

Phenom Pro

Most professional desktop SEM imaging



Phenom Pro

High-end desktop SEM with superb imaging power

Magnification

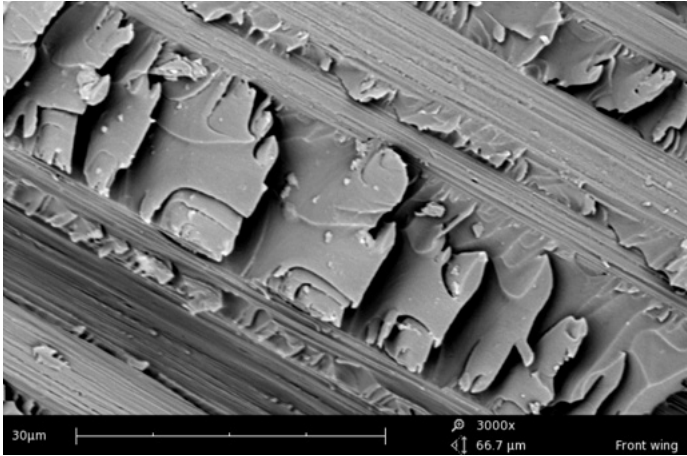
Magnification range up to 130,000x

Acceleration voltages

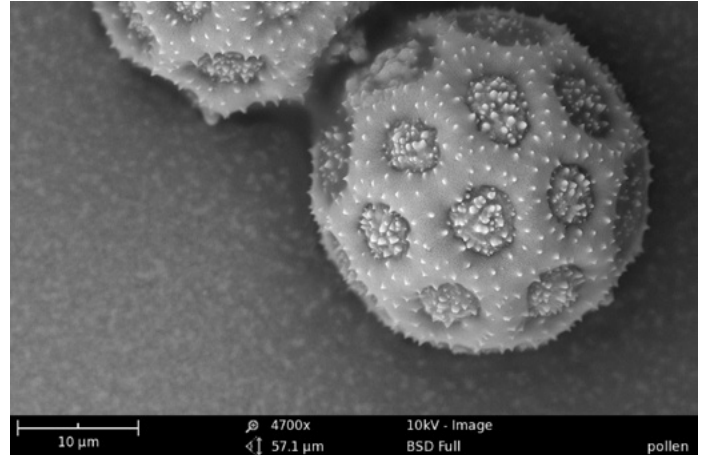
Between 5 kV and 10 kV acceleration voltages for the best resolution on a large variety of samples

Never lost navigation

Swift navigation to any region of interest



Carbon fiber composites material



Pollen

The Phenom Pro is Phenom-World's high-end imaging desktop scanning electron microscope (SEM). In combination with a large range of sample holders and automated system software, it can be tailored to suit a multitude of applications.

Phenom Pro

Phenom-World is focused on enabling its customers to keep pace with continuously shrinking feature sizes and to increase productivity while bringing down the costs of analysis. The Phenom Pro is the most effective and fastest imaging oriented desktop SEM on the market. Its unique design makes it suitable for use in a wide variety of applications and markets. With custom made detection hardware, a high brightness source and a state of the art color navigation camera, it is an extremely powerful desktop SEM. The zoom functionality of the color navigation camera narrows the gap between optical and SEM imaging.

The Phenom Pro is the platform that offers automated and mechanized accessories such as ProSuite and active sample holders.

The Phenom Pro can be upgraded to Phenom ProX with EDS or equipped with the Phenom ProSuite application platform.

Imaging Specifications

Imaging modes

- Light optical Magnification range: 20 - 135x
- Electron optical · Magnification range: 80 - 130,000x
- Digital zoom max. 12x

Illumination

- Light optical Bright field / dark field modes
- Electron optical Long lifetime thermionic source (CeB₆)
- Acceleration voltages · Default: 5 kV, 10 kV
- Advanced mode: adjustable range between 4,8 kV and 10 kV imaging mode
- Resolution ≤ 10 nm

Digital image detection

- Light optical Color navigation camera
- Electron optical High sensitivity backscattered electron detector (compositional and topographical modes)

Image formats

JPEG, TIFF, BMP

Image resolution options

456 x 456, 684 x 684, 1024 x 1024 and 2048 x 2048 pixels

Data storage

- USB flash drive
- Network

Sample stage

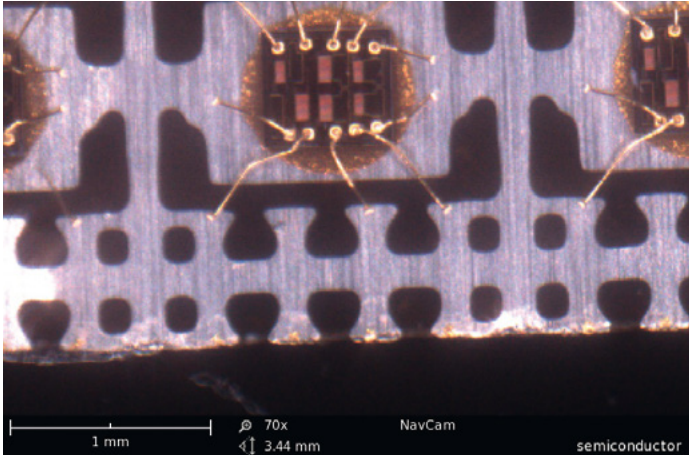
Computer-controlled motorized X and Y

Sample size

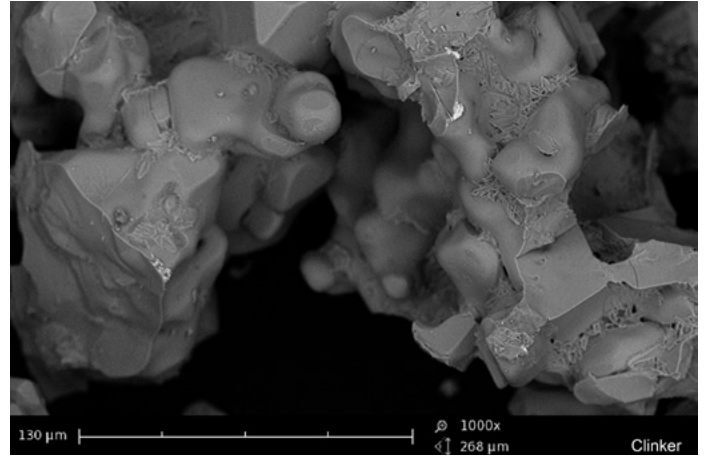
- Up to 32 mm (Ø)
- Up to 100 mm (h)

Sample loading time

- Light optical < 5 s
- Electron optical < 30 s



Example of a chip viewed with the navcam



Cement sample

Never lost navigation

The color navigation camera in the Phenom Pro provides information that helps the operator to make a link between the optical and electron optical images. Users are 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 due to our patented sample vacuum loading technology.

The optical camera, motorized stage and intuitive user interface work together to help navigate swiftly to any region of interest. Upon clicking on the position of the optical image to investigate, the stage automatically centers the region of interest. Switching to electron imaging mode is fully automated and fast at the

touch of just one button. A high resolution image is available within 30 seconds after loading the sample. Saving images is practical and easy on a USB memory stick or network storage location for offline analysis and distribution.

The Phenom Pro is equipped with two acceleration voltages: 5 kV and 10 kV. This allows the users to make higher resolution images at the same magnification, providing even more details from the sample than before. At the same time, the Phenom Pro can be used with the lower beam current setting. The combination of two different acceleration voltages and two beam current settings offers a high level of flexibility, creating the best results for a large variety of samples.

System Specifications

System	<ul style="list-style-type: none"> • Imaging module • 19" monitor • Rotary knob • Mouse • Diaphragm vacuum pump • Power supply • USB flash drive
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Dimensions & 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	375(w) x 203(d) x 395(h) mm, 7.9 kg

Requirements

Ambient conditions

• Temperature	15°C ~ 30°C (59°F ~ 86°F)
• Humidity	< 80 % RH
• Power	Single phase AC 110 - 240 Volt, 50/60 Hz, 300 W (max.)

Recommended table size

120 x 75 cm, load rating of 100 kg



ProSuite

ProSuite

ProSuite is an optional application platform that has been developed to further enhance the capabilities of the Phenom system. ProSuite enables maximum information to be extracted from images obtained on the Phenom imaging system. It offers multiple solutions to specific application needs. ProSuite 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 properties of a sample can be revealed using the Phenom desktop SEM in combination with ProSuite.



Phenom ProX

Upgrade to Phenom ProX

The Phenom ProX is the ultimate all-in-one imaging and X-ray analysis system. With the Phenom ProX, sample structures can be physically examined and their elemental composition determined. The optional Elemental Mapping and Line Scan software allows further analysis of the distribution of elements. A dedicated software package is included and installed on the ProSuite PC 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 latest Phenom Pro models can be upgraded to Phenom ProX at Phenom-World service hubs.

ProSuite Specifications

System	<ul style="list-style-type: none"> Automated collection of images Real-time remote control Intuitive single page user interface Standard applications included: Automated Image Mapping & Remote User Interface
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Optional

3D Roughness Reconstruction	<ul style="list-style-type: none"> Based on "shape from shading" technology, no stage tilt required Fast reconstruction
FiberMetric	<ul style="list-style-type: none"> 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

EDS Specifications

Detector type	<ul style="list-style-type: none"> Silicon Drift Detector (SDD) Thermoelectrically cooled (LN₂ free)
<ul style="list-style-type: none"> Detector active area X-ray window 	25 mm ² Ultra thin Silicon Nitride (Si ₃ N ₄) window allowing detection of elements B to Am
<ul style="list-style-type: none"> Energy resolution Processing capabilities 	Mn Kα ≤ 137 eV Multi-channel analyzer with 2048 channels at 10 eV/ch
<ul style="list-style-type: none"> Max. input count rate Hardware integration 	300,000 cps Fully embedded
Software	<ul style="list-style-type: none"> Integrated in Phenom ProSuite Integrated column and stage control Auto-peak ID Iterative strip peak deconvolution Confidence of analysis indicator Export functions: CSV, JPG, TIFF, ELID, EMSA
Report	Docx format