

Get the nanotech data you need faster with the industry's premier characterization solution



To turn your Model 4200-SCS into a full-fledged nanotech characterization workstation, request your **FREE** Keithley Nanotechnology Toolkit

Go from device to data in minutes

Once, creating applications for characterizing nanoscale materials and devices was a complicated, time-consuming process. Keithley's new Nanotechnology Toolkit makes that process a lot simpler and faster. It includes 16 Interactive Test Modules (ITMs) for characterizing the seven most common nanodevice structures. Designed exclusively for use with the Model 4200 Semiconductor Characterization System, the Toolkit has the capabilities you need to create powerful nanotech R&D software applications. The ITMs provided in the Toolkit leverage the Model 4200-SCS's intuitive Windows®-based GUI, which minimizes the system-specific training needed and allows even novice users to start acquiring data on experimental devices almost immediately.

Test more productively to accelerate your research

The Toolkit's ITMs provide a point-and-click interface for defining test input parameters and controlling the Model 4200-SCS's source and measure instrumentation. Using the Model 4200-SCS in interactive mode allows changing test parameters on the fly, collecting device data, then analyzing and graphing the collected data immediately. In automated mode, the Project Navigator provided in the Model 4200-SCS's test environment makes it easy to incorporate ITMs into automated test sequences, eliminating the need to write code, even for complex series of tests. The Model 4200-SCS is simple to connect directly to nanoscale DUTs or through a variety of nanotech probe stations, nanomanipulators, TEMs, and SEMs. Together, the Model 4200-SCS and the Nanotech Toolkit can help you to focus on your research by slashing the time needed to develop new applications or to refine them as new test requirements emerge.

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The ITMs in the Nanotechnology Toolkit are compatible with the Keithley Test Environment Interactive (KTEI), version 4.3.1 and later. However, upgrading to the latest Model 4200-SCS software/hardware release ensures faster, higher stability operation and offers added stress measurement/reliability testing tools that many nanotech researchers will find useful.

Ensure the integrity of your nanoscale device measurements

Characterizing emerging technologies like nanodevices, carbon nanotubes, nanowires, and molecular electronic devices demands measurement instrumentation capable of measuring ultra-low levels of DC voltage, current, and resistance quickly, accurately, and repeatably. The Model 4200-SCS's superior measurement performance allows you to measure currents as low as 100aA with confidence. No other device or material characterization solution can match the Model 4200-SCS's low level performance. Understanding the issues involved in making accurate low level measurements on nanoscale structures is just as important as using high integrity instrumentation. To help bring you up to speed on these issues quickly, we've included a nanotechnology seminar and a number of related Model 4200-SCS application notes and white papers on the Toolkit CD.

Toolkit Contents

Supported nanodevices and their associated Interactive Test Modules:

- Carbon Nanotube
 - I-V characteristics
- BioComponent
 - I-V characteristics
- Carbon Nanotube FET
 - +Drain Voltage vs. Drain Current
 - -Drain Voltage vs. Drain Current
 - Linear Threshold Voltage Sweep
 - Gate Voltage vs. Drain Current
 - Sub-Threshold Voltage Sweep
 - Threshold Voltage Max GM Sweep
 - Gate Leakage vs. Voltage Sweep
- Nanowire
 - Low Resistance Nanowire Sweep
 - Low Resistance Nanowire Differential Conductance Sweep

- High Resistance Nanowire Sweep
- High Resistance Nanowire Differential Conductance Sweep
- Molecular Wire
 - Current, Conductance vs. Voltage I-V Sweep
- Molecular Transistor
 - Drain Voltage vs. Drain Current Sweep
- Multi-Pin Nanocell
 - Input/Output Characteristics Sweep

Reference Materials:

Application Notes:

- Low Current Measurements
- Understanding Low Voltage Measurements
- Gate Dielectric Capacitance-Voltage Characterization using the Model 4200-SCS
- Making Ultra-Low Current Measurements with the Low-Noise Model 4200-SCS Semiconductor Characterization System
- I-V Measurements of Nanoscale Wires and Tubes with the Model 4200-SCS and Zyvex S-100 Nanomanipulator
- Four-Probe Resistivity and Hall Voltage Measurements with the Model 4200-SCS

White Papers:

- Improving Low Current Measurements on Nanoelectronic and Molecular Electronic Devices
- New Materials - New Reliability Issues

Seminar:

Techniques for Accurate Nanotech Electrical

Measurements. This 40-minute overview of the measurements typically performed on nanoscale devices includes a discussion of the potential sources of error and how to correct for them.

Stay on the forefront of nanotech innovation

Keithley is committed to the advancement of nanoscience. We created the Toolkit based on insights gained by working with leading nanotechnology researchers and suppliers and through a thorough review of measurement needs identified in the technical literature. To request your free copy of the Nanotech Toolkit CD for the Model 4200-SCS, contact your Keithley sales engineer or visit www.keithley.com.

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