

Launch of HD-2700 Scanning Transmission Electron Microscope Equipped with Hitachi Spherical Aberration Corrector

-High-throughput, high-resolution imaging, and high-sensitivity analysis for a broad range of users-

Hitachi High-Technologies Corporation (TOKYO: 8036, Hitachi High-Tech) announced today the launch of HD-2700, a scanning transmission electron microscope (STEM) equipped with a spherical aberration corrector developed by Hitachi High-Tech. The associated automatic aberration correction function facilitates the use of the corrector and significantly reduces the time needed for aberration correction.

In the fields ranging from R&D of advanced nano materials and semiconductor devices to quality control, there have been increased demands in recent years for improving spatial resolution and analytical performance for electron microscopes. Aberration correction provides a prominent solution to these demands. Hitachi High-Tech had previously commercialized electron microscopes equipped with spherical aberration correction capability, since then the continuous efforts concentrated on the concept of providing both high throughput and high performance benefited from aberration correction. The newly developed spherical aberration corrector by Hitachi High-Tech on the HD-2700 STEM realized this concept successfully.

The Hitachi-made spherical aberration corrector is software-controlled, the fully automatic aberration correction process can be executed simply by one mouse-click, user's pre-experience and intensive operation training for aberration correction are not required. Moreover, the time needed for high-order aberration correction is cut down to about 20% compared with other comparable Hitachi High-Tech instruments therefore dramatically improves the total throughput. For those experienced users, step-by-step involvement in the aberration correction process is also possible.

Along with the newly developed Hitachi spherical aberration corrector, the HD-2700 is also powered by another two well-known technologies of the Hitachi High-Tech—cold field-emission electron gun and high-resolution objective lens, both are included as standard components. The synergy of all these state-of-the-art technologies guarantees routinely obtainable specified high spatial resolution as well as high-quality chemical analysis with high throughput. This latest HD-2700 model also preserves atomic resolution secondary electron (SE) imaging and other highly evaluated and market-proven features and functions which have been served as hallmarks of the Hitachi STEM HD series in past years. In this way, the new version of the HD-2700 will be able to better meet requirements from a wide range of users working in various research and industrial fields.

Hitachi High-Tech is scheduled to begin shipment in the second half of year 2012.

Hitachi High-Tech will exhibit the HD-2700 panel as a part of the commercial exhibition in the 68th annual meeting of the Japanese Society of Microscopy held at the Tsukuba International Congress Center from Monday, May 14 to Wednesday, May 16, 2012.



HD-2700 Hitachi Spherical Aberration-Corrected STEM/SEM.

<Main Features of the HD-2700 STEM>

1. Equipped with a spherical aberration corrector developed by Hitachi High-Tech, the automatic aberration correction process takes short time and does not need pre-experience for aberration correction
2. Cold field-emission electron gun and high-resolution objective lens for high-resolution imaging and high-sensitivity chemical analysis.
3. CCD camera as a standard component for recording electron diffraction and Ronchigram
4. Atomic resolution SEM imaging through spherical aberration correction
5. SD-STEM* imaging (selected-diffraction dark-field STEM imaging) for defect observation, similar to the dark-field TEM imaging technology.
6. High-precision magnification calibration prior to shipment* (within +/-3% for the entire magnification range), and field-proven dimension measurement functionality*
7. Lineup of specially designed Hitachi specimen holders, including 360deg rotational holder*(for 3D imaging and chemical analysis) and environmental-control holder* (for air-sensitive materials)

*Option

<Main Specifications>

Electron source	Cold field-emission electron gun
Spatial resolution	0.136 nm (HAADF-STEM image), 0.105 nm (FFT)
Magnification	×100 to ×10,000,000
Maximum acceleration voltage	200 kV
Aberration corrector	Multi-pole transfer lens design, by Hitachi

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