

News Release

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Hitachi High-Technologies Launches New Transmission Electron Microscope

The HT7800 Series - A Next-Generation TEM Meeting and Exceeding the Requirements for a Wide Range of Fields with High-Performance Imaging and Easy Operation

Tokyo, Japan, March 7, 2017—Hitachi High-Technologies Corporation (TSE: 8036, Hitachi High-Tech) announced the development of a new Transmission Electron Microscope (TEM)^{*1} model, the HT7800 Series, which enters the market starting March 7, 2017. The product has inherited digital operation under normal room light conditions from the HT7700 model and also incorporates improved electro-optics with many new functions.

The observation of nanostructures enabled by TEM is used in a wide range of fields, including medical research and diagnosis, bioscience, pathology, food product research, polymer development, chemistry, nanomaterials, and more. Recently, with the miniaturization of materials for observation, using TEM to perform structural analysis has become commonplace in an increasing number of situations. This has led to a broadening of the user base that calls not only for performance improvements, such as high-resolution and high-contrast imaging, but also an enhanced operating environment that does not require high skill level or knowledge for effective use.

The newly launched HT7800 Series has inherited many advantages that stem from the current HT7700 model, which when first introduced revolutionized traditional observation methods by removing the antiquated traditional viewing chamber and integrating a digital camera system. The HT7800 once again reflects the use of modern technology resulting in a more precise, ergonomic, and easy-to-use system that can be utilized under normal room light conditions.

This new model features the unique Hitachi Dual-Mode Objective Lens with the addition of advanced electro-optics^{*2} to enable higher-performance imaging under low magnification, high contrast, wide field of view, and high resolution. Specifically, the HT7830 model has a special ultra-resolution lens configuration that enables it to achieve class-leading high-resolution performance.

For easy operation and high throughput, the system features a user interface with a novel function to support visualization and navigation of entire grids. The newly developed Image Navigation function enables intuitive and improved functionality, including the ability to automatically capture images at user-defined locations through utilization of an overview image.

Hitachi High-Tech expects annual sales of 70 units. The Company plans to present a panel exhibition of the product at the 73rd Annual Meeting of the Japanese Society of Microscopy, to be held at the Sapporo Convention Center from Tuesday, May 30 through Thursday, June 1, 2017.

Under its mid-term management strategy of aiming to become the global leader in electron microscopes by 2020, Hitachi High-Tech will continue to promote development and sales expansion with strong contributions to technological advancement. In addition, the Hitachi High-Tech Group will continue its aim to "become the Global Top in high-tech solutions," and respond swiftly to the needs of customers and markets, working from the customer's perspective as a fast-moving creator of cutting-edge businesses.

*1 TEM: Transmission Electron Microscope

*2 Electro-optics: a coverall term for the column and other peripheral equipment that perform functions such as collecting and dispersing electron



Transmission Electron Microscope HT7800

* Display shows embedded TEM GUI

【Main Features】

1. TEM operation is optimized for a monitor (single or dual), enabling digital operation under normal room light conditions.
2. A new user interface and navigation function enables efficient TEM analysis by users ranging from novice to expert.
3. Fully automated generation of stitched panoramic images, tomography, CLEM^{*3}, STEM^{*4}, EDX^{*5}, and other functions support a wide range of analysis needs.
4. Use of Hitachi's unique Dual-Mode Objective Lens and improved electro-optics allow for observation and analysis from wide-angle, high-contrast conditions at low magnification to high magnification, and high-resolution imaging.
5. With its ultra-resolution lens, the HT7830 achieves a class-leading on-axis lattice resolution of 0.19 nm and is coupled with *in situ* capabilities^{*6}.

*3 CLEM (Correlative Light and Electron Microscopy) : A microscopy method of correlative observation using both light and electron microscopes

*4 STEM: Scanning Transmission Electron Microscopy

*5 EDX: Energy Dispersive X-ray spectroscopy system

*6 *in situ* capability (observation): a method of observing a sample in the site and state where it is usually found

【Main Specifications】

	HT7800	HT7830
Electron source	Tungsten or LaB ₆ ^{*7}	Tungsten or LaB ₆ ^{*7}
Accelerating voltage	20–120 kV (100 V/step variable)	
Resolution (lattice)	0.20 nm (Off-axis、100kV)	0.19 nm (On-axis、120kV)
Maximum magnification	×600,000	×1,000,000
Maximum tilt angle	±70°	±10°

*7 LaB₆: Lanthanum hexaboride

◆ Web site

http://www.hitachi-hightech.com/global/product_detail/?pn=em-ht7800

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