

News Release

Launch of SU5000, a New Type of Schottky Field Emission Scanning Electron Microscope With a New User Interface, Provides High-quality Images for Every User

Tokyo Japan, July 31, 2014 – On August 4, Hitachi High-Technologies Corporation (TOKYO: 8036, Hitachi High-Tech) will launch SU5000, a Schottky field emission scanning electron microscope* that incorporates EM Wizard, a new user interface, and provides good operability independent of the user's skill together with high-quality images.

A scanning electron microscope is a tool that can be used in a wide variety of fields such as nanotechnology, materials, medicine and life sciences. Recently, although there have been marked developments in the functions and capabilities of the scanning electron microscope, the types of users are also expanding and so there is demand for a microscope that can acquire data by using these functions and capabilities independent of the user's level of skill. Furthermore, there is now also a diversification in the types of observation samples, and as a result there are increasing needs for microscopes that allow observations to be made with as few limitations as possible as regards such aspects as sample size and characteristics.

The newly developed SU5000 incorporates the new user interface EM Wizard that enables the user to acquire an image of the observation sample in line with the objective but independent of the level of skill of the user. EM Wizard has applied the concept of experience design (design centered on human needs) to significantly improve the operability of the microscope. As a result, the user does not have to examine the conditions related to the observation. Instead, the microscope automatically sets the conditions necessary for the observation without the user having to perform some complicated operation. All the user needs to do is to select the objective, such as making an observation of surface information or finding out the distribution of materials. At the same time, the microscope enables an advanced user to perform a full-fledged operation as in the past in which a number of conditions can be freely set. EM Wizard offers beginners or light users the value of high operability and the opportunity to improve their skill by using various educational training tools. For advanced users, it offers value that includes the full-fledged operation capability and support for the training of beginners.

The SU5000 incorporates such unique functions as the "multi-finder" that supports the user in the confirmation of the position of the observation sample, and functions that improve the measurement throughput and the repeatability of the data. Furthermore, the microscope secures a maximum power current of 200nA in order to ensure compatibility with a wide range of observations and analysis. The SU5000 is equipped with the hardware needed for an increasingly wide variety of materials observation and analysis going forward. These include a newly developed reflective electron detector and the capability to acquire secondary electron images under low vacuum conditions. We anticipate selling 200 units annually.

Hitachi High-Tech intends to exhibit an actual working SU5000 at the Microscopy & Microanalysis

exhibition to be held in the state of Connecticut in the U.S. from Sunday, August 3 until Thursday, August 7, at JASIS 2014 to be held at the Makuhari Messe International Convention Complex in Chiba City, Chiba Prefecture from Wednesday, September 3 until Friday, September 5, and at the 18th International Microscopy Congress to be held in Prague in the Czech Republic from Sunday, September 7 until Friday, September 12.

*A Schottky field emission-scanning electron microscope is a scanning electron microscope that incorporates an electron beam source known as a “Schottky type” that provides high brightness, emitted electron beam amount, and stability. The microscope is excellent as regards its high-resolution imaging and various types of qualitative and quantitative analysis capabilities.

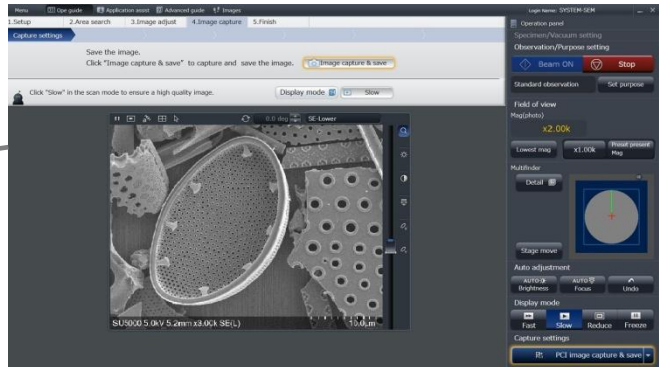


Image of EM Wizard screen

SU5000, a Schottky field emission scanning electron microscope

Main Features

- Incorporates the newly developed user interface EM Wizard, which provides every type of user with good levels of high resolution, repeatability and throughput
- Incorporates an automatic axis adjustment technology (auto-calibration) that can restore the microscope to its “best condition” state whenever necessary
- Designed to reduce as much as possible any limits as regards the observation sample, and employs a “draw out” specimen chamber that is compatible with large specimens (~200 mm ϕ , ~80 mmH)
- The time required from the start of evacuation until making an observation is within 3 minutes of the maximum level for field emission scanning electron microscopes

Main Specifications

Electron gun	ZrO/W Schottky emission electron gun
Accelerating voltage	0.5 to 30 kV
Irradiation voltage	0.1 to 2.0 kV
Resolution	2.0 nm@1kV ^{*1} , 1.2 nm@30kV, 3.0 nm@15kV Low vacuum mode ^{*2}
Magnification	Photograph magnification: 10-600,000 times Monitor display magnification: 18-1,000,000 times
5 axis motor-drive stage	X: 0-100 mm, Y: 0-50 mm, Z: 3-65 mm, T: -20/+90 deg., R: 360 deg.

*1 Deceleration mode option *2 Low vacuum mode option

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