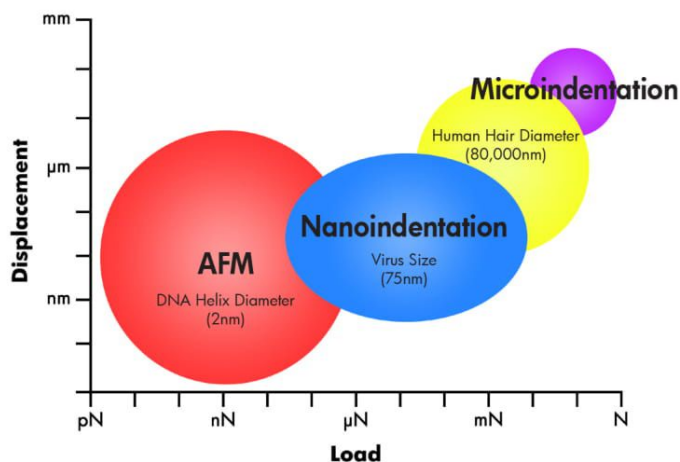


NanoGuru[®]

For Every Discipline of Undergraduate Engineering Students

Why Nanoscale Knowledge Is Important

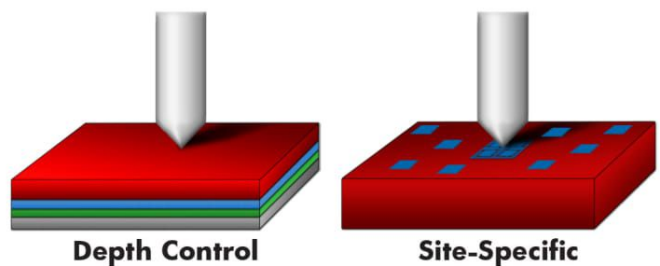
As transistor sizes are reduced, coatings get thinner and materials become increasingly complex, it is integral to have an understanding of the nanoscale properties in order to succeed in this evolving world and its associated challenges.



Nanoindentation provides the ability to measure mechanical properties of materials where size is critical or precise locations are limiting factors and dictate the nanoscale testing regime.

Examples when nanoindentation is critical:

- Phases too small for standard indentation
- Films/coatings with thickness <100nm
- Nanoscale material behavior phenomena
- Low-dimensional structures
- Site specification to overcome sample roughness



Preparing Engineering Students for the 21st Century

Why Nanoscale?

- All properties are dependent on nano structure

Why teach Nanoscale?

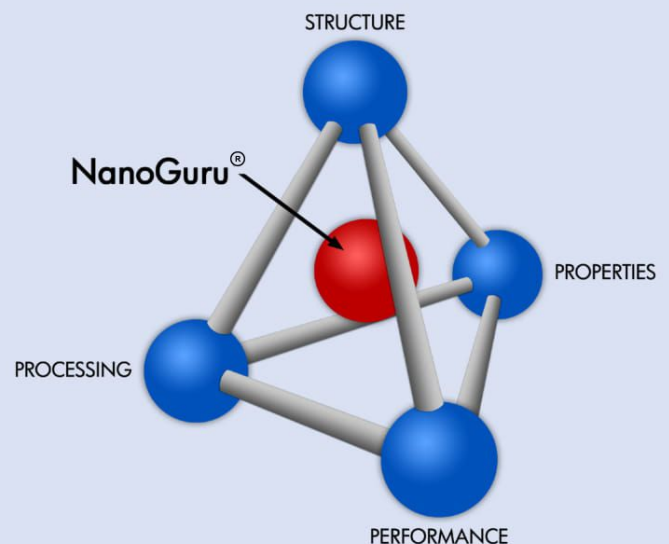
- Industry expects employees to know the nanoscale

Why wide scale connectivity?

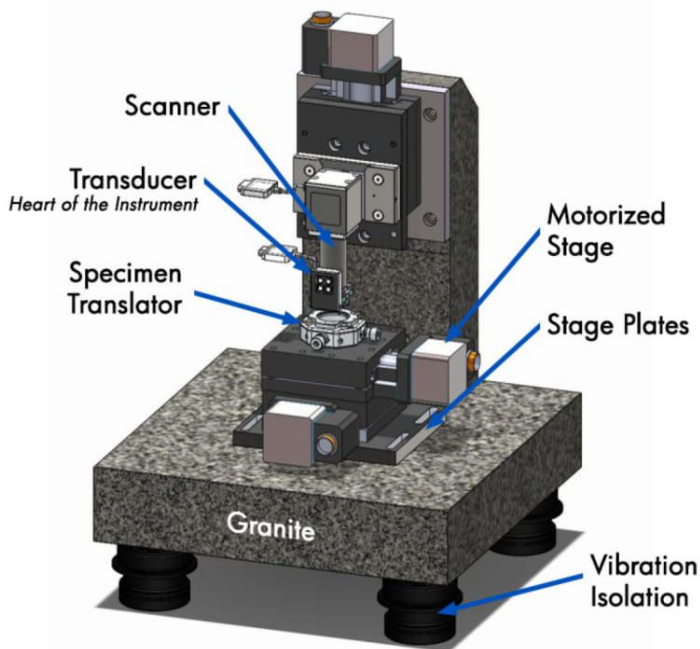
- Nanoscale measurements are correlated to macroscale properties

Why the NanoGuru?

- Provides a comprehensive educational system based on Hysitron's globally proven technology
- The NanoGuru is the only system that allows educators to provide content to students that bridges the gap between nano and macroscales
- Brings nanoscale to multiple engineering disciplines



Understanding Structure-Property-Processing-Performance relationships across length scales is critical for preparing our next-generation of engineers.



Foot Print: 12" x 12"
Weight: 70lbs

NanoGuru® Highlights

A Nanomechanical Education System

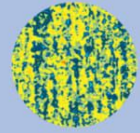
- Depth sensing nano and micro indentation testing for teaching multiple engineering concepts
- In-situ Scanning Probe Microscopy Imaging for micro/nano structural analysis, surface roughness analysis, pre and post indent analysis, structure property correlation, and site specific selection
- Built-in vibration isolation for smaller foot print and portability with environmental enclosure to reduce noise
- 24 bit DSP based controller for data acquisition and control
- Includes curriculum, samples, and training

**Teaching Engineering Concepts
at the Nanoscale**

NanoGuru® Capabilities



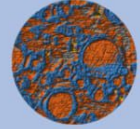
Nano & Micro Indentation



Property Mapping



Time Dependent Properties



Topography

NanoGuru® Specifications

- **Force**
Noise Floor: <150nN
Resolution: 1nN
Range: 10mN
- **Displacement**
Noise Floor: <1nm
Resolution: 0.006nm
Range: 5µm
- **In-Situ SPM Imaging**
SPM Image Size: 50µm x 50µm
SPM Image Resolution: 256x256
- **Positioning**
X, Y, Z Stage Travel: 50mm x 50mm x 50mm
XY Step Resolution: 50nm
Z Step Resolution: 10nm



WhyNanoGuruTEC_r1.f

 **INDUSTRON**
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