

thermo scientific

# Phenom Pharos G2 Desktop FEG-SEM

Intuitive evidence for your research

**ThermoFisher**  
SCIENTIFIC

Nanotechnology research redefines how we live, and field emission scanning electron microscopy (FEG-SEM) has revolutionized nanoparticle research. In the textile industry, this research is leading to intelligent, adaptable clothing that better repels stains, odors, and water. Consumer electronics, such as smartphones and other devices we use on a daily basis, are powered by transistors that are becoming increasingly smaller and faster. In the energy sector, nanotechnology is improving the efficiency of solar and wind power as well as battery innovation.

The Thermo Scientific™ Phenom Pharos™ G2 FEG-SEM provides high-resolution imaging of a variety of materials on an efficient and easy-to-use tabletop system. You can also image “soft” samples, which expands research possibilities to materials such as polymers and organic materials that could not previously be comprehensively imaged with tabletop microscopes.

# Just follow the beam

Ease of use is what the Phenom Pharos name has come to mean. All the capabilities of a floor-standing FEG-SEM have been housed in a tabletop model with the simplicity that Phenom desktop SEMs are known for.

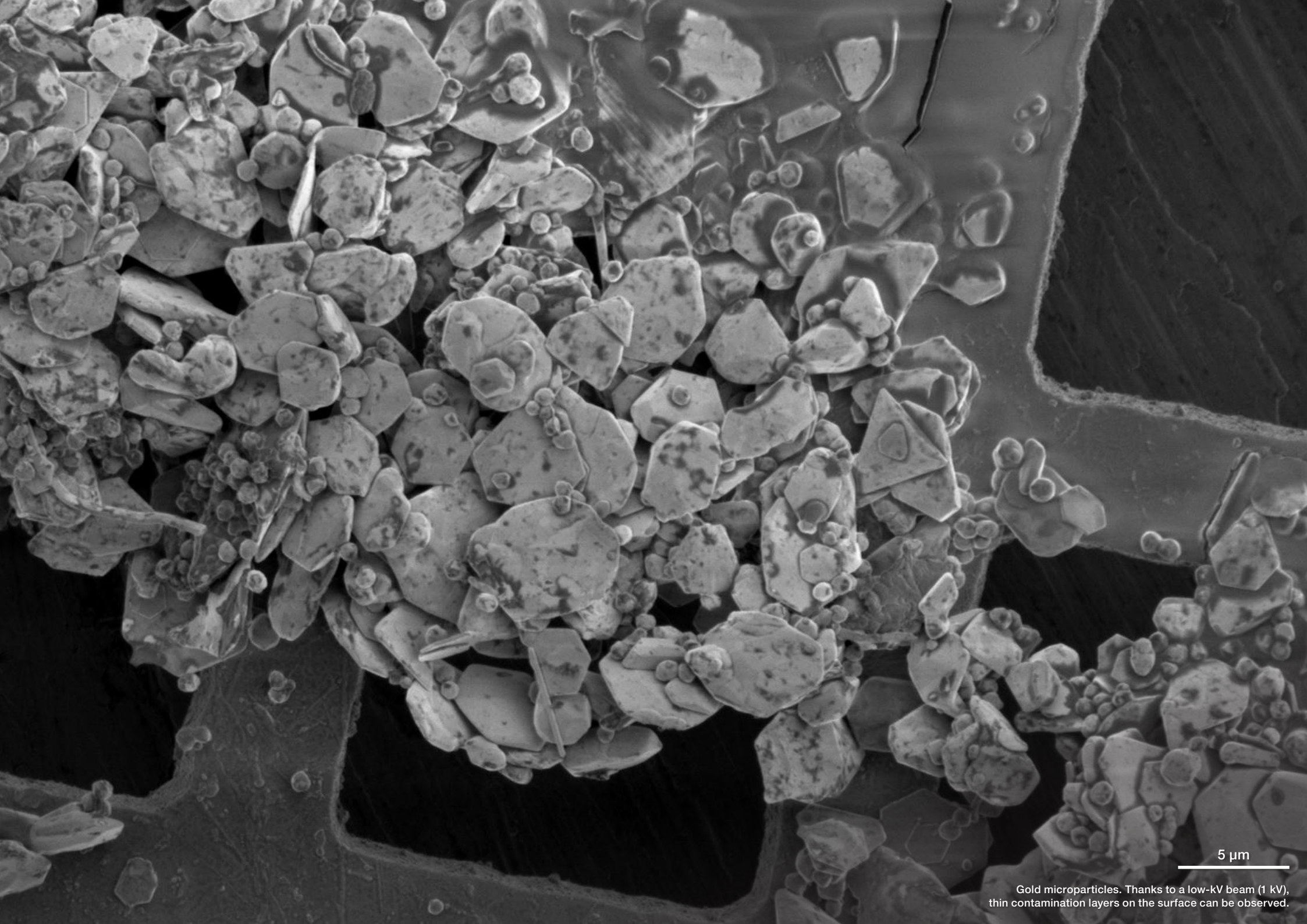
The Phenom Pharos G2 Desktop FEG-SEM's ease of use actually begins with installation. Shorter bakeout times have accelerated the process by 40% compared to the previous generation, with installation reduced from 60 hours to just 36 hours. Additionally, the instrument has been made even more reliable, thanks to both an integrated UPS to prevent power outage issues and more robust parts. The space-saving Phenom Pharos G2 Desktop FEG-SEM's tabletop footprint requires a smaller environment, eliminating the need for researchers to use another facility's floor model.

An optical image is available immediately to be used for initial navigation, and it will then be used throughout the SEM session. After switching to SEM mode, the image appears in 30 seconds, displaying an incredible amount of detail. It is easy to zoom in or navigate to other parts of the sample.

Intuitive operation of the Phenom Pharos G2 Desktop FEG-SEM (field emission gun scanning electron microscope) makes it an easy-to-learn and highly productive instrument—right from initial installation. You can now more readily characterize breakthrough materials and quickly find publish-worthy results.



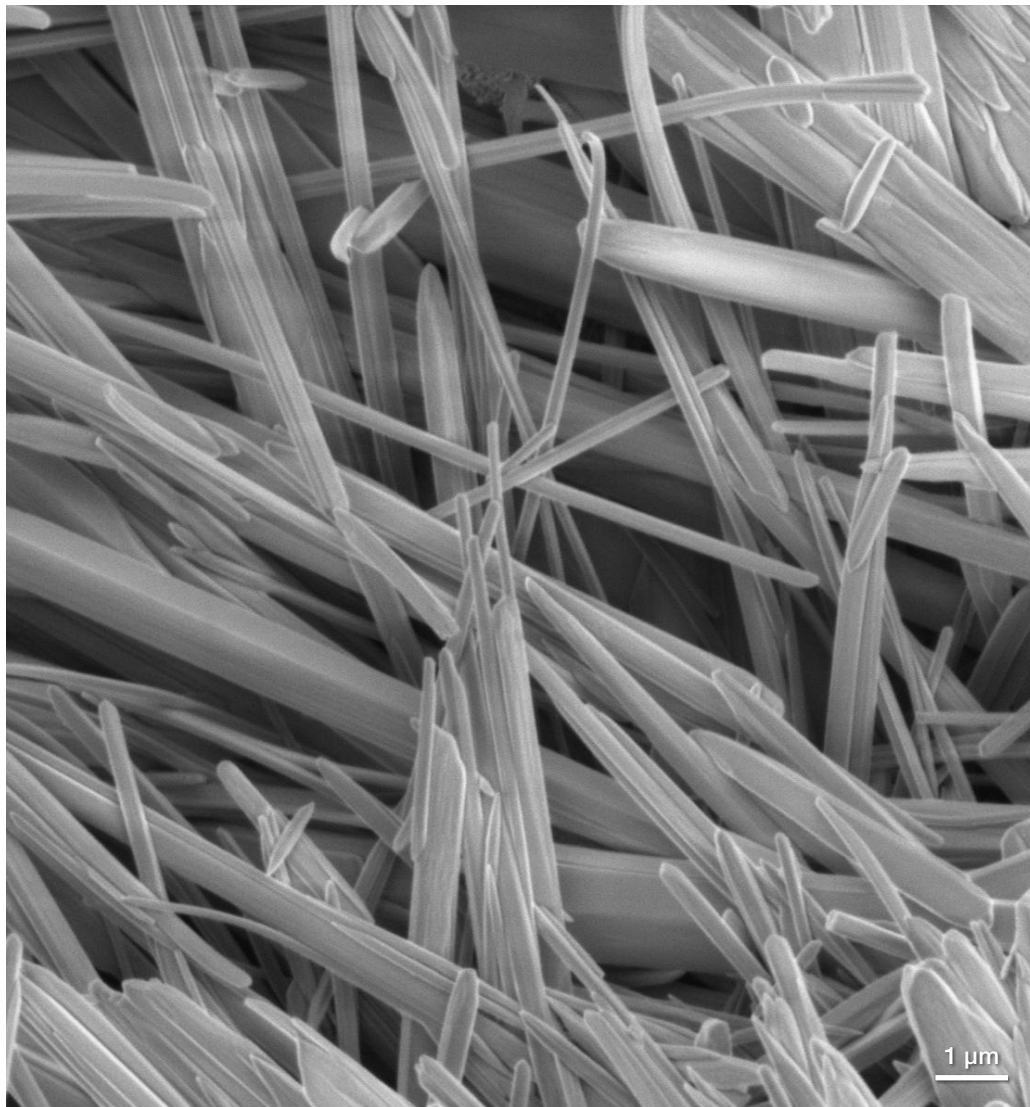




5  $\mu$ m

Gold microparticles. Thanks to a low-kV beam (1 kV), thin contamination layers on the surface can be observed.

# The power of a FEG on your desk



Copper-potassium crystals.

Scientists and researchers in academia or industry who want to create higher-quality products, improve specifications, discover new applications, and develop new materials will require access to the smallest length scales. While optical and conventional (tungsten) SEMs provide high-resolution imaging, demanding applications require a FEG (field emission gun).

The morphology of nanoparticles, small defects in thin films, insulating materials, or materials sensitive to high-kV electron beams can be adequately studied only by using a field emission SEM, whose source provides a stable, high-brightness beam. Additionally, while field emission tips generally cost more than other types, they normally last longer than a year, meaning you will not experience recurring, costly downtimes for frequent source exchange.

Field emission SEMs are known to be large, often requiring a dedicated room along with special infrastructure and connections, while also being difficult to learn. As a result, many institutions that own field emission SEMs will restrict their use to highly trained personnel. Many research groups, departments, or companies will even outsource their FEG-SEM needs to service labs or central facilities to avoid the hassle typically associated with FEG-SEM.

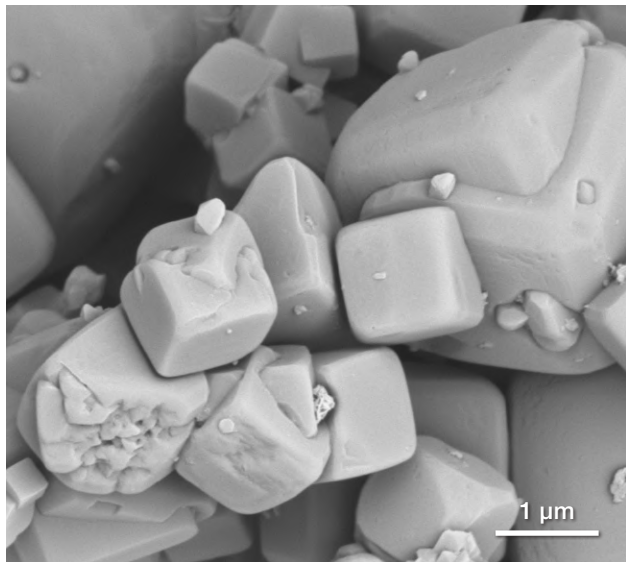
Now, that hassle is gone. The Thermo Scientific™ Phenom Pharos™ G2 Desktop FEG-SEM is the only desktop SEM with a FEG source. It is so easy to install and operate that it will enable those research groups, departments, or companies to own their own FEG-SEM and no longer rely on external services.



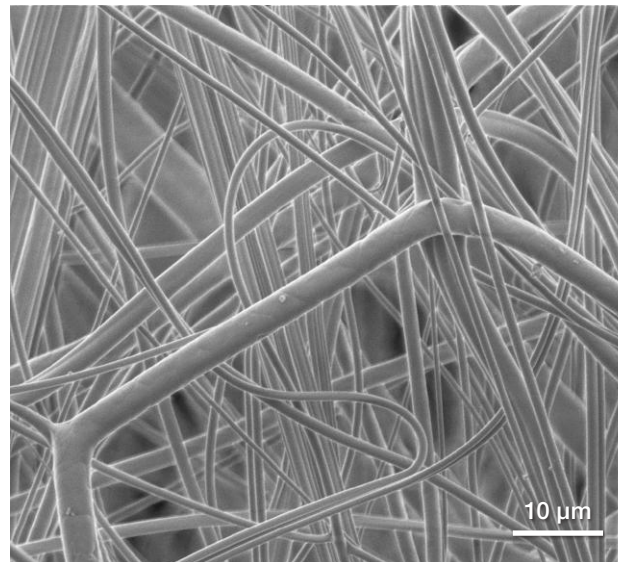
# Imaging soft samples

Due to the high performance at low acceleration voltage of FEG compared to other SEM electron sources, FEG-SEM makes it possible to image insulating and beam-sensitive materials without sample preparation and without damaging samples or obscuring nanoscale features.

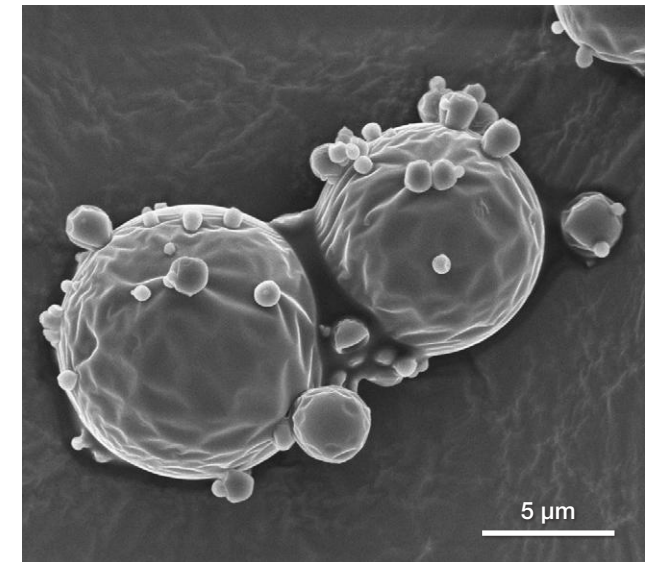
The expanded energy range of the electron beam on the Phenom Pharos G2 Desktop FEG-SEM delivers the ability to image beam-sensitive specimens. Examples include zeolites, which are used in water purification, pharmaceutical powders, which form the basis of many commonly used medicines in tablet or capsule form, and polymer fibers, which can be found in materials ranging from nylon, polyester, and spandex to Kevlar. The structures of these specimens can be extracted only from low-kV SEM imaging since they will suffer from beam damage if imaged using higher energy electrons.



Zeolite.



Polymer fibers.



Pharmaceutical material.



2  $\mu$ m

Potassium-copper microstructure.



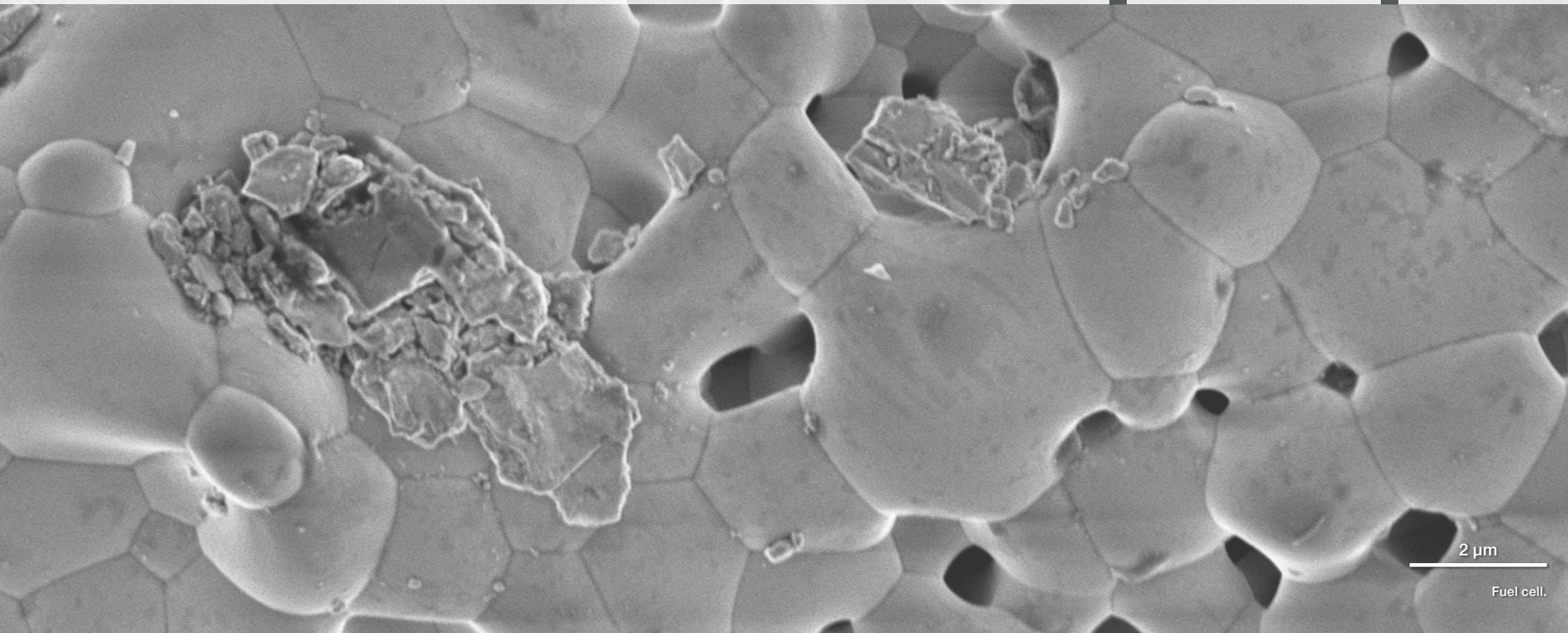
# Phenom Desktop SEM Portfolio

Every research situation is unique. The wide portfolio of Phenom desktop SEMs has an instrument that can help you solve any materials science challenge you face.

Phenom desktop SEM's redefine speed, ease-of-use, and performance. All Phenom desktop SEMs support energy dispersive X-ray spectroscopy (EDS), complementing the SEM imaging with comprehensive elemental analysis. Thanks to an innovative and user-friendly software interface, all levels of users can obtain an SEM image in minutes. This ease of use is ideal for materials science applications, where researchers of varied scientific backgrounds can all obtain vital analytical information.

The Phenom Pharos G2 Desktop FEG-SEM is our more accessible FEG-SEM, our easiest-to-use FEG-SEM, and our highest-resolution desktop SEM within our desktop portfolio. It has made the research benefits of FEG-SEM considerably more accessible to a considerably larger group of researchers. You can now take advantage of the power and expanded specimen range of a floor-standing FEG-SEM model with less concern over budget constraints, lab space, and learning curve.

Learn  
more  
about the  
product  
portfolio



2 μm

Fuel cell.



# About Thermo Fisher Scientific

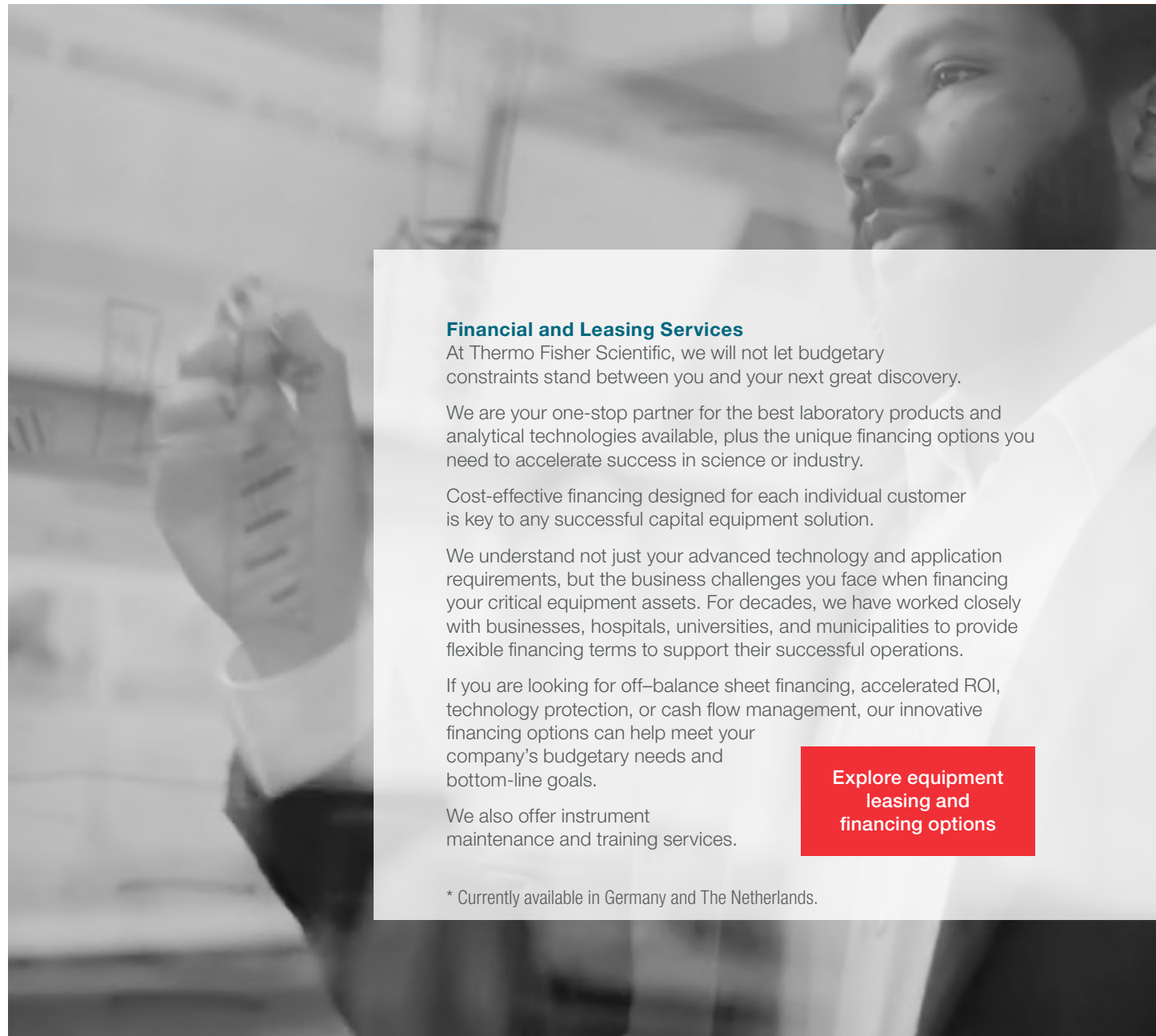
We are the world leader in serving science. Our mission is to enable our customers to make the world healthier, cleaner and safer.



**Step ahead. Step beyond.** Duration 1.33

Our innovative solutions for 3D electron microscopy, spectroscopy, and microanalysis help materials science researchers advance their sample characterization to gain deeper insight into materials using the latest advances in analytical instruments. Our multiscale, multimodal solutions provide the additive manufacturing industry with imaging and characterization of powders and parts at nano- to atomic-level resolution.

Our TEMs, DualBeam™ FIB/SEMs, and comprehensive portfolio of SEMs, combined with software suites, take customers from questions to usable data by combining high-resolution imaging with physical, chemical, elemental, mechanical, and electrical analysis across scales and modes—through the broadest sample types.



## Financial and Leasing Services

At Thermo Fisher Scientific, we will not let budgetary constraints stand between you and your next great discovery.

We are your one-stop partner for the best laboratory products and analytical technologies available, plus the unique financing options you need to accelerate success in science or industry.

Cost-effective financing designed for each individual customer is key to any successful capital equipment solution.

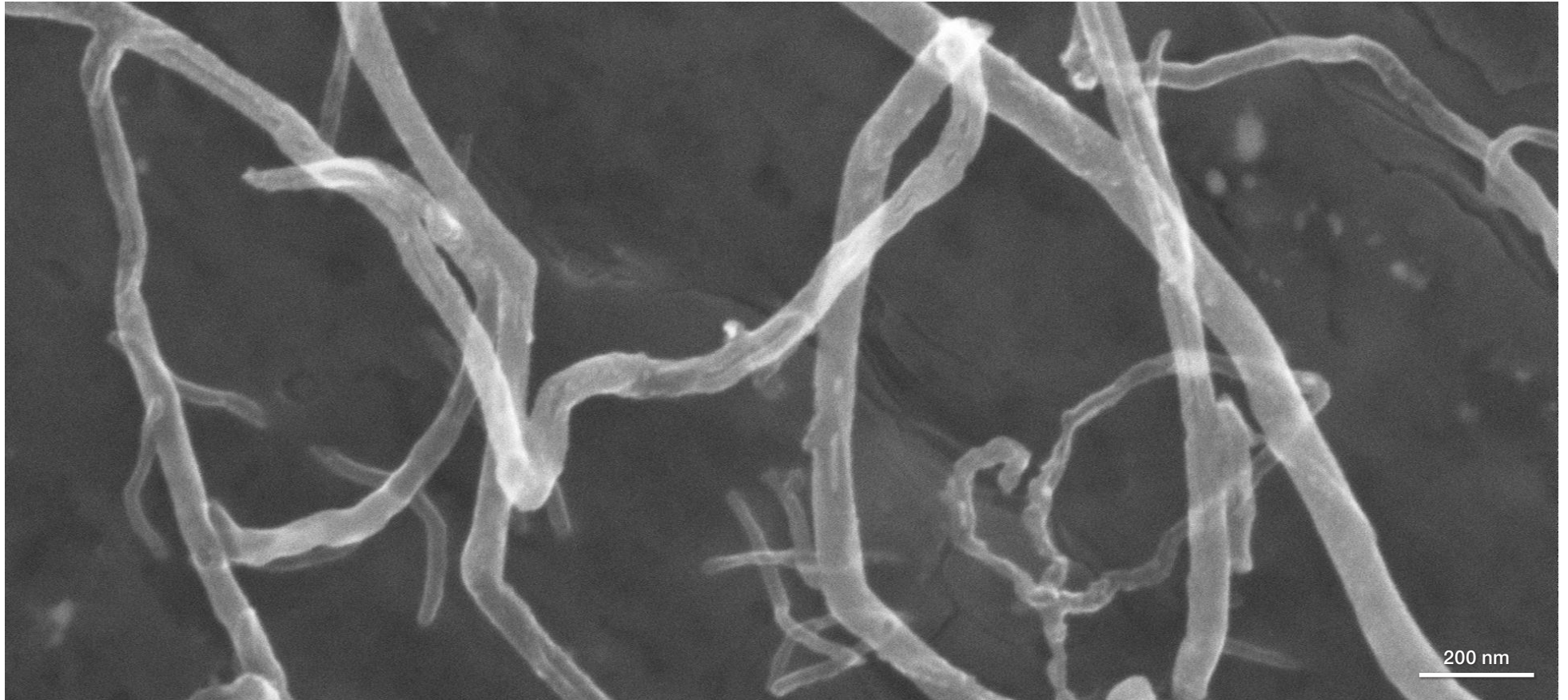
We understand not just your advanced technology and application requirements, but the business challenges you face when financing your critical equipment assets. For decades, we have worked closely with businesses, hospitals, universities, and municipalities to provide flexible financing terms to support their successful operations.

If you are looking for off-balance sheet financing, accelerated ROI, technology protection, or cash flow management, our innovative financing options can help meet your company's budgetary needs and bottom-line goals.

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financing options**

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