

Hitachi High-Technologies

Hitachi Tabletop Microscope

TM-1000



HITACHI

A compact tabletop microscope invites you to the stereoscopic micro world



*Compact size
Easy to use
Solid construction
Superior resolution and higher magnification than an optical microscope
Ideal for a variety of sample types*

Features

- 1** *Energy-saving design^{*1} and compact size*
- 2** *No metal coating required to observe non-conductive samples*
- 3** *Easy to use*
- 4** *Quick change through desired magnifications*
- 5** *Stereoscopic observation with greater depth of focus^{*2}*

^{*1} 80% less power consumption than the predecessor

^{*2} in comparison with optical microscope



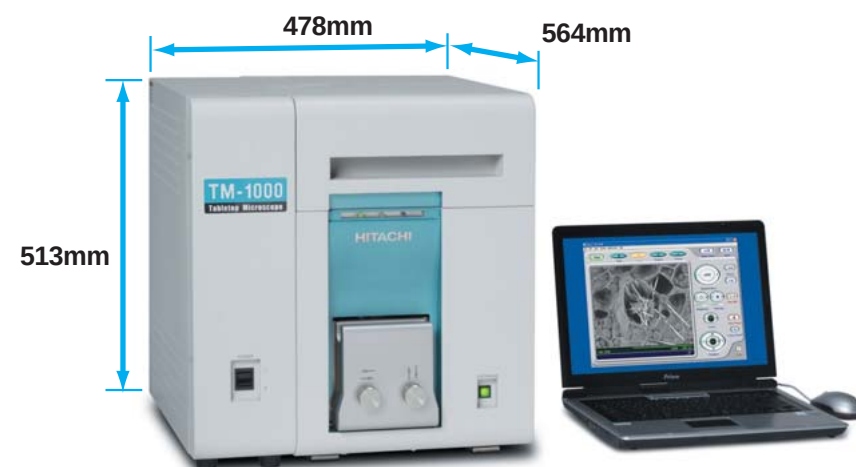
Reference example of PC installation.
An associated PC to be procured locally.

1 Energy-saving design and compact size

Table-top size and ready for observation anytime

The TM-1000 is ready to image at anytime using a standard power outlet. Power is only needed during use, creating an energy-saving, eco-friendly system.

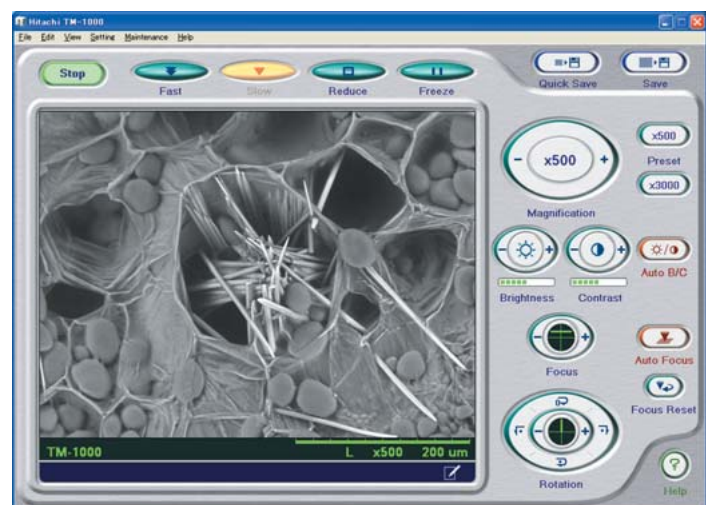
The compact and portable design allows it to fit on any standard laboratory bench or desk, requiring no special room or environment.



Energy-saving design without continuous power ON

The TM-1000 incorporates a user friendly, intuitive screen controlled by a mouse that any novice user can quickly learn. Designed for both educational and professional research labs, the Tabletop Microscope's ease of use brings the power of high resolution microscopy to any facility.

Simply insert your sample into the chamber, pump down and click the start button; it's that easy. The image is automatically focused and ready for you to explore the fascinating structures of the micro-world.



2 No metal coatings required for observation of non-conductive sample types

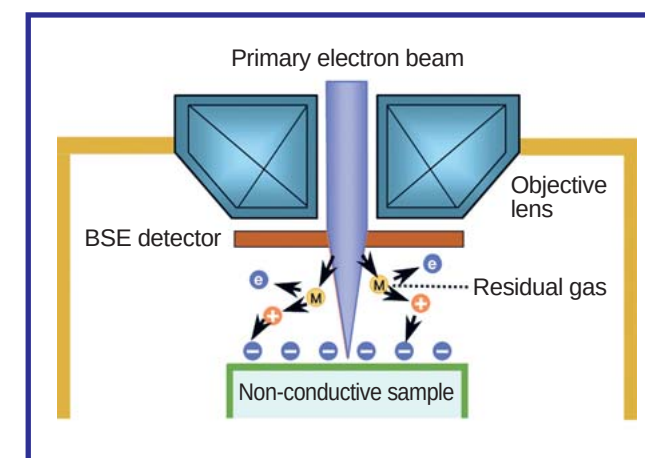
No coating is required due to observation under variable pressure vacuum

Samples imaged by the TM-1000 require no special preparation such as metal coatings of non conductive samples, giving the ability to observe a broad variety of samples quickly and easily.

Observation utilizing Variable Pressure vacuum

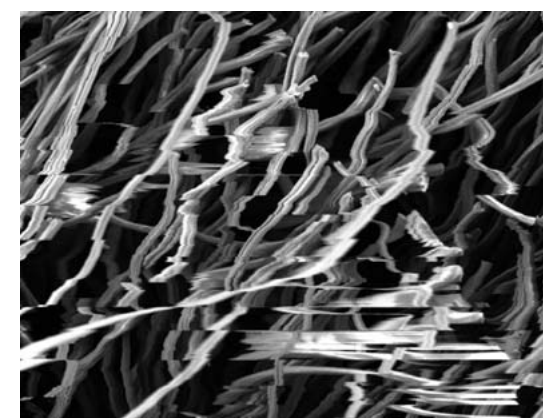
Because the Tabletop Microscope is based on Variable Pressure technology, sample throughput is high*¹ and perfect for a multi-user lab. The Variable Pressure, combined with the high sensitivity backscattered electron detector, makes visual observation quick and simple.

*¹ At 3 minutes after sample exchange image observation is ready.

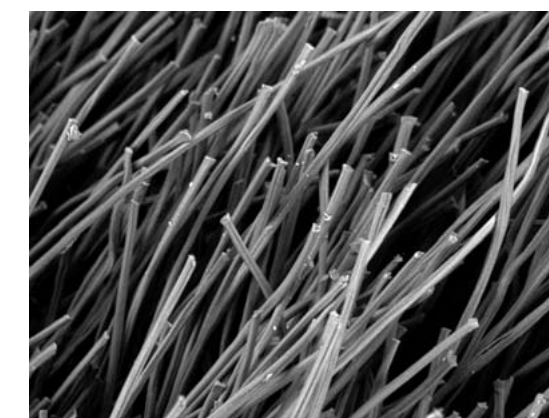


Charge-up reduction mode

With the integrated "Charge-up reduction mode", even samples that are prone to charging can be observed at high magnification with little or no disturbances. This is just one of many features the TM-1000 uses to optimize the image quality with just a click of the mouse.



Standard mode



Charge-up reduction mode

3 Easy to use

Auto Start function

By clicking the “Start” button, the TM-1000 will automatically saturate the filament, set the magnification to 100X, adjust the contrast and brightness and focus the image providing a sharp image on the viewing monitor.



Image rotation on the monitor

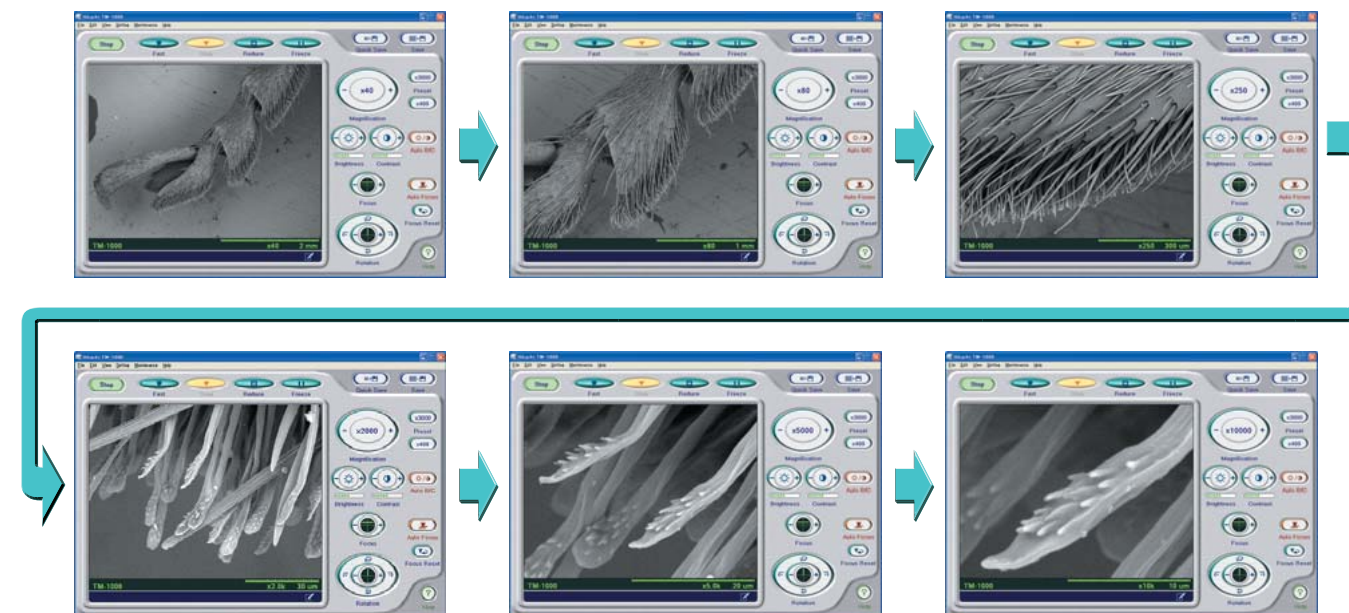
The integrated image rotation function allows the user to rotate the image 360 degrees for frame perfect orientation and image capture.



4 Quick change to required magnifications

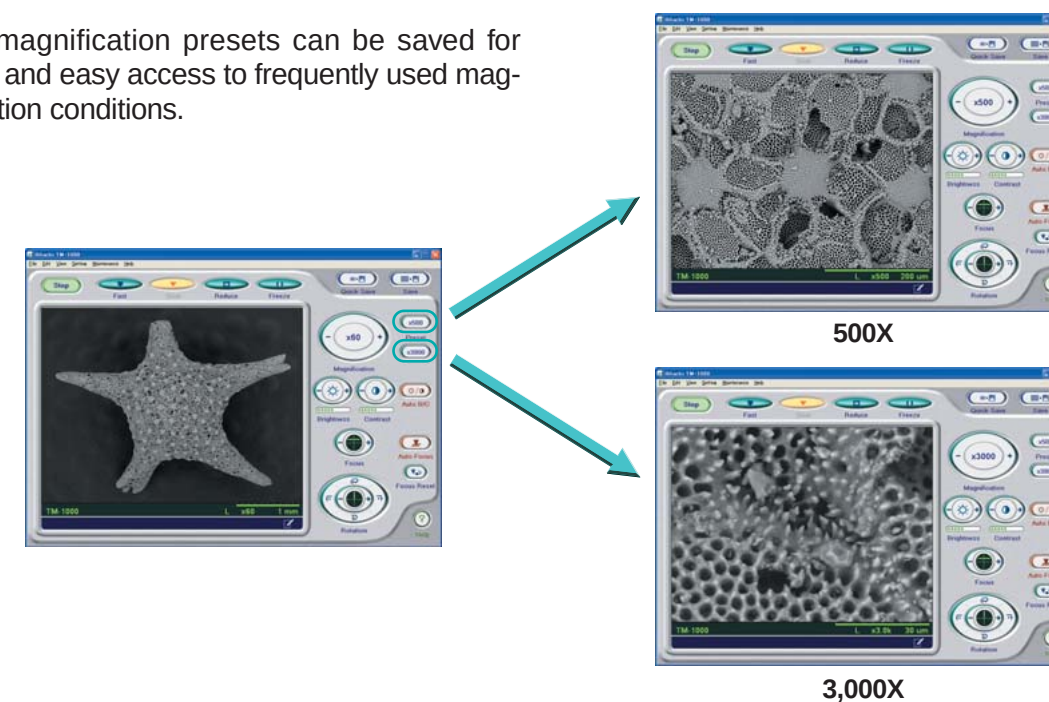
Changing magnification is quick and easy

The magnification can quickly be changed between 20X to 10,000X via the GUI. There is no need to change the objective lens as required by optical microscopes.



Preset magnifications

Two magnification presets can be saved for quick and easy access to frequently used magnification conditions.

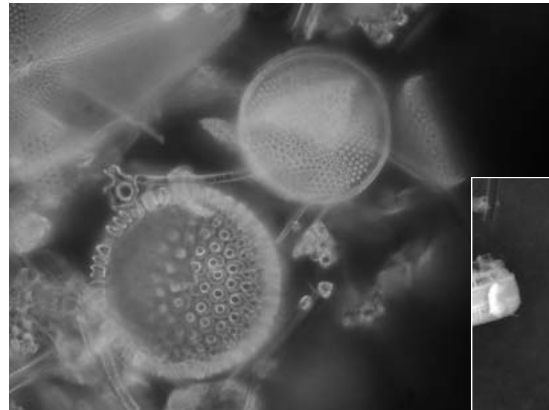


Stereoscopic morphological observation with greater depth of focus

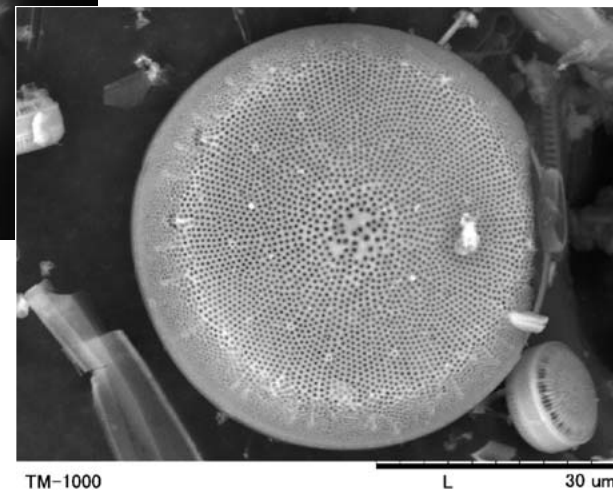


Stereoscopic image observation with high depth of focus

The TM-1000's imaging system allows stereoscopic observation with a high depth of focus.



Optical microscope image



Sample: Diatom

TM-1000

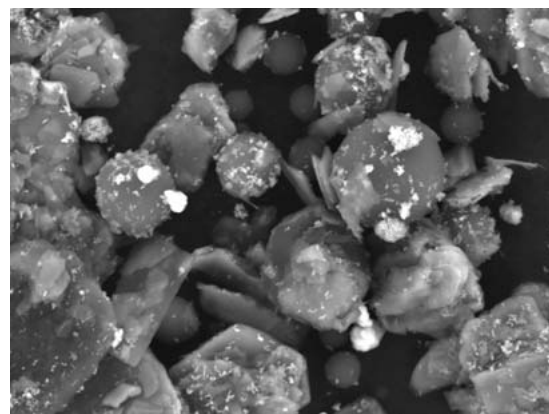
L

30 μm



Elemental observation

In addition to great depth of focus and surface topography, the TM-1000 provides elemental information observed as a function of atomic number. High atomic number material will appear bright as compared to low atomic number material which will appear darker, whereby providing compositional information.

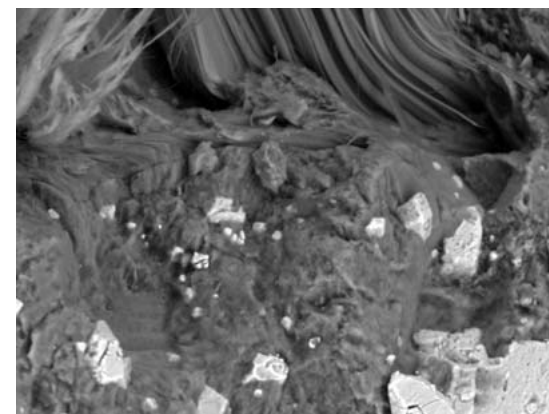


TM-1000

L

30 μm

Cosmetic Foundation



TM-1000

L

30 μm

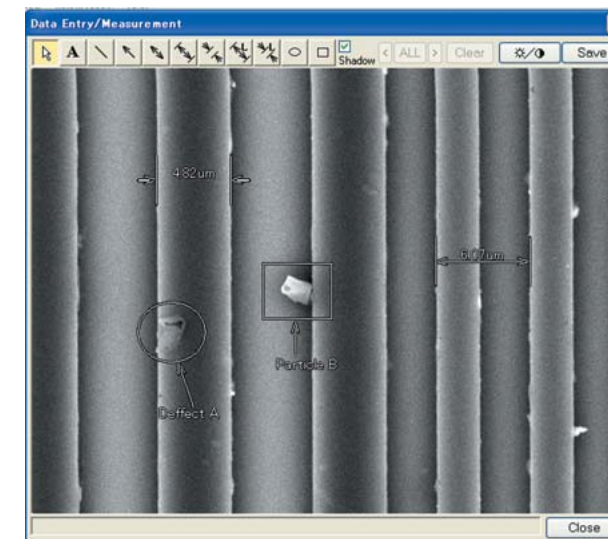
Serpentine

Useful extended functions



Data Entry/Measurement function

Texts and graphics can be superimposed on a captured image. As an example of operation, point-to-point measurement at any angle can be simply executed by dragging from the first point to the end point. Arrows, rectangles and ellipse can be entered to point out areas of interest.



Text tool



Line drawing tool



Single arrow headed line drawing tool



Double arrow headed line drawing tool



Inner dimension drawing tool



Outer dimension drawing tool



Inner dimension drawing tool with measurement data



Outer dimension drawing tool with measurement data



Ellipse drawing tool

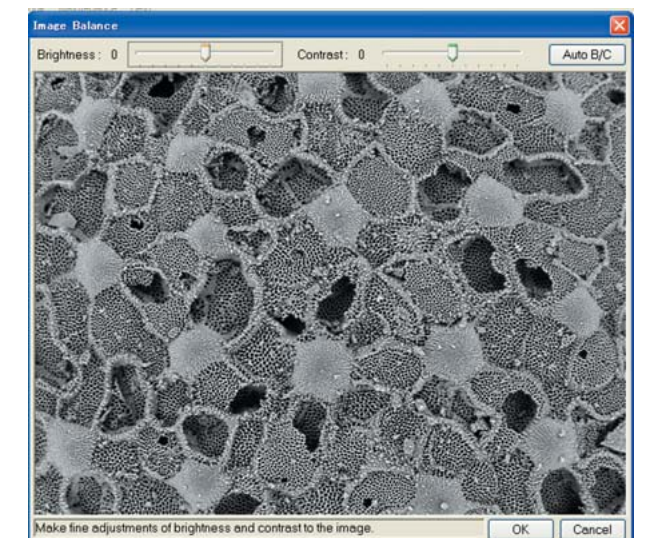


Rectangle drawing tool

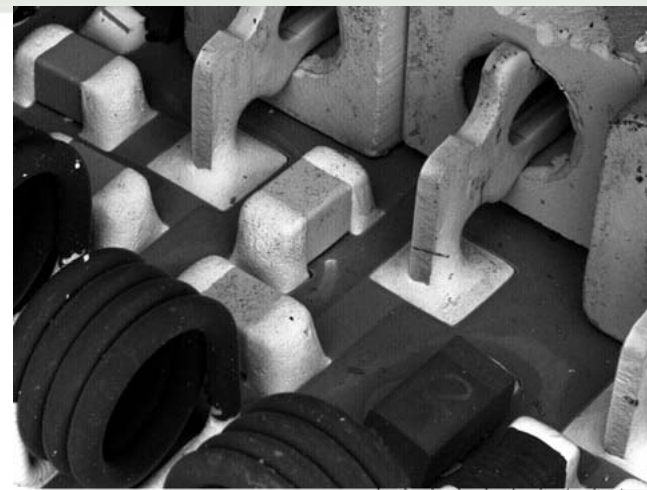


Image balance mode

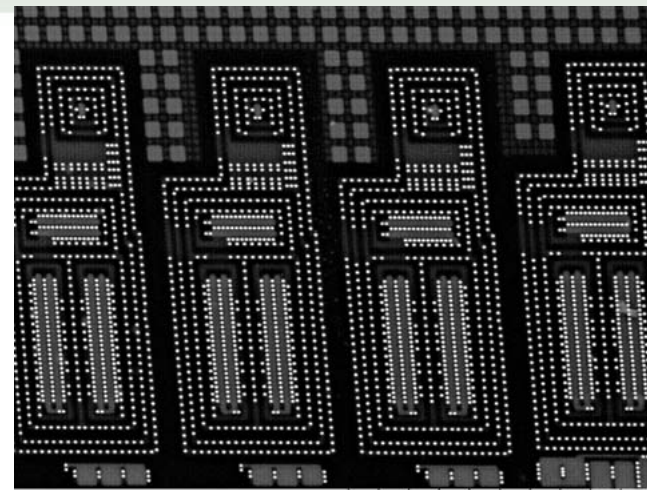
Although the TM-1000 employs an automatic brightness and contrast adjustment, they can be additionally manipulated by an individual slide bar on a captured image to enhance images and bring out fine structures when necessary.



Application gallery



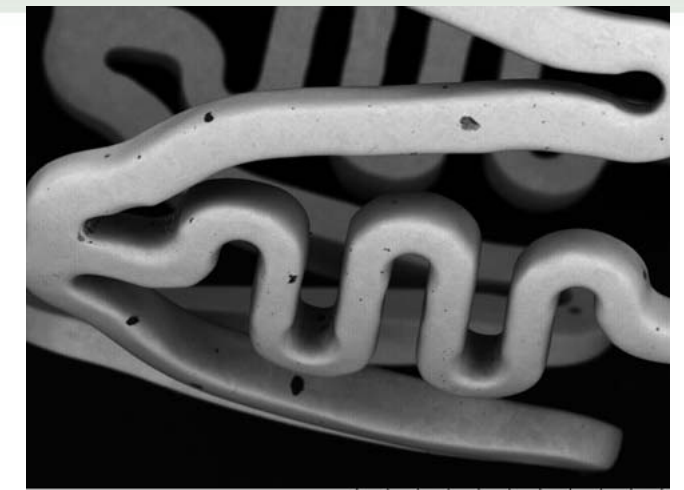
TM-1000 Printed Circuit Board L 2 mm



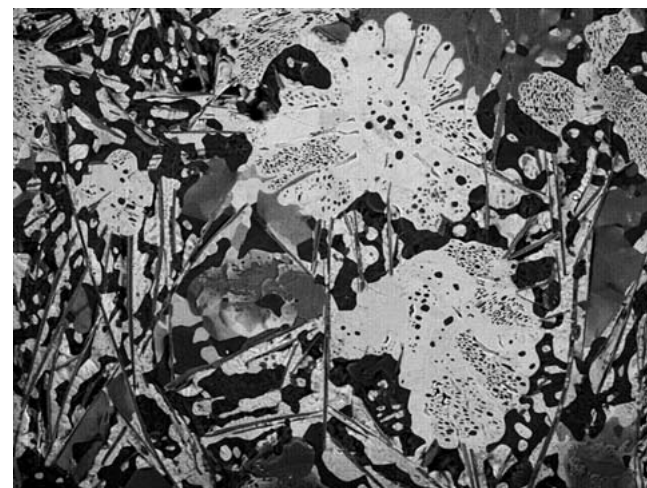
TM-1000 Semiconductor Device L 30 um



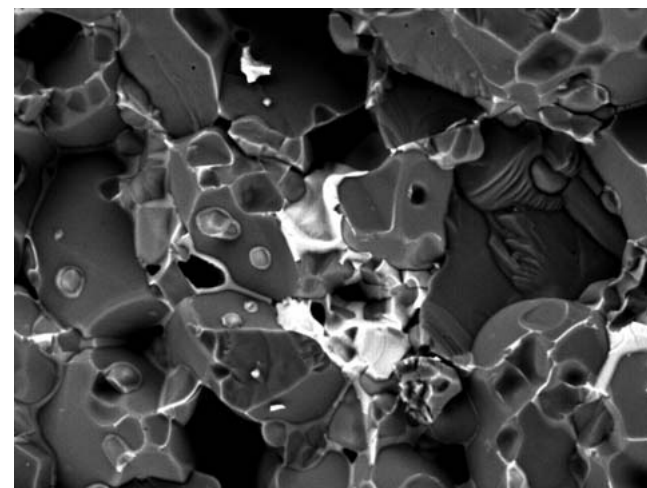
TM-1000 Watch Mechanism L 2 mm



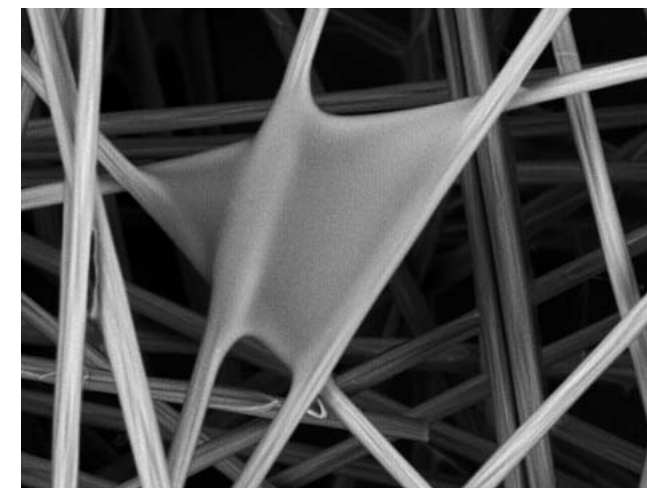
TM-1000 Stent L 500 um



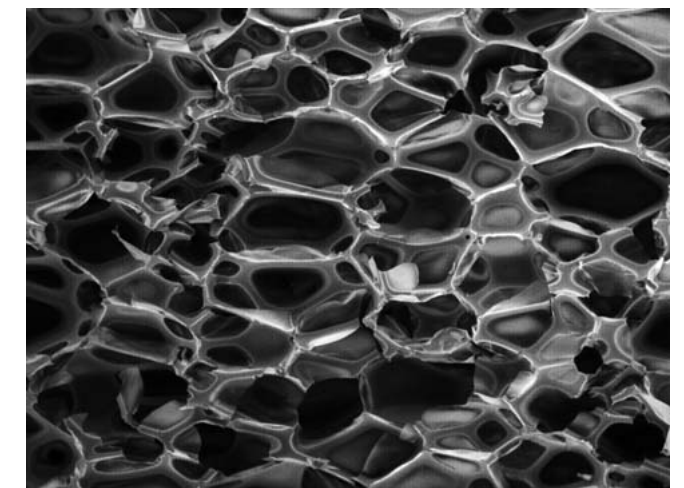
TM-1000 Solder L 50 um



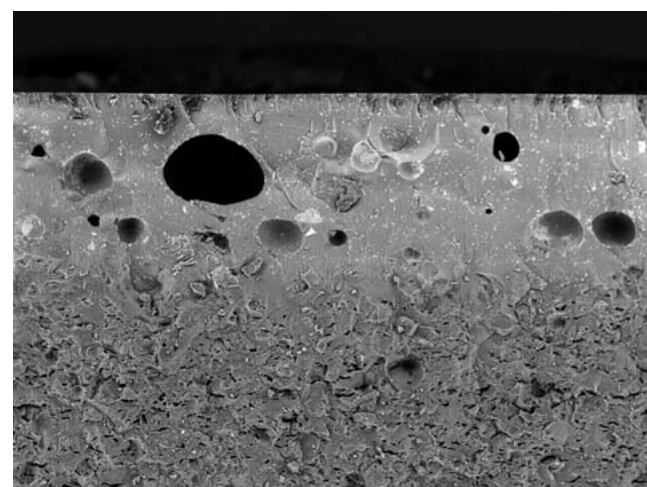
TM-1000 Varistor L 30 um



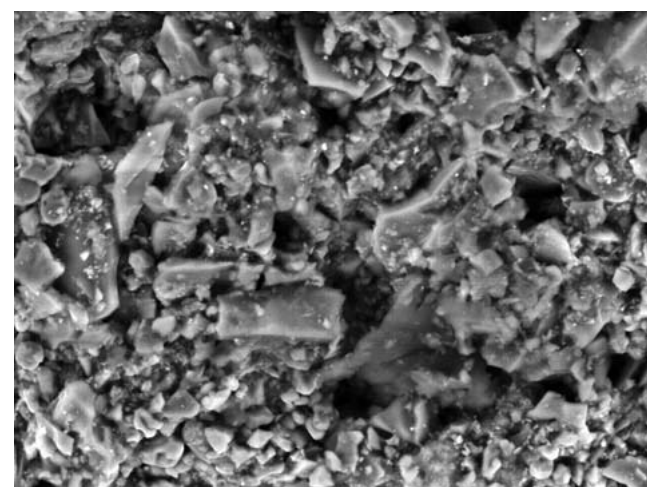
TM-1000 Carbon Fiber L 100 um



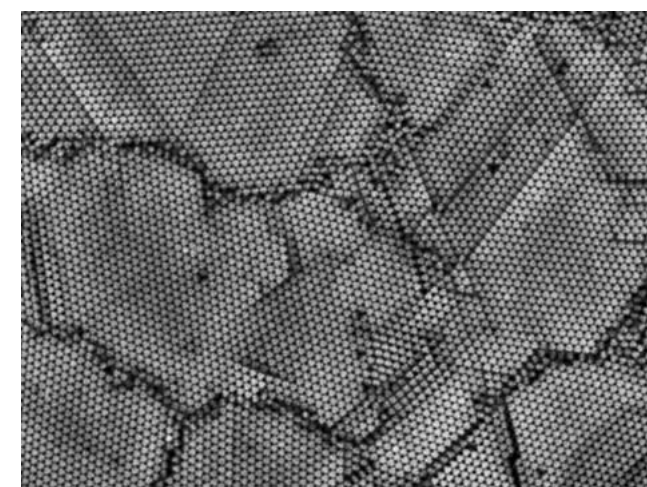
TM-1000 Foamed Plastic L 1 mm



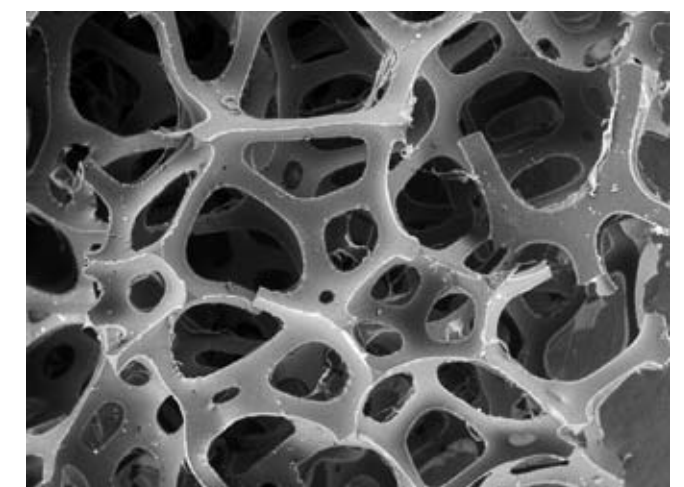
TM-1000 Ceramic L 500 um



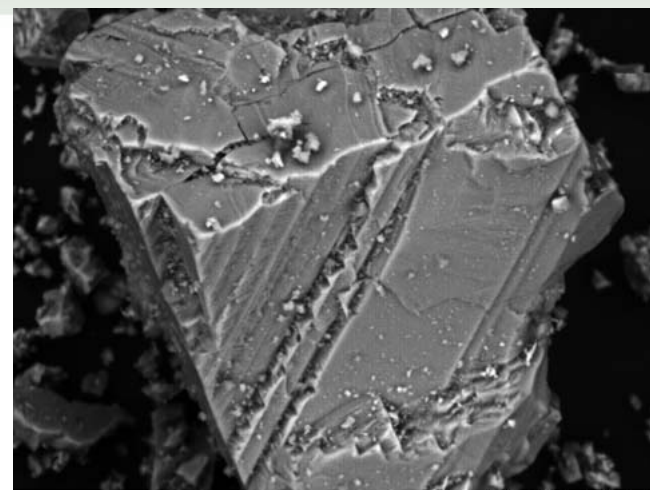
TM-1000 Ceramic Electronic Component L 30 um



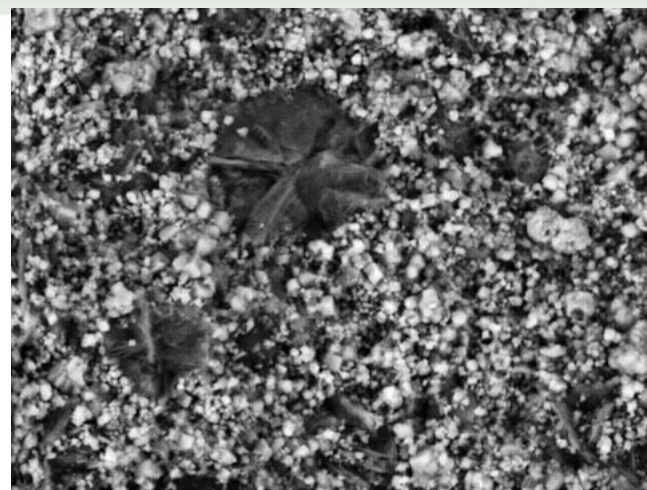
TM-1000 Polystyrene Compound L 20 um



TM-1000 Polyurethane Foam L 1 mm



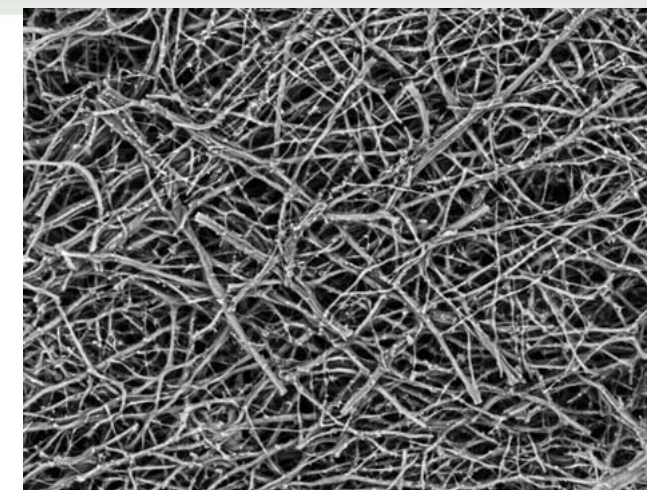
TM-1000 L 30 um
Powdered Cleanser



TM-1000 L 30 um
Headache Tablet



TM-1000 L 100 um
Pigeon Feather



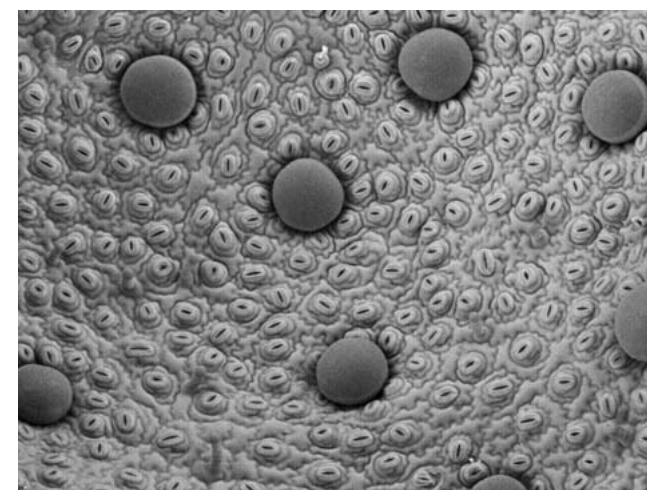
TM-1000 L 100 um
Egg Shell Membrane



TM-1000 L 1 mm
Nylon Stocking



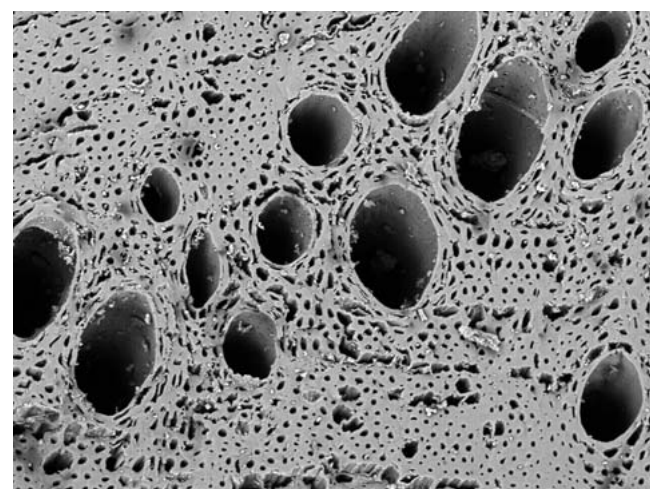
TM-1000 L 200 um
Wool Blend Fabric



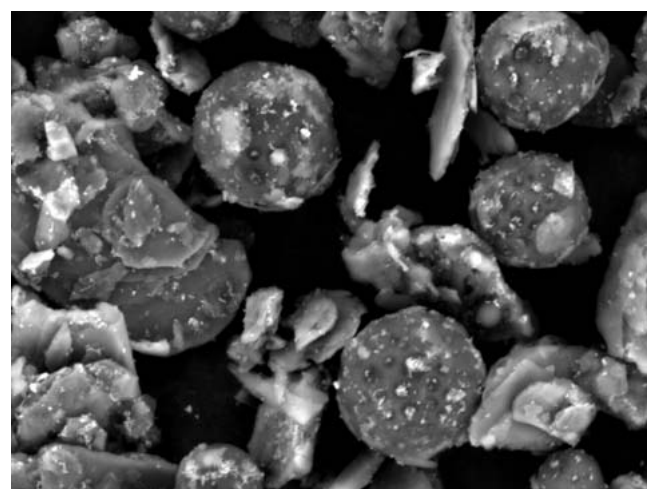
TM-1000 L 300 um
Mint Leaf



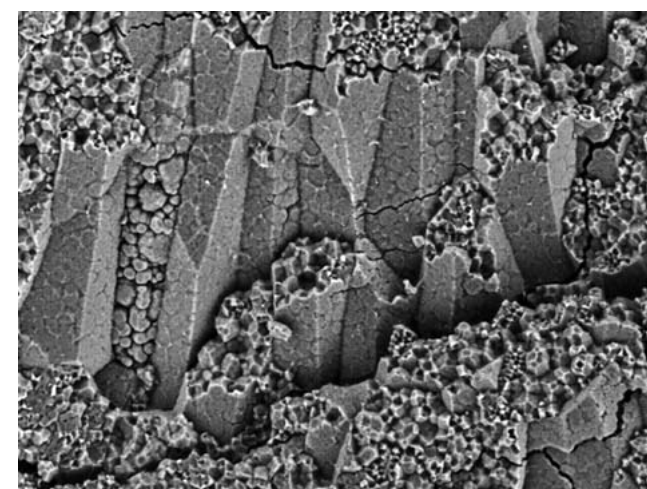
TM-1000 L 500 um
Fungus



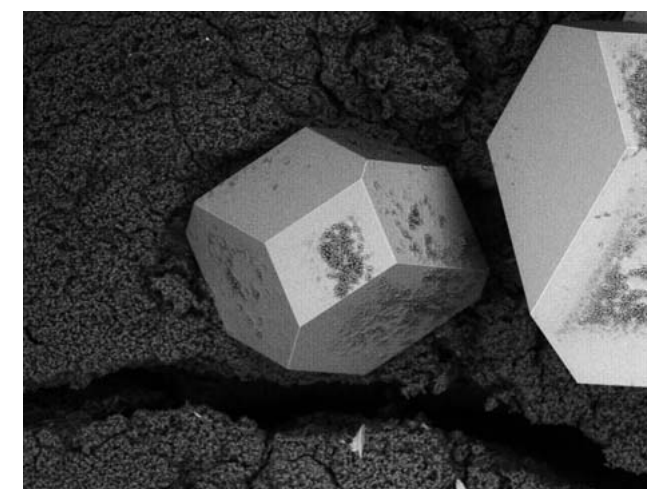
TM-1000 L 200 um
Charcoal



TM-1000 L x3.0k 30 um
Cosmetic Foundation

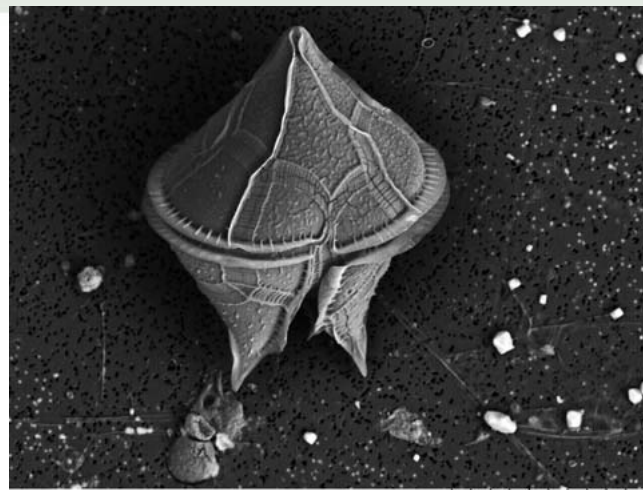


TM-1000 L 200 um
Rice



TM-1000 L 500 um
Tartaric Acid

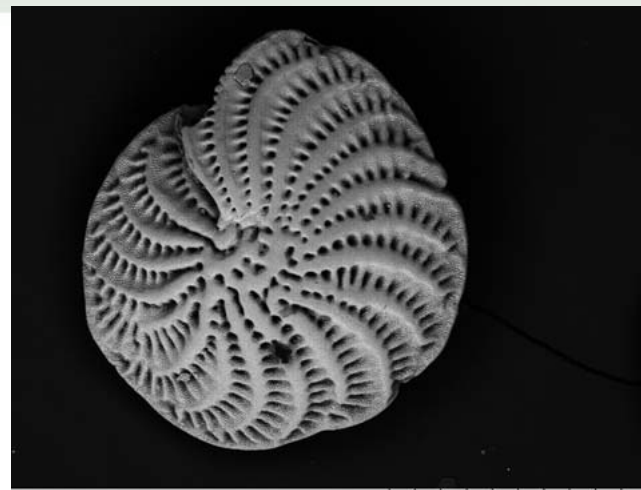
Main unit specifications



TM-1000

Dinoflagellate

L 50 μ m



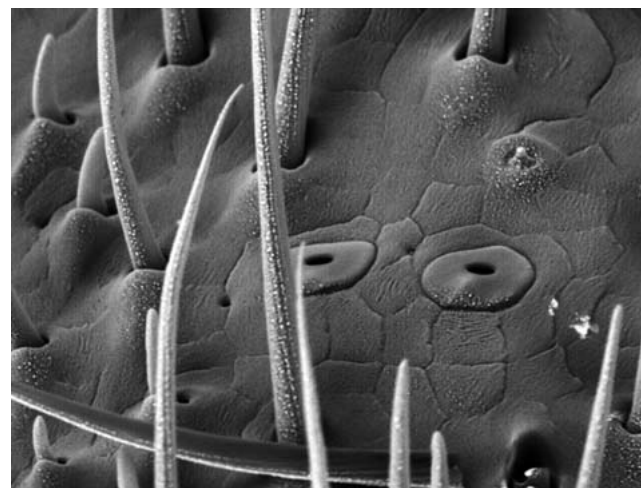
TM-1000 500 μ m

Elphidium



TM-1000 L 100 μ m

Tick

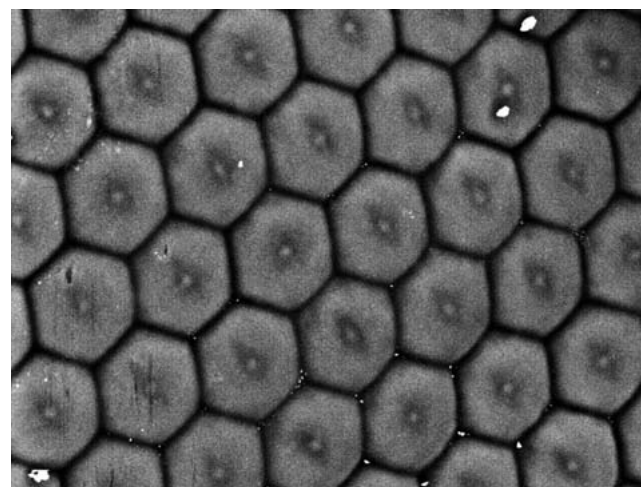


TM-1000 L 20 μ m



TM-1000 L 1 mm

Butterfly Proboscis



TM-1000 L 50 μ m

Specifications

Items	Description
■ Magnification	20~10,000X (digital zoom: 2X, 4X)
■ Accelerating voltage	15kV
■ Observation mode	Standard mode Charge-up reduction mode
■ Sample stage traverse	X:15mm, Y:18mm
■ Maximum sample size	70mm in diameter
■ Maximum sample height	20mm
■ Electron gun	Pre-centered cartridge filament
■ Signal detection system	High-sensitive semiconductor BSE detector
■ Auto image adjustment function	Auto start, auto focus, auto brightness/contrast
■ Frame memory	640 × 480 pixels, 1,280 × 960 pixels
■ Image data memory	HDD of PC and other removal media
■ Image format	BMP, TIFF, JPEG
■ Data display	Micron marker, micron value, date and time image number and comments
■ Evacuation system (vacuum pump)	Turbomolecular pump: 30L/s × 1 unit, Diaphragm pump: 1m³/h × 1 unit
■ Safety device	Over-current protection function

Dimensions and weight

Items	Description (Width × Depth × Height, Weight)
■ Main unit	338 × 564 × 513mm, 58.5kg
■ Control unit	140 × 564 × 513mm, 23.0kg
■ Diaphragm pump	145 × 256 × 217mm, 4.5kg

Installation condition

Items	Description
■ Room temperature	15~30°C
■ Humidity	70%RH or less
■ Power source	Single-phase AC100,110,115,200, 220 or 240V(±10%), 500VA
■ Grounding	100 ohm or less

Required PC specifications

Items	Description
■ OS	Windows XP Home Edition (SP2)
■ CPU	Intel Celeron M340 or better
■ Memory size	512MB or larger
■ Display monitor	15.4 type, WXGA 1,280 × 800 pixels
■ Interface connector	USB 2.0

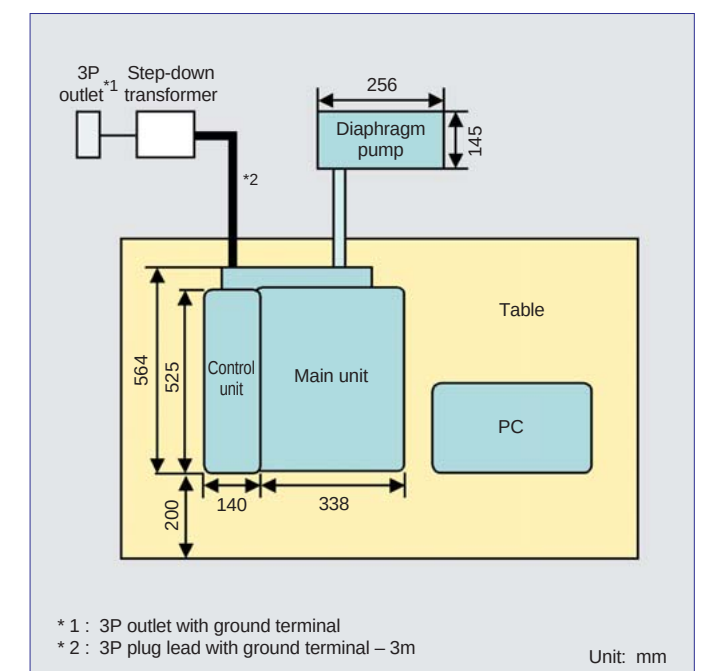
* An associated PC to be procured locally.

* Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.

* Intel and Celeron are registered trademarks of Intel Corp. or its affiliated companies in the United States and/or other countries.

* Specifications of a PC are subject to change.

Suggested installation layout



* Recommended table size: 1,200 × 800mm, withstand load: 100kg or more

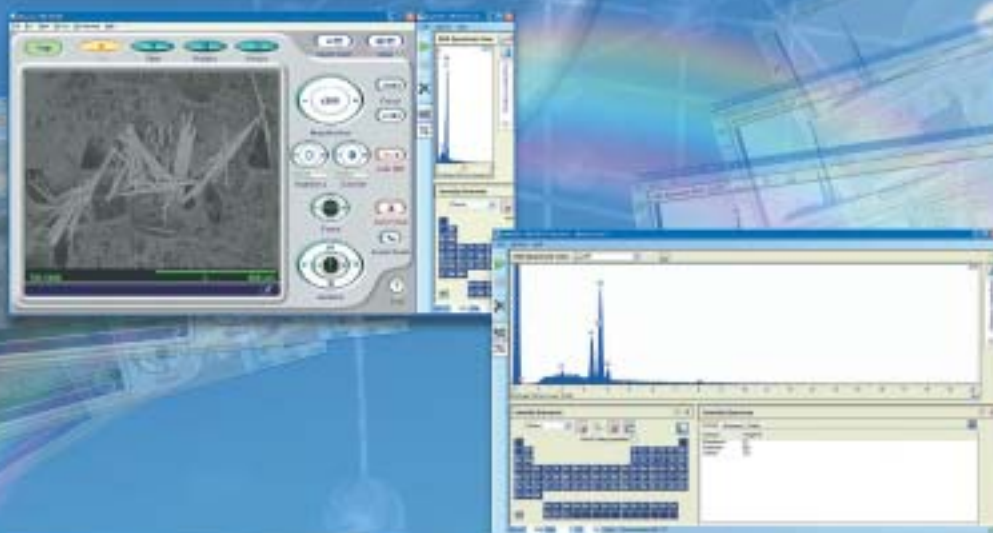
* Periodical maintenance is required for this apparatus

* Limited to indoor operation.

SwiftED-TM

Energy Dispersive X-ray Spectrometer
(dedicated for TM-1000 Tabletop Microscope)

- No metal coating required to analyze non-conductive samples
- Compact size and easy to operate
- Display of image and elemental data on the same monitor
- Quick and easy analysis available within minutes
- No LN2 required



Reference example of TM-1000 and SwiftED-TM Installation

Main specifications of SwiftED-TM EDX system

Hardware	
Detector	
■ Detector type	Silicon drift detector
■ Detection area	30mm ²
■ Energy resolution	165eV (Cu-K α) (equivalent to 148eV with Mn-K α)
■ X-ray window	Be window
■ Detection element	Na ₁₁ – U ₉₂
■ Cooling method	2-stage thermoelectric (peltier) cooling (without fan and LN ₂ free)
Digital pulse processor	
	Multi channel analyzer 2,048 channel (10eV/ch)

Software	
■ Spectrum display	Scale expansion or shrink in vertical and horizontal, KLM marker display
■ Qualitative analysis	Auto ID and manual peak ID
■ Quantitative analysis	Standardless quantitative analysis
■ Spectrum exporting	Bitmap, Tiff, JPEG, EMSA, Text
■ Data reporting	Report template for printing Exporting to Microsoft® Word

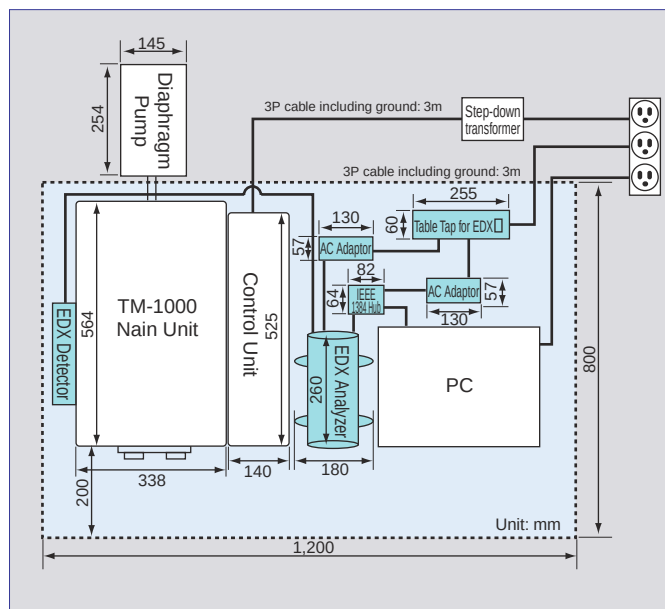
PC Specifications	
■ OS	Windows® XP Home Edition (SP2)
■ CPU	Intel Celeron M340 or better
■ Memory size	512MB or larger
■ Monitor resolution	15.4 type, WXGA 1,280 × 800 pixels
■ Interface connector	USB 2.0, IEEE1394

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- * Intel and Celeron are registered trademarks of Intel Corp. or its affiliated companies in the United States and/or other countries.
- * Specifications of a PC are subject to change.

Dimensions and Weight (Width × Depth × Height, Weight)	
■ Detector unit	149 × 234 × 136mm, 3.0kg
■ Analyzer unit	180 × 260 × 330mm, 3.0kg
■ IEEE1394 Hub	82 × 64 × 20mm, 50g
■ Table tap for EDX system	225 × 60 × 40mm, 300g
■ AC Adaptor for Analyzer	130 × 57 × 32mm, 400g
■ AC Adaptor for IEEE1394 Hub	130 × 57 × 32mm, 400g

Installation condition	
■ Room temperature	15~30°C
■ Humidity	45~70%RH or less
■ Power	Single-phase 100VA, AC100~240V ±10%
■ Grounding	100 ohm or less

Reference example of TM-1000 and SwiftED-TM Installation



- * Recommended table size: 1,200 × 800mm, withstand load: 100kg or more
- * Periodical maintenance is required for this apparatus
- * Limited to indoor operation

NOTICE: For proper operation, follow the instruction manual when using the instrument.

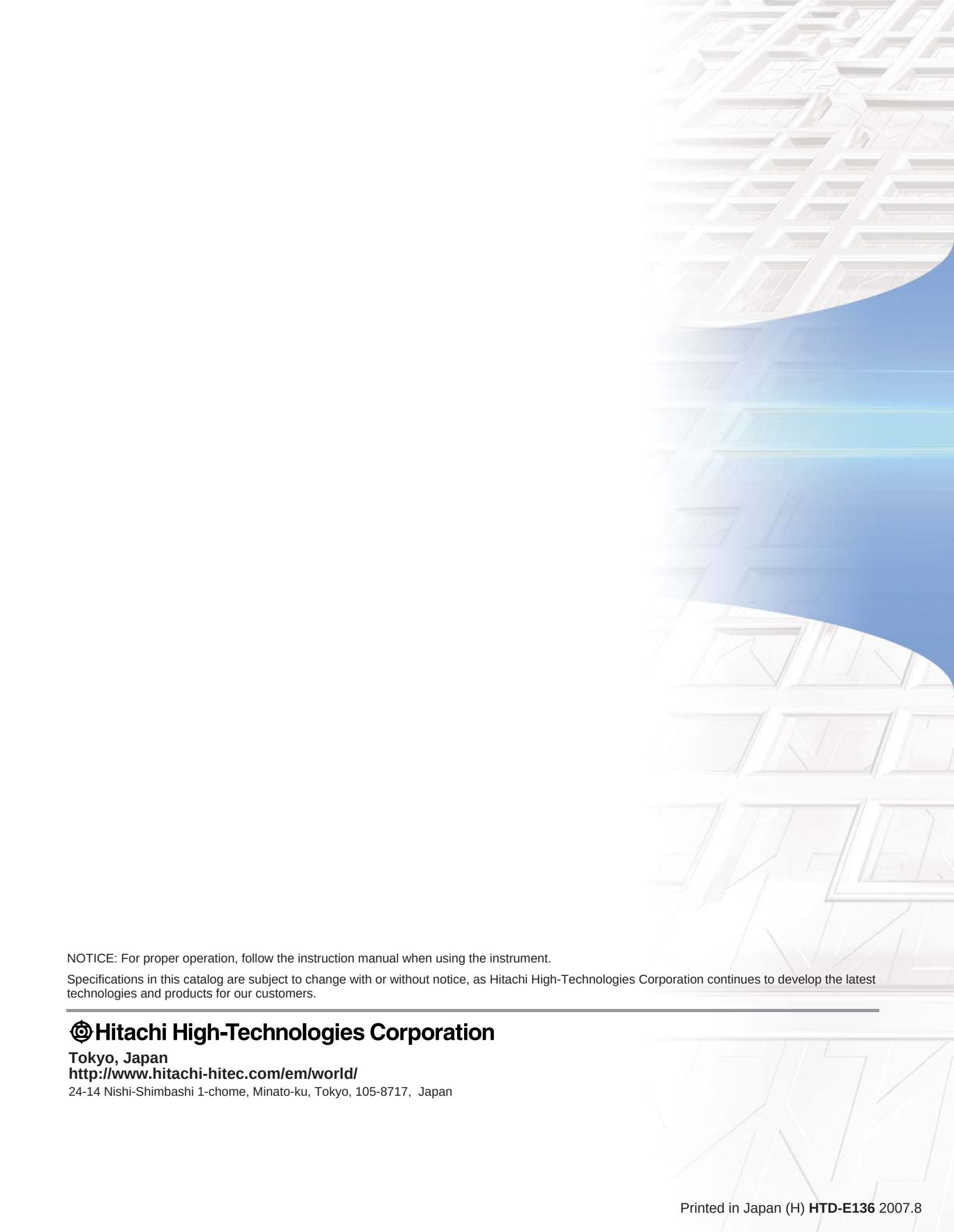
Specifications in this catalog are subject to change with/without notice, as Hitachi High-Technologies Corporation continues to develop the latest technologies and products for our customers.

Hitachi High-Technologies Corporation

Tokyo, Japan

<http://www.hitachi-hitec.com/em/world/>

24-14 Nishi-Shimbashi 1-chome, Minato-ku, Tokyo, 105-8717, Japan



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24-14 Nishi-Shimbashi 1-chome, Minato-ku, Tokyo, 105-8717, Japan