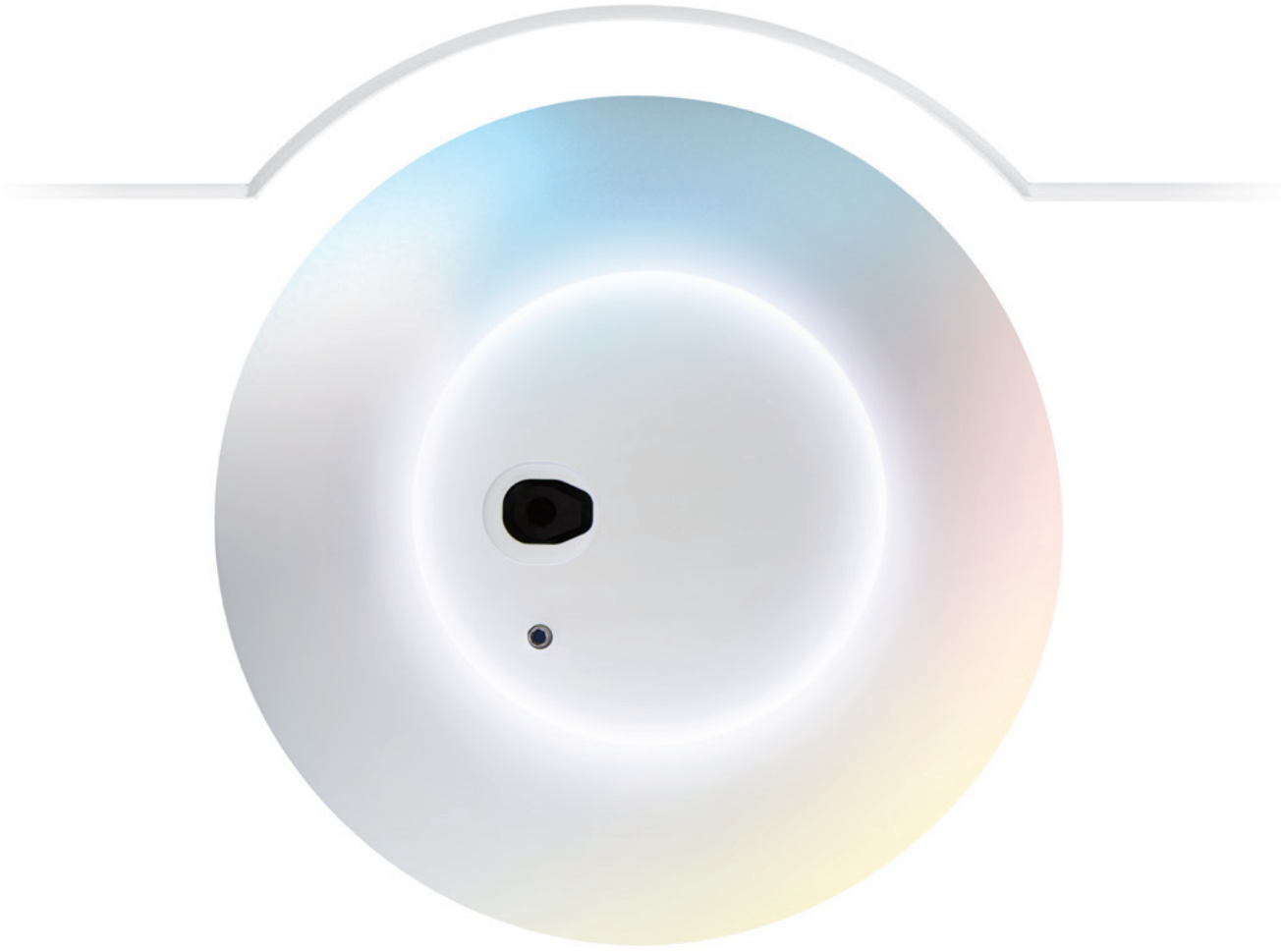
JEOL

Scientific / Metrology Instruments

Electron Microscope

Solutions for Innovation

JEM-120i

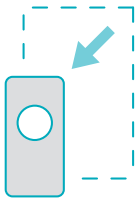


JEOL Ltd.

With compact size & simple operation

It is a Useful Tool for Every User!

Compact





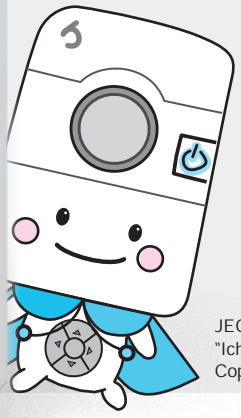
Easy To Use

Expandable



JEM-120i





JEOL Character
"Ichiemon"
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Specimen observation with simple operation

It takes only 4 steps from loading a specimen to completing observation

Step1

Observation Preparation

Insert the specimen holder and click the Start Button

Voltage increases and emission starts automatically for observation. A wide area image is captured at the same time.

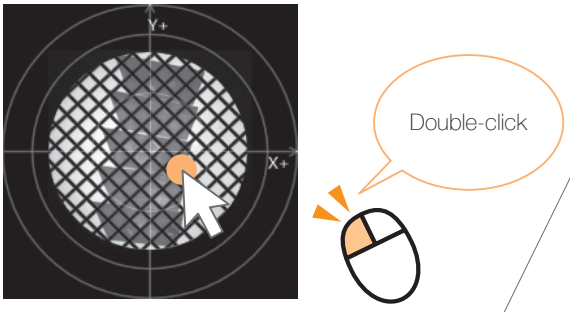


Step2

Searching for a Field of View

Click anywhere on a Map

The stage moves to the clicked position automatically.



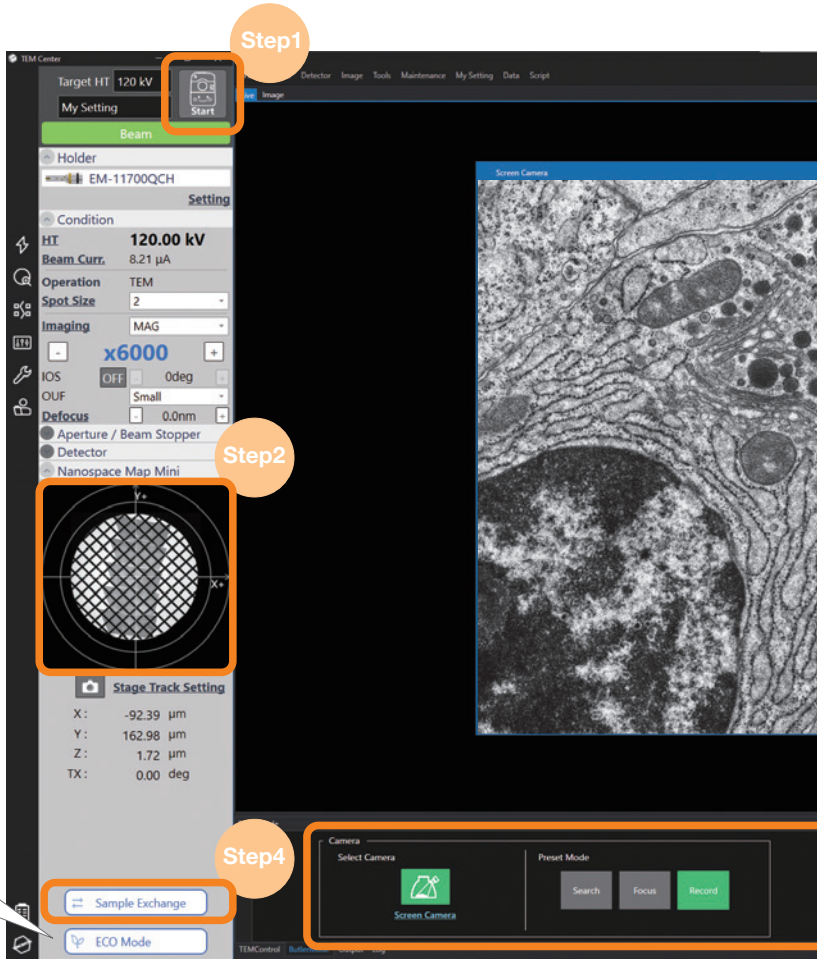
ECO

Make Energy Saving Part of Your Research with ECO Mode

By switching to ECO mode when the instrument is not used, you can save power consumption by up to 80%* compared with when the TEM is in operation.



*When accelerating voltage is 120 kV in TEM mode



Easy To Use

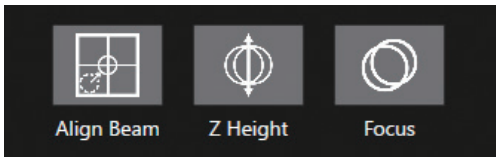
Step3

Image Capture

Click the Capture Button

Butler mode assists data acquisition.
Even a beginner can capture data easily.

Automatic alignment

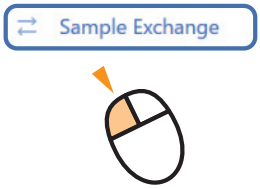


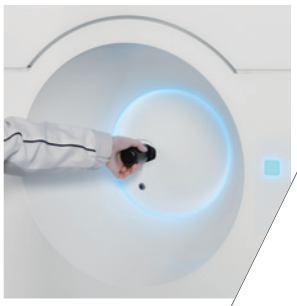
Step4

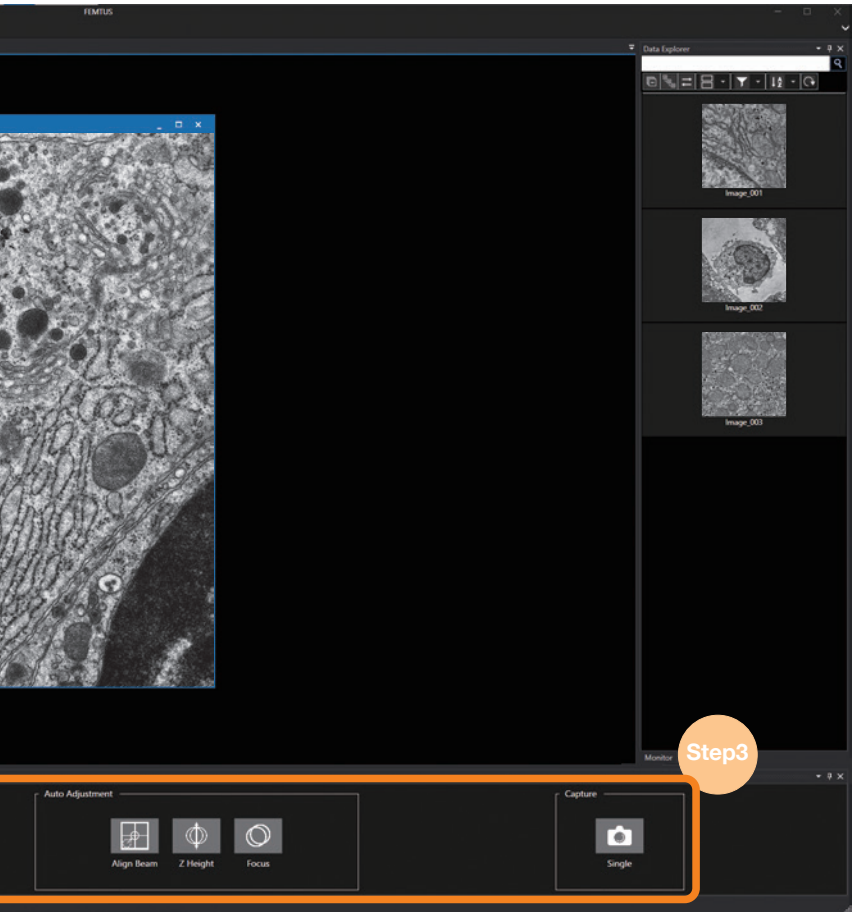
Observation Completed

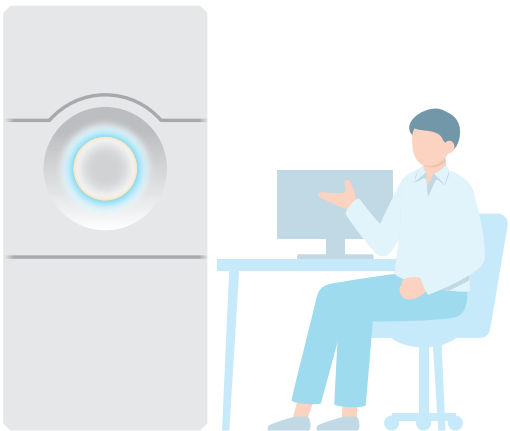
Click the Sample Exchange Button

Take out the specimen holder while keeping the emission on.



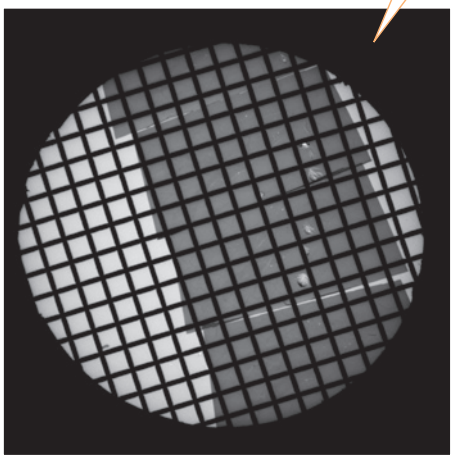




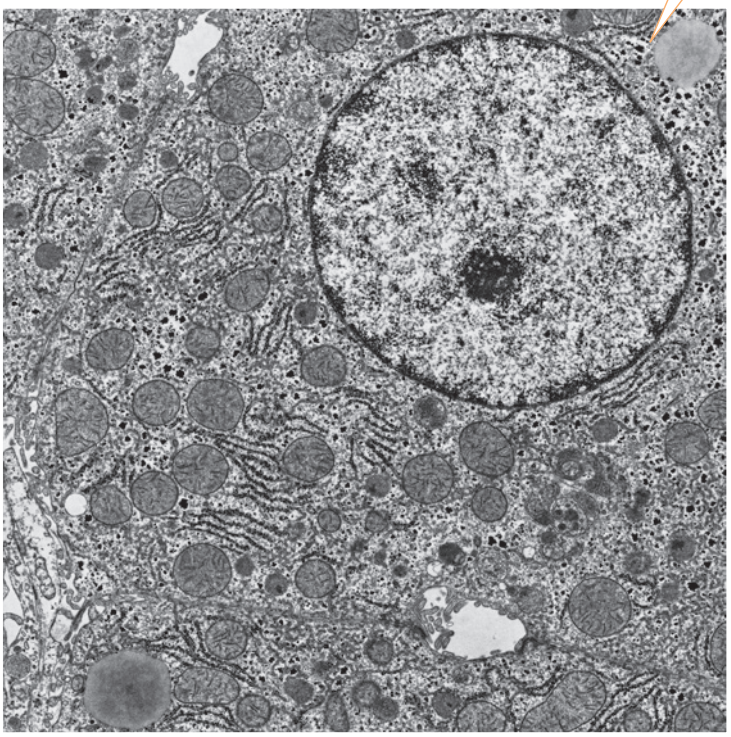


Seamless observation without switching magnification mode

The JEM-120i is equipped with an enhanced TEM control system and fully automated apertures, eliminating the need for switching magnification mode and selecting an aperture. Observation operations can be performed more smoothly than with previous models.



500 μm

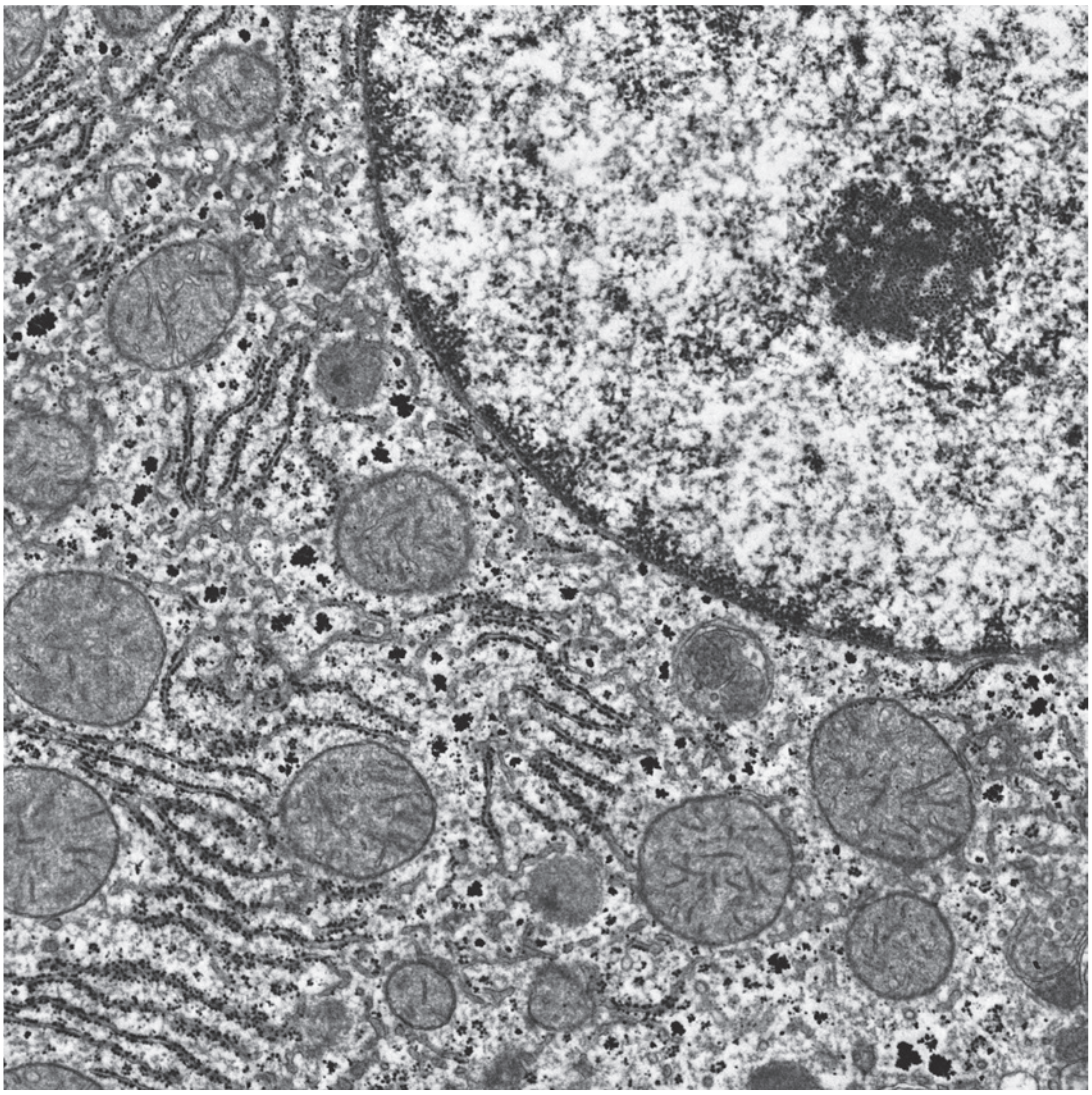


2 μm

Q. What is the drift correction function?

A. In some cases, a section shifts in one direction due to its shrinkage or other reasons. If you capture an image in this condition, the image distorts in the direction of the drift. The incorporated drift correction function helps users capture clear images.

Easy To Use

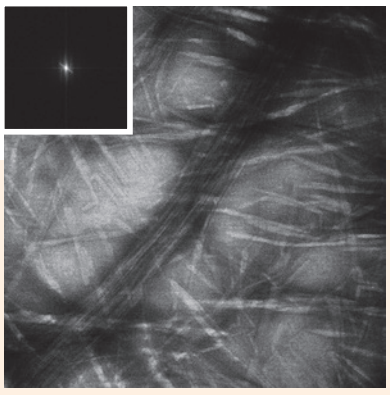


1 μm

Specimen: Liver of rat

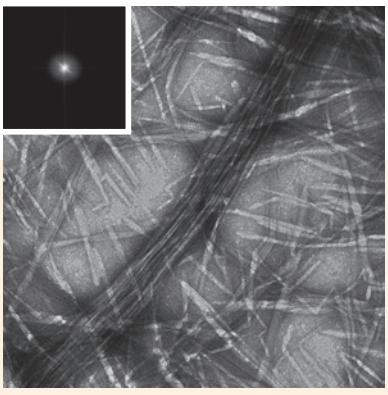
The membrane structure including the nuclear membrane, rough endoplasmic reticulum, and smooth endoplasmic reticulum can be viewed clearly.
(Accelerating voltage: 120 kV)

Without drift correction



100 nm

With drift correction



100 nm

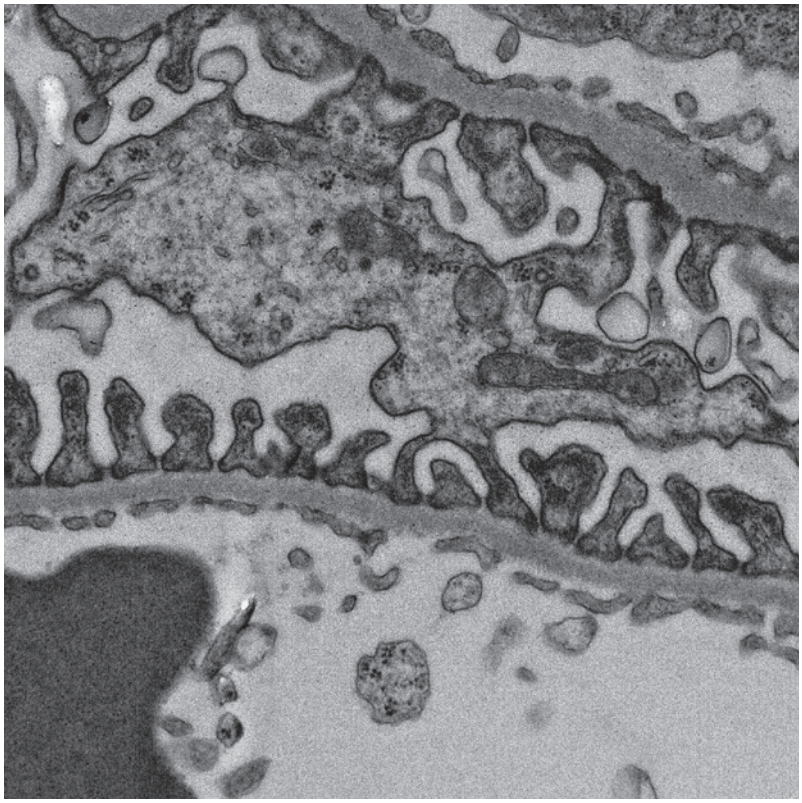
Specimen:
Chitin nanofiber
(negative staining)





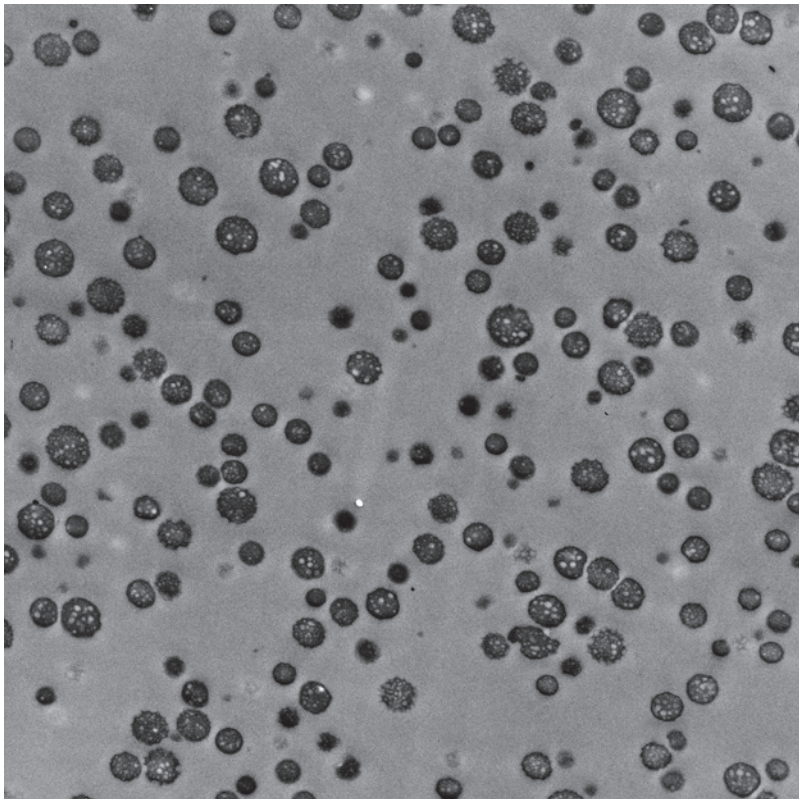
One camera from a field of view search to data acquisition

The incorporated multi-functional digital camera “NeoView” enables observation with high sensitivity and low noise. A high frame rate and smooth field of view (FOV) search function allow you to find an FOV and acquire data without switching cameras.



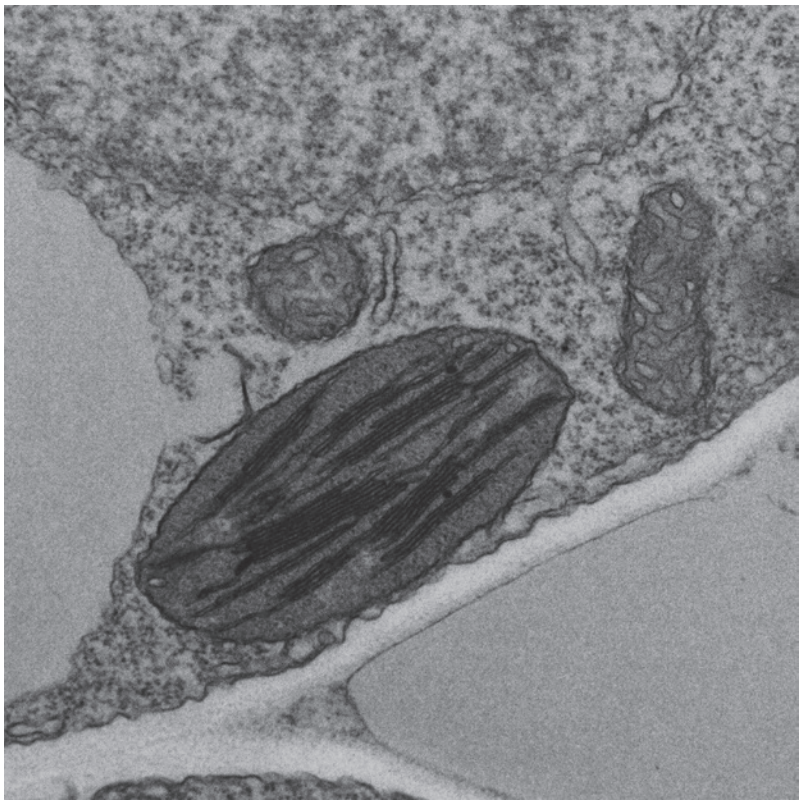
Specimen: Kidney of mouse

The microstructure of the basement membrane can be clearly viewed.
(Accelerating voltage: 80 kV)



Specimen: ABS resin

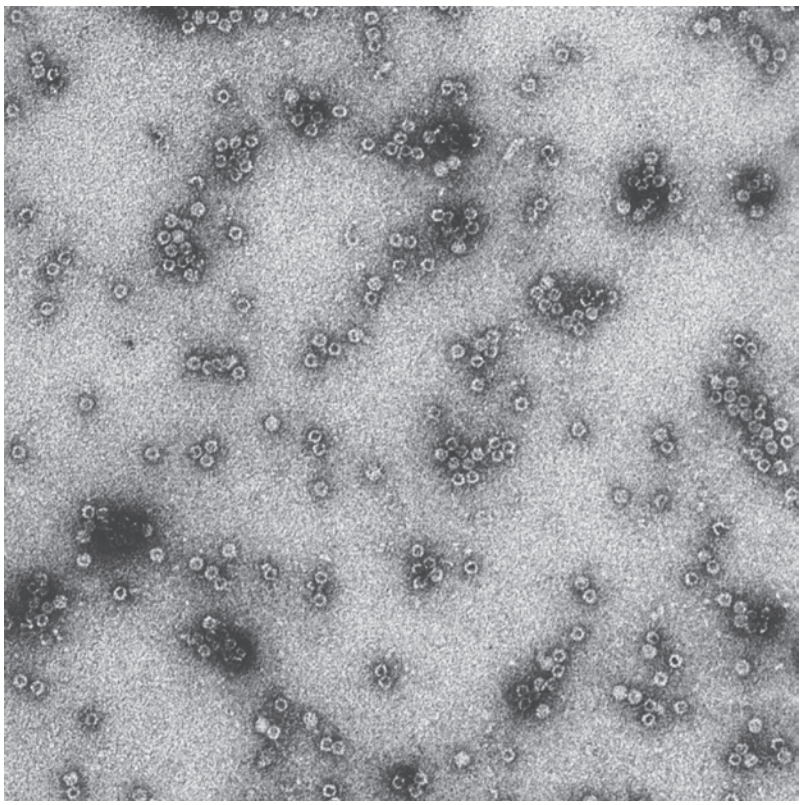
The sea-island structure of butadiene rubber can be viewed with high contrast.
(Accelerating voltage: 120 kV)



500 nm

Specimen: Carrot leaf

The membrane structure, such as thylakoid membrane and granum in a chloroplast can be clearly observed.
(Accelerating voltage: 120 kV)



100 nm

Specimen: Ferritin

Protein particles containing iron can be viewed. The NeoView camera is also useful for specimen screening for cryo-observation.
(Accelerating voltage: 120 kV/negative staining)



Size is more compact, operation has become more user-friendly



The totally new external appearance and compact size fits any installation location and can support users from normal use to maintenance.

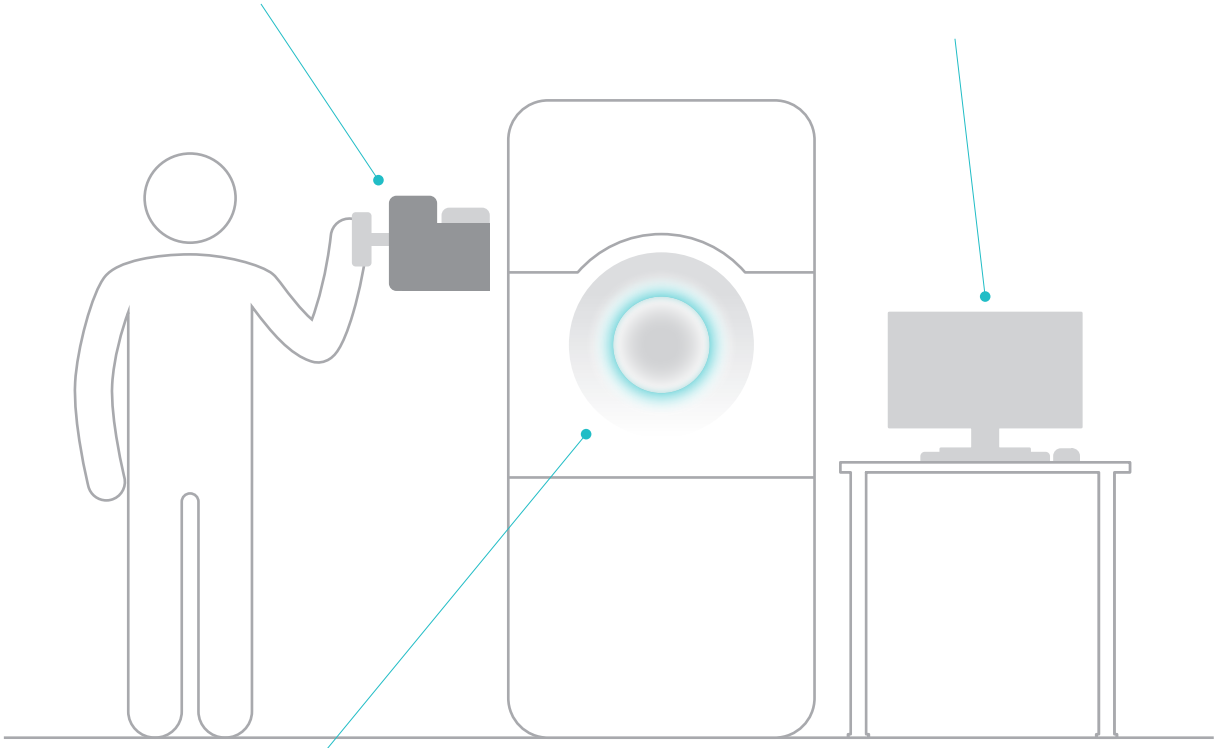
① Replacing the filament is easy

A newly developed cartridge type filament unit helps make filament replacement easy and safe. In addition, an auto conditioning function increases the accelerating voltage automatically after filament replacement.

③ Simple operations with mouse and keyboard only

The new TEM control software allows the user to operate the TEM easily with a mouse and keyboard. This eliminates the need for a dedicated operation panel* and is suitable for remote operation.

*Operation panel can be configured as an option.



② A light tells you the state of the instrument

The instrument has an LED light on its front and its color changes depending on the state of the TEM. You can determine its operating state at a distance.



Vacuum level OK

Specimen holder IN

Instrument is being vented

Instrument is being baked

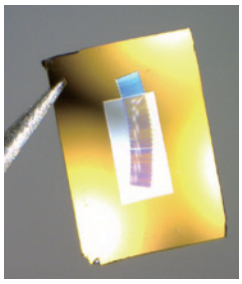


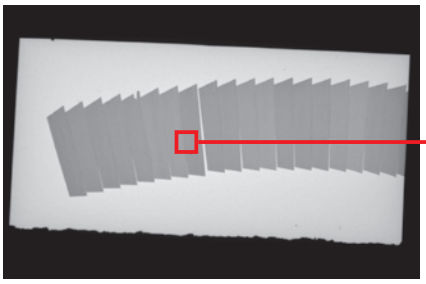
A variety of options provide more applications

The JEM-120i supports a wide range of retrofits and meets customer's needs of adding new functions after purchase.

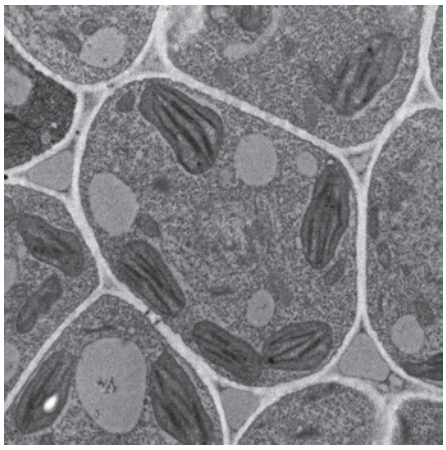
Specimen Plate with Supporting Film for large area observation
SiN Window Chip

This is a specimen plate using high-strength SiN film. It has no grid bar and enables wide field-of-view observation at millimeter sizes. The stub is chemically resistant and the specimen can be stained in place.





500 μm

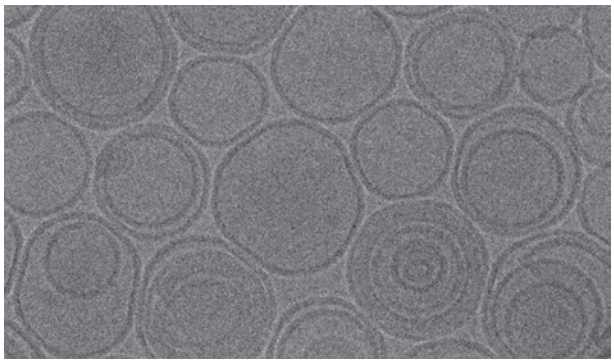


Specimen: Carrot leaf

2 μm

JEOL fiber coupling CMOS camera
SightSKY

You can mount JEOL's unique CMOS camera in addition to the incorporated multi-functional digital camera "NeoView". This high-resolution camera with 19 megapixels produces high-definition images.



Specimen: Liposome (ice embedding)

100 μm



Specifications of SightSKY	
Frame rate	58 fps (all pixels read)
Effective pixels	19 M pixels (5,688 × 3,336 pixels)
Image saving format	TIFF, BMP, JPG
Pixel size	6.4 × 6.4 μm²
Effective element size	36.40 × 21.35 mm²

Bottom cameras manufactured by other companies can be used. For details, contact your JEOL service office.

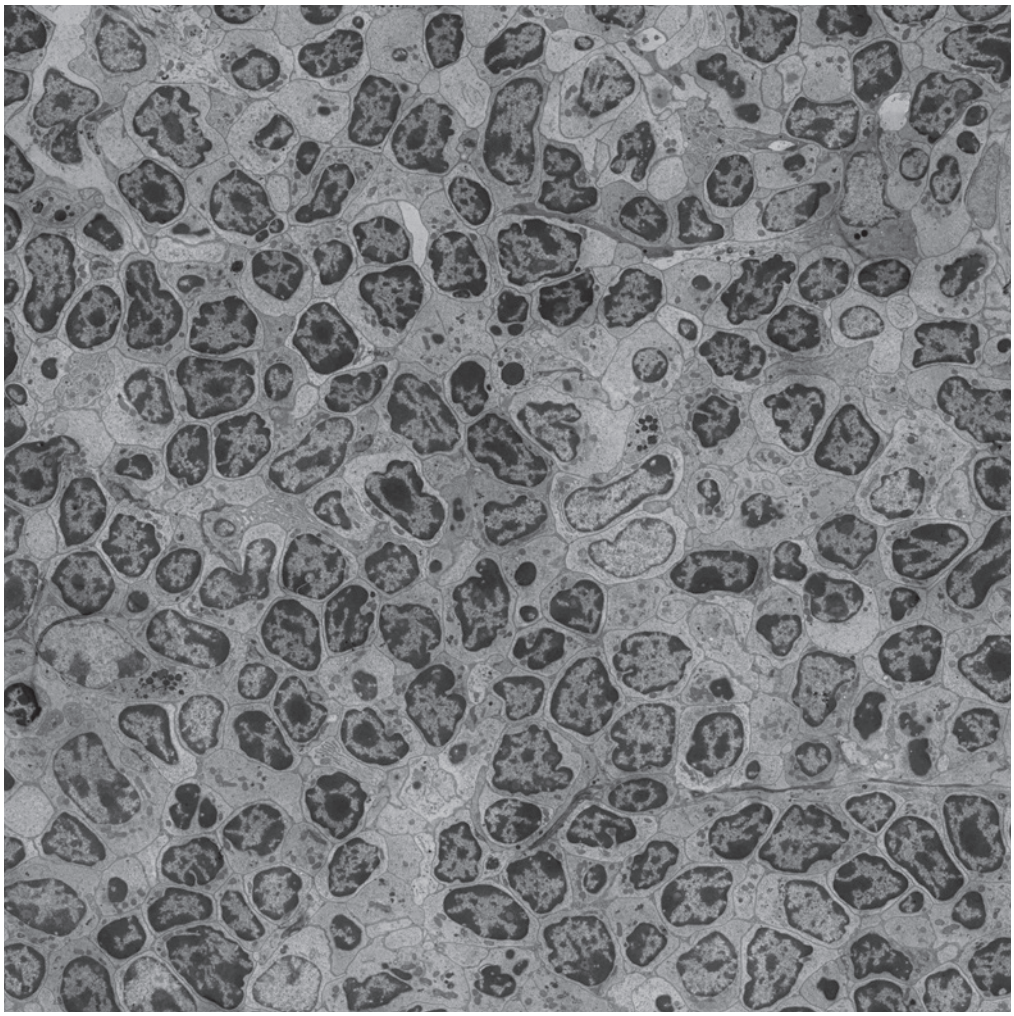


A variety of options provide more applications

Ultra-wide field of view montage system
Limitless Panorama (LLP) (Shot Meister manufactured by SIF is required separately.)

Ultra-wide field of view observation of biological specimens

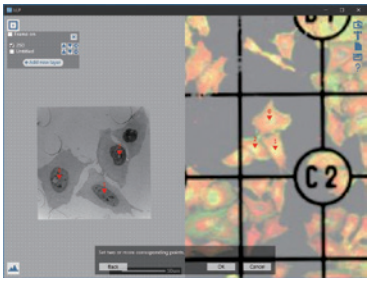
Studying biological specimens with complex structure requires not only observing fine structures such as organelle, but also obtaining morphological data of the entire tissue. Limitless Panorama (LLP), a combination of beam scan and stage scan functions, enables automatic capture of images over an ultra-wide area with no limit.



Specimen: Spleen of mouse Number of images: 25 x 25
Magnification: x8,000

Link function with optical microscope images (LLP-CLEM)

Correlative Light Electron Microscopy (CLEM) is available. You can perform positional alignment by selecting the same three or more points on both images. Furthermore, LLP alone can capture ultra-wide area and high-definition images.

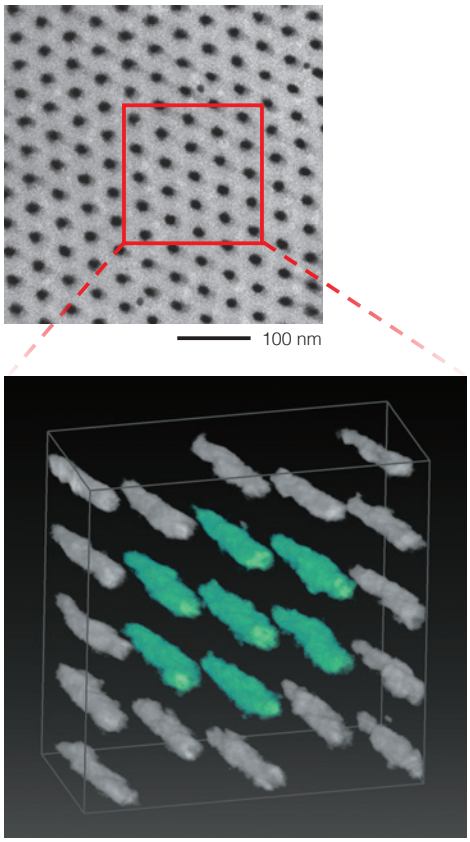


Specimen: Hela cell

3D structure observation

TEM Tomography (TEMography manufactured by SIF is required separately.)

Captures a series of tilt images to acquire information about internal structure of specimens three-dimensionally



Recorder

Software for acquiring the continuous-rotation images required for 3D reconstruction of TEM images.

Composer

Software for performing 3D reconstruction of continuous-rotation images acquired with TEM.

Visualizer-evo

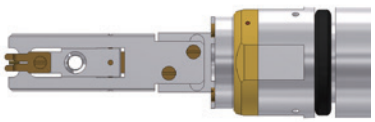
Software for visualizing 3D reconstruction data. Software for viewing the 3D reconstruction data. It is possible to render the 3D data quickly and with high quality, even without a special rendering board.

Specimen: Cylinder structure (en bloc staining in osmium tetroxide)
Tilt angle: -70° to +70° (1° step)
Specimen image: Courtesy of Professor Hiroshi Jinnai,
Institute of Multidisciplinary Research for Advanced Materials (IMRAM),
Tohoku University

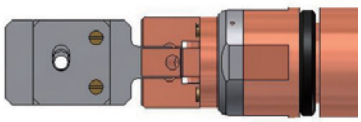
Select according to your purpose

Specimen holders

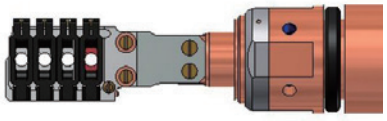
Quick Change Holder



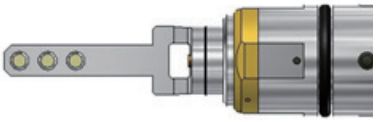
Common Specimen Holder & Beryllium Analytical Retainer



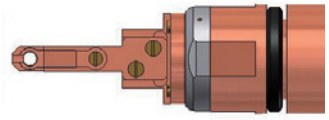
Specimen Quartet Holder



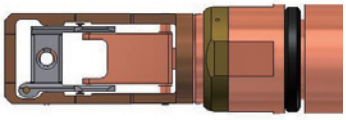
High Tilting Specimen Trio Holder



High Tilting Holder



Specimen Tilting Holder



Installation room/Specifications

Version *1		High contrast configuration (HC)	High resolution configuration (HR)
Resolution (lattice image)		0.2 nm	0.14 nm
Accelerating voltage		20 to 120 kV	
Magnification		×50 to ×1,200,000	×50 to ×1,500,000
Specimen drive	Shift-X, Y	±1.0 mm	
	Shift-Z	±0.3 mm	
	Tilt-X	±35° (Quick change holder)	±30° (Quick change holder)
		±80° (High Tilting Holder)	
	Tilt-Y	±18° (Specimen tilting holder)	±30° (Specimen tilting holder)
Evacuation system		Full dry evacuation system	
Image detector (NeoView)	Frame rate	30 fps (all pixels)	
	Number of pixels	4 M pixels	
	Format	16-bit TIFF, BMP, JPEG	

*1 Select either configuration when ordering the instrument.
* To use EDS or SCAN functions, contact your JEOL service office.

Installation room environment *2		
Room temperature		15 to 25 °C (allowable fluctuation 1 °C/h or less)
Humidity		60% or less
Installation room dimensions	Floor area	3,000 mm (W) × 3,300 mm (D) or greater
	Ceiling height	2,200 mm or more
	Entrance	900 mm (W) × 1,900 mm (H) or more
Power supply	Main unit	Single phase 200 V, 50/60 Hz, 5 kVA
	Main breaker	50 A
	Allowable power fluctuation	±5% or less (moderate voltage variation)
	GND terminal	100 Ω or less × 1
Cooling water	Flow rate	6 L/min
	Radiated heat to cooling water	1,600 W
	Water pressure	0.1 to 0.14 MPa (gauge pressure)
Compressed air	Pressure	0.5 MPa (gauge pressure)

*2 The values shown are guidelines for preparing the installation room.
Make a separate inquiry about environmental measurements for the installation room.
* For earthquake-resistant fixing brackets, there will be a separate fee.

Main components

Standard configurations

Electron microscope main unit
Pneumatic drive objective aperture
Pneumatic drive selected area aperture
Multi-functional digital camera “NeoView”
Computer unit

Options

Filament unit (tungsten, LaB_6)
Motor drive aperture
(Condenser lens, objective lens, selected area)
Motor drive beam stopper
Pneumatic drive Faraday cage
Pneumatic drive hard X-ray aperture
Quick change holder
27-inch monitor
Microscope operation panel
Trackball
Specimen control panel
Anti-contamination device
Air compressor
Anti-ice contamination cryo fin*3

*3 Available only in the HR configuration



Computer unit



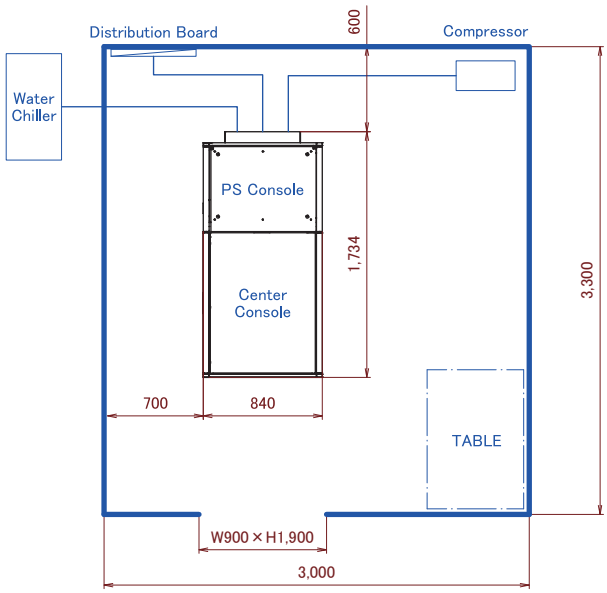
27-inch monitor (Optional)



Microscope operation panel (Optional)



Installation room layout



Note: Specifications guaranteed when no modifications or additions are made, and are subject to change without notice.

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