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DATASHEET

Phenom ProX G6 Desktop SEM

Desktop SEM with EDS capability for robust, effortless, and versatile elemental analysis

ThermoFisher
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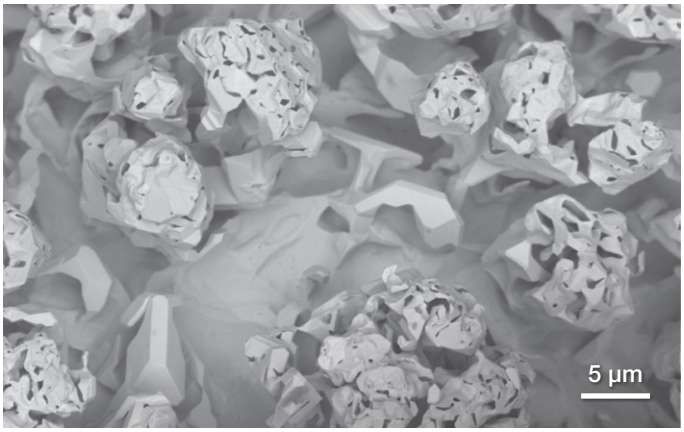
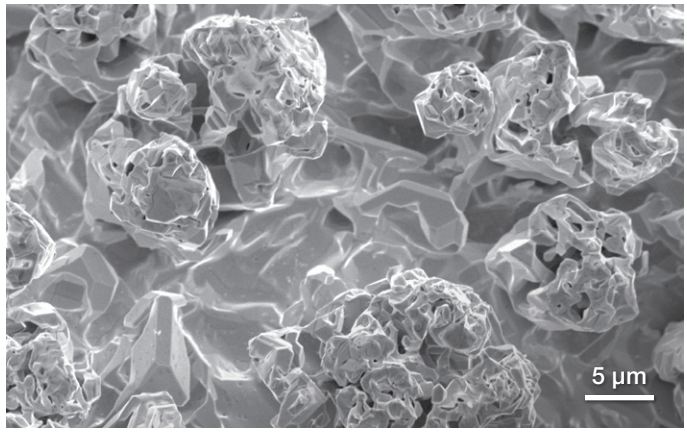


Platinum-coated metal grid (BSD).



Platinum-coated metal grid (SED).

The sixth generation of Thermo Scientific Phenom ProX G6 Desktop SEM fills the gap between light microscopy and floor-model SEM analysis, expanding the capabilities of research facilities. It offers fast, high-resolution imaging in addition to an integrated energy dispersive spectroscopy (EDS) detector for robust, easy-to-use, rapid elemental analysis.

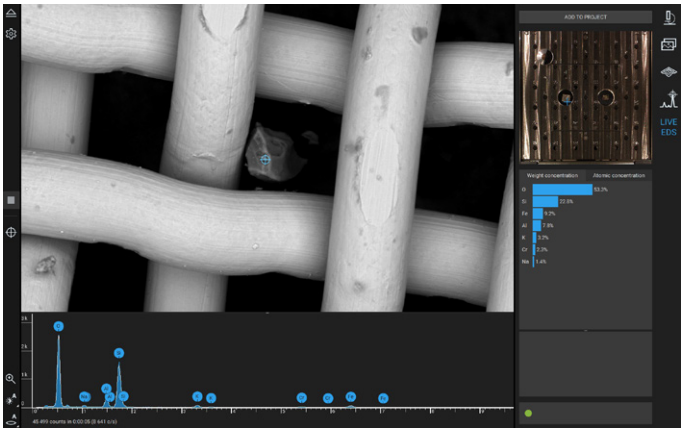
Expand your research facility's capabilities

Fast and easy to use, the Thermo Scientific™ Phenom™ ProX G6 Desktop SEM can be used to relieve the burden of routine analysis for common samples from floor-model SEM instruments. Instrument configuration and the sample loading mechanism ensure quick imaging with minimal time spent tuning between experiments.

Facility users of any experience level can quickly begin producing high-quality results with the Phenom ProX G6 Desktop SEM. Its long-lifetime CeB_6 source offers high brightness while requiring low maintenance. Additionally, the Phenom ProX G6 Desktop SEM's high stability and small form factor allow it to be used in practically any lab environment because it does not require specialized infrastructure or expert oversight.

Key Benefits
Expand research capabilities—Offload work from your floor-model SEMs
Fully integrated EDS detector—High-resolution imaging at same working distance as EDS analysis for faster workflow
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: 20–134x
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	• Energy dispersive spectroscopy detector • Backscattered electron detector
Optional	Secondary electron detector (enabled for live mixing with BSE)



Live EDS analysis of particles inside metal mesh.

Digital image detection	
Light optical	Color navigation camera
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

Element IDentification (EID)

The Phenom ProX G6 Desktop SEM is equipped with an EDS detector to obtain more material insights with element identification via X-ray analysis. Thanks to the design of the SEM column, high-resolution imaging is done at the same working distance as EDS analysis, resulting in an even faster workflow.

Live EDS gives you immediate element identification via point & click in imaging mode, while more advanced analysis, including the optional EDS line scan and EDS fast mapping, can be done via the integrated EID application.

Step-by-step data collection

The dedicated software package, Element IDentification (EID), is used to control the fully integrated EDS detector. Analysis has become as easy as imaging, since there is no need to switch between external software packages or computers. The CeB_6 electron source is used to generate the highest X-ray count rate in its market segment, allowing for fast results.

The EID software package allows you to identify nearly all materials in the periodic table, starting from boron (5) and ranging up to californium (98). It is a perfect analysis tool for a wide range of samples and applications. Projects can be stored locally or on the network, where they can be analyzed at a later stage or offline.

The EID software package runs smart algorithms with advanced peak analysis to optimize the auto-identification functionality, while still allowing for manual adjustments at any time in the analysis process. The intuitive step-by-step process within the software helps you collect all X-ray results in an organized and structured manner.

EDS Specifications	
Detector type	• Silicon Drift Detector (SDD) • Thermoelectrically cooled (LN_2 free)
Detector active area	25 mm^2
X-ray window	Ultra thin silicon nitride (Si_3N_4) window allowing detection of elements B to Cf
Energy resolution	Mn Kα ≤132 eV
Processing capabilities	Multi-channel analyzer with 2048 channels at 10 eV/ch
Max. input count rate	300,000 cps
Hardware integration	Fully embedded
Software	
• Integrated in Phenom user interface • Integrated column and stage control • Auto-peak ID • Iterative strip peak deconvolution • Export functions: CSV, JPG, TIFF, ELID, EMSA	
Report	
Docx format	

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	
120x75 cm, load rating of 100 kg	

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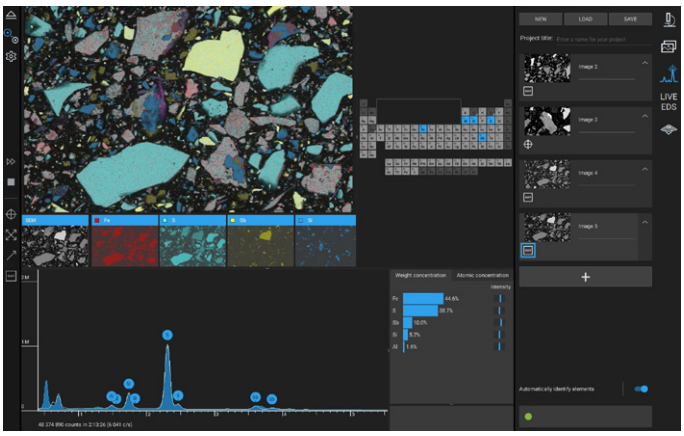
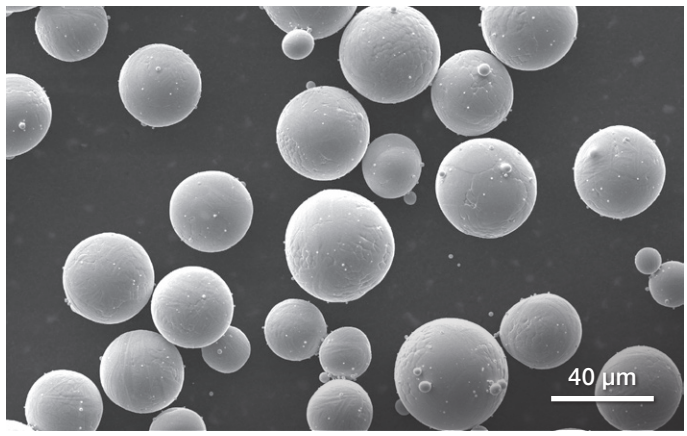


Elemental Mapping of a mineral sample..



SED image of Titanium particles.

Secondary electron detector

The standard detector in the Phenom ProX G6 Desktop SEM is a four-segment backscattered electron detector (BSD) that yields sharp images and provides topographical contrast information.

A secondary electron detector (SED) is optionally available. 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 ProX G6 offers live mixing of backscattered and secondary electrons images to combine compositional and topographic data.

Long-life CeB_6 source

The CeB_6 (cerium-hexaboride) source has several advantages: first, the high brightness it provides compared to tungsten makes it much easier to obtain high-quality images with many details; second, the lifetime of the source is very long, and maintenance can be scheduled, enabling you to obtain the results you are looking for, even after a long (automated) run. The lifetime is extended as much as possible via our intelligent software; the source is hibernated when the Phenom ProX G6 Desktop SEM is not in use. In case the source needs to be replaced, this can be done on-site.

Element Mapping and Line Scan specifications*	
Element Mapping	
Full spectrum mapping and line scan, makes post processing possible including offline element selection and re-quantification	
Element selection	User-specified individual element maps, plus BSD and mix image
Selected area	Any size, rectangular
Mapping resolution range	32x32-960x960 pixels
Pixel dwell time range	1–500 ms
Line Scan	
Line Scan resolution range	16–512 pixels
Points dwell time range	10–500 ms
Element selection	Auto ID or manual
Reporting	
Docx format	
SED specifications	
Detector type	Everhart Thornley

* Optional

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

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