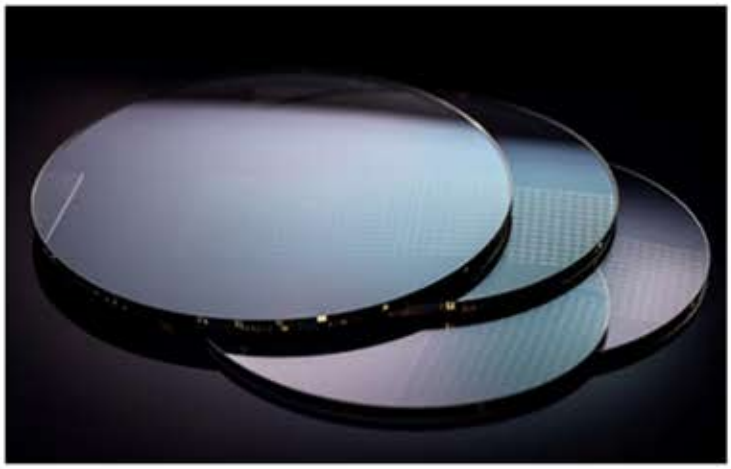
AI Defect Metrology

Image surface detail in 3D at high Z-axis resolution

2D 3D Profiler
BpT CLARITY PRO ™

The optional AI module enables the system to automatically detect, classify features, measure images, and identify surface defects—eliminating subjective variations from human inspection and delivering robust, repeatable metrology data.

- **Data Preparation:** Use annotated images of defect-free and defective samples to train AI models directly within the Profiler.
- **Model Training:** Automated routines train models to identify specific surface issues such as scratches, pits, voids, bumps, or roughness anomalies.
- **Real-Time Detection:** As 2D/3D images are captured, AI assists in live detection, measurement, and classification of surface defects—accelerating quality control.
- **Custom Defect Categories:** Tailor AI logic to your unique inspection requirements, compliance standards, and material applications.
- **Continuous Improvement:** AI models become more accurate with ongoing training data and user feedback, ensuring ever-improving reliability.



Precision Beyond the Surface

The BPT Clarity Pro 2D/3D Profiler is a breakthrough optical microscope that reveals surface detail in 3D with unmatched Z-axis resolution—while still performing all conventional optical imaging modes including:

- Bright Field
- Dark Field
- POL
- DIC
- NIR

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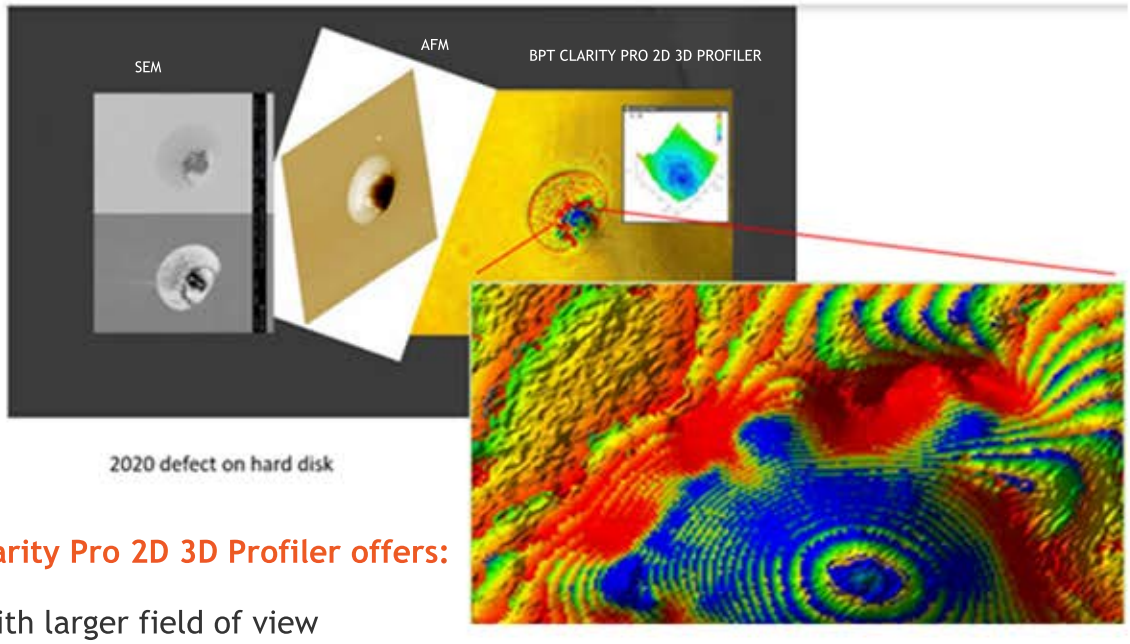
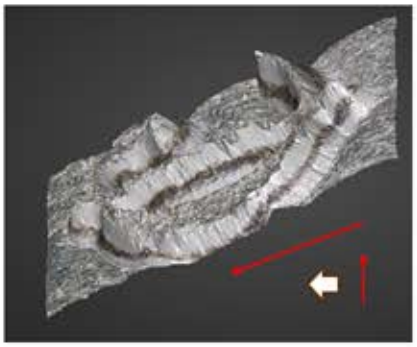


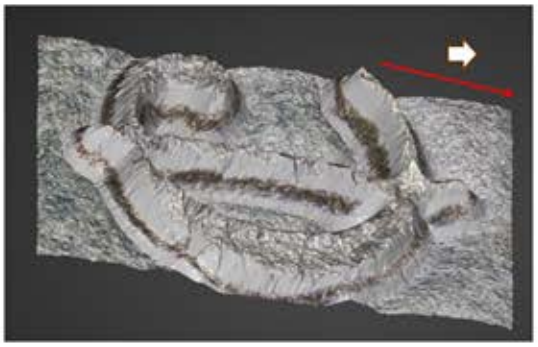
2020 defect on hard disk

Unlike AFM or SEM, Clarity Pro 2D 3D Profiler offers:

- Faster analysis with larger field of view
- True surface imaging without subsurface artifacts
- High-resolution 3D surface detail over the full Z-range
- Ease of use with no need for specialized operators

3D surface imaging





3D Image Tilting

From inspection to analysis and reporting, BPT Clarity Pro 2D 3D Profiler guides you through every step seamlessly.

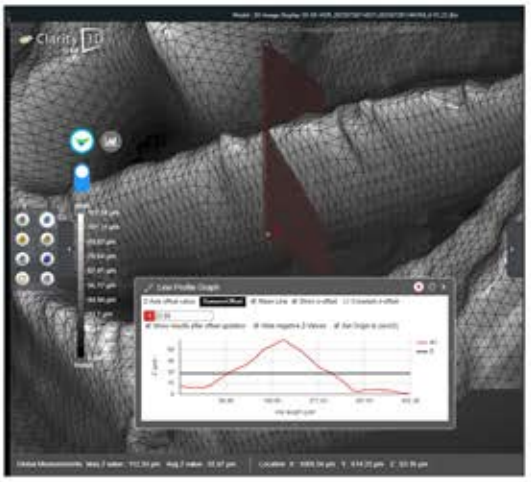
Why BPT Clarity Pro 2D 3D Profiler?

- **SEM Limitation:** Images electrons from beneath the surface, not true surface features.
- **AFM Limitation:** Resolves at angstrom level but limited Z-range (<0.1 micron).
- **BPT Clarity Pro 2D 3D Profiler Advantage:** Captures full Z-range with detailed surface curvature mapping, displacement analysis, and 3D visualization.

Key Features & Capabilities

3D Image Analysis Tools

- Adjust image display & lighting from multiple angles
- Record movies & take screenshots
- Calibrate Z-axis
- Perform line/area profiles
- Overlay comparison images
- Analyze roughness & surface wave patterns
- XYZ slicing with adjustable scaling



Tilted - zoomed in, line profile and mesh

Lighting & Calibration

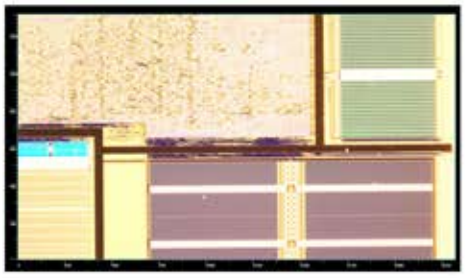
- Change lighting conditions for enhanced visualization
- Z-calibration adjustments for precision measurements

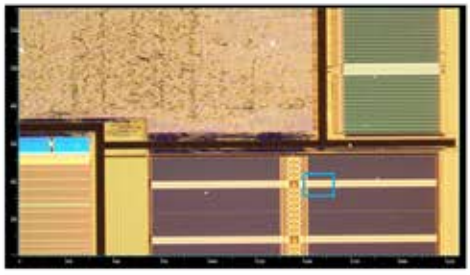
XYZ Slicing & Scaling

- Slice models along X, Y, or Z axis
- Scale 3D models to larger or smaller resolutions

Live Imaging Tools

- **Auto Exposure Metering:** Full-frame averaging or 10% ROI selection





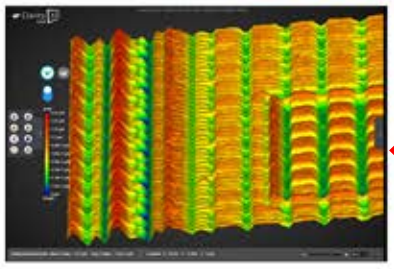
Auto exposure meter 100% full frame averaging

Metering area reduced to 10% and reposition

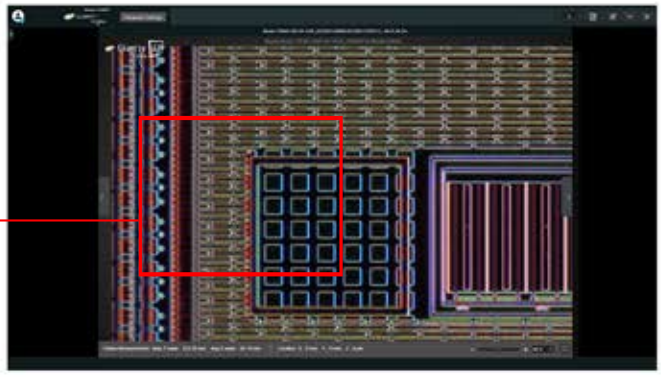
- **Live Compare:** Compare live images with stored gallery references

3D Display Modes

Greyscale 3D display



3D color height maps



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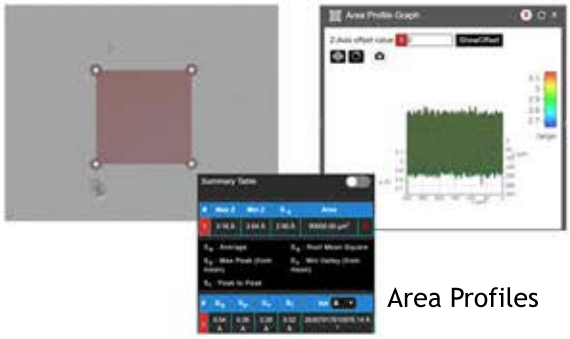
Line Profile

Line Profiles

Area Profile



Area Profiles

Measurement Tools

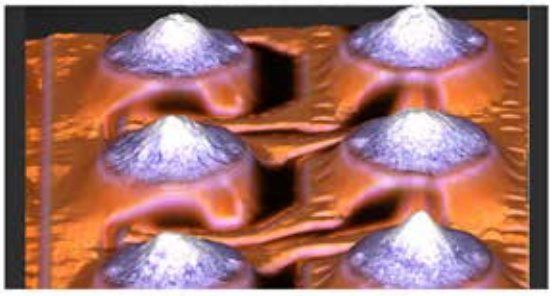
- Length
- Radius
- Angle
- Circle Area
- Ellipse Area
- Rectangular Area

Reports

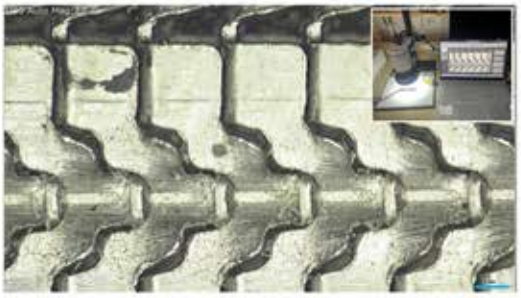
Applications

- Defect detection & analysis (e.g., solder bumps, hard disk defects, rough machined surfaces)
- Surface roughness & displacement mapping
- Research & development in electronics, semiconductors, and materials science

3D Image of Solder Bumps



Rough machined heat sink



CAMERA SPECIFICATIONS

- Model: DCM5.3
- Resolution: Sensor and Optics dependant
- Interface: USB 3.0 (direct computer connection)
- Compatibility: Works with additional camera models

FACILITIES & ELECTRICAL SPECIFICATIONS

Voltage 120V/240V at 60Hz/50Hz

Current Rating <10Amps