Feature

1.Substantially Larger Specimen Chamber Accommodates Oversized and Heavy Samples

■Robust Stage for Flexibility in Sample Size, Shape, and Weight

- The specimen exchange sequence prevents potential damage to the system or the sample.
- Exchange the specimens without venting the specimen chamber, improving throughput.
- Increase sample manipulation with Stage Free Mode*.
- The Chamber Scope enhances the safety of stage movements*.

■Increased Viewing Area—SEM MAP Expands the Boundaries of Sample Navigation

- Integrated in-chamber camera display
- Easily navigate the entire observable area
- Detector-oriented rotation

2.Evolution of the Market—Improved Automatic Functions for Operators of Any Skill Level

■Multiple Modes of Operation

■ Automatic Functions for Operators of Any Skill Level

- Improved auto algorithms—3X faster (compared with the Hitachi Model S-3700N)
- Improved auto focus function
- Features of our proprietary Intelligent Filament Technology (IFT):

■Multi Zigzag enables wide-area observation across multiple areas.

■Report Creator generates reports of acquired data.

3.Integrated Solutions for Various Applications

■High Sensitivity Detectors Supporting All Observation Requirements

- CL observation Using UVD*
- Segmented BSED allows for visualizing composition and topography.

■A Variety of Accessories Mountable onto Any of the 20 Ports in the Innovative SU3900 Specimen Chamber.

■SEM/EDS Integration System*

■3D Modeling Software: Hitachi map 3D*

■Image Processing, Measurement, and Analysis Software: Image-Pro for Hitachi

*optional

1.Substantially Larger Specimen Chamber Accommodates Oversized and Heavy Samples

■Robust Stage for Flexibility in Sample Size, Shape, and Weight

- **The specimen exchange sequence prevents potential damage to the system or the sample.**
  The procedure for exchanging specimens can be performed by referring to the graphic user interface to avoid the risk of damage due to human error, even with irregular or large samples.

- **Specimen Exchange Chamber***
  Exchange the specimen without venting the specimen chamber, improving throughput.

- **Increase sample manipulation with the Stage Movement Restriction Cancellation function*.**
  The SU3800/SU3900 can be configured with the Stage Movement Restriction Cancellation function*, which increases the flexibility of stage movement. The operator can move the stage based on their imaging requirements free of restrictions.
  Note: When the Stage Movement Restriction Cancellation function is used, caution and the Chamber Scope must be used in order to ensure safe operation.

- **The Chamber Scope enhances the safety of stage movements*.**
  The Chamber Scope is a device for monitoring the inside of the specimen chamber. By using an infrared camera the inside of the specimen chamber can be monitored during SEM image observation. It is also possible to magnify the Chamber Scope image and view the sample position more clearly.

*optional

■Increased Viewing Area—SEM MAP Expands the Boundaries of Sample Navigation

- **Integrated in-chamber camera display**
  SEM MAP, now in-chamber, offers wide-angle camera navigation* within the graphic user interface. By specifying the observation target position on SEM MAP, the operator can move the stage seamlessly to any position within the observable area and switch from a wide field of view color image to a high-magnification SEM image by freely zooming in and out. Any image can be imported and utilize this capability.

*optional

- **Easily navigate the entire observable area**
  Wide-area SEM MAP images are obtained by stitching numerous images. Navigate to any location of the observable areas, 127 mm dia./200 mm dia. (SU3800/SU3900) with a single click. If necessary, the stage will rotate automatically during navigation.

- **Detector-oriented rotation**
  The graphic user interface makes it easy to visually grasp the orientation between the sample and the detectors allowing the operator to seamlessly navigate regions of interest, incorporating rotation. During the observation/analysis of samples with topographic irregularities, rotating the stage and scanning direction while looking at SEM MAP alleviates challenges, such as the influence of shadows.

2.Evolution of the Market—Improved Automatic Functions for Operators of Any Skill Level

■Multiple Modes of Operation

Features a graphical user interface offering easy operation and flexibility by:

- Ability to control stage navigation and observation conditions via mouse
- Using touchscreen and/or control panel
- Large main window at 1280 x 960 pixels
- Simultaneous display for different signal types

■Automatic Functions for Operators of Any Skill Level

- **Easily navigate the entire observable area (compared with the Hitachi Model S-3700N)**
  After sample setting is complete, various image adjustments (AFS/ABCC/AFC/ASC) are automated, so that sample images can be acquired immediately after starting observation.

  Automated Functions:
  AFS = Filament Saturation
  ABCC = Brightness Contrast Correction
  AFC = Focus Correction
  ASC = Stigma Correction

Thanks to the high-speed auto functions based on new design algorithms, the time to execute auto image-adjustment functions is 3X shorter as compared with the previous model. High-quality data acquisition is faster than ever!

- **Improved Auto Focus function**
  The improved auto-focus algorithm now makes it even easier to quickly acquire high-quality images, especially for planar samples.

- **Features of our proprietary Intelligent Filament Technology (IFT):**
  o Automatic monitoring and control of filament condition ensures long filament life.
  o Real time monitoring and feedback displays remaining filament life.

  With this function, the operator can use the device with confidence even for long-term continuous observation, such as particle analysis.

■**Multi Zigzag* Enables Wide-Area Observation across Multiple Areas**

The Zigzag function enables automatic acquisition of a continuous field of view. The Multi Zigzag function enables zigzag settings at multiple locations on the sample stage, allowing the acquisition of multiple high-magnification images at user-selectable regions of interest. These images can be montaged to create pixel-dense-micrographs by connecting the acquired images with the Viewer function.

*optional

- **Report Creator generates reports of acquired data**
  Report Creator can export data onto user-customizable templates, not only for SEM images but also for acquired images such as EDS data and CCD camera images. The created reports can be saved and edited in any Microsoft® Office format.

3.Integrated Solutions for Various Applications

■**CL Observation Using UVD***

The SU3800/SU3900 feature a high-sensitivity UVD. UVD can acquire images and CL information with secondary electron information by detecting the light generated by

collisions of secondary electrons and residual gas molecules accelerated by a bias electrode.

- **Segmented BSED allows for visualizing composition and topography**

  With a 5-segment design, it is possible to observe composition images, 3D images, and topographic images from 4 directions without sample rotation. Due to the design and high sensitivity of the detector, high-resolution imaging with improved S/N retention is possible.

■**A Variety of Accessories Mountable on Any of the 20 Ports on the Innovative SU3900 Specimen Chamber.**

The SU3900 is equipped with a large multipurpose specimen chamber to accommodate observation of large samples.

■**SEM/EDS Integration System***

The newly developed SEM/EDS integration system unifies stage location, condition setting, analysis, reports, and a series of operations from the SEM graphic user interface of the SU3800/SU3900. Controlling everything from the SEM graphic user interface improves throughput and reduces operator tasks.
*optional

■**3D Modeling Software: Hitachi map 3D***

Hitachi map 3D automatically combines 4 images acquired from different directions using the backscattered electron detector to construct a 3D model. Measurements such as height between two points, volume, and simple surface roughness (area roughness, line roughness, etc.) are possible. Since all backscattered electron data is collected in a single acquisition, it is not necessary to tilt the sample or adjust the field of view.

■**Image Processing, Measurement, and Analysis Software: Image-Pro for Hitachi**

The SU3800/SU3900 feature IPI, which transfers SEM images to advanced image-processing software (Image-Pro® manufactured by Media Cybernetics Inc.). The operator can transfer data from SEM images to sophisticated image-analysis software with just one click.

SPECIFICATION

Items	Product Features	
	SU3800	SU3900
Secondary Electron Resolution	3.0 nm (accelerating voltage 30 kV, WD＝5 mm, high vacuum mode)	
	15.0 nm (accelerating voltage 1 kV, WD＝5 mm, high vacuum mode)	
Backscattered Electron Resolution	4.0 nm (accelerating voltage 30 kV, WD＝5 mm, low vacuum mode)	
Magnification	×5 to ×300,000 (magnification of image*1)	
	×7 to ×800,000 (magnification of actual display*2)	
Accelerating Voltage	0.3 kV to 30 kV	
Low Vacuum Mode Setting	6 to 650 Pa	
Image Shift	± 50 μm (WD＝10 mm)	
Maximum Specimen Size	Φ 200 mm	Φ 300 mm
X	0 to 100 mm	0 to 150 mm

Specimen Stage	Y	0 to 50 mm	0 to 150 mm
	Z	5 to 65 mm	5 to 85 mm
	R	360° in continuous mode	
	T	−20 to +90°	
	Maximum Movable Range	Φ 130 mm (in combination with R)	Φ 200 mm (in combination with R)
	Maximum Movable Height	80 mm (WD= 10 mm)	130 mm (WD= 10 mm)
	Motor Drive	5-axis motor drive	
Electron Optics	Electron-Gun	Pre-centered cartridge type tungsten hairpin filament	
	Objective-Lens Aperture	4-hole movable aperture	
	Detectors	Secondary electron detector, sensitive semiconductor backscattered electron detector	
	WD for EDX analysis	WD＝10 mm (T.O.A＝35°)	
Image Display	Auto-Axis Alignment. Function	Beam control : auto (AFS→ABA→AFC→ABCC)	
		Optical axis adjustment: auto (current alignment)	
		Beam brightness: auto	

Auto Image Adjustment Function		Auto brightness and contrast control (ABCC)
		Auto focus control (AFC)
		Auto stigma and focus (ASF)
		Auto filament saturation (AFS)
		Auto beam alignment (ABA)
		Auto start (HV-ON→ABCC→AFC)
Operation Auxiliary Function		Raster rotation, dynamic focus, image improvement function, Data input (point-to-point measurement, angle measurement, texts),preset magnification, Stage positioning navigation function (SEM MAP), beam marking function
Optional function		■Hardware: Track ball, Joystick, Operation panel, Compressor, Ultra sensitive low vacuum detector (UVD), Chamber scope, Camera navigation system ■Software: SEM data manager, External communication interface, 3D-capture, Stage free mode, EDS integration
Options(for External Devices)		Energy dispersive X-ray spectrometry (EDS), Length dispersive X-ray spectrometry (WDS),Various external stages (heating stage, cooling stage, tensile stage)

1. Set magnification with 127 mm x 95 mm (4" x 5" picture size) as display size.

2. Set magnification with 509.8 mm x 286.7 mm (1,920 x 1,080 pixels) as display size.