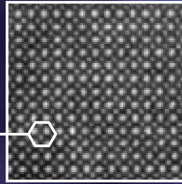
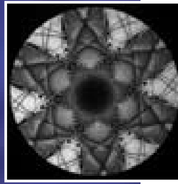
ANY WAY YOU LOOK AT IT,
FEI PROVIDES THE WORLD'S BEST VIEW.

Tecnai™ S/TEM Family

The Ultimate S/TEM Solutions for Imaging, Analysis and Characterization

It's time for Tecnai

As a rule in today's 300 mm fabs, a one-percent yield increase equates to US$1 million in additional profits per day. The pressure is real. In the lab, sub-90 nm technologies have pushed the boundaries of traditional SEM imaging and analysis. The increasing density and decreasing dimensions of today's components are driving the need for higher-resolution analysis of structures and defects. It's mission-critical for you to get high-quality characterization, analytical and metrology data in the shortest time possible. Based on decades of experience in electron microscopy, the powerful, fast and easy-to-use Tecnai S/TEM products ensure you get the highest-quality data in the shortest time possible — lowering the cost per sample, ensuring you are fast to volume and providing a rapid return on your S/TEM investment.

Minimize the time it takes to:

- *Characterize thin samples in your lab*
- *Identify and characterize small (< 2 nm) processing defects*
- *Switch from one imaging mode to another*
- *Switch from one analysis mode to another*
- *Switch from one application to another*
- *Train staff to take STEM or TEM images*
- *Realize a return on your S/TEM investment*

RIGHT — Right the first time

FIRST — First to market

FAST — Fast to volume

Applications:

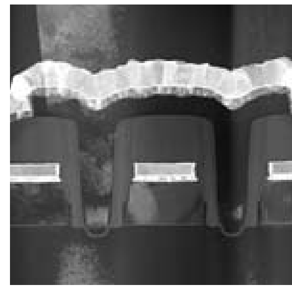
Failure Analysis

- ⬢ HR-TEM imaging
- ⬢ General purpose TEM imaging
- ⬡ General purpose SEM imaging
- ⬡ X-Ray analysis
- ⬡ STEM detector
- ⬡ EMI active cancellation

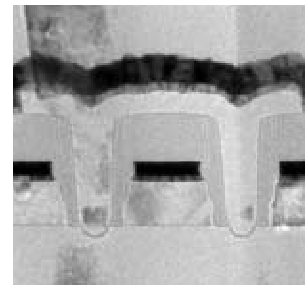
Characterization and Analysis

- ⬢ Sub Ångström resolution
- ⬡ High throughput STEM mode
- ⬡ EELS
- ⬡ GIF
- ⬡ Holography

⬢ Standard
⬡ Optional



HAADF STEM image showing a portion of a DRAM chip



Bright field TEM image of a DRAM chip

Higher productivity for more applications

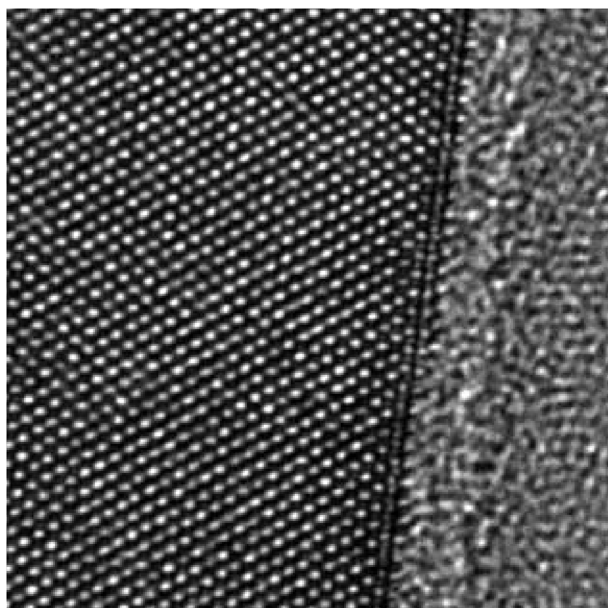
At every point in the development and manufacturing cycle, the demands to increase yields, reduce costs and accelerate time to volume are mounting. By design, the Tecnai family meets all these demands through a superior combination of powerful hardware and versatile application software. By seamlessly integrating all peripherals, software and third-party components into a single user interface, Tecnai products bring unprecedented ease of use to advanced S/TEM imaging, characterization and analysis.

Key features:

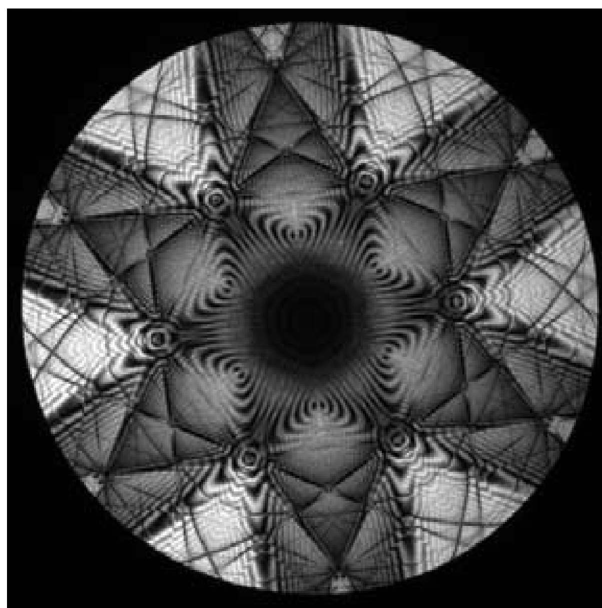
- *High performance in both STEM and TEM imaging*
- *High performance in high (spatial) resolution analytical techniques*
- *Fully integrated, optimized, easy-to-use interface*
- *Extensive applications-software support*
- *Extremely fast mode switching*
- *Rapid acceleration-voltage switching*
- *Advanced electron-optics design*
- *Easy, multi-user operations*
- *Outstanding, fine-probe performance*
- *Ultra-clean vacuum*
- *Sole system responsibility*

Product	Voltage	Electron Source	TEM Point Resolution	TEM Line Resolution	STEM Resolution	TEM Information Limit
Tecnai G2 F20 S-Twin TMP*	200 kV	FEG	0.24 nm	0.102 nm	0.20 nm	0.14 nm
Tecnai G2 F20 X-Twin TMP*	200 kV	FEG	0.25 nm	0.102 nm	0.17 nm	0.14 nm
Tecnai G2 F20 S-Twin	200 kV	FEG	0.24 nm	0.102 nm	0.20 nm	0.14 nm
Tecnai G2 F20 X-Twin	200 kV	FEG	0.25 nm	0.102 nm	0.17 nm	0.14 nm
Tecnai G2 F20 U-Twin	200 kV	FEG	0.19 nm	0.102 nm	0.14 nm	0.12 nm
Tecnai G2 F30 U-Twin	300 kV	FEG	0.19 nm	0.102 nm	0.14 nm	0.1 nm
Tecnai G2 F30 S-Twin	300 kV	FEG	0.24 nm	0.102 nm	0.17 nm	0.14 nm
Tecnai G2 20 S-Twin	200 kV	LaB_6	0.24 nm	0.102 nm	1.0 nm	0.24 nm
Tecnai G2 20 X-Twin	200 kV	LaB_6	0.25 nm	0.102 nm	1.0 nm	0.25 nm
Tecnai G2 20 U-Twin	200 kV	LaB_6	0.19 nm	0.102 nm	1.0 nm	0.19 nm
Tecnai G2 30 S-Twin	300 kV	LaB_6	0.24 nm	0.102 nm	1.0 nm	0.24 nm
Tecnai G2 30 U-Twin	300 kV	LaB_6	0.19 nm	0.102 nm	1.0 nm	0.19 nm

*Includes turbo molecular pump



High-resolution bright field image of a Si/SiOx interface



Energy Filtered Large Angle Convergent Beam Diffraction pattern (LACBED) from Si 111 crystal direction. The ability to acquire such patterns to this clarity and detail is useful in advanced research development in determining materials' crystal symmetries, which in turn assists in unraveling complex structural relationships and enables quantification of small strains.

Speeding your time to volume and profits

Unlike any other industry offering, all Tecnai S/TEM products feature hardware peripherals and software that are smartly integrated into one user interface. All capabilities of the system are easily controlled in a single, universal imaging and analysis environment. Furthermore, the Tecnai products can support and store countless user alignments, making these solutions ideal for multiple users and multiple applications without interruption. With all functionality controlled by a PC through a central "TEM" server, the Tecnai products can be remotely accessed and can also be integrated with special service software for remote diagnosis.

Across the entire Tecnai family the high tension can be rapidly and stably changed (up or down) with a simple mouse click. The corresponding alignments for any one high tension can be stored and recalled, again, at the click of a mouse. Offering even more flexibility, Tecnai S/TEM products also come in a variety of lens types so you can choose the optimal combination of tilt/resolution and analytical performance. Furthering its ease of use and faster access to data, Tecnai S/TEM products also allow you to switch modes from transmission electron microscopy (TEM) to scanning transmission electron microscopy (STEM), or vice versa, in a matter of seconds.

Tecnai S/TEM microscopes are supported by an industry-leading suite of application software developed by a dedicated Software Applications group within FEI. For example, Xplore*3D*™ allows you to rapidly acquire, reconstruct, visualize and analyze tomography data in 3D. TrueImage™ software quickly obtains precise, directly interpretable results from high-resolution TEM beyond the point resolution. Dedicated software like this not only enhances ease of use, it also ensures you can enjoy leading-edge performance now and into future process nodes.

Simplified ownership from a superior supplier

Because FEI takes full responsibility for all hardware, software and third-party components in its Tecnai systems, ownership and support is cost-effective and easy. Plus, you get the peace of mind that comes from working with the industry's true technology leader for sub-surface imaging solutions. In addition to being the world's most experienced provider of dual-beam solutions, FEI also offers the world's most advanced TEM solutions. You can take comfort knowing FEI will always provide the highest quality characterization, analytic and metrology data in the shortest time. These are just some of the advantages that ensure you have long-life solutions that are extensible through the next several technology nodes. With FEI, optimizing performance for your specific applications simply adds up to a more secure and faster return on your technology investment.

See more at **www.fei.com**.

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TOOLS FOR NANOTECH

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