News Release
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Hitachi High-Tech Announces the SU9600: Next-Generation Ultrahigh-Resolution Scanning Electron Microscope with High Throughput

Accelerating the expansion of digitalized assets and the deployment of Lumada 3.0 with a focus on the semiconductor field through the launch of a flagship model

Ultrahigh-Resolution Scanning Electron Microscope SU9600

Tokyo, October 31, 2025—Hitachi High-Tech Corporation ("Hitachi High-Tech"), has launched the Ultrahigh-Resolution Scanning Electron Microscope SU9600, which allows for highly accurate and precise observation of substances down to the sub-nano level*[1]. The SU9600 retains the world-leading high resolution. It also incorporates efficient and automated functions to provide improved throughput of data acquisition, thereby helping users with highly precise and highly efficient observation. In response to the growing demand for large-scale data analysis driven by the rise of AI, Hitachi High-Tech supports the research and development of next-generation semiconductors and advanced materials.

Hitachi Group is advancing Lumada 3.0, providing digital services that combines data generated from digitalized assets with domain knowledge and advanced AI. Through the SU9600 as a digitalized asset that acquires and generates data, Hitachi High-Tech is realizing the digital service "HMAX for Industry" that embodies Lumada 3.0, aiming to deliver greater value to our customers. By focusing on "Integrated Industry Automation" which aims to expand "HMAX for Industry" into growth industries horizontally such as semiconductors, we will contribute to drive innovation for frontline workers.

*1 Sub-nano level: Less than one nanometer (one millionth of a millimeter) in size.

SU9600 Development Background

Scanning Electron Microscopes ("SEM") are used in a wide range of fields, including semiconductor devices, electronics and advanced materials. They have become indispensable in cases requiring high-precision observation of microstructures, including everything from research and development to process control at production sites. In particular, the recent surge in AI-driven demand within the semiconductor market has accelerated development cycles and created a growing need for high-precision, high-throughput analysis using SEMs. This is driven by the requirement for faster innovation and precise dimensional control of devices with

reduced feature sizes. In response, expectations are rising for the use of SEM to provide feedback in research and manufacturing processes through large-scale data analysis.

Given these circumstances, Hitachi High-Tech has developed the SU9600. Building on the high precision and stable observation capabilities—characteristic of our existing high-resolution FE-SEMs*[2], we have developed automated imaging and data-handling workflows to help streamline observation by increasing throughput. The SU9600 can be used for a wide variety of observations in line with user needs including academic foundational research.
*2 Field Emission SEM

Main Features of SU9600

(1) High-Resolution, High-Precision Observation Powered by Hitachi's Proprietary Technologies
The SU9600 includes Hitachi's proprietary CFE Electron Gun (Cold Field Emission Electron Gun) technology. The CFE Electron Gun enables the emission of a highly stable and luminous electron beam, meaning observation can begin immediately after the device is started up. This allows for long, continuous acquisition of sharp, high-contrast images with excellent S/N*[3]. The SU9600's improved column structure has made the acquisition of even brighter and higher-precision images possible.
*3 S/N (Signal to Noise Ratio): Ratio of signal strength divided by noise intensity. Generally, the higher the S/N, the better.

In addition, Hitachi's proprietary in-lens objective lens technology enhances its world-class resolution, enabling high-precision observation in this flagship model of Hitachi High-Tech's SEM lineup.

Secondary Electron Resolution	0.4nm (accelerating voltage 30 kV)
	1.0nm (accelerating voltage 1 kV)
STEM Resolution*[4]	0.34nm (accelerating voltage 30 kV / lattice image obtained using scanning transmission electron microscopy)

(2) Custom Capture Modes to Suit User Needs through High Resolution and High Throughput
In addition to providing increased versatility in terms of setting the electron beam scanning time, SU9600 also includes a Custom Reduced Scan function*[4], enabling users to select only their desired field of view for imaging. The device also features a High-Definition Image Capture function*[4] capable of capturing high-resolution images of up to 40k pixels. Combining these functions enables the efficient acquisition of high-precision image data.

(3) Automatic Observations Streamline Large-Scale Data Acquisition
With recent advances in information processing technology, analysis is performed based on large amounts of data obtained by observing many different areas at various operating conditions. The SU9600 can be equipped with EM Flow Creator*[4], an automation software that helps reduce operator workload when acquiring large amounts of data. This enables operators to configure a series of steps by combining condition settings such as magnification, stage position, focus and contrast according to their specific requirements. As a result, users can run continuous automatic observations, which significantly reduces operator workload and minimizes the manual configuration and adjustment tasks that were previously required.

*4 STEM Resolution, Custom Reduced Scan function, High-Definition Image Capture function, and EM Flow Creator are optional functions.

About SU9600

https://www.hitachi-hightech.com/ca/en/products/microscopes/sem-tem-stem/fe-sem/su9600.html

About Hitachi High-Tech
Hitachi High-Tech provides cutting-edge technologies, products and services to society and customers with its corporate vision of "Changing the World and Future with the Power of Knowledge" to contribute to a sustainable global environment, healthy, safe and secure lives, and the sustained development of science and industry. We manufacture and sell clinical analyzers, biotechnology products and radiation therapy systems in the healthcare field, semiconductor manufacturing and inspection equipment in the semiconductor field, as well as analytical systems and electron microscopes used in environmental fields and materials research. We are also engaged in a wide range of business areas globally, providing high added-value solutions in battery, communication infrastructure, railway inspection, digital and other industrial and social infrastructure fields. We provide solutions through a deeper understanding of the issues facing society and our customers to contribute to realizing a sustainable society. The company's consolidated revenues for FY2024 were approx. JPY 756.5 billion.
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Business Contact
Bito
Global Sales Strategy Dept.,
Business Strategy Planning Div.,
Core Technology & Solutions Business Group,
Hitachi High-Tech Corporation
nanami.bito.vz@hitachi-hightech.com