Title:

Nanoindenter

Sub-title:

Mechanical Characterization of Soft and Hard Materials for Biomedical, and Research Applications

General description:

The nanoindenter characterizes the physical-mechanical properties (elastic modulus, hardness, creep, viscoelasticity, and adhesion) of various materials. The UNHT3 Bio model is a Bioindenter specializes in analyzing soft materials like hydrogels, biological tissues, and cellular constructs in both air and liquid. The HIT300 model extends the measurement range to hard materials (elastic modulus >1 GPa), including ceramics, metals, and rigid polymers/fabrics.

Features:

UNHT3 Bio

- Motorised XYZ stage (75x75x30 mm, resolution x,y=33 nm, z=10 nm)
- Young Modulus 1kPa- 1 GPa
- Stiffness range[N/m] minimo: 0.5 µN/µm.
- Load (min-max): 5µN min - 20mN, max.
- Depth (min-max): 10nm min - 100µm max
- Quasi-static (for calculation of E and G), step (creep/stress-relaxation) and dynamic (DMA) measurement with oscillatory profile.
- Hertz model analysis commonly used for soft samples
- Measurements can be made in force or displacement control.
- Possibility of working in air and liquid.
- Optical microscope for viewing the sample surface
- Possible installation of additional measuring heads for microindentation, microscope, nanoscope and atomic force microscope (AFM).
- Possibility of thermostating (up to 50 °C).
- Anti-vibration system.

HIT300

- Young's modulus* [Pa]: ≥50MPa
- Stiffness range [N/m] min: 100uN/µm
- Load (min-max): 0.1mN- 500mN
- Depth (min-max): 10nm- 200µm

Applications:

- Measure physical-mechanical properties of soft polymer and biological samples (UNHT3 BIO)
- Study time-dependent properties such as creep or viscoelasticity (HIT300 and UNHT3 BIO)
- Optimize hard coating processes (HIT300)
- Mechanical characterization of ceramics and metals (HIT300)
- Evaluate hardness, elasticity or resistance of tissues or artificial organs (UNTH3 BIO)