

# Desktop microscopy at 24,000x – faster than the speed of light

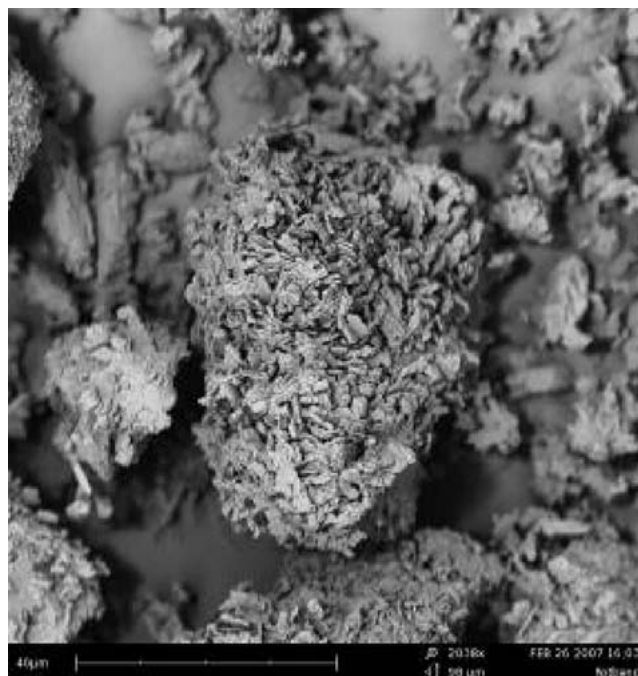
The rapidly accelerating pace of development in micro- and nanotechnologies has created growing demand for imaging capability beyond the 1000x magnification available from a typical light microscope (LM). Scanning electron microscopes (SEM) can generate useable information at magnifications higher than 100,000x, but they are typically slower, harder to use and more expensive than LM. Now, an innovative desktop imaging system, the Phenom™ combines the power of SEM with the speed and convenience of LM, delivering crisp, clear images at magnifications up to 24,000x with about as much effort as a point-and-shoot camera.

The new instrument has been rapidly accepted in many applications where it can quickly acquire detailed images of almost any sample without complicated preparation procedures. More subtle, but perhaps ultimately much more important, the Phenom™ transforms the nature of SEM analysis, allowing investigators and technicians to examine and interact with the sample immediately without the delays inherent in evaluating samples in a traditional SEM.

The Phenom departs radically from conventional SEM design in a number of fundamental aspects. Its miniaturized electron column is practically immune to mechanical and acoustical interference, permitting high-resolution imaging with no need for special facilities or environmental isolation. The touch screen control interface and automated navigation capability permit simple, intuitive operation with little or no training. An innovative vacuum system achieves low vacuum imaging conditions within seconds, and eliminates most sample constraints and preparation requirements. Finally, and not insignificantly, the system's cost of ownership is a fraction of that of a conventional SEM or outsourcing SEM images.

## Conclusion

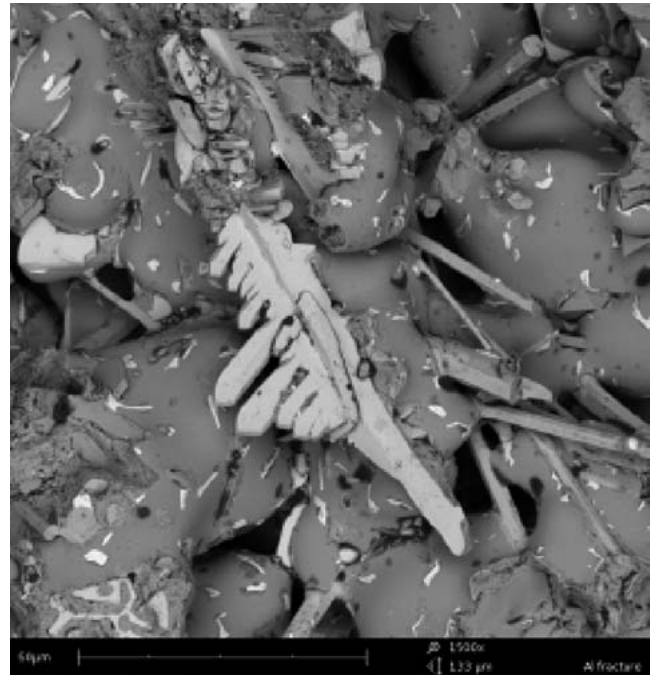
The development of a practical bench top SEM is in many ways analogous to the introduction of the desk top computer. Specifically, personal SEM analysis of data reduces the time and complications associated with analysis at a centralized location. In many applications, the added value of direct interaction between the user and the sample permitted by a "personal" SEM will likely lead to a rapid proliferation of these instruments.



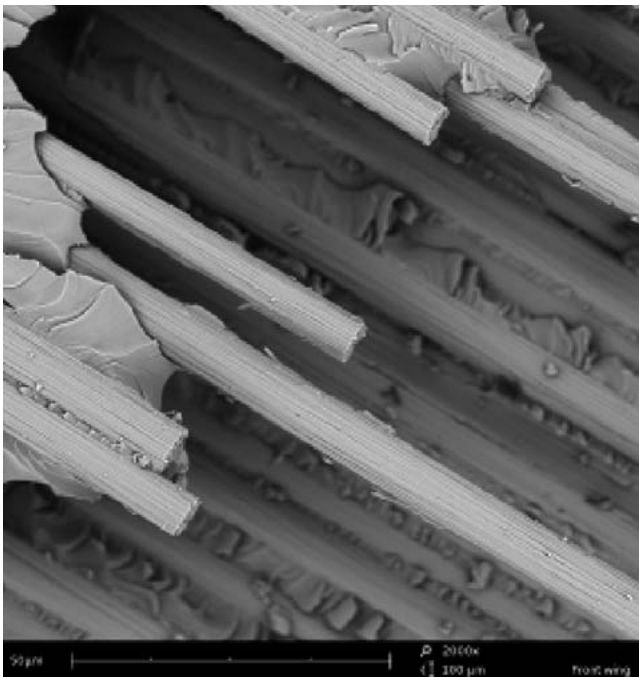
Gypsum "Rotband" taken at 2038x magnification  
(Field of view is 98 µm).



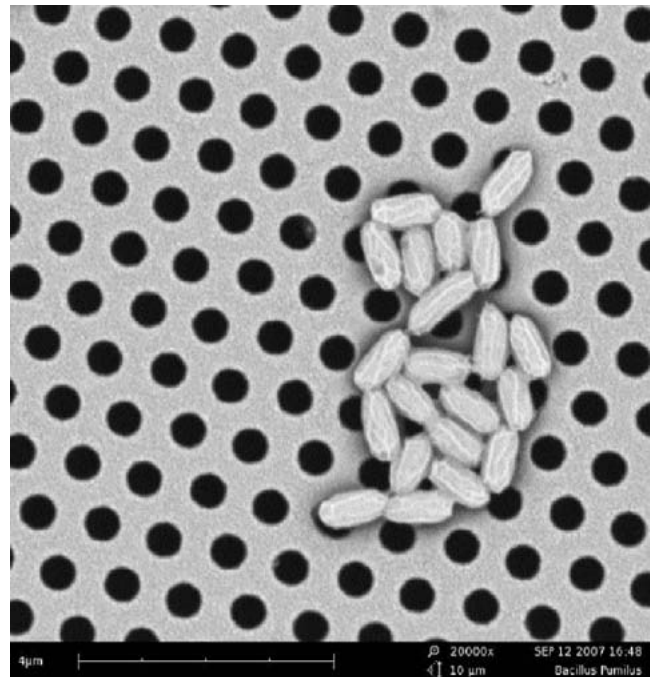
Dust filter taken at 500x magnification  
(Field of view is 400 µm).



Fractured Aluminum taken at 1500x magnification  
(Field of view is 133 µm).



Carbon fiber automobile panel taken at 2000x magnification  
(Field of view is 100 µm).



Bacteria on a filter taken at 20000x magnification  
(Field of view is 10 µm).