

Zyvex S100 Nanomanipulator

The Premier Choice for Nanomanipulation Inside a High-Resolution Imaging Tool

Patents Pending

Features and Benefits

The Zyvex S100, part of the NanoWorks® Tools product line, is a manipulation and testing tool used with a scanning electron microscope (SEM) or a focused ion beam (FIB) system for micro- and nanoscale research and development applications.

The system consists of a state-of-the-art Zyvex Nanomanipulator, a control cabinet housing the PC and electronics, a joystick, and Windows based software to control the system.

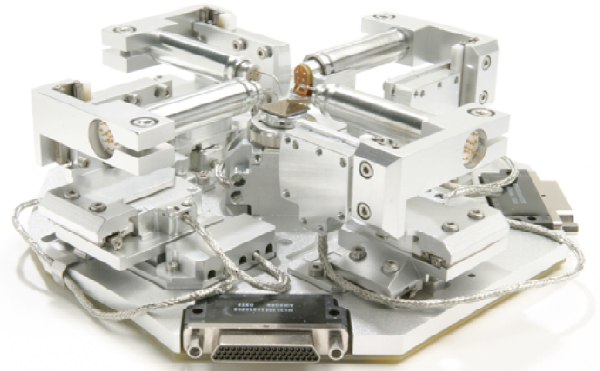
The S100 is specifically designed for research and development labs in universities, national facilities, and industry. The system is easily installed and removed by the user allowing the SEM/FIB to be quickly converted between imaging only and nanoscale manipulation applications. The system is also flexible enough to work with a wide range of electrical, mechanical, and other test equipment through the patch panel on its control cabinet.

The S100 has a coarse mode which provides controlled cartesian motion over large distances (12 mm of travel with 100 nm resolution) and a fine mode for extremely smooth and precise motion (100 microns of travel with 5 nm resolution). Zyvex NanoEffector® Probes have a tip radius of 50 nm or better and a smooth taper to tip that allows multiple probes within a small area. Each positioner contains 5 I/O channels, for a total of 20 independent electrical connections inside the SEM.

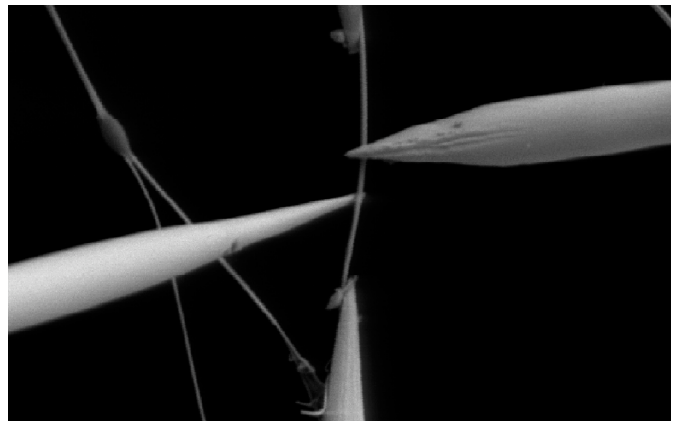
The S100 is a versatile tool that is designed to provide the best possible nanomanipulation platform for a multitude of applications. Researchers on a budget can design their own characterization packages to integrate with the S100 or purchase specific characterization packages from Zyvex. Our Applications Group is constantly working on new enhancements for the system in areas like mechanical, electrical, and thermal characterization.

Applications

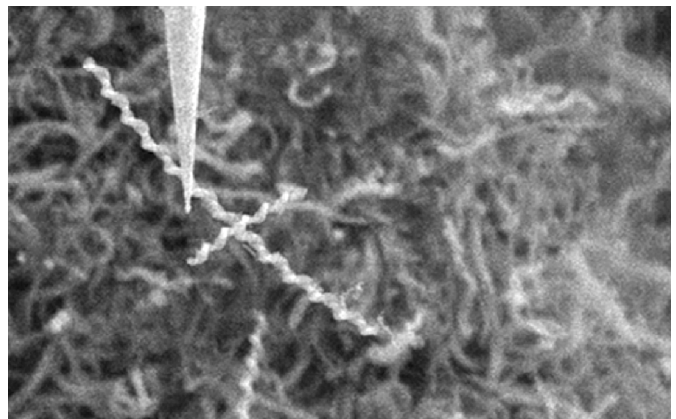
- Electrical characterization of nanostructures (Additional equipment needed)
- Mechanical characterization of nanostructures (Additional equipment needed)
- Micro- and nanoassembly
- Sample preparation for TEM, Raman, and other characterization tools
- Surface science experiments
- Nano-interconnect R&D
- *In-situ* nanoscale sample positioning



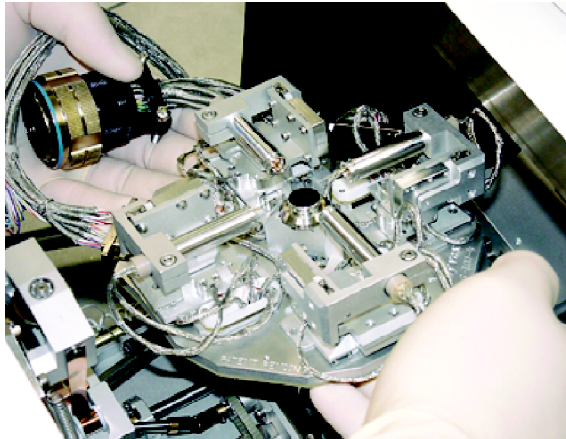
The S100 configured with three NanoEffector® probes for probing a variety of nanostructures.



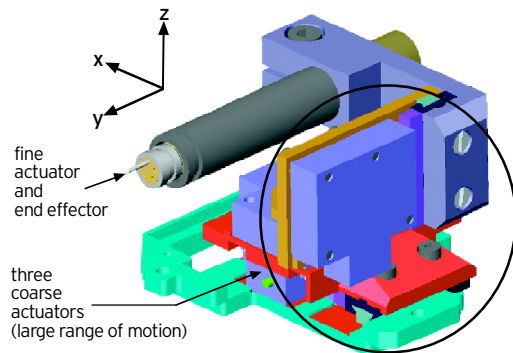
Four Zyvex NanoEffector Probes manipulating and characterizing a 20 nm germanium nanowire.



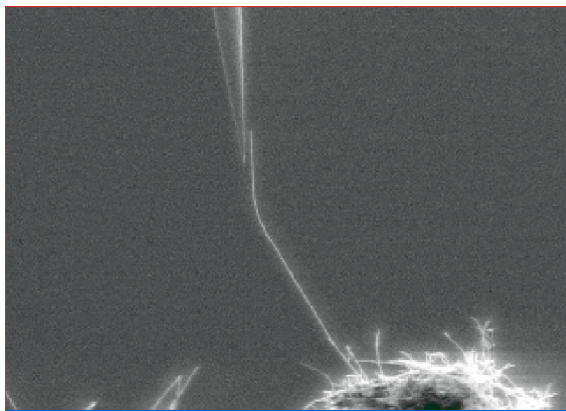
A NanoEffector Probe isolating and removing a coiled carbon nanotube for further characterization.



Zyvox's S100 head unit installs quickly and efficiently in an SEM chamber.



Closeup of a 3 degree-of-freedom positioner.



Zyvox NanoEffector TP-25 Probe manipulating a carbon nanotube bundle.

Zyvox S100 Technical Specifications

Positioners

- Number of positioners: 1 to 4
- X, Y, Z course resolution: 100 nm open loop
- X, Y, Z fine resolution: <5 nm open loop
- X, Y, Z range of motion: 12 mm
- Degrees of freedom: 3
- I/O per positioner: 5
- Top speed: 3 mm/s

Sample Holder

- Max sample size: 12 mm X 12 mm X 4 mm

Software and Control

- Windows-based operating system
- PC controller software
- Joystick
- 5 BNC I/O Channels per positioner

SEM Mounting

- User installable and removable
- Custom mount design on SEM stage
- Single electrical feedthrough

Ultra Sharp NanoEffector Probes

- Better than 50 nm tip radius
- Smooth taper to tip
- 99.9% pure tungsten

Optional Z Center Stage

- Range of motion: 12 mm
- Resolution: 100 nm
- Compatible with load lock integration package
- Max sample size: 12 mm X 12 mm X 4 mm

System: Prober

- Operating voltage: 100-240V AC Input/ 50-60Hz

Additional Accessories

- Zyvox NanoEffector ultra sharp probes
- Z Center Stage Sample Holder
- High-precision Joystick with LEDs
- Load Lock Integration Package (only available at order)
- Advanced anti-contamination system

Applications Packages

- DC Electrical Characterization Package
- Low Noise Characterization Package
- Temperature Characterization

To place an order, call us toll-free at 1.877.ZYVEX99 (1.877.998.3999) ext. 271 or direct at 972.792.1671. For the most up-to-date information, please visit our web site at www.zyvex.com or email sales@zyvex.com.

