NEWS RELEASE

Hitachi High-Tech HITACHI

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Hitachi High-Technologies Launches Sale of New SU9000 Scanning Electron Microscope

Field Emission Scanning Electron Microscope Featuring Ultra-high Resolution Imaging

Hitachi High-Technologies Corporation (TOKYO: 8036, Hitachi High-Tech) announces the development and worldwide launch on April 19, 2011, of the SU9000, a new type of Field Emission Scanning Electron Microscope (FE-SEM) capable of ultra-high resolution imaging. The SU9000 is equipped with a newly developed electron source that enables ultra-high resolution observations, while minimizing sample damage caused by electron beams during observations.

SEMs are utilized in an array of fields, ranging from semiconductor devices, electronics, and advanced nanotechnology materials, to life sciences and medicine. SEMs from Hitachi High-Tech play an especially critical role in the field of semiconductor analysis, where they are indispensable for observing micro-level structures a) at the R&D stage, b) as part of production-floor process control, and c) in defect analysis. SEMs capable of supporting advanced technology of this kind require a number of important features beyond the capacity for outstanding high-resolution observations. These include the ability to perform observations using low accelerating voltages (Vacc), which minimize the sample damage caused by electron beams; throughput on the level of 100 or more observations a day; and stable operability that consistently allows for this performance.

The SU9000 is equipped with a new type of cold FE electron source for ultra-high resolution observations, an area of strength for Hitachi. Compared to previous versions, this new cold FE electron source is stable used for long periods, from right after startup with no wait times. The probe current within this stable range is approximately double that of earlier models, enabling bright images with superior S/N performance to be taken. Furthermore, Hitachi's unique in-lens technology improves resolution under low accelerating voltage (1 kV) to 1.2 nm, and guarantees STEM resolution (optional) that can image the lattice structure of graphite (C (002) d=0.34 nm) at an accelerating voltage of 30 kV.

The SU9000, while performing as an SEM boasting world-leading resolution of 0.4 nm (30 kV:SE image as of April 2011), also adopts a side-entry method for introducing samples for observation. This technique reduces the time for sample exchanges and the time to obtain a high-resolution photo to around 6 minutes or less*, permitting high-throughput data acquisition. The SU9000 also employs proprietary signal detection that enables high-contrast observations that can be tailored to the observation task, such as evaluation of morphology or composition. This new FE-SEM also has a large 24.1-inch widescreen monitor offering a comfortable environment for operating the device, as well as a new interface that enhances usability. Together, these innovations have delivered an environment that facilitates user operations.

Shipments are scheduled to commence from the first half of 2011.

*Reference time is based on the time required to photograph gold evaporation particles with an accelerating voltage of 5kV at 200,000 times magnification. Time may vary based on device installation conditions, the sample used, and photographic requirements.

SU9000 Ultra-High Resolution Field Emission Scanning Electron Microscope

Main Features of the SU9000

-Improved resolution during low accelerating voltage observation to minimize sample damage
-Newly developed cold field emission (FE) electron source featuring both low distortion and high-brightness, stable probe current
-Ultra-high vacuum sample chamber to minimize contamination
-High-rigidity frame and noise-dampening cover that allow high performance under a variety of installation conditions
-New interface and 24.1-inch widescreen monitor to enhance usability

Main Specifications

Specifications	SU9000
Secondary electron image resolution†	0.4 nm (Vacc 30 kV, Sample Height=1.0 mm, Magnification 800 kx) 1.2 nm (Vacc 1 kV, Sample Height=2.0 mm, Magnification 250 kx)
STEM resolution (optional)	0.34 nm (lattice structure imaging by SEM, Vacc 30 kV, Sample Height=0.0 mm)
Magnification display	LM: 80 to 10,000x / HM: 800 to 3,000,000x
Stage	Side-entry goniometer stage
Traverse range	X：±4.0 mm, Y：±2.0 mm, Z：±0.3 mm, T：±40
Standard holder (1 included)	Sample stage plane: 5.0 mm×9.5 mm×3.5 mm (Height) (Maximum)
Sample stage: One unit for six sample types included	Cross-sectional sample stage: 2.0 mm×6.0 mm×5.0 mm (Height) (Maximum)
Specialized holders (optional)	Cross-sectional holder: 2.0 mm×12.0 mm×6.0 mm (Height) Cross-sectional dual-axis incline holder: 0.8 mm×8.5 mm×3.5 mm (Height)

†Smallest particle gap measured in SEM images from Hitachi High-Tech samples

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