Micro and Nanofabrication Clean Room

Techniques and equipment

INSPECTION AND MEASUREMENT

TECNIQUES

- Optical Microscopy
- Spectral Reflectance
- Spectral Ellipsometry
- 3D optical Profilometry
- Mechanical Profilometry
- FT-IR Spectroscopy
- Sheet Resistance measurement
- Bow and Thickness measurement
- Life Time measurement

EQUIPMENT

Optical Microscope: Leica DM8000
Surface analysis: Defects and Particles.
Dimensions measurements.
Wafer-mapping
Photomicrography.

Spectral reflectometers: Nanospec 6100 and Filmetrics F20

Thickness measurement of transparent layers.
Predeterminated materials library.
New material analysis.
Multiple layer analysis.
Automatic XYZ stage.

Wafer-mapping.

Spectral Ellipsometer: Horiba Auto SE
Full analysis of thin films: thicknesses, optical constants, surface roughness, and film inhomogeneities.
Automatic XYZ stage.

Real-time imaging.

Automatic selection of spot size.

Many accessories are available to suit a large range of applications.

Spectral range: 440-1000 nm.

3D optical profilometer: Sensofar Neox

Extract topographical data: surface morphology, step heights and surface roughness
Fast data acquisition over large areas
Noncontact and nondestructive
Large Z-axis range, feature heights from few nanometers up to 2cm.
Variable field of view.

Mechanical Profilometers: Tencor P7 (x2, CMOS and MNC lines)

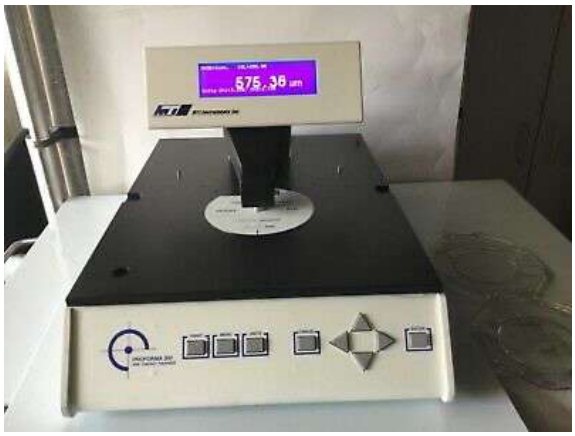
Profile and roughness measurement in any type of sample (Transparent or Opaque).
High accuracy in horizontal measurements: 1 um displacements.
Wide range in vertical measurements: 1 Å - 180 um.
Non-destructive technique for metals and semiconductors measurements.

FT-IR Spectrometer: Bruker Invenio-S

Qualitative and quantitative chemical analysis of layers (Si-O, Si-N…), dopants (P-O, B-O…) and impurities (N-H, Si-H…)
Spectral resolution: 8000-340 cm^{-1}.
Spectral resolution better than 0,4 cm^{-1}.

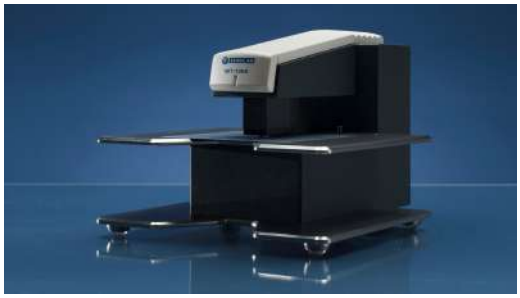
Four point probe Resistivity Measurement: Chang Min Four (x2, CMOS and MNC lines)

Resistivity measurement of thin layers of conductive and semiconductor materials.
Characterization of uniformity in the metal deposit, polysilicon doping and ion implantation.



Geometrical characterization: Proforma 300
Wafer Bow and Thickness capacitive measurement

Tencor Sonogage RT2
Resistivity and wafer Thickness measurement:
Wafer thickness measurement
Bulk resistivity characterization.



Carrier lifetime Measurement: Semilab WT-1000
Incoming wafer characterization

Measurement of electrical parameters in different manufacturing steps

Characterization of deposited layer parameters

STAFF: Samuel Dacunha Pazos