

NIOS nanomechanical testers

Main features

Modular design

Combination of more than 20 indentation and scratching techniques + AFM and optical profilometry

Flexible configuration

From simple device for particular scientific task to wide-range indenter for complex investigations

Universal wide-range indenter

Two indentation modules with total force load ranges from 10 μN to 50 N available

Whole forces range, up to 50 N, is available without replacement of any module or re-installation of the sample (for Advanced configuration)

High accuracy probe's positioning

Probe's positioning accuracy is 1.5 nm for the nanosclerometry head module

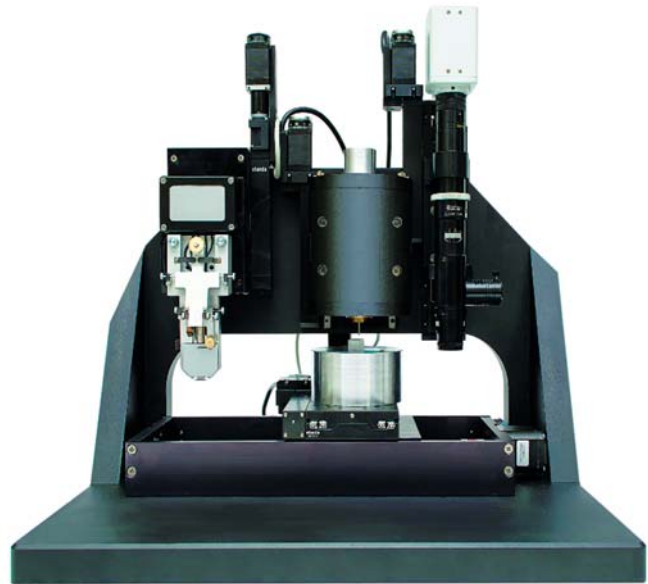
Option of choosing the indent point by high accuracy SPM topography image

Programmable force load range

Force load range from 100 μN to 50 N with force noise floor resolution down to 0.8 μN , available by the same indentation module

Transparent indenter

Unique option of video indentation + Raman analysis at once

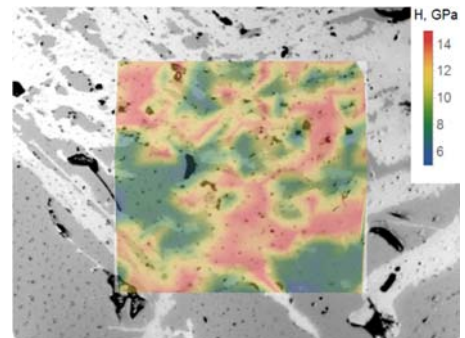
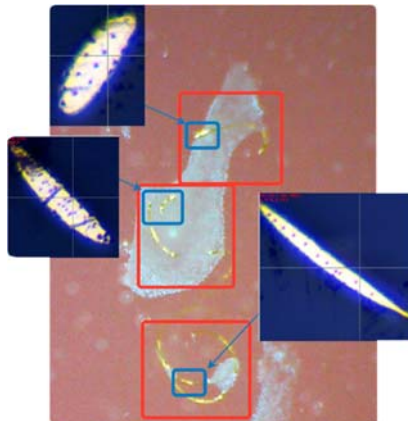
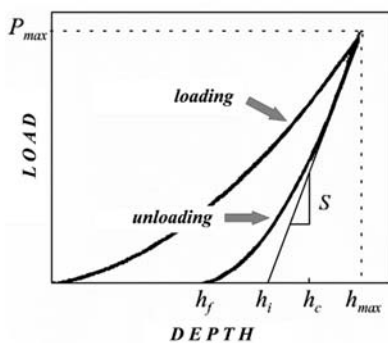


Instrumented indentation test (ISO 14577)

Study of loading/unloading curves for hardness and elasticity calculation

Using optical microscope to choose the indent points

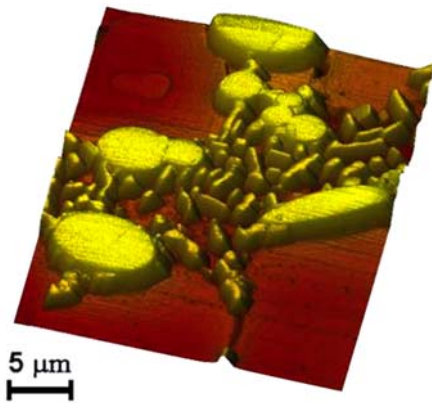
Making a grid of indents and overlapping hardness and optical images



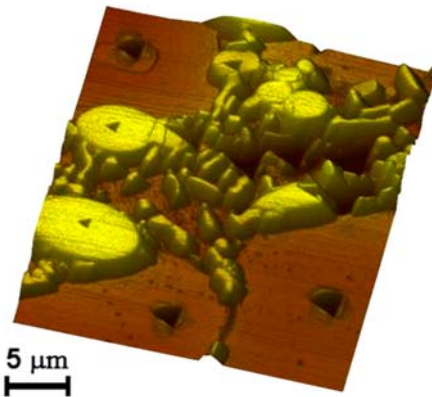
Nanosclerometry head. Unique combination of SPM and indentation tools in the same unit



- Indenter movement by the integrated piezo scanner of 100x100x10 μm range
- Positioning accuracy down to 1.5 nm
- Indentation, scratching and wear tests with the force load range up to 50 mN
- Getting in-situ AFM topography scans to choose point of the interest and to analyze indentation/scratching results



Topography: before indentation

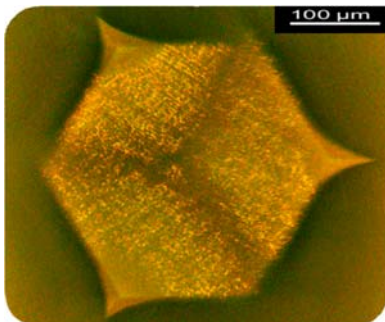


Topography: after indentation

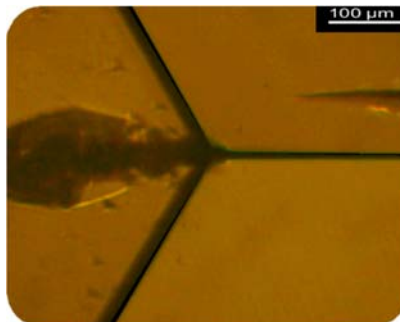
Transparent indenter. Direct optical visualization of the indentation process

- No analogues in the market
- Nano-indentation + Raman

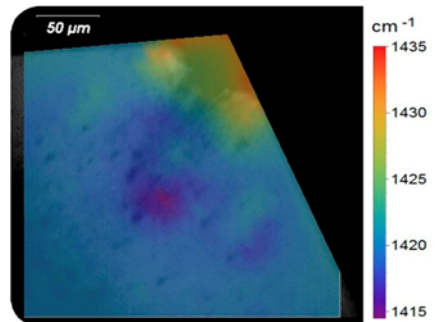
Direct visualization of the indentation process



Surface observation during scratching



Raman mapping during the indentation process



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All configurations and specifications are subject to change without notice