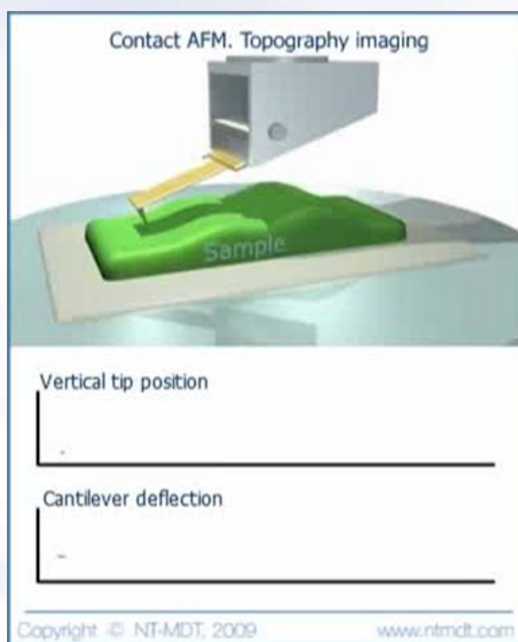
MASER ENGINEERING

Atomic Force Microscopy (AFM) analysis service

Atomic Force Microscopy (AFM) is used to narrow down the failure location of a via or transistor in an larger area, found after EMMI/OBIRCH/LIT failure localisation analysis.
Further failure analysis step is delayering or FIB cross-sectioning

PARK NX10 FEATURES:

- Auto engage by Slide-to-Connect SLD head
- Expansion slot for advanced SPM modes and options
- High speed 24-bit digital electronics
- Direct on-axis high powered optics with integrated LED illumination
- Accessible Sample Holder



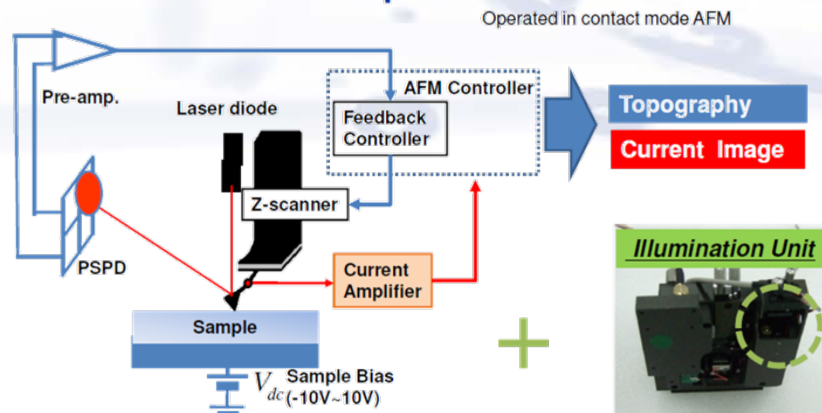
STAGE & SCANNER:

Scanner:

- 100 µm x 100 µm XY Scanner (normal 50 µm x 50 µm)
- Max Resolution: 0.05 nm
- 15 µm Scan Range
- Pre-mounted tips

Electrical Properties:

- Conductive AFM mode
- I-V Spectroscopy



SCANNING MODES:

- True Non-Contact AFM
- Basic Contact AFM
- Intermitted (tapping) AFM

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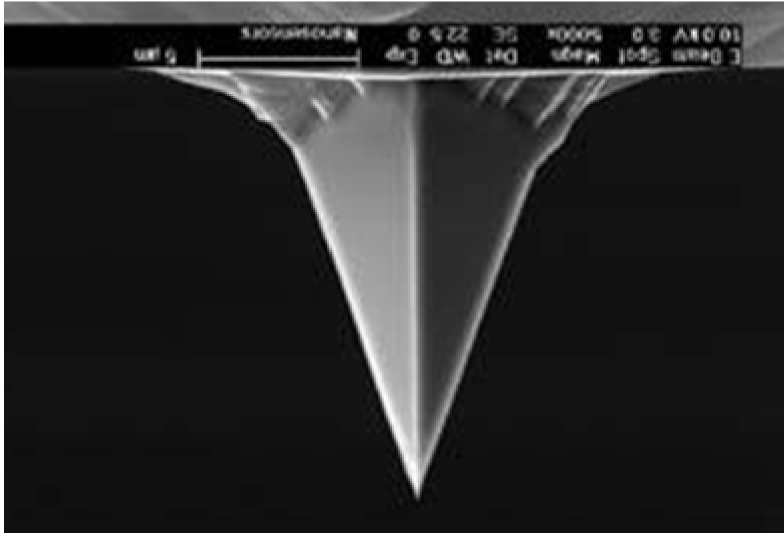
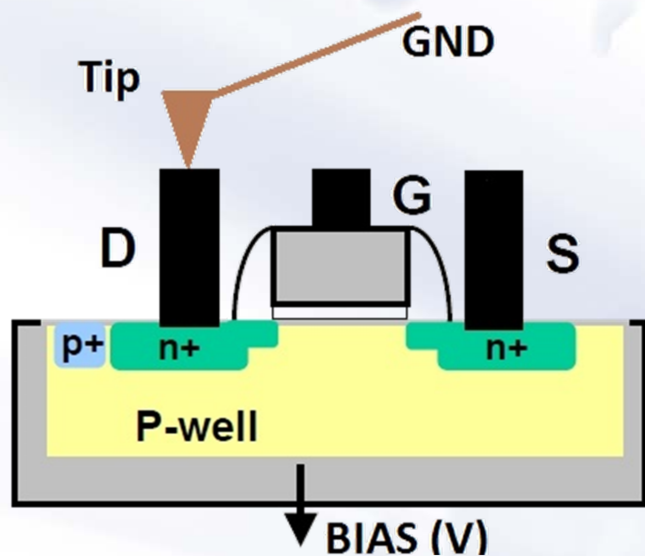


MEASUREMENT MODES:

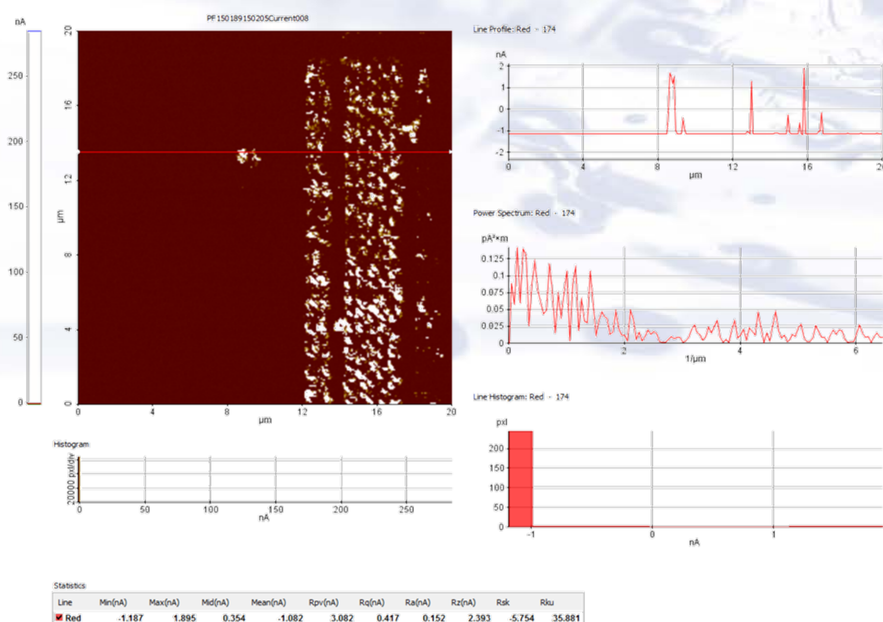
- Surface Morphology *
- Conductive AFM *
- Electrostratic Force Microscopy (EFM) *
- Surface potentional Microscopy, kelvin Probe (SKPM)
- Force Modulation Microscopy (FMM) *
- Lateral Force Microscopy (LFM) *
- Magnetic Force Microscopy (MFM)
- Scanning Tunneling Microscopy (STM) *
- Fluid AFM

* = Available at Maser



AFM APPLICATIONS:

- Identification of a leakage of a via or transistor
- Pinpoint of location with a very high accuracy after polishing
- Local I-V curve measurement while leaving the tips on a certain spot/contact
- Failure confirmation by further delayering or FIB cross-sectioning



APPLICATION EXAMPLES:

- Gate Oxide breakdown (SEM inspection after poly etch)
- Open plugs (via's or transistor plugs)
- Molten plugs (via's or transistor plugs)
- Surface roughness measurement

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