

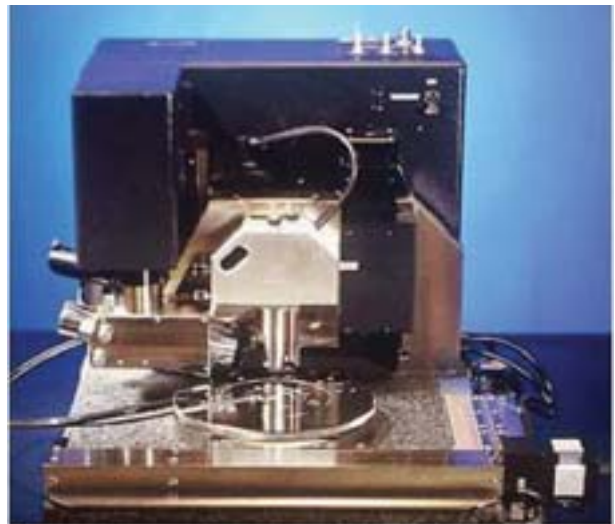


# ATOMIC FORCE MICROSCOPE

Atomic Force Microscope (AFM) Dimension 3000 utilizes standard and advanced AFM imaging modes to measure surface topography and characteristics for semiconductors, lithography masks, magnetic media, CDs/DVDs, biomaterials and other samples up to 200mm in diameter.

The AFM uses a nano-sized tip mounted on a flexible cantilever which scans above the surface to be investigated. Interatomic forces between tip and sample surface induce bending of the cantilever. A laser beam is reflected from the cantilever and is detected with a position sensitive detector which provides topographical image of the surface with atomic resolution. The cantilever can be deflected not only by far-ranging forces but also electric, magnetic, and other forces. It provides researchers the advanced scanning probe microscopy modes:

- AFM Phase Image
- Electric Force Microscopy (EFM)
- Scanning Capacitance Microscopy (SCM)
- Scanning Tunneling Microscopy (STM)
- Magnetic Force Microscopy (MFM)
- Force Modulation
- Lateral Force Microscopy (LFM)



The AFM is capable of resolving single atomic steps on epitaxial thin films and measuring sub-Angstrom surface roughness on ultrasmooth surfaces.

AFM Dimension 3100 Basic specifications:

- X-Y Scan Range  $\sim 90\mu\text{m}$  square
- Z Range  $\leq 4.6\mu\text{m}$
- Sample Size  $\leq 200\text{mm}$  (with optional chuck)
- Sample Holders - 150mm vacuum chuck for hard disks, semiconductor wafers, and other samples
  - magnetic holder for smaller samples up to 6mm thick
- Inspectable scanning area:  $100\mu\text{m} \times 100\mu\text{m}$
- Vibration Isolation table and Silicone vibration pad