

Maps Software on Phenom Desktop SEM

Automated multi-modal correlation and offline visualization

Thermo Scientific™ Maps™ Software provides an automated and correlative workflow for all Thermo Scientific™ EM instruments, including SEM, DualBeam™ FIB-SEM, and TEM platforms. Maps Software automatically acquires large image datasets and intuitively combines and correlates multiple imaging, analytical, and digital modalities, providing a better understanding and enhanced insights into the sample. The software supports Thermo Scientific™ Phenom™ P-Series Desktop Scanning Electron Microscopes, including the XL G2, Pharos G2, and ProX Desktop SEMs, unifying the software experience and expanding the correlative workflow lifecycle across different instruments.

Core capabilities Maps Software provides:

- Correlation: Unified systems for alignment, navigation, and registration
- Automation: Automatically image multiple samples in a single session
- Connectivity: Sample-centric digital connectivity between instruments
- Data management and offline analysis: Access Maps Software data offline using the offline viewer to further process your data
- Analytics: Large-area EDS overviews



Phenom XL G2 Desktop SEM

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Phenom ProX Desktop SEM

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Phenom Pharos Desktop SEM

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Smart acquisition

Maps Software on the Phenom Desktop SEM enhances the automation of image acquisition for multiple samples, maximizing ease of use.

A single user can set up and run multiple tilesets on various samples, enabling automated, unattended instrument jobs that optimize microscope time for acquiring high-quality, impactful data.

The smart acquisition technology eliminates the need for hours of searching for regions of interest. Large-area overviews can be quickly and easily collected, allowing the system to automatically gather higher-resolution data at selected sites efficiently.

Additionally, Maps Software's offline features help you to move data off the instrument and interact with your projects. You can annotate data and define new regions of interest for EM acquisitions within the Maps Software offline environment. The software also manages automatic stitching and exporting of mosaic datasets, offering several stitching algorithms and export options, including RAW, tile TIFF, or HD view-compatible formats.

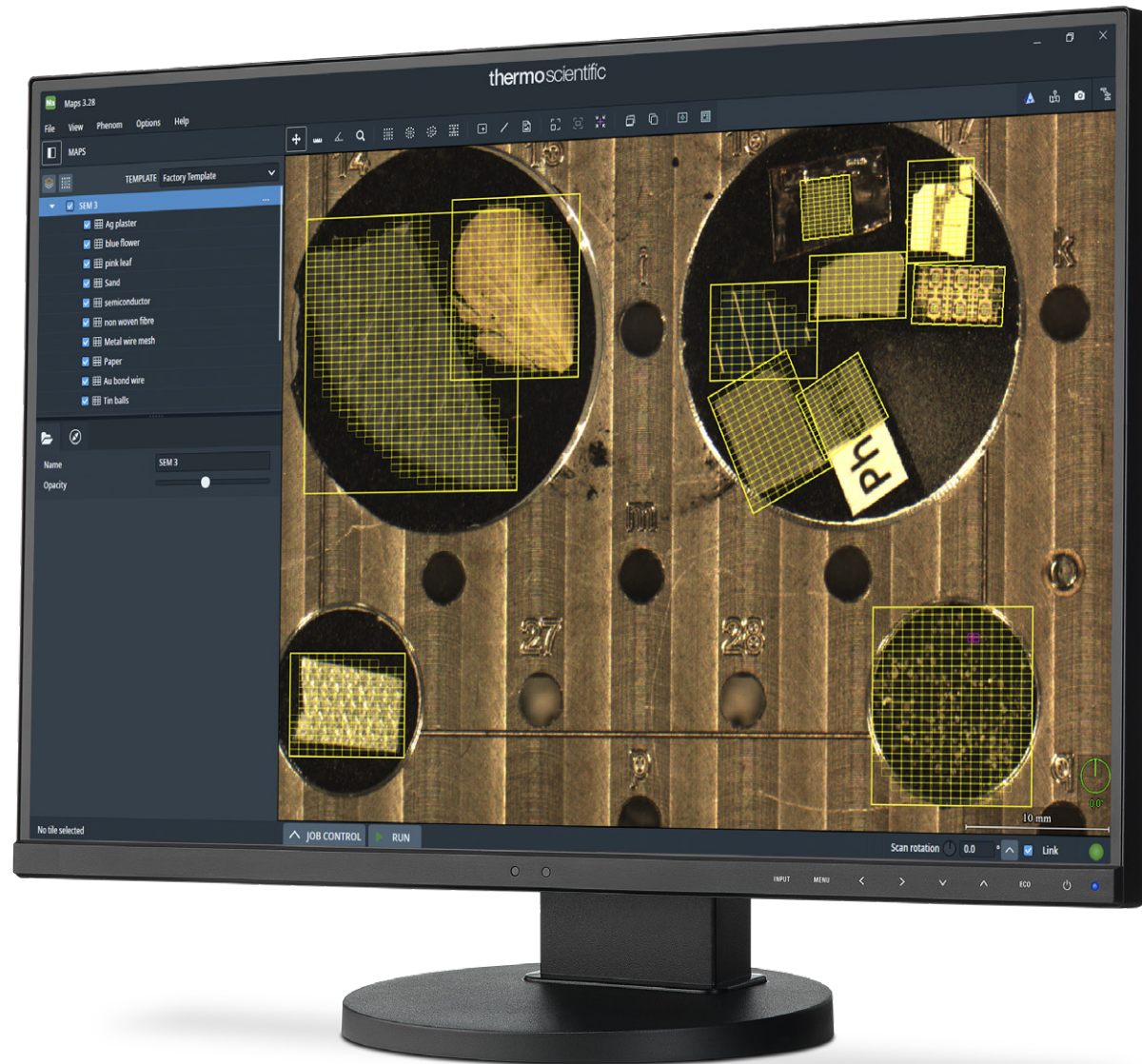


Figure 1: Multiple tilesets set up on multiple samples.

Material characterization using SEM-EDS

Maps Software can help you acquire low-magnification, large-area EDS overviews much faster than traditional techniques to visualize the entire spatial elemental distribution in a sample.

Reprocessing the data allows you to incorporate additional elemental layers for online and offline analysis.

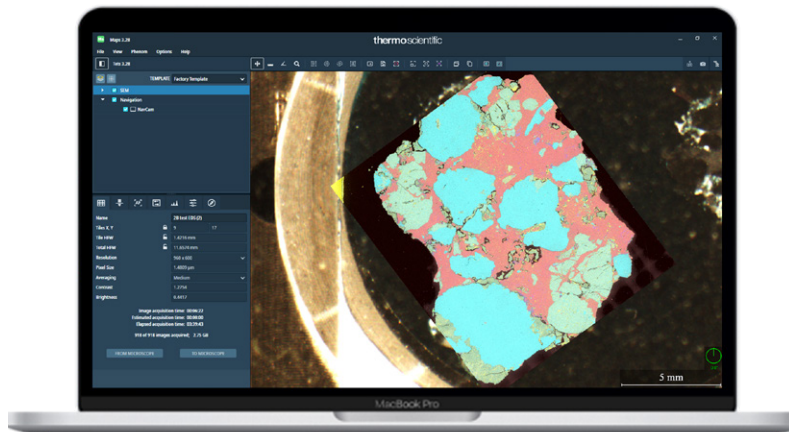


Figure 2: Large-area EDS map overview.

After data collection, Maps Software allows you to explore your data in the Phenom Desktop SEM UI for further quantitative EDS analysis.

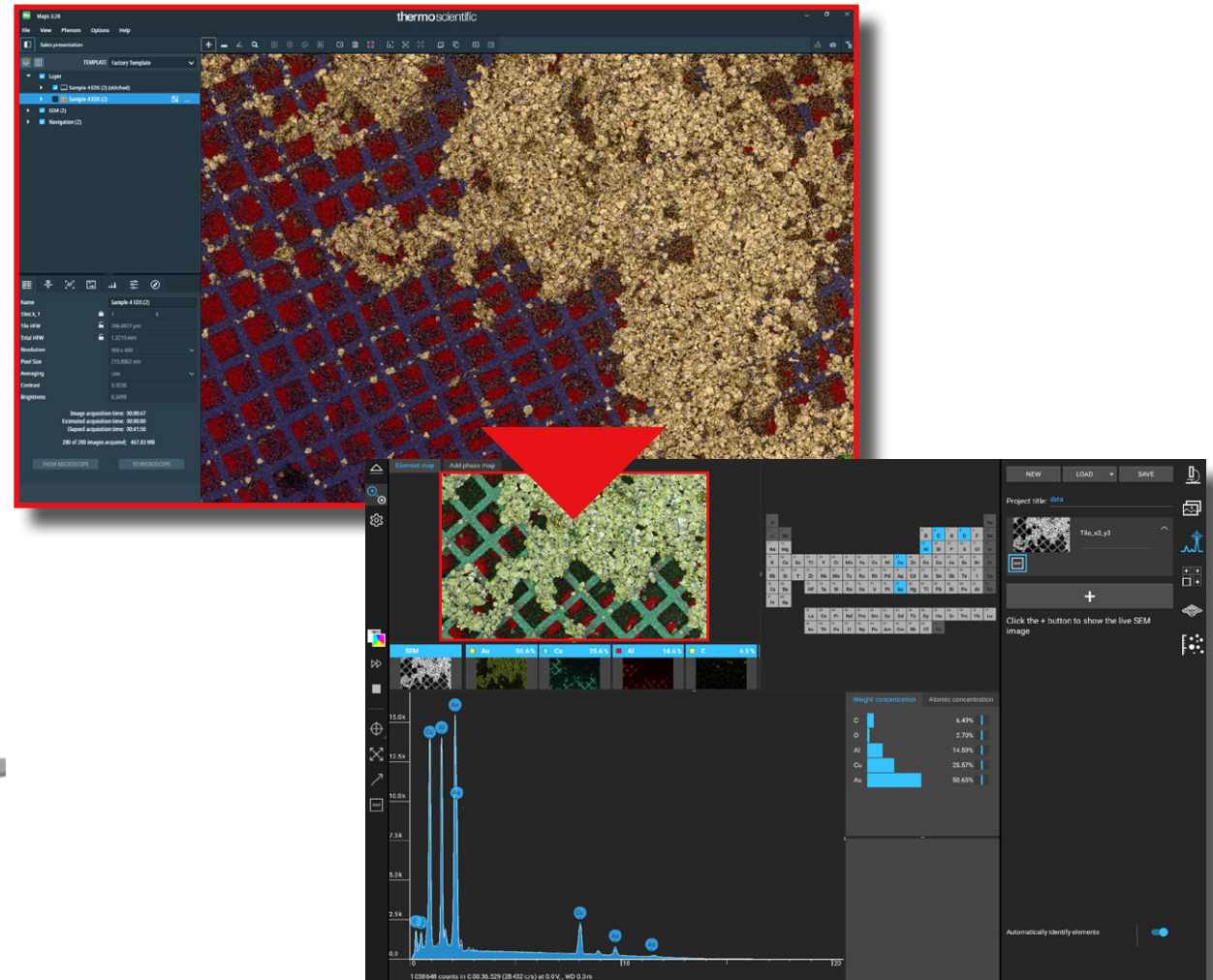


Figure 3: EDS data for multiple tiles can be imported into the Phenom Desktop SEM UI.

Correlative ecosystem

The Maps Software User Interface (UI) is consistent across multiple microscopes, helping you more easily gather and work with data across modalities.

The guided workflows help you register, align, scale, and visualize any number of image layers in acquired datasets.



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Figure 4: No matter your instrument, Maps Software provides a consistent interface.

Use case: Analyzing the distribution of silver in a wound dressing using Maps Software on the Phenom Desktop SEM

Wound dressings that contain silver are an advanced healing technology that use silver's antibacterial properties to prevent infections.

These dressings consist of several layers, including the wound pad (Figure 5), which contains silver and is made of non-woven polymer fibers that absorb fluids. These fibers are separated from the wound by a polyethylene net film that prevents the pad from sticking to the wound.

The effectiveness of such dressings depends on the physical and chemical characteristics of the silver and how well it is distributed across the dressing. If the concentration of silver ions is too high, the ions could be released from the dressing and lead to cytotoxic effects.

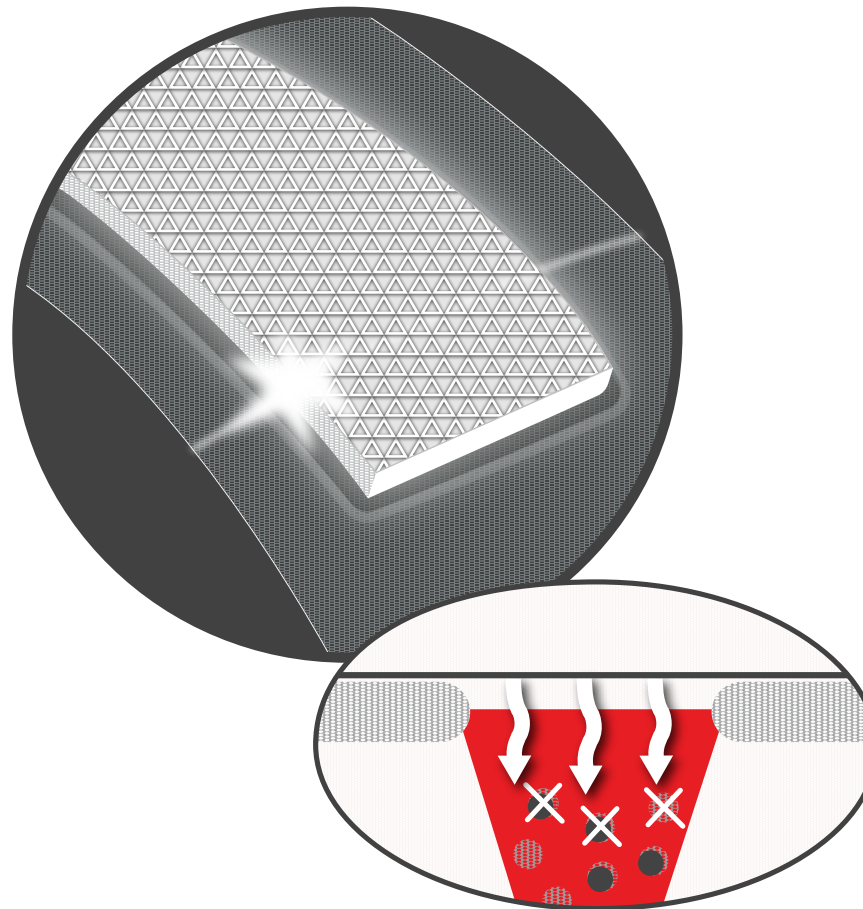


Figure 5: Wound pad containing silver to prevent infection.

Maps Software on the Phenom Desktop SEM can create high-resolution EDS maps that reveal the distribution of silver across the wound dressing. As seen in Figure 7, the silver (shown in pink) lines the edges of the polyethylene net. This provides an indication of the quality of the dressing and its relation to the controlled release of silver ions.

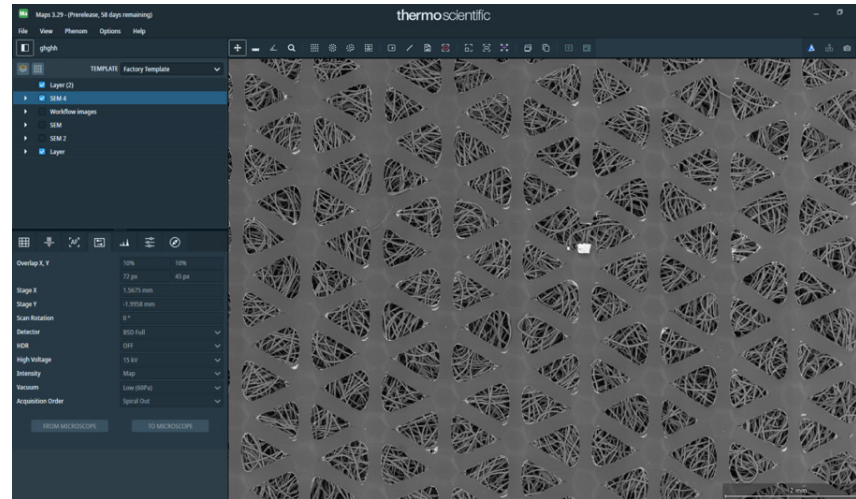


Figure 6: Large-area SEM-BSE image overview of a wound dressing. Polymer fibers are shown behind the perforated net film.

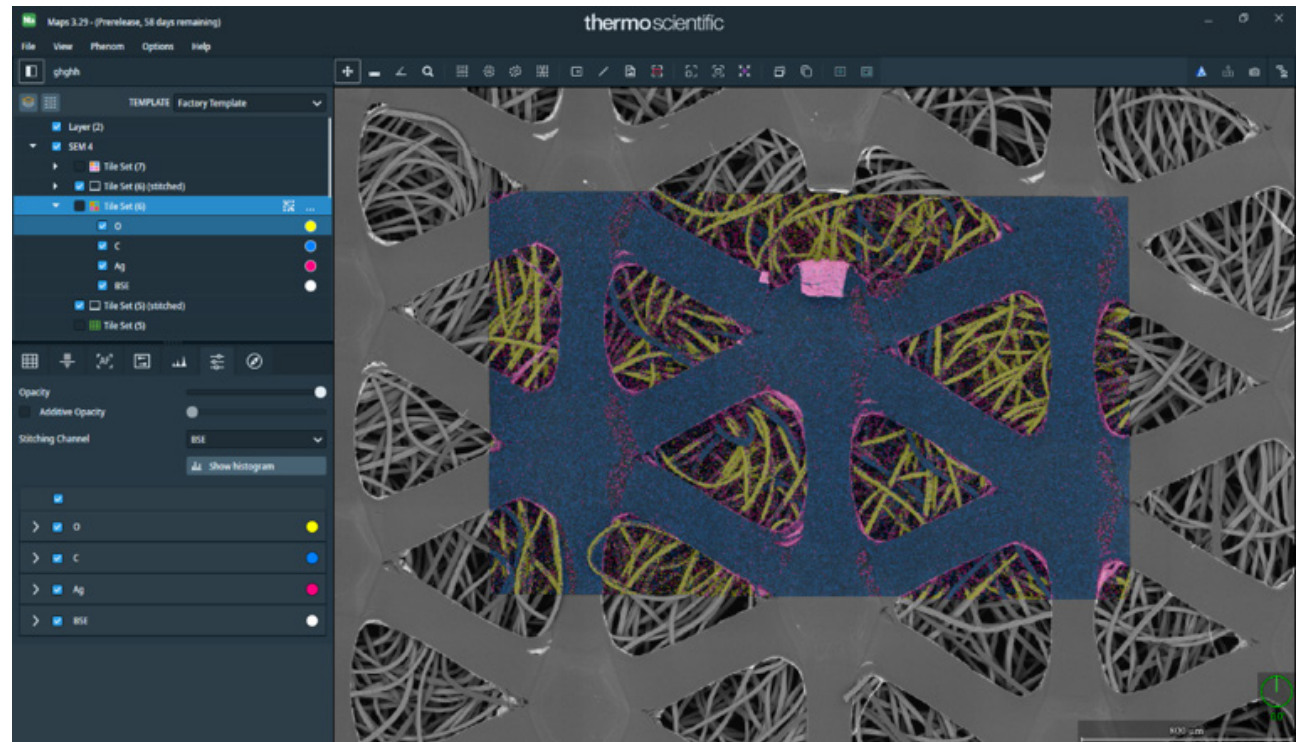


Figure 7: Small-area EDS map overlaid onto large-area image overview of dressing morphology in Maps Software. Pink signal shows the distribution of silver.

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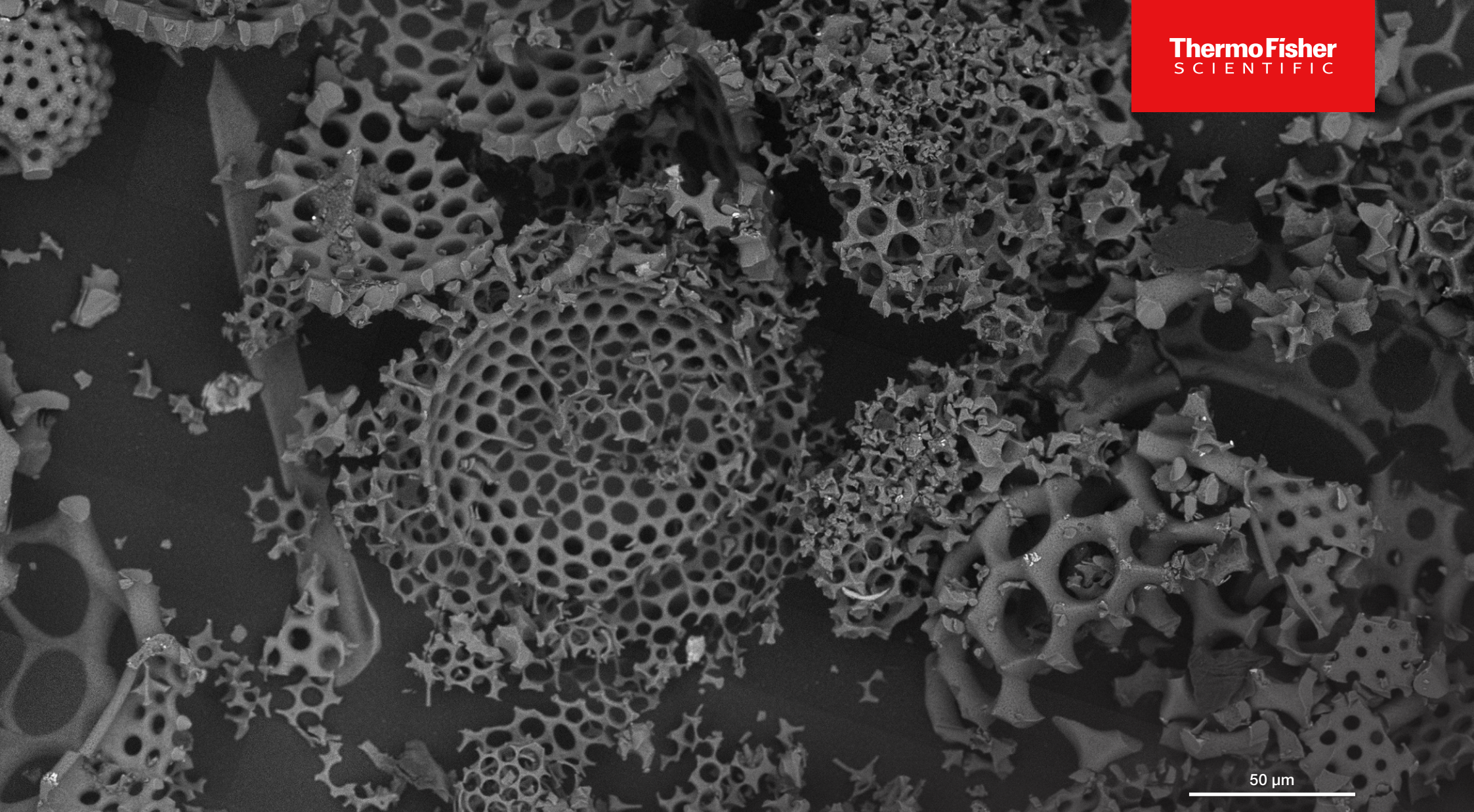


Figure 8: Stitched SEM-BSE image of diatoms acquired using Maps Software on the Phenom Desktop SEM.

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