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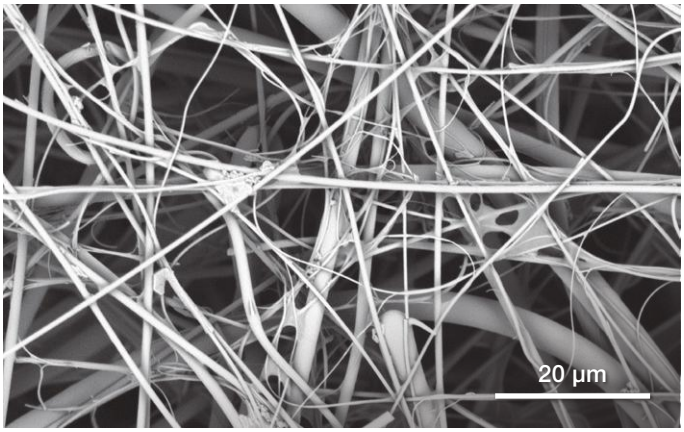
DATASHEET

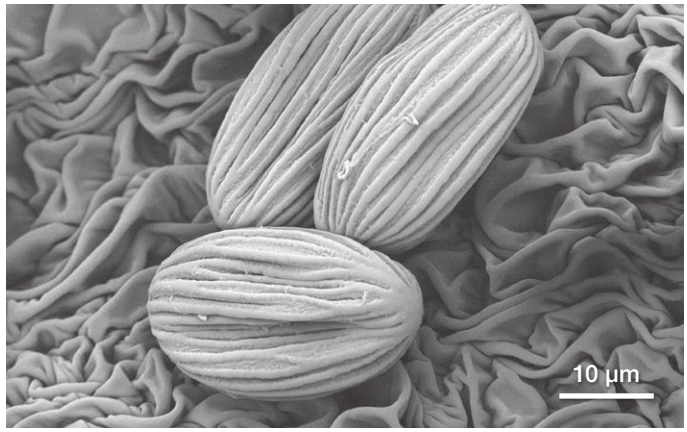
Phenom Pro G6 Desktop SEM

Effortless SEM analysis to do more research

ThermoFisher
SCIENTIFIC



Fibers from High-Efficiency-Particulate-Air filter.



Pollen peace lily.

The Thermo Scientific Phenom Pro G6 Desktop SEM is a robust, effortless, and versatile tool with a long-lasting, high-brightness CeB_6 electron source designed to expand the capabilities of research facilities. In combination with a large range of sample holders and automated system software, it can be tailored to suit a multitude of applications and markets.

Phenom Pro G6 Desktop SEM

With custom made detection hardware, a high brightness source, and a state-of-the-art color navigation camera, the Thermo Scientific™ Phenom™ Pro G6 Desktop SEM fills the gap between light microscopy and floor-model SEM analysis, increasing facility breakthroughs and productivity.

It is quick and easy to use, making it a prime choice to relieve the burden of routine analysis from your floor-model SEMs. It is fast to train on, too, meaning the Phenom Pro G6 Desktop SEM can quickly begin producing results for facility users of any experience level.

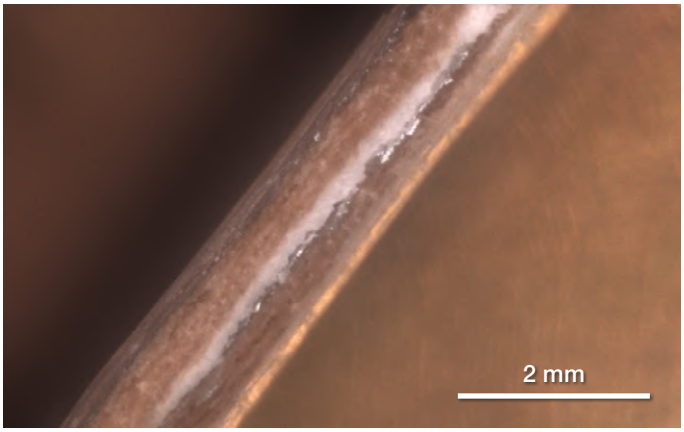
The Phenom Pro G6 Desktop SEM is based on the sixth-generation platform and offers automated and mechanized accessories such as Thermo Scientific Phenom ProSuite Software and active sample holders.

The Phenom Pro G6 Desktop SEM can be upgraded to the Phenom ProX model with EDS or equipped with the Thermo Scientific Phenom ProSuite Software. Also, an optional secondary electron detector is available. The Phenom Pro G6 offers live mixing of backscattered and secondary electrons.

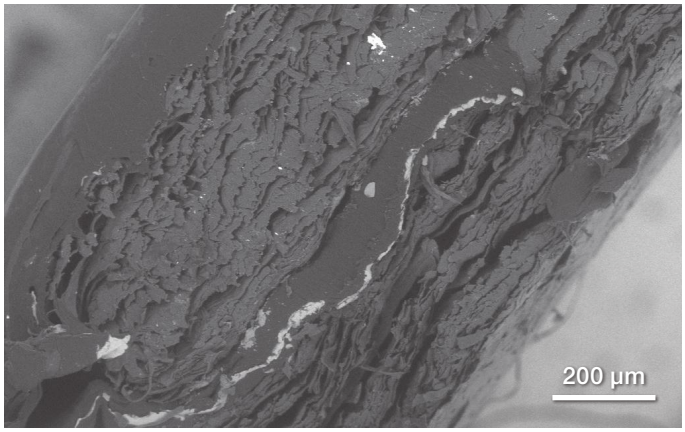
Compared to its predecessors, the Phenom Pro G6 Desktop SEM boasts 20% better resolution and an even better user experience. You can address a wider range of applications, including samples that are sensitive to electron beam irradiation.

Key Benefits
Expand research capabilities—Offload work from your floor-model SEMs
Easy to learn, easy to use—Users of any experience level can quickly start producing results
Fast, high-resolution imaging—Long-lasting, high-brightness CeB_6 electron source
No specialized infrastructure—High stability and small form factor allow it to be used in practically any lab environment

Imaging specifications	
Imaging modes	
Light optical	Magnification range: 27–160x
Electron optical	Magnification range: 160–350,000x
Illumination	
Light optical	Bright field / dark field modes
Electron optical	Long lifetime thermionic source (CeB_6)
Acceleration voltages	• Default: 5 kV, 10 kV and 15 kV • Advanced mode: adjustable range between 4.8 kV and 20.5 kV imaging and analysis mode
Resolution	• ≤6 nm (SED) • ≤8 nm (BSD)
Detector	
Standard	Backscattered electron detector
Optional	• Secondary electron detector (enabled for live mixing with BSE) • Energy dispersive spectroscopy detector
Digital image detection	
Light optical	Color navigation camera



Cross section of packaging material viewed with the optical navigation camera.



BSD image - cross section of multilayer packaging material.

Image formats
JPEG, TIFF, PNG
Image resolution options
960x600, 1920x1200, 3840x2400 and 7680x4800 pixels
Data storage
Network, workstation with SSD
Sample stage
Computer-controlled motorized X and Y
Sample size
• 25 mm diameter (up to 32 mm as option) • 35 mm height (up to 100 mm as option)
Sample loading time

Light optical	<5 seconds
Electron optical	<30 seconds

Never-lost navigation and ease-of-use

The color navigation camera in the Phenom Pro G6 Desktop SEM provides information that helps you make a link between optical and electron optical images. You will be ready to take images after only 10 minutes of basic training. A large variety of sample holders is available to accommodate a large range of samples. Sample loading is fast and easy thanks to our patented sample vacuum loading technology.

The optical camera, the motorized stage and the intuitive user interface work together to help you navigate swiftly to any region of interest. When you click on the position of the optical image to investigate, the stage automatically centers the region of interest. At the touch of just one button, you can switch to electron imaging mode. A high-resolution image is available within 30 seconds after loading the sample. Save images to the microscope computer or network storage location for offline analysis and distribution.

The acceleration voltages of the Phenom Pro G6 Desktop SEM can be set at any value between 4.8 kV and 15 kV, with default settings at 5 kV, 10 kV and 15 kV. At the same time, the Phenom Pro G6 Desktop SEM can also be used with very low beam current settings. To support multiple applications, a range of active sample holders is optionally available: charge reduction, resin mount, tilt&rotation, core plug and electrical feedhrough. The combination of variable acceleration voltages and variable beam current settings offers a high level of flexibility creating the best results for a large variety of applications.

System specifications	
Dimensions and weight	
Imaging module	286(w) x 566(d) x 495(h) mm, 50 kg
Diaphragm vacuum pump	145(w) x 220(d) x 213(h) mm, 4.5 kg
Power supply	156(w) x 300(d) x 74(h) mm, 3 kg
Monitor (24”)	531,5 (w) x 250 (d) x 515,4 (h) mm; 6,7 kg
Workstation	• Lenovo P330, including SSD storage and 4 USB slots • 92.5 (w) x 305.6 (d) x 343.5 (h) mm, 8 kg
Requirements	
Ambient conditions	
Temperature	15°C ~ 30°C (59°F ~ 86°F)
Humidity	Between 20% and 80% RH
Power	Single phase AC 100–240 Volt, 50/60 Hz, 250 W (max.)
Recommended table dimensions	
150x75 cm, load rating of 100 kg	

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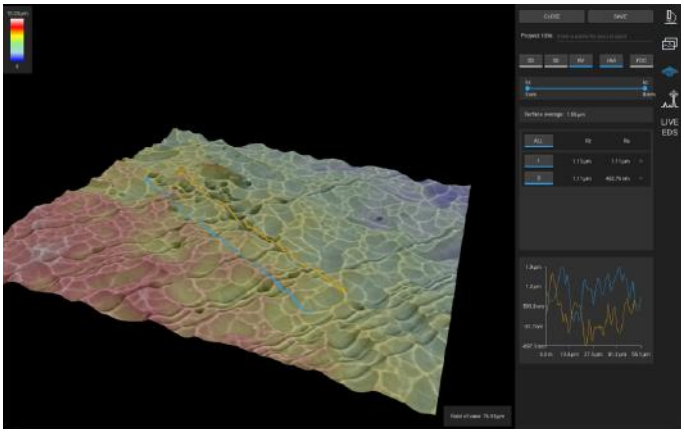
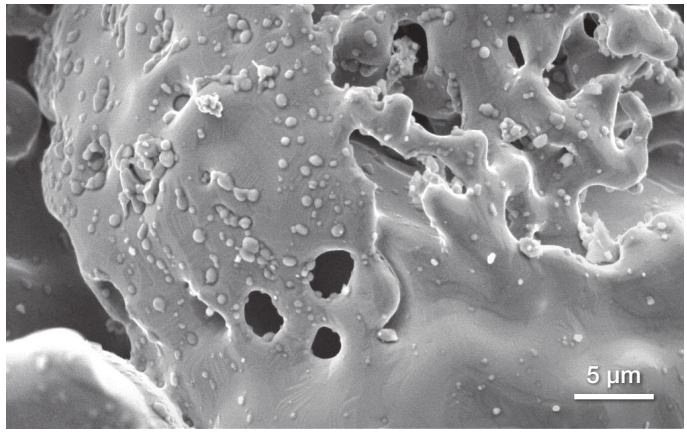


3D roughness reconstruction from a solar cell surface.



SED image of Iron-oxide particles.

Phenom ProSuite Software

Thermo Scientific Phenom ProSuite Software is an optional software application platform that has been developed to further enhance the capabilities of the Phenom desktop SEM and can be installed on the standard workstation. Phenom ProSuite Software enables maximum information to be extracted from images obtained on the Phenom Pro G6 Desktop SEM. It offers multiple solutions to specific application needs. Phenom ProSuite Software contains standard applications such as Automated Image Mapping and Remote User Interface. Optional applications are 3D Roughness Reconstruction, FiberMetric, ParticleMetric and PoroMetric. Virtually all the physical properties of a sample can be revealed using the Phenom desktop SEM in combination with Phenom ProSuite Software.

Secondary electron detector

A secondary electron detector (SED) is optionally available on the Phenom Pro G6 Desktop SEM. The SED collects low-energy electrons from the top surface layer of the sample. It is therefore the perfect choice to reveal detailed sample surface information. The SED can be of great use for applications where topography and morphology are important. This is often the case when studying microstructures, nanostructures or particles. Once installed, the Phenom Pro G6 offers live mixing of backscattered and secondary electrons images to combine compositional and topographic data.

Phenom ProSuite Software specifications

System

- Automated collection of images
- Real-time remote control
- Intuitive single page user interface
- Standard applications included: Automated Image Mapping

Optional

3D Roughness Reconstruction	• Based on “shape from shading” technology, no stage tilt required • Fast reconstruction
FiberMetric	• Fast and automated collection of all statistical data • Large range of fibers and pores can be measured
ParticleMetric	Morphology and particle size data for submicron particle applications
PoroMetric	Fully automated visualization and analysis of pores

SED specifications

Detector type	Everhart Thornley

Find out more at **thermofisher.com/phenom-pro**

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