

NeoScope[™]

JCM-6000 Benchtop SEM



The Most Advanced Benchtop SEM





Natural & Humanistic

Intuitive operation



JEOL's renowned image quality can be achieved with the utmost ease. A touch panel system with intuitive GUI will guide the operator through the imaging process with the level of ease equal to a smartphone.

NeoScope^{*}

Automated functions

Auto controls include alignment, focus, stigmator, contrast/ brightness, and Full Auto. A single touch of Full Auto will initiate the entire imaging process to present an image instantly.



for coarse control. Light, intermittent tapping for fine control. These control buttons combines the ease of operation from the touch panel and the familiar feel of the knobs.

display

green.

The Display image button is used to search a library of images for a specific image. Checking the Display image button after selecting a desired image will present a magnified view of the image for closer examination.

Manual control

An item touched and selected will turn

Hard, continued pressing of the buttons

Minimum magnification image

Checking the Low Mag Image will allow the operator to view an image acquired at the lowest magnification immediately after the evacuation sequence was completed. This is a useful feature when examining the positioning of the sample.

Preset magnification

Up to 6 magnifications are presettable. Programming frequently used magnifications will increase operating efficiency. One of the buttons can be used to preset the current magnification.

Stylish Mechanism

ow-

mag.

Advanced capabilities



A single touch can switch the mode between High Vacuum and Low Vacuum, allowing the operator to acquire a variety of images.

High vacuum mode

Observe

Secondary electron image in the High Vacuum mode can bring out clear images of samples that require high magnification image and samples with an uneven surface. Comparing SEI images with BEI images allows for closer examination of the surface structure.

The image mode may also be switched to backscattered electron image to examine compositional differences.



Sample: Metal fracture surface Accelerating voltage 15 kV, magnification 5,000×

5μm



Sample: Coated paper Accelerating voltage 5 kV, magnification 3,000×

10 μ m



Sample: Yogurt culture Accelerating voltage 15 kV, magnification 20,000×



Sample: Butterfly scales Accelerating voltage 15 kV, magnification 30,000×

— 1 μ m



Sample: Mouse trachea Accelerating voltage 15 kV, magnification 10,000×

= 2 μ m

NeoScope[™]

200 μm



Sample: Aluminum alloy 10 µm Backscattered electron image Accelerating voltage 10 kV, magnification 3,000×



Sample: Concrete Backscattered electron image Accelerating voltage 15 kV, magnification 200×

Low vacuum mode

The Low Vacuum mode, a standard feature in NeoScope™, is designed to increase the pressure in the specimen chamber to neutralize the charges on the sample surface, allowing the operator to observe uncoated non conductive samples.

The Low Vacuum mode is also effective for samples containing a small amount of oil or water and gas-emitting samples that resist coating.



Sample: Dandelion puff Accelerating voltage 15 kV, magnification 80×





Sample: Filter paper Accelerating voltage 15 kV, magnification 540×



Sample: Cookie Accelerating voltage 15 kV, magnification 500×

50 μm

50 µ m



Search image window

The Search image window allows the operator to select and print image data. The window also allows the operator to restore the photographing conditions (accelerating voltage. filament current, probe current, etc.) for any image.



Print

Checking a desired image and pressing the Output images button in the Search image window will display a preview image. If multiple images are selected, the system will automatically print 3 images per page.

Retrieve imaging conditions

NeoScope[™] can retrieve the imaging conditions of any image that is saved in memory. The system will retrieve the data when an image is selected and the Load observation conditions button is pressed. It is a convenient feature for routine operation.





NeoScope™ can simultaneously display live and retrieved images. In the example below, a low magnification image is presented on the right while a magnified live image on the left. This allows the operator to compare a current image with another image retrieved from memory.





EDS

Measure



NeoScope™ incorporates a feature to measure the distance between 2 points. When the Scaler button is selected, the functions needed for measurement will be assigned to the auto control buttons. The measured results can be saved in image and CSV data files.



Sample: Metal particles



Elemental analysis



Pressing the Analysis button will open the EDS view. EDS supports qualitative/quantitative analysis, point analysis, and mapping (elemental distribution).



Sample: Black ore (mineral)

Qualitative/Quantitative analysis

Two buttons, Image and Spc, initiate analysis. Pressing the Quantitative button after data acquisition will display quantitative results.





Mapping (elemental distribution)

Pressing the Map button will initiate elemental mapping of the image. The mapped results will show 2 dimensional distribution of the constituent elements.



+0
Using mapped results, the operator can:
Create quantitative maps in color
where each color represents the
quantitative value of an element.
Reconstruct maps of additional elements
by data processing alone after analysis.
G Select a specific area on the map and
extract the spectrum
Overlap elemental maps and
identify where the elements of
interest exist in the area of view
or how they are overlapped.

Powerful aid in complicated analysis

Analytical Assistance is one of the functions to help the operator navigate any data acquisition process, including mapping and line analysis.

When a type of analysis is selected from the Analytical Assistance view, the system will display a series of process steps needed for the analysis. The buttons shown in the view will guide the operator through any analytical procedure.

An example of mapping sequence



Point analysis

When multiple analytical points are selected on the image, the system will automatically analyze the elements on each point, and display spectral data. These spectra can be compared after the analysis is completed.





Line analysis

When a line is defined on the image, the system will begin measuring relative concentration changes in the elements on the line.

The elements may be edited after the analysis is completed.



Probe tracking

Probe tracking is designed to maintain a stable analytical point for prolonged operation.

SSM Probe Tracking														
								. • .						
												3. J		
				-		1				*	en.		1	1
		P.		- 10					4	8	- 00			



View at varying angles

Tilting and Rotating Motor Drive Holder

The Tilting and rotating motor drive holder allows the operator to examine samples at different angles. Observation of a tilted sample results in 3 dimensional information of the sample. The tilt rotation motorized specimen holder is optional.







Sample: Substrate; magnification 45×

10 μ m

Sample: Substrate; magnification 45×

10 µ m

<complex-block>

JCM-6000 character [Rokumaru kun] Sample: Spiderwort, uncoated, Low Vac mode

Mr.Power Supp

NeoScope™

Quick response

Startup

NeoScope[™] will be ready for operation in 3 minutes after it is powered on.

Placing a sample and closing the door will automatically initiate the evacuation sequence.

An SEM image will be displayed when the evacuation is completed.



Selecting High Vacuum or Low Vacuum mode



EDS analysis

NeoScope[™] incorporates a JEOL proprietary dry SD detector. The detector is always ready for analysis during SEM imaging.

New Laboratory

Easy maintenance

Filament

Changing filaments is simple and easy.

Unlike the conventional filament assembly that requires cleaning of the wehnelt, the electron gun in NeoScope[™] uses a pre-centered cartridge filament that integrates a wehnelt. Since the cartridge is replaced as a unit, cleaning of the wehnelt or centering of the filament is not needed. The exchange process is quick and insures correct positioning of the filament.

Auto gun alignment

Any new filament that is installed requires alignment to insure good image quality. This alignment process is fully automated in NeoScope™.



Filament-wehnelt integral grid

Peripherals

Coating device

Coating allows non conductive samples to be observed in the SEI mode under high vacuum. Comparing the SEI image with the low vacuum BEI image allows for closer examination of the fine surface structure.



Sample: Resin fracture surface , Uncoated Low Vacuum mode, backscattered electron image× Accelerating voltage: 15 kV; magnification: 1,500× Sample: Resin fracture surface, gold coated High Vacuum mode, secondary electron image Accelerating voltage: 15 kV; magnification: 1,500×



Specifications

Magnification	Secondary electron image: ×10 to ×60,000				
	Backscattered electron image: ×10 to ×30,000				
	(when image size is 128 mm × 96 mm)				
Imaging mode	Secondary electron image, backscattered electron image				
Accelerating voltage	Secondary electron image; 5 kV, 10 kV, 15 kV (3 stages)				
	Backscattered electron image; 10 kV, 15 kV (2 stages)				
Electron gun	Small gun with cartridge filament				
	integratinng wehnelt				
Bias current	Auto bias				
	(linked to accelerating voltage and filament current)				
Condenser lens	Two stage electromagnetic zoom condenser lens				
Objective lens	Electromagnetic lens				
Auto magnification	Magnification corrected with reference to sample				
correction	height (7 mm, WD56 to 53 mm, WD10)				
Preset magnification	6 levels, user programmable				
Specimen stage	Manual control for X and Y: X: 35 mm, Y: 35 mm				
Maximum sample size	70 mm diameter × 50 mm height				
Specimen exchange	Draw-out mechanism				
Image memory	One, 1,280 × 960 × 16 bits				
Pixels	640 × 480, 1,280 × 960				
Image processing	Pixel accumulation				
	Image accumulation (recursible)				
Automated functions	Filament, alignment, focus,				
	stigmator, exposure				
Metrology	Distance between 2 points, angles				
File format	BMP, TIFF, JPEG				
Computer	PC (desktop PC), OS Windows®7				
Monitor	23 inch wide LCD monitor (touch panel)				
Evacuation system	Fully automatic, TMP: 1, RP: 1				

Optional accessories

- Tilt rotation motorized holder
 Tilt: -15° to +45°; rotation: 360°
- ♦ EDS

Installation requirements

Power supply	Voltage: Single phase AC 100 V					
	(120 V, 220 V, 240 V)					
	50/60 Hz, 700 VA (AC 100 V),					
	840 VA (AC 120 V),					
	880 VA (AC 220 V),					
	960 VA (AC 240 V),					
	Fluctuation $\pm 10\%$ or less, with grounding					
Installation Room						
Room temperature	15 to 30°C					
Humidity	60% or less					
Operation table	Sturdy table with a loading capacity of					
	100 kg or more					
Weight	Main console: approximately 50 kg					
	RP: approximately 9 kg					
	Power supply box: approximately 10 kg					
Base unit	(Width) (Depth) (Height)					
dimensions	325 mm \times 490 mm \times 430 mm					

* Specifications subject to change without notice.

- * The official name of Windows7 is Microsoft(R), Windows(R), Operating System.
- * Windows is a registered trademark of Microsoft Corp. in the U.S.
- * Other trademarks referenced in this catalog and marked with* are the property of our allied companies.



Index of samples	Page
Compound eye of an ant	3
Iron rust	
Yogurt culture	6
Metal fracture surface	6
Butterfly scales	6
Coated paper	6
Mouse trachea	6
Aluminum alloy	
Concrete	7
Filter paper (LV)	
Dandelion puff (LV)	7
Cookie (LV)	
Human hair	8
Star sand	9
Metal particles	9
Black ore (mineral)	10
Substrate	12
Spiderwort (LV)	
Resin fracture surface (LV, HV)	14

System composition





Certain products in this brochure are controlled under the "Foreign Exchange and Foreign Trade Law" of Japan in compliance with international security export control. JEOL Ltd. must provide the Japanese Government with "End-user's Statement of Assurance" and "End-use Certificate" in order to obtain the export license needed for export from Japan. If the product to be exported is in this category, the end user will be asked to fill in these certificate forms.

JEOL Ltd. 1-2 Musashino 3-chome Akishima Tokyo 196-8558 Japan Sales Division Telephone:+81-42-528-3381 Facsimile:+81-42-528-3386

ARGENTINA COASIN S.A.C.I.yF. Virrey del Pino 4071 1430 Buenos Aires Argentina Argentina Telephone: 54-11-4552-3185 Facsimile: 54-11-4555-3321

AUSTRALIA & NEW ZEALAND JEOL(AUSTRALASIA) Pty.Ltd. Suite 1, L2 18 Aquatic Drive - Frenchs Forest NSW 2086 Australia Australia Telephone: 61-2-9451-3855 Facsimile: 61-2-9451-3822

AUSTRIA JEOL (GERMANY) GmbH Oskar-Von-Miller-Strasse 1a, 85386 Eching, Germany Telephone: 49-8165-77346 Facsimile: 49-8165-77512

BANGLADESH A.Q. CHOWDHURY SCIENCE & SYNERGY PVT. LTD. House No. 12, Road No. 5A Sector No. 11, Uttara Dhaka - 1230 Bangladesh Telephone: 880-2-9980790, 8953450, 8953501 Facsimile: 880-2-8854428

BELGIUM JEOL (EUROPE) B.V. Planet II, Gebouw B Leuvensesteenweg 542, B-1930 Zaventem Belgium Telephone: 32-2-720-056 Belgium Telephone: 32-2-720-0560 Facsimile: 32-2-720-6134

BRAZIL JEOL Brasil Instrumentos Científicos Ltda. Av. Jabaquara, 2958-5° andar-cj. 52 04046-500 Sao Paulo, SP Brazil Telephone: 55-11-5070 4000 Facsimile: 55-11-5070 4010

CANADA JEOL CANADA, INC. 3275 Premier Rue #8, St-Hubert, Quebec J3Y 8Y6, Canada Telephone: 1-450-676-8776 Facsimile: 1-450-676-6694

CHILE ARQUIMED INNOVATION Arturo Prat 828, Santiago, Chile Telephone: 56-2-634-6266 Facsimile: 56-2-634-4633

CHINA JEOL(BELJING) CO., LTD. Room B1010/1110, Wantong New World Plaza No. 2 Fuchengmenwai Street, Xicheng District, Beijing 100037, PR.China Telephone: 86-10-6804-6321 Facsimile: 86-10-6804-6324

JEOL (BEIJING) CO., LTD., SHANGHAI BRANCH Room 1505/1506, Nol 300Xi Kang Road, Jing an Dist., Shanghai, 200040, China Telephone: 66-21-6248-4868/4487/4537/4404 Facsimile: 86-21-6248-4075

JEOL (BEJJING) CO., LTD., GUANG ZHOU BRANCH N1601, World Trade Center Bulding, 371-375, Humo Shi Road East, Guang Zhou, Guangdong Prov., 510056, PR. China Telephone: 86-20-8778-748 Facsimile: 86-20-8778-4288

JEOL (BEIJING) CO., LTD., WUHAN BRANCH Room A2117, Zhongshang Plaza Office Bldg., No. 7 Zhongnan Road, Wuhan, Hubei, 430071, P.R.China Telephone: 86-27-8713-2567 Facsimile: 86-27-8713-2567

JEOL LTD. (BEIJING) CO., LTD., CHENGDU BRANCH 1807A Zongfu Bullding, NO, 35 Zhongfu Bullding, RR, China Telephone: 86-28-86622554 Facsimile: 86-28-86622564

EGYPT JEOL SERIVCE BUREAU 3rd Fl. Nile Center Bldg., Nawal Street, Dokki, (Cairo), Egypt Telephone: 20-2-3335-7220 Facsimile: 20-2-3338-4186 FRANCE JEOL (EUROPE) SAS Espace Claude Monet, 1 Allee de Giverny 78290, Croissy-sur-Seine, France Telephone: 33-13015-3737 Facsimile: 33-13015-3747

GERMANY JEOL (GERMANY) GmbH Oskar-Von-Miller-Strasse 1a, 85386 Eching, Germany Telephone: 49-8165-77346 Facsimile: 49-8165-77512

GREAT BRITAIN & IRELAND JEOL (U.K.) LTD. JEOL House, Silver Court, Watchmead, Welwyn Garden City, Herts AL7 1LT, U.K. Telephone: 44-1707-377117 Facsimile: 44-1707-373254

GREECE N. ASTERIADIS S.A. 56-58,S. Trikoupi Str. P.O. Box 26140 GR-10022, Athens, Greece Telephone: 30-1-823-5383 Facsimile: 30-1-823-9567

HONG KONG FARMING LTD. Millennia Plaza, 663 King's Road North Point, Hong Kong Telephone: 852-2515-7299 Facsimile: 852-2581-4635

INDIA JEOL INDIA Pvt. Ltd. JEOL INUM PY, Ltd. Elegance Tower, Level 2, 212B Old Mathura Road, Jasola Business District Centre, New Delhi 110 025, India Telephone: 91-11-5472-2578 Facsimile: 91-11-5472-2578

BLUE STAR LTD. (HQ: Mumbai) Analytical Instrments Department, Sahas' 414/2 Veer Savarkar Marg Prabhadery Mumbai 400 025, India Telephone: 91-22-6666-4000 Facsimile: 91-22-6666-4001

BLUE STAR LTD. (Delhi) Analytical Instruments Department, E-44/12 Okhla Industrial Area, Phase-II, New Delhi 110 020, India Telephone: 91-11-4149-4000 Facsimile: 91-11-4149-4005

BLUE STAR LTD. (Calcutta) Analytical Instruments Department, 7, Hare Street Calcutta 700 001, India Telephone: 91-33-2213-4133 Facsimile: 91-33-2213-4102

BLUE STAR LTD. (Chennai) Analytical Instruments Department, No. 46, Caruda Building, Cathedral Road, Chennai 600 086, India Telephone: 91-44-4244-4000 Facsimile: 91-44-4244-4190

INDONESIA PT, TEKNOLABindo Penta Perkasa Komplek Gading Bukit Indah Blok I/11 J. Bukit Gading Raya Kelapa Gading Permai, Jakarta 14240, Indonesia Telephone: 62-21-45847057/58/59 Facsimile: 62-21-45842729

ITALY JEOL (ITALIA) S.p.A. Centro Direzionale Green Office Via dei Tulipani, 1 20090 Pieve Emanuele (MI) Italy Telephone: 39-02-9041431 Facsimile: 39-02-90414343

KOREA JEOL KOREA LTD. Dongwoo Bldg. 7F, 1443, Yangjae Daero, Gangdong-Gu, Seoul, 134-010, Korea Telephone: 82-2-511-5501 Fassimile: 82-2-511-2635

KUWAIT Ashraf & CO. Ltd. W.L.L. P.O.Box 3555 Safat 13036, Kuwait Telephone: 965-1805151 Facsimile: 965-24335373 MALAYSIA JEOL(MALAYSIA) SDN.BHD.(359011-M) 205, Block A, Mezzanine Floor, Kelana Business Center, 97, Jalan SS 772, Kelana Jaya, 47301 Petaling Jaya, Selangor, Malaysia Telephone: 60-3-7492-7723

MEXICO JEOL DE MEXICO S.A. DE C.V. JEOL DE MEXICO S.A. DE C.V. Arkansas 11 Piso 2 Colonia Napoles Delegacion Benito Juarez, C.P. 03810 Mexico D.F., Mexico Telephone: 52-5-55-211-4511 Facsimile: 52-5-55-211-0720

PAKISTAN (Karachi) ANALYTICAL MEASURING SYSTEM (PVT) LTD.(AMS LTD.) ANALT II.CAL MEASONING OTSTEM (FT) ELSAW 14-C Main Sehar Commercial Avenue Lane 4, Khayaban-e-Sehar, D.H.A-VII, Karachi-75500, Pakinstan Telephone: 922-1-3534581/35340747/35346057-8 Facsimile: 92-21-35345582

PANAMA PROMED S.A. Parque Industrial Costa del Este Urbanizacion Costa del Este Apartado 0816-01755, Panama, Panama Telephone: 507-303-3100 Facsimile: 507-303-3115

PHILIPPINES PHILAB INDUSTRIES INC. 7487 Bagtikan Street, SAV Makati, 1203 Metro, Manila Philippines Telephone: 63-2-896-7218 Facsimile: 63-2-897-7732

PORTUGAL Izasa Portugal Lda. R. do Proletariado, 1 2790-138 CARNAXIDE, Portugal Telephone: 351-21-424-73-00 Facsimile: 351-21-418-60-20

RUSSIA JEOL (RUS) LLC. Krasnoproletarskaya Street, 16, Bld. 2, 127473, Moscow, Russian Federation Telephone: 7-495-748-7791/7792 Facsimile: 7-495-748-7793

SAUDI ARABIA ABDULREHMAN ALGOSAIBI G.T.C. (Riyadh) King Abdulaziz Avenue, PO. Box 215, Riyadh 11411, Saudi Arabia Telephone: 966-1-479-3000 Facsimile: 966-1-477-1374

SCANDINAVIA SWEDEN JEOL (Skandinaviska)AB Hammarbacken 6A, Box 716, 191 27 Sollentuna Sweden Telephone: 46-8-28-2800 Facsimile: 46-8-29-1647

SERVICE & INFORMATION OFFICE NORWAY JEOL (Skandinaviska)AB

Lorenvangen 23, 0580 Oslo, NORWAY Telephone: 47-2-2-64-7930 Facsimile: 47-2-2-65-0619 FINLAND JEOL (Skandinaviska)AB Ylakaupinkuja 2, FIN-02360 Espoo, Finland Telephone: 358-9-8129-0350 Facsimile: 358-9-8129-0351

SINGAPORE JEOL ASIA PTE. LTD. 2 Corporation Road #01-12 Corporation Place Singapore 618494 Telephone: 65-6565-9989 Facsimile: 65-6565-7552

SOUTH AFRICA ADI Scientific (Pty) Ltd. 370 Angus Crescent, Northlands Business Park, 29 Newmarket Road Northriding, Ranburg, Republic of South Africa Telephone: 27-11-462-1363 Facsimile: 27-11-462-1466

SPAIN IZASA. S.A.

Argoneses, 13, 28100 Alcobendas, (Poligono Industrial), Madrid, Spain Telephone: 34-91-663-0500 Facsimile: 34-91-663-0545

http://www.jeol.com/

SWITZERLAND JEOL (GERMANY) GmbH Oskar-Von-Miller Strasse 1, 85386 Eching, Germany Telephone: 49-8165-77346 Facsimile: 49-8165-77512

TAIWAN For EO Products JIE DONG CO., LTD. Section 1, Taipei, Taiwan 10023 Republic of China Telephone: 886-2-2395-2978 Facsimile: 886-2-2322-4655

For Mass Spectrometer Products: Mass Solutions Technology Co., Ltd. SF, No.79, Sec. 1, Xintai 5th Rd Xizhi Dist., New Taipei City 221, Taiwan Republic of China Telephone: 886-2-2698-9511 Facsimile: 886-2-2698-9512

For Semiconductor Products: JEOL TAIWAN SEMICONDUCTORS LTD. TIF-1, No. 346, Pei-Da Road, Hsin-Chu City 300, Taiwan, Republic of China Telephone: 886-3-523-8490 Facsimile: 886-3-523-8503

THAILAND BECTHAI BANGKOK EQUIPMENT & CHEMICAL CO., Ltd. 300 Phaholyothin Rd. Phayathai, Bangkok 10400, Thailand Telephone: 66-2-615-2929 Facsimile: 66-2-615-2350/2351

THE NETHERLANDS JEOL (EUROPE) B.V. Lireweg 4, NL-2153 PH Nieuw-Vennep, The Netherlands Telephone: 31-252-623500 Facsimile: 31-252-623501

TURKEY TEKSER A.S. Kayisdagi, Inonu Mah Kartal Cad. No:55/3 34755 Atasehir / Istanbul, Turkey Telephone: 90-216-5736470 Facsimile: 90-216-5736475

UAE MRS Group Dubai MHS Group Dubai P.O.Box: 171612, Rashid Abdulla Al Noami Building Suite No: 306, Damascus Street, Al Qusais-3, Dubai, U.A.E. Telephone: 971-4-2581141 Facsimile: 971-4-2581151

JEOL Gulf JEOL Gulf P.O.Box: 171612, Rashid Abdulla Al Noami Building Suite No: 306, Damascus Street, Al Qusais-3, Dubai, U.A.E. Telephone: 971-553964219(mobile)

USA JEOL USA, INC. 11 Dearborn Rod, Peabody, MA 01960, U.S.A. Telephone: 1-978-535-5900 Facsimile: 1-978-536-2205/2206

JEOL USA, INC. WEST OFFICE 5653 Stoneridge Drive Suite #110 Pleasanton, CA 94588, U.S.A. Telephone: 1-925-737-1740 Facsimile: 1-925-737-1749

VENEZUELA GOMSA Service and Supply C.A. Urbanizacion Montalban III - Residencias Don Andres - Piso 7 - Apartomento 74 Avenida 3, entre calles 7 y 6 Montaban, Caracas, Venezuela Telephone: 58-212-443-4342 Facsimile: 58-212-443-4342

VIETNAM VIETNAM TECHNICAL MATERIALS AND RESOURCES IMPORT-EXPORT JOINT STOCK COMPANY(REXCO) Hanoi Branch, No. 13-Lot 12 Trung Yen, Trung Hoa Street, Cau Giay Dist, Hanoi, Vietnam Telephone: 84-4-562-0516,17/562-0535 Facsimile: 84-4-853-2511