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Thermo Fisher Scientific Introduces Revolutionary S/TEM Platform
Thermo Scientific Spectra delivers leading-edge atomic-level imaging and analysis in one tool

PORTLAND, Ore., Aug. 5, 2019 /PRNewswire/ -- Today at Microscopy and Microanalysis 2019, Thermo Fisher Scientific unveiled the Thermo Scientific Spectra scanning/transmission electron microscope (S/TEM), designed to accelerate breakthrough discoveries by delivering advanced atomic-scale imaging and analysis, in one tool. Spectra combines the highest commercially available S/TEM image resolution specification and high sensitivity, allowing users of all experience levels to generate best-in-class results.

Producing the right materials and making the right design choices are critical to solving challenges such as developing safer and longer lasting batteries, creating lighter materials for improved energy efficiency, and building faster, higher capacity computer processors or memory devices. Spectra is ideal for researchers in academic or industrial labs who need to characterize a wide variety of materials at the atomic level. It allows them to create lightweight materials such as advanced steels, aluminum alloys or plastics used to develop safer or more fuel-efficient transportation. Spectra also supports research for new semiconductor structures and materials, which delivers the essential building blocks for future generations of higher performance electronic devices.

"Thermo Fisher Scientific has a long history of leadership in high-end transmission electron microscopes, and Spectra continues this direction by delivering the best commercially available atomic-level S/TEM imaging and analysis in a single tool," said Mike Shafer, president of materials and structural analysis at Thermo Fisher Scientific. "Spectra offers unprecedented ease-of-use for the widest range of applications while solving some of today's most challenging problems, including the analysis of beam-sensitive and increasingly complex materials and the imaging of shrinking semiconductor devices."

Spectra includes revolutionary detection capabilities, allowing scientists and engineers to acquire previously hard to obtain atomic-level data for a wider range of applications. The platform makes it possible to obtain detailed images of extremely beam-sensitive materials and semiconductor structures including metal organic frameworks, zeolites and polymers that can be damaged or destroyed if exposed to the electron beam for too long or at the wrong voltage. It also meets the growing demand for high-volumes of atomic-level chemical analysis using several modalities such as EDX (Energy Dispersive X-Ray) or EELS (Electron Energy Loss Spectroscopy).

The platform includes several new features that take S/TEM microscopy to the next level, including:

- **A higher-brightness electron source**: An exceptionally bright cold field emission gun (X-CFEG) is a new technology offering higher contrast imaging. For chemical analysis and x-ray analytics, it provides more than twice the signal and greater than ten percent higher spatial resolution than conventional CFEG sources found in current generation TEMs. The result is higher quality imaging and analysis at a higher resolution, allowing users to examine a wider range of materials.
- **Easier analysis of electrical properties**: The new X-FEG/Ultimono source allows researchers and engineers to generate complex high energy resolution data in parallel rather than dedicating a separate tool for that single purpose. This helps accelerate new materials development because researchers will better understand the electrical behavior parallel to other critical properties.
- **High dynamic range mapping**: The Electron Microscope Pixel Array Detector (EMPAD) is a high-speed pixelated STEM detector that allows researchers to perform a large number of advanced applications such as Ptychography for super-high resolution and user segmentation of signals. This helps unravel more properties critical for the development of new materials and processes.

Spectra 300 includes three source options, an XFEG Mono, X-FEG UltiMono and an X-CFEG and is designed for ultimate atomic-level imaging and analysis on the widest variety of samples. Spectra 200 offers a 200 kV C-FEG and is ideal for high-contrast imaging and chemical analysis.

Thermo Fisher will demonstrate the S/TEM platform at Microscopy & Microanalysis 2019 in Booth #1038.

About Thermo Fisher Scientific
Thermo Fisher Scientific is the world leader in serving science, with revenues of more than $24 billion and approximately 70,000 employees globally. Our mission is to enable our customers to make the world healthier, cleaner and safer. We help our customers accelerate life sciences research, solve complex analytical challenges, improve patient diagnostics, deliver medicines to market and increase laboratory productivity. Through our premier brands – Thermo Scientific, Applied Biosystems, Invitrogen, Fisher Scientific and Unity Lab Services – we offer an unmatched combination of innovative technologies, purchasing convenience and comprehensive services. For more information, please visit thermofisher.com.

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