

News Release

IMMEDIATE RELEASE

Hitachi High-Technologies Introduces New Regulus Series of Field-Emission Scanning Electron Microscopes

—High-Quality Imaging with Improved Resolution, Higher Magnification, and New Functions—

Tokyo, Japan, May 29, 2017 – Hitachi High-Technologies Corporation (TSE: 8036, Hitachi High-Tech) announced the introduction of the new Regulus series of field emission scanning electron microscopes (FE-SEM) on May 30. As a new brand for FE-SEMs, the Regulus series lineup comprises four models: the Regulus8100, developed as the successor to the SU8010, as well as the Regulus8220, Regulus8230, and Regulus8240, which extend the functions of the SU8200 series with the use of a common platform. The Regulus series offers enhanced functionality with improved resolution and operability.

Scanning electron microscopes (SEMs) are used to observe material structures in a diverse range of scientific fields, including nanotechnology, semiconductors/electronics, biology, and materials science. In recent years, cutting-edge science and technology around the world have been supported by advances in research into graphene and other new carbon materials expected to be applied to next-generation electronic devices, as well as polymeric materials and composite materials. SEMs used in the observation and evaluation of these materials must have low-accelerating-voltage imaging capabilities and high-sensitivity elemental-analysis capabilities to enable observation of surface microstructures as well as ultra-high-resolution imaging capacity. Moreover, SEMs must be able to consistently and reliably perform these functions.

With optimized electron optical systems, the new Regulus series features resolutions down to 0.9 nm in the Regulus8220/8230/8240 models and 1.1 nm in the Regulus8100 model—an improvement of roughly 20% in resolution at 1 kV landing voltage compared with previous models. The Regulus series employs a novel cold-field-emission (CFE) gun optimized for high-resolution imaging at low accelerating voltages. This CFE gun makes it possible to magnify high-resolution images of up to 2 million times,^{*1} compared with 1 million times in previous models. User-support functions have also been enhanced so that the advanced performance of the series can be fully leveraged, including functions to assist the operation of the signal detection system for analyzing diverse types of materials, as well as device-maintenance functions.

Hitachi High-Technologies forecast the sales of the Regulus Series at 300 units annually. The Company plans to hold a panel exhibition for the Regulus Series at the 73rd Annual Meeting of the Japanese Society of Microscopy in Sapporo, Hokkaido, Japan, from Tuesday, May 30 to Thursday, June 1, 2017.

Hitachi High-Technologies will continue to promote development and sales expansion of highly sophisticated solutions and technologies by responding swiftly to the needs of customers and markets, working from the customer's perspective as a fast-moving creator of cutting-edge businesses.



Regulus8100

【Main Features】

1. Cold field emission (CFE) gun optimized for low-voltage, high-resolution imaging with low aberration
2. Resolution improved by 20% than previous models
(Regulus8220/8230/8240: 0.9 nm/1 kV; Regulus8100: 1.1 nm/1 kV)
3. Maximum magnification doubled from 1 million times to 2 million times^{*1}
4. User-support functions to ensure high performance

【Main Specifications】

	Regulus8100	Regulus8240/8230/8220
Secondary Electron Image Resolution	0.8 nm (Accelerating Voltage 15 kV) 1.1 nm (Landing Voltage 1 kV) ^{*2}	0.7 nm (Accelerating Voltage 15 kV) 0.9 nm (Landing Voltage 1 kV) ^{*2}
Accelerating Voltage	0.5~30 kV	0.5~30 kV
Landing Voltage ^{*2}	0.1~2 kV	0.01~20 kV
Magnification	20x~1,000,000x ^{*3}	20x~2,000,000x ^{*3}
Stage Control	3-axis motor drive ^{*4}	5-axis motor drive

*1 Only in Regulus8240/8230/8220

*2 Observation in beam deceleration mode

*3 Magnification specified based on a display size of 127 mm × 95 mm

*4 The 5-axis motor drive is an option for the Regulus8100

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