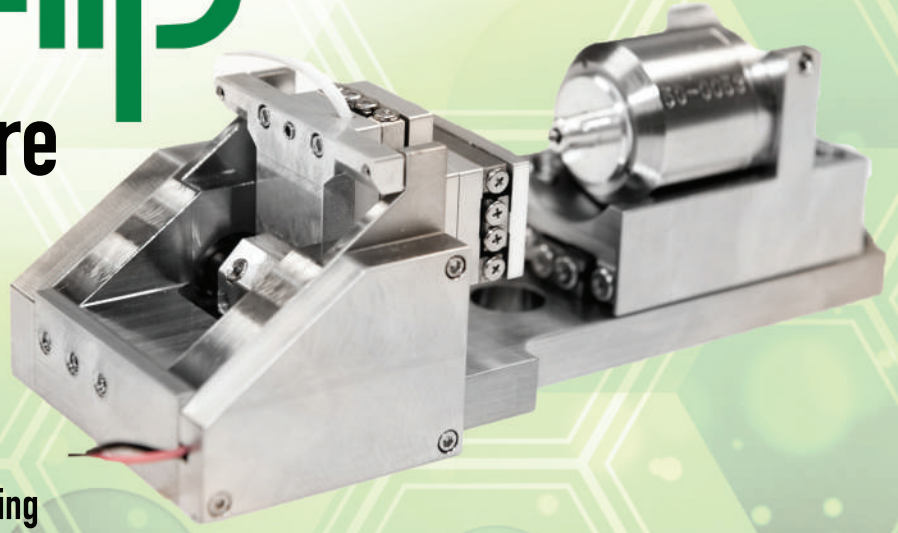


# NanoFlip

## Versatility at its Core

The NanoFlip nanoindenter is designed to be the most versatile mechanical properties testing instrument on the market today, by offering researchers the option to use the tool in both in-situ environments and ambient settings depending on the demands of the experiment.



By offering the highest performing and most capable mechanical properties microprobe on the market, at a price that is easy to afford, we offer our customers the capability to perform accurate testing on a wide range of materials and a wide range of lab settings, while remaining true to the principle of getting more, for less.

## Limitless Imaging Options

Designed to be vacuum compatible like all instruments in the InSEM product line, NanoFlip is ideal for in-situ environments like SEMs, FIBs and vacuum chambers, using the microscopes themselves to provide imaging. When your experiments take you ex-situ, NanoFlip stands ready to perform by being able to operate under any imaging system imaginable such as AFMs, Optical Microscopes and Optical Profilometers.

### WORKS WITH:

- Both Small and Large Chamber SEM/FIBs
- Optical Microscopes
  - AFMs
- Optical Profilometers
  - Raman
  - XRD
  - DIC
- Many others

In-Situ?

Ambient?



**NANOMECHANICS, INC.**

# NanoFlip

## InView Software

Nanomechanics' InView software provides the user with exceptional control of their experiment, while moving complex control tasks to the background for ease-of-use and rapid ramp-up time for new users. Reviewing data is simple, and InView makes it easy to generate presentation-ready plots immediately that can be viewed on several computer stations in multiple locations.

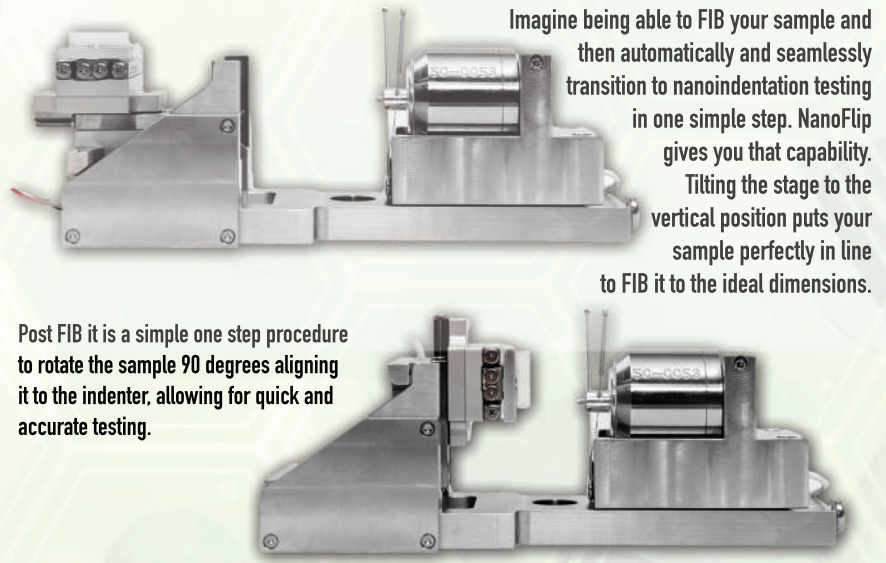
## InQuest Controller

Nanomechanics' InQuest Controller provides quasi-static and dynamic control in the same compact enclosure, which is run by the included all-in-one computer. With an industry-leading dynamic range, displacement ranges of over 50µm can be measured with precision below 0.05nm and a time constant of 20 microseconds and data acquisition speeds up to 100 kHz.

## Dynamics

Nanomechanics, Inc.'s scientists have developed and used dynamic measurement techniques for over twenty-five years. Operating nanomechanical actuators in a dynamic mode, in-vacuum, allows for continuous measurement of contact stiffness, or continuous dynamic analysis of viscoelastic properties such as storage and loss modulus.

## REVOLUTIONARY Fib2Test TECHNOLOGY



Imagine being able to FIB your sample and then automatically and seamlessly transition to nanoindentation testing in one simple step. NanoFlip gives you that capability. Tilting the stage to the vertical position puts your sample perfectly in line to FIB it to the ideal dimensions.

Post FIB it is a simple one step procedure to rotate the sample 90 degrees aligning it to the indenter, allowing for quick and accurate testing.

## InForce 50

The Nanomechanics InForce actuators utilize patent-pending voice-coil force generation and capacitive displacement resolution to achieve the best dynamic range in the industry. With 50mN of force, the InForce 50 enables a wide range of tests including, but not limited to compression, membrane and indentation testing. The dynamic characteristics of InForce 50 mean that low-noise, stability, and closed-loop control are inherent to the design, whether operating in quasi-static or dynamic modes.



## Superior Physics

The InForce 50 is an electromagnetic actuator, which by design has linear physics of force actuation with clear separation of measurement variables like force and displacement. This makes it the most accurate actuator in the market. Also, the actuator is inherently force controlled making it the most precise actuator in the market. Furthermore, it is the only actuator that performs dynamic testing in vacuum and the only actuator that can perform dynamic testing up to 500Hz.

## Best In Class Load Frame Stiffness

The NanoFlip offers a unique combination of high flexibility in sample manipulation along with a high load frame stiffness. The NanoFlip has a load frame stiffness of more than 10<sup>6</sup> N/m.

ACTUATOR SPECIFICATIONS	
Displacement measurement	Capacitive Gauge
Displacement range	50 microns
Displacement resolution (electronic)	0.02 nm
Typical noise	< 0.1 nm
Load application	Electromagnetic
Maximum load	50 mN
Load resolution	3 nN
CONTROLLER SPECIFICATIONS	
Data Acquisition Rate	100 kHz
Closed Loop CPU Control Rate	500 Hz
Dynamic Excitation Frequencies	0.1 Hz – 1 kHz



105 Mecco Lane, Suite 100  
Oak Ridge, TN 37830

T: 865.978.6490  
F: 888.381.5798

info@insem.com  
www.insem.com