Hitachi High-Tech HITACHI

Hitachi High-Technologies Corporation

24-14, Nishi-shimbashi 1-chome, Minato-ku Tokyo 105-8717, JAPAN

May 16, 2013

Hitachi High-Technologies Introduces the Ultimate Field Emission Scanning Electron Microscope: The SU8200 Series

—Innovative Cold Field Emission Gun with Unmatched Resolution and Beam Stability—

Hitachi High-Technologies Corporation (TOKYO: 8036, Hitachi High-Tech) announces the development and worldwide release of the new SU8200 series Field Emission-Scanning Electron Microscopes (FE-SEMs) employing a novel cold field emission (CFE) gun for improved imaging and analytical performance. The newly designed Hitachi CFE gun complements the inherent high resolution and brightness of conventional CFE with increased probe current and beam stability. The best SEM source gets even better.

SEMs are utilized in a broad range of scientific fields and applications including nanotechnology, semiconductors/electronics, materials science, biotechnology, and pharmaceuticals. The latest trends in advanced materials research are migrating towards carbon and polymer materials used in lithium-ion batteries, fuel cells, and catalysts in support of efficient technologies for future generations. Characterizing these modern materials requires extended SEM capabilities beyond pure resolution. Quality imaging at low acceleration voltage (Vacc) is critical to mitigate beam damage, and highly sensitive elemental analysis is required.

The heart of the new SU8200 series is the innovative CFE source. This novel CFE gun employs a Hitachi patented "Mild flashing" technique and a new vacuum system which greatly minimizes gas molecule deposition on the emitter tip. The emitter always operates in a "clean" state, and emission current and beam stability are significantly improved. The result is the ultimate SEM electron source offering high S/N, stability, and uncompromising resolution performance at low acceleration voltages. Further, these enhanced performance capabilities open a new gateway for low voltage elemental microanalysis. The SU8200 series supports a variety of large-diameter silicon drift detectors (SDDs) for high spatial resolution, high sensitivity, and high speed X-ray detection.

SU8200 system features include a new top detector filtering system for enhanced electron detection specificity. Fine contrast differentiation is now achieved by selectively filtering inelastic scattering electrons and directly detecting specific energy back scattered electrons. This selective filtering is particularly powerful for enhancing material contrast at low acceleration voltages. Vibration control measures for the stage and chamber, and optimization of the optical system contribute to the high resolution system performance of 0.8 nm at 15 kV and 1.1nm at 1kV. The SU8200 series includes three models (SU8220, SU8230, and SU8240) offering various stage, chamber, and detector configurations for a wide range of applications.

Hitachi High-Tech will conduct a poster panel exhibit of the SU8200 series at the 69th Annual Meeting of the Japanese Society of Microscopy to be held in Suita City, Osaka May 20-22, 2013.

Ultra high resolution FE-SEM SU8240

Creative Minds. Innovative Solutions.

<Main Features>

1. Innovative CFE gun yielding ultra bright, stable probe current for high-resolution, low voltage observations and elemental analyses
2. High resolution performance (1.1 nm / 1 kV, 0.8 nm / 15 kV)
3. Ultra-high vacuum gun and sample chambers to minimize contamination
4. Optional Top Filter detection system for fine material contrast differentiation

< Main Specifications>

		SU8220	SU8230	SU8240
Secondary electron image resolution *1		0.8 nm (Vacc 15 kV, WD=4 mm, Magnification 270,000x) 1.1 nm (Landing voltage 1 kV, WD=1.5 mm, Magnification 200,000x) *2		
Landing voltage		0.01 – 30 kV		
Magnification		20 – 1,000,000 x *3		
Stage control		5-stage actuator	5-stage actuator	5-stage actuator Regulus® stage *4
Traverse range	**X**	0-50 mm	0-110 mm	0-110 mm
	Y	0-50 mm	0-110 mm	0-80 mm
	R	360°		
	Z	1.5-30 mm	1.5-40 mm	1.5-40 mm
	T	-5-70°		
Stage reproduction		—	—	±0.5 μm or less

*1: Smallest particle gap measured in SEM images with Hitachi High-Tech standard samples
*2: Observation in deceleration mode
*3: Magnification specified based on a display size of 127 mm x 95 mm
*4: Regulus® (REGULated Ultra Stable: Hitachi High-Tech high-performance stage) is a registered trademark of Hitachi High-Tech in Japan and U.S.

The 69th Annual Meeting of the Japanese Society of Microscopy
http://www.microscopy.or.jp/conf2013/english/index.html

Product website
http://www.hitachi-hitec.com/global/em/fe/su8200.html

Contact:
Osamu Takagi, Kenichi Sato,
Marketing Department,
Science Systems Sales & Marketing Div.,
Science & Medical Systems Business Group,
Hitachi High-Technologies Corporation
Tel: +81-3-3504-7402

Media Inquiries
Reiko Takeuchi, Aiko Matsumoto,
CSR & Corporate Communications Dept.,
CSR Div.,
Hitachi High-Technologies Corporation
Tel: +81-3-3504-7760