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Thermo Fisher DualBeam enables innovative research and enhanced sample prep

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New Helios Hydra DualBeam from Thermo Fisher Scientific offers exciting possibilities for researchers and engineers characterizing wide range of materials



Researchers can now apply a range of ion beam species within one focused ion beam (FIB) scanning electron microscopy (SEM) instrument with the new Thermo Scientific Helios Hydra DualBeam system.

This unique system was designed to deliver four different ions as the primary beam, including argon, nitrogen, oxygen and xenon, and quickly and easily switch between them in less than ten minutes without sacrificing performance.

This allows researchers and engineers to choose the ion species that provide the best results for their samples or do fundamental research on the interactions of different ions with matter.

"Integrating the ability for scientists to easily choose between four different ion species within one instrument will expand and optimize the application space for investigating material properties across length scales," said Mike Shafer, president of materials and structural analysis at Thermo Fisher Scientific. "Our new Helios Hydra DualBeam system provides the flexibility they need to better analyze their samples, improve their results and develop new and enhanced materials."

The Helios Hydra DualBeam instrument allows materials science researchers to discover and design new materials and analyze their properties and structure. With its oxygen ion beam, ideally suited for the milling of carbon-based materials such as graphite used in battery anodes, it could help researchers develop safer, lighter and more efficient energy storage devices.

This is the first commercially available instrument of its kind to allow fast and easy ion beam switching. Previously, the application of different beams required researchers to transfer the sample between instruments or conduct lengthy and complicated source exchanges. For example, stand-alone specialized broad-beam argon polishers are currently a typical component of high-quality transmission electron microscopy (TEM) sample preparation workflows. With the Helios Hydra DualBeam instrument, the focused argon beam can be applied to the sample directly after initial milling, vastly reducing transfer and processing time for the sample.

With switching times of 10 minutes or less, researchers can also apply all 4 beams to their sample within one session to determine which ion is best suited for their intended purpose. This flexibility expands the potential use cases of FIB in the exploration of ion-sample interactions.

Regular production of the Helios Hydra DualBeam will begin in September 2019.