

## Hysitron TS 77 Select

- Your Essential Toolkit for Quantitative Nanoscale-to-Microscale Mechanical and Tribological Characterization

# Hysitron TS 77 Select

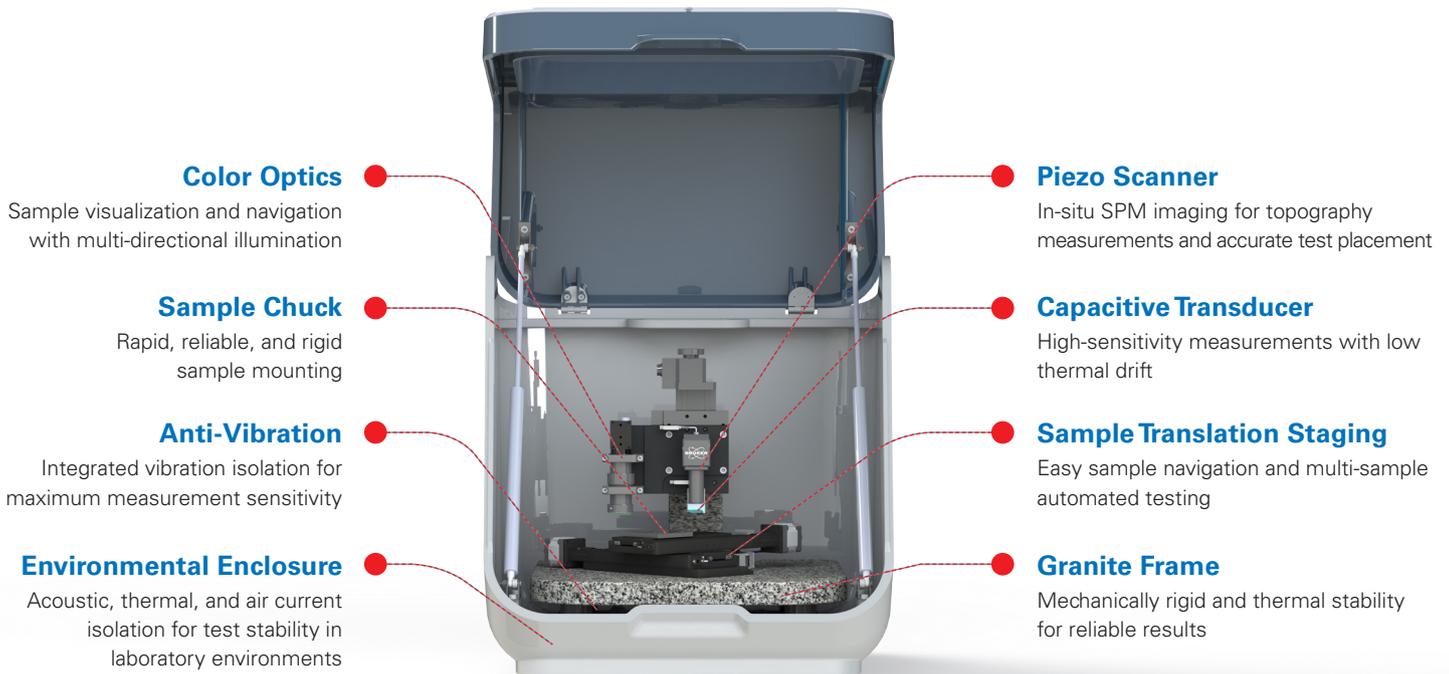
## Quantitative and Reliable Characterization

The Hysitron® TS 77 Select™ automated benchtop nanomechanical and nanotribological test system provides the highest level of performance, functionality, and accessibility of any instrument in its class. Built around Bruker's renowned TriboScope® capacitive transducer technology, this new test system delivers reliable mechanical and tribological characterization over nanometer-to-micrometer length scales. Supporting the most prominent testing modes, the TS Select is an affordable entry into quantitative nanoindentation, dynamic nanoindentation, nanoscratch, nanowear, and high-resolution mechanical property mapping.



### ● Hysitron TS Select Configuration

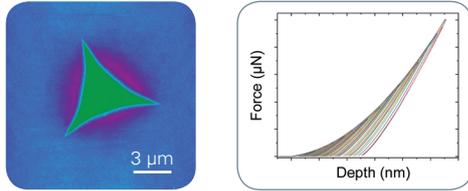
Superior Design for Superior Results



# ● Hysitron TS Select Testing Modes

## Nanoindentation

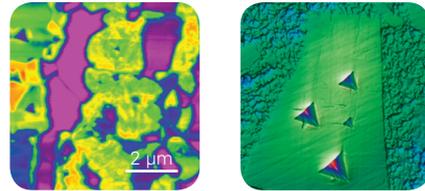
High-Precision Mechanical Characterization



Nanoindentation is a common technique for characterizing the elastic modulus, hardness, creep, stress relaxation, and fracture toughness of localized microstructures, interfaces, small surface features, and thin films. TS Select utilizes Bruker's proven Hysitron TriboScope capacitive transducer technology to deliver reliable and quantitative mechanical property measurements over the nanometer-to-micrometer length scales.

## In-Situ SPM Imaging

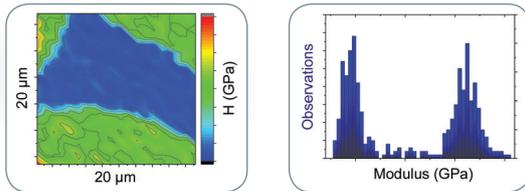
Enabling Superior Nanomechanics



Bruker's in-situ scanning probe microscopy (SPM) utilizes the same probe to raster the sample surface for topography imaging as it does to conduct the nanomechanical test. This ability to visualize the sample surface on the same length scale as the testing delivers superior nanomechanical characterization results and data reliability. In-situ SPM imaging enables nanometer-precision test placement accuracy to ensure that the test is at the exact desired location on the material.

## Mechanical Property Mapping

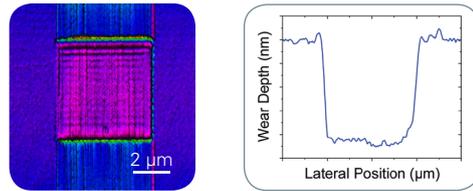
High-Speed Mapping and Fast Data Acquisition



TS Select delivers high-speed testing capabilities, up to 180x faster than traditional nanoindentation measurements. At two nanoindentation tests per second, high-resolution mechanical property maps of inhomogeneous materials can be obtained within minutes. Additionally, the high-speed testing capabilities enable statistically significant datasets to be quickly obtained for superior confidence in results.

## Wear Testing

Quantitative Nanoscale Wear Resistance

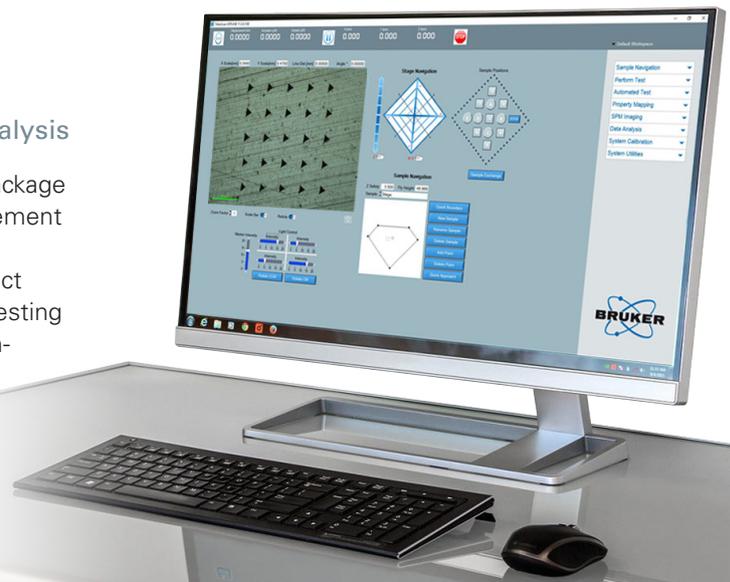


Utilizing the in-situ SPM imaging capabilities on the TS Select, quantitative wear volumes and wear removal rates can be measured as a function of applied contact force, sliding speed, and number of passes. Due to the scale of testing, tribological performance of individual microstructures, interfaces, and thin films can readily be measured.

## TS Select Control Software

Streamlined System Operation and Data Analysis

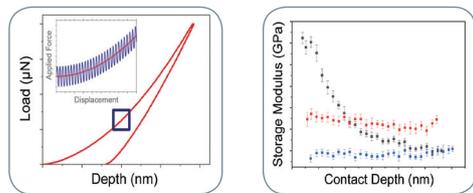
Bruker's TS Select control and analysis software package was specifically developed to simplify the measurement process; from loading samples and test set-up to measurement execution and data analysis. TS Select control software incorporates automated sample testing and instrument calibration routines for simple, high-throughput, and mistake-free characterization.



# ● Hysitron TS Select Options

## Dynamic Nanoindentation

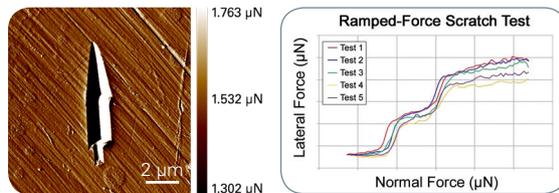
Depth Profiling, Viscoelastic Properties



Dynamic nanoindentation superimposes a small oscillatory force over a quasi-static force component to obtain a continuous measurement of hardness and modulus as a function of depth into a material's surface. The dynamic nanoindentation option includes a capacitive transducer optimized for dynamic measurements and a controller-integrated lock-in amplifier to deliver superior results as a function of testing depth, frequency, and time.

## Nanoscratch

Friction, Mar Resistance, and Thin Film Adhesion



Nanoscratch utilizes an electrostatically actuated two-dimensional transducer to apply a normal force in a controlled fashion while simultaneously measuring the force required to move the tip laterally across the sample surface. The nanoscratch option does not rely on motorized staging for lateral movement, providing the most sensitive and reliable nanoscale friction and thin film adhesion measurements in the market.

## Only TS 77 Select

- Provides an essential toolkit of core testing techniques; including nanoindentation, dynamic nanoindentation, nanoscratch, nanowear, and in-situ SPM imaging
- Delivers high sensitivity with low thermal drift via electrostatic actuation with capacitive displacement sensing transducer technology
- Features high-speed indentation for fast mechanical property mapping and statistically significant datasets
- Enables reliable measurements by technician-level operators with its intuitive and easy-to-use control software
- Offers easy test setup with pre-written test functions in accordance with the ISO 14577 and ASTM E2546
- Performs automated system calibrations and multi-sample testing routines for faster time to results

## Bruker Nanomechanical Test Instruments

Enabling Solutions for All Characterization Needs

### Hysitron TS Series

Supporting Core Nanomechanical Testing Techniques



TS 75 TriboScope



TS 77 Select

### Hysitron TI Series

Delivering the Broadest Range of Characterization Techniques with Industry-Leading Performance



TI Premier



TI 980 TriboIndenter

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