



Product Guide



JEOL Ltd.

Scientific/Metrology Instruments
Industrial Equipment
Medical Equipment

Introduction

Thank you for your interest in JEOL products and services.

JEOL designs and manufactures scientific instruments for high-level research and development activities. Our customers include scientists and engineers working in leading-edge academic and industrial laboratories around the world. JEOL products and services enable them to pursue a variety of R&D applications that require high resolution imaging and analytical capabilities such as: basic observation and analysis, environmental science, information technology, semiconductor production, biotechnology, nanotechnology, and a broad range of industrial endeavors.

Experts involved in the studies of medicine, biology, biochemistry, agriculture, materials science, metallurgy, ceramics, chemistry, petroleum, pharmacy, semiconductors and electronic materials have been using JEOL products for more than 65 years. Our new products are easier-to-use than ever before and contribute to a high level of quality assurance and quality control during the production process.

This Product Guide presents the most current high performance solutions from JEOL to meet your R&D requirements for electron optics, analytical, semiconductor, industrial, and medical instruments and equipment. For more details or information about any of our products, please contact your nearest JEOL office.

JEOL Ltd.

Company Profile

Name: JEOL Ltd. (NIHON DENSHI KABUSHIKI KAISHA)

President: Gon-emon Kurihara

Establishment: May 30,1949

Capital: 10,037 million yen (as of March 31, 2016)

Employees: Consolidated 2,963 (as of March 31, 2016)

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Electron Microscopes

JEM-ARM1300

Ultra High Voltage Electron Microscope

Using a highly accelerated electron beam, this microscope permits the direct observation of the 3-D structure of thick specimens, the direct observation of radiation damage and the observation of biological specimens with little damage. It features great operational ease and stability. The JEM-ARM1300 is essential for atomic level structural imaging and 3-D observations.

Point resolution :

0.10 nm (with top entry stage)

0.12 nm (with side entry stage)

Accelerating voltage : 400 to 1,300 kV

Magnification : ×200 to 1,500,000



JEM-3200FS

Field Emission Electron Microscope

(Equipped with In-Column Energy Filter)

A field emission electron microscope that gives full play to not only high-resolution imaging, but also nano area analysis.

Equipped with a 300 kV FEG and an in-column energy filter. Incorporation of a new, rotation-free image-forming optical system facilitates acquisition of TEM images and diffraction patterns as well as provides stable spectra. The combination of the 300kV FEG and the energy filter offers many new solutions for a wide range of research fields.

Point resolution : 0.17 nm

Accelerating voltage : Max 300 kV

Magnification : ×100 to 1,500,000



JEM-ARM300F GRAND ARM™

Atomic Resolution Analytical Electron Microscope

An atomic-resolution electron microscope with a maximum accelerating voltage of 300 kV and equipped with JEOL's own aberration corrector. Capable of resolutions of 63 pm - unprecedented STEM (HAADF) resolution in 300 kV TEMs. The standard configuration includes a newly-designed, high-performance cold cathode field-emission electron gun. The superbly high-brightness electron beam with reduced chromatic aberration enables high-resolution observation and analysis.

Point resolution : 0.063 nm (with STEM Cs corrector)

0.05 nm (with TEM Cs corrector)

Accelerating voltage : 80 kV, 300 kV

Magnification : ×60 to 2,000,000



JEM-ARM200F ACCEL ARM

Atomic Resolution Analytical Electron Microscope

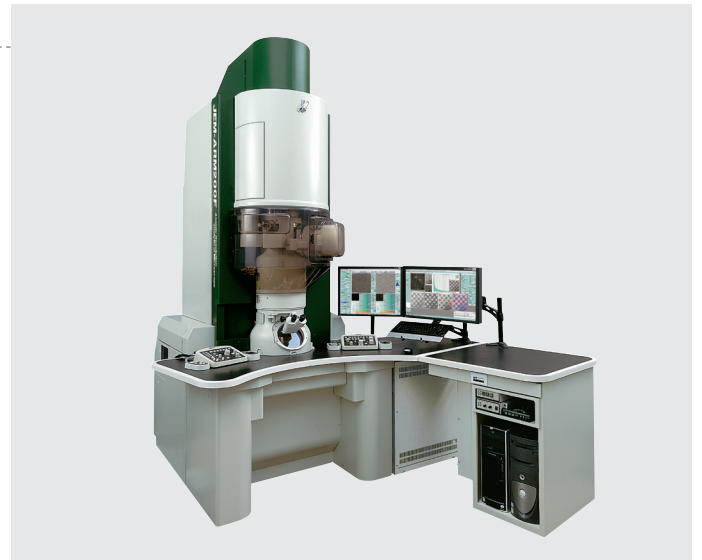
The JEM-ARM200F, incorporating a STEM Cs corrector and a microscope column with dramatically improved mechanical and electrical stability, achieves superbly high STEM (HAADF) resolution of 0.08 nm among 200 kV TEMs. The Cs-corrected extremely small electron probe achieves a remarkably increased current density, one order of magnitude larger than conventional TEMs. Thus, the JEM-ARM200F provides ultimate atomic-level analysis and also higher throughput with dramatically shortened measurement time.

Point resolution : 0.08 nm (STEM), 0.19 nm (TEM)

0.11 nm (with TEM Cs corrector)

Accelerating voltage : 120 kV, 200 kV

Magnification : ×50 to 2,000,000



NEOARM JEM-ARM200F

Atomic Resolution Analytical Electron Microscope

New Atomic Resolution Analytical Electron Microscope “NEOARM” JEM-ARM200F comes with JEOL’s unique cold field emission gun (Cold-FEG) and a new Cs corrector (ASCOR) that compensates for higher order aberrations. The combination of a Cold-FEG and ASCOR enables atomic-resolution imaging at not only 200 kV accelerating voltage, but also a low voltage of 30 kV. “NEOARM” is also equipped with an automated aberration correction system that incorporates JEOL’s new aberration correction algorithm for automatic fast and precise aberration correction.

We will deliver “High throughput atomic resolution image” to everyone.

Resolution : 0.071 nm (UHR) for HAADF-STEM image

Accelerating voltage Standard : 30 kV, 60 kV, 80 kV, 120 kV, 200 kV

Electron gun : Cold-FEG



JEM-F200

Multi-purpose Electron Microscope

JEM-F200 (nickname : F2) is a multi-purpose electron microscope of the new generation to meet today’s diversified needs. JEM-F200 incorporates a new probe-forming lens system, CFEG and Dual SDD system required for high-resolution analytical systems, leading to high-throughput materials analysis. “SPECPORTER™” for automatic holder insertion and retraction is also incorporated, enabling us to smoother microscope operation.

Point resolution : TEM point to point : 0.19 nm (with CF-UHR)

TEM lattice image : 0.10 nm (with CF-UHR)

STEM-HAADF image : 0.14 nm (with CF-UHR)

Accelerating voltage : standard 200 kV, 80 kV

Magnification : ×20 to 2,000,000 (TEM) / ×200 to 150,000,000 (STEM)



JEM-1400Flash

Electron Microscope

Equipped with a high-sensitivity sCMOS camera, the JEM-1400Flash offers new “Flash” for TEM users via powerful new functions, including an ultra-wide area montage system and an OM (optical microscope) image linkage function.

Resolution : 0.2 nm (HC) / 0.14 nm (HR)

Accelerating voltage : 10 kV to 120 kV

Magnification : ×10 to 1,200,000 (HC) / ×10 to 1,500,000 (HR)

Maximum tilt angle (Tilt-X) : ±70° (HR/HC)

※With optional high tilt specimen holder



Electron Microscopes

JEM-2800

Multi-Purpose Analytical Electron Microscope

The JEM-2800 is a new TEM that achieves nano-area analysis based on a concept "Automation and Convenience, Easy-to-use", so that expert results can be obtained by operators of any skill level. Its advanced electron optical system makes it possible to perform high-resolution TEM and STEM imaging, EDS, EELS, tomography and in-situ observation on the same sample without sacrificing any of these capabilities.

Point resolution : 0.2 nm (STEM)
0.21 nm (TEM)

Accelerating voltage : 100 kV, 200 kV

Magnification : x500 to 20,000,000 (TEM)



JEM-2100Plus

Electron Microscope

The JEM-2100Plus is a multi purpose transmission electron microscope, which combines the proven JEM-2100 optic system with an advanced control system for enhanced ease of operation. Achieving superior performance through intuitive operation, the JEM-2100Plus provides solutions to a wide range of applications from materials science to medical/biological studies.

Point resolution : 0.19 nm

Accelerating voltage : 80 to 200 kV

Magnification : x30 to 1,500,000



JEM-2200FS

Field Emission Electron Microscope

(Equipped with In-Column Energy Filter)

A field emission electron microscope equipped with a 200 kV field emission gun and a new in-column energy filter, which is optimally configured for analytical functions. The use of a new, rotation-free image forming optical system makes it easy to compare TEM images and diffraction patterns. Since the microscope allows observation of wide-field energy-filtered images, combination with the optional tomography function enables acquisition of three-dimensional information with a wide field and a high contrast.

Point resolution : 0.19 nm

Accelerating voltage : 160 kV, 200 kV

Magnification : x50 to 1,500,000



JED-2300T

Energy Dispersive X-ray Spectrometer

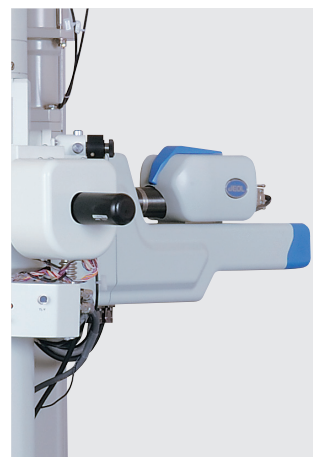
The JED-2300T, installed on a TEM, can easily perform qualitative/quantitative analysis and line/area analysis of microareas, with high energy resolution. This EDS employs JEOL's unique ultra-thin window detector with gate valve protection mechanism, making it possible to obtain high-sensitivity analysis data particularly from light elements.

Analytical functions :

Qualitative/quantitative analysis,
line/area analysis

Analyzable elements : B to U or Na to U

Magnification : x50 to 1,500,000



Scanning Electron Microscopes

JSM-7900F

Schottky Field Emission Scanning Electron Microscope

The JSM-7900F, a high-end next-generation analytical tool, successfully combines ultrahigh-resolution imaging, ultrahigh spatial-resolution analysis and higher operability, as well as multi-purpose capabilities. Equipped with a new electron optics control system “Neo Engine” and a super hybrid lens “SHL”, the new FE-SEM enables observation and analysis of any samples at ultrahigh spatial-resolution, including magnetic and insulation materials.

Resolution : 1.1 nm (0.5 kV)*¹, 1.0 nm*²

0.7 nm (1 kV)*¹, 0.7 nm*²

0.7 nm (15 kV)*¹, 0.6 nm*²

3.0 nm (5 kV, WD : 10 mm, 5 nA)*¹

*1: Gap method, *2: Edge method

Accelerating voltage : 0.01 kV to 30 kV

Magnification

Photo magnification : ×25 to 1,000,000 (120 × 90 mm picture)

Display magnification : ×75 to 3,000,000 (1,280 × 960 pixels on display)



JSM-7800FPRIME

Schottky Field Emission Scanning Electron Microscope

A field emission scanning electron microscope equipped with an in-lens Schottky Plus FEG and GBSH (GENTLEBEAM™ Super High Resolution) to deliver ultra-high-resolution observation of 0.7 nm at 1 kV. Image quality at low acceleration voltages is greatly improved, and fine surface structures can be observed with the suppression of charging effects and reduced damage to the specimen. The analytic resolution is also significantly improved, allowing high-magnification, high-resolution elemental mapping.

Resolution : 0.7 nm (15 kV)

0.7 nm (1 kV)

Accelerating voltage : 0.01 to 30 kV

Magnification : ×25 to 1,000,000

At pixel display (1,280×960) : to 3,000,000



JSM-7800F

Schottky Field Emission Scanning Electron Microscope

The JSM-7800F, equipped with a newly developed super hybrid objective lens, is a cutting-edge thermal FE-SEM that successfully combines ultrahigh-resolution imaging with fast and high-accuracy elemental analysis. Magnetic specimens can be observed and analyzed at high magnification. The JSM-7800F also supports various analyses such as EDS, WDS, EBSD and CL.

Resolution : 0.8 nm (15 kV)

1.2 nm (1 kV)

Accelerating voltage : 0.01 to 30 kV

Magnification : ×25 to 1,000,000

At pixel display (1,280×960) : to 3,000,000



JSM-7610F

Schottky Field Emission Scanning Electron Microscope

A high-resolution field emission scanning electron microscope with a semi-in-lens objective lens.

The GENTLEBEAM™ mode allows observation of the specimen surface using extremely low accelerating voltages of only a few hundred eV. High Power Optics are utilized for the illumination system, enabling high-speed, high-precision element analysis to be performed. Also suitable for high spatial resolution element analysis.

Resolution : 1.0 nm (15 kV)

1.3 nm (1 kV)

Accelerating voltage : 0.1 to 30 kV

Magnification : ×25 to 1,000,000

At pixel display (1,280×960) : to 3,000,000



JSM-7200F

Schottky Field Emission Scanning Electron Microscope

Equipped with the TTL (through-the-lens) system and JEOL proprietary in-lens Schottky Plus technology, the JSM-7200F improves the resolution at low accelerating voltages (1.6 nm at 1 kV) and achieves maximum probe current of 300 nA (guaranteed). This multi-purpose FE-SEM can satisfy a wide range of needs with seamless, high-speed high-resolution observation and analysis.

Resolution : 1.0 nm (30 kV)

1.6 nm (1 kV)

Accelerating voltage : 0.01 to 30 kV

Magnification : ×10 to 1,000,000

At pixel display (1,280×960) : to 3,000,000



Scanning Electron Microscopes

JED-2300/2300F

Energy Dispersive X-ray Spectrometer

The JED-2300 or the JED-2300F performs elemental analysis by detecting characteristic X-rays emitted from a specimen. With the design concept of "Seamless from Observation to Analysis", JEOL's EDS is integrated into JEOL's SEM, TEM, EPMA, or FIB. Comprehensive data management (images and X-ray data) is fully achieved for smooth examination and review.

Analysis Station : System that links observed images with analysis data

Analytical functions : Qualitative/quantitative analysis, line/area analysis

Analyzable elements : Be to U, B to U

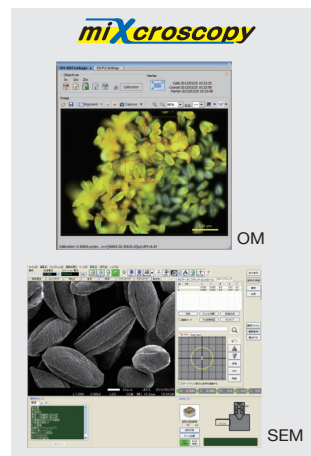
This unique box type DrySD™ detector is designed for JSM-IT100 series SEM. The detector is positioned at the optimum position.



miXcroscopy™

Linked Optical and Scanning Electron Microscope System

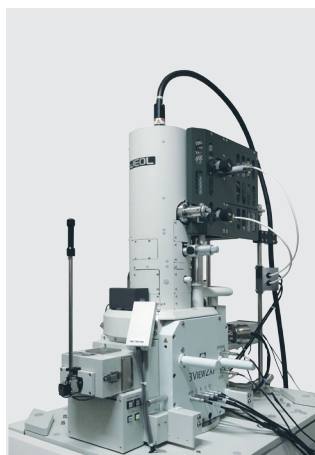
The same specimen holder is used for both the optical microscope (OM) and the scanning electron microscope (SEM). By managing the stage data using dedicated software, the sites viewed with the optical microscope are saved, making it possible to view the fine structures at the same sites at even greater magnification using the scanning electron microscope.



Schottky FE-SEM with 3View® 2XP

Serial Block Face SEM

Gatan 3View® 2XP (Gatan Inc.) is integrated into a Schottky field emission scanning electron microscope that can stably deliver a fine probe at a high current for extended periods of time. This makes it possible to perform serial automatic sectioning and image acquisition of the resin-embedded specimen. By performing 3D reconstruction of the acquired images, the fine structures of the specimen can be observed and analyzed in 3D.

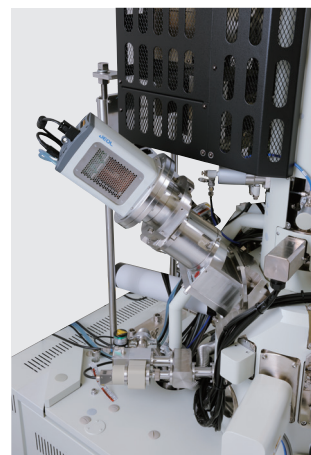


SS-9400SXES

Soft X-ray Emission Spectrometer

The Soft X-ray Emission Spectrometer (SXES) achieves superbly high energy resolution with combination of a newly developed diffraction grating and a high-sensitivity CCD camera. SXES allows parallel detection comparable to EDS and provides 0.3 eV energy resolution (Fermi edge: Al-L) surpassing WDS in terms of energy resolution.

*This spectrometer is used with an EPMA or an FE-SEM. For applicable models of EPMA's and SEMs, please contact JEOL sales staff.



JSM-IT500 series

Scanning Electron Microscope

The JSM-IT500 series are new models of award-winning predecessor of our InTouchScope™ series. Any analyses, from locating the specimen area to generating a report, are facilitated. Fast throughput, approximately 35% higher than the conventional models, is achieved for significantly easier analysis.

Resolution High Vacuum : 3.0 nm (30 kV), 15.0 nm (1.0 kV)

Low Vacuum : 4.0 nm (30 kV, BED)

Accelerating voltage : 0.3 kV to 30 kV

Direct magnification : ×5 to 300,000

(Defined with a display size of 128 mm × 96 mm)

Displayed magnification: ×14 to 839,724 (on the monitor)

(Defined with a display size of 358 mm × 269 mm)



JSM-IT300HR InTouchScope™

Scanning Electron Microscope

The JSM-IT300HR, a new model of JEOL InTouchScope™ series SEMs, is equipped with a new high-brightness electron gun and optical system for enabling high resolution imaging and high-sensitivity, high spatial-resolution analysis. Built off of high operability and a wealth of automatic functions offered by our highly successful InTouchScope™ series, this cutting-edge SEM allows for highly-efficient acquisition from image collection to elemental analysis with fewer steps. The JSM-IT300HR also comes with the low-vacuum function, suitable for extended observation and analysis of various sizes and types of specimens.

Resolution High Vacuum : 1.5 nm (30 kV)

Low Vacuum : 4.0 nm (1 kV)

Accelerating voltage : 0.5 kV to 30 kV

Magnification : ×5 to 60,000

At pixel display (1,280×960) : to 1,679,449



JSM-IT100 InTouchScope™

Scanning Electron Microscope

The JSM-IT100, equipped with 50 years of JEOL SEM technologies, is a compact, versatile SEM. Ease of use is a key feature of our successful InTouchScope™ series while maintaining the versatility and expandability expected from a research-grade SEM. With an EDS-embedded model, an easy-to-use software system enables smooth integration of image collection, elemental analysis and report generation.

Resolution High-vacuum mode : 3 nm (30 kV*), 4 nm (20 kV)

8 nm (3 kV), 15 nm (1 kV)

Low-vacuum mode : 4 nm (30 kV*), 5 nm (20 kV)

Accelerating voltage : 0.5 to 30 kV (53 steps)*, 0.5 to 20 kV (43 steps)

Magnification : ×5 to 300,000

At pixel display (1,280×960) : to 793,750

* Accelerating voltage extension kit is required.



Scanning Electron Microscopes

JCM-6000Plus

NeoScope™

The JCM-6000Plus benchtop SEM, equipped with a high-sensitivity semiconductor detector, enables acquisition of low-vacuum-mode image and compositional information with higher contrast. Like conventional models, this SEM can be used in both high- and low-vacuum modes and accommodates an optional EDS (X-ray analyzer for element analysis).

Magnification : ×10 to 60,000

Specimen size : Max. 70 mm dia.



SMILE VIEW™ Standard

Analysis & Measurement Integrated Software

The SMILE VIEW™ Standard simplifies the user interface of the highly regarded SMILE VIEW™ Program which is a PC-based system facilitating a series of operations of listing to printing of images saved in the same folder. An image sharpening function is also added to this new program.



Ion Beam Application Equipment

JIB-4000

Focused Ion Beam System

- Top of the line high- throughput processing
- Compact size for flexible layout – Installation space reduced by 20% (compared to JEOL conventional models)
- Superb performance at low accelerating voltage
- Stage Navigation System for fast positioning.

Resolution : 5 nm

Accelerating voltage : 1 to 30 kV

Magnification : ×60 (for searching field)
×200 to 300,000



JIB-4700F

MultiBeam System

The JIB-4700F features a hybrid conical objective lens, GENTLEBEM™ (GB) mode and an in-lens detector system to deliver a guaranteed resolution of 1.6 nm at a low accelerating voltage of 1 kV. Using an “In-Lens Schottky FEG” that produces an electron beam with a maximum 300 nA probe current, this new FIB-SEM allows for high-resolution imaging and fast analyses. For the FIB column, a high-current density Ga ion beam with a maximum 90 nA probe current is employed for fast ion milling and processing of specimens.

SEM image resolution : 1.2 nm (15 kV, GB mode)
1.6 nm (1 kV, GB mode)

FIB image resolution : 4.0 nm (30 kV)

FIB probe current : 1 pA to 90 nA



IB-19530CP

CROSS SECTION POLISHER (CP)

The IB-19530CP adopts a newly-developed, multi-purpose stage to meet increasingly diversified market needs and provides multi-functionality by the use of different types of specialized functional holders. The multi-purpose stage combined with these holders expands its applications to planar surface milling and polishing, sputter coating as well as conventional cross-section ion milling.



IB-19520CCP

Cooling Cross Section Polisher (CP)

The IB-19520CCP Cooling Cross Section Polisher incorporates a specimen cooling system suitable for specimens susceptible to beam damage. A new air isolation system transfers a specimen between SEM and CP in an air-isolated environment. Its unique cooling system can cool the specimen for 8 h or more only with 1 L liquid nitrogen, enabling specimen exchange in a short time while liquid nitrogen is held. It features high-throughput milling (milling speed) of 500 μm/h (Si single crystal, protrusion: 100 μm).



EM-09100IS

ION SLICER

The ION SLICER prepares a cross-section specimen for TEM. It irradiates a pre-processed section with an argon ion beam along a masking belt placed on the specimen. Compared with ion milling, this tool can dramatically reduce pre-processed time of the specimen.



IB-09060CIS

Cryo ION SLICER

The IB-09060CIS Cryo ION SLICER incorporates a specimen cooling mechanism in the EM-09100IS Ion Slicer, for easy preparation of thin films/cross sections even for specimens susceptible to thermal damage.



Peripheral Equipment

EC-52000IC

Ion Cleaner

This is a device for removing hydrocarbon contaminants deposited on the sample using physical and chemical reactions while maintaining the sample in a glow discharge. Collecting the hydrocarbon contaminants helps to prevent the generation of sample contamination when an electron beam is irradiated onto the sample by an electron microscope, and by accumulation of hydrocarbon contaminants (contamination).



DII-29020HD

HD Treatment

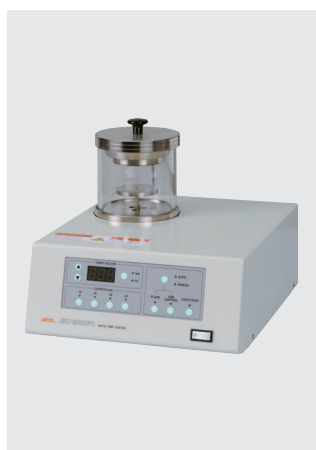
HD Treatment is a device that was designed with the electron microscope sample fabricator in mind, offering the long-desired hydrophilic treatment applicable to a wide range of samples prepared for TEM and SEM. Operation is exceptionally easy; all processing from start to finish is fully automatic.



JEC-3000FC

Auto Fine Coater

This device consists of a main unit and a rotary pump, and is used mainly to prepare specimens for scanning electron microscopes. Various types of coatings can be deposited onto biological and other non-conductive specimens efficiently in a short time.



DII-29010SCTR/DII-29030SCTR

Samples for use in a scanning electron microscope are coated with a metal (Au, Pt) to prevent charging of the specimen and improving the generation efficiency of secondary electrons, thus making it possible to improve the quality of the observed images.



Instruments for Microarea and Surface Analysis

JXA-8530FPlus

Field Emission Electron Probe Microanalyzer

The JXA-8530Plus is a third-generation FE-EPMA that comes with extended capabilities. The In-Lens Schottky Plus field-emission gun combined with advanced hardware and software systems brings a new era of elemental analysis.



JXA-8230

Electron Probe Microanalyzer

The JXA-8230 is an EPMA that combines a WDS offering high wavelength-resolution and an EDS allowing fast element analysis with ease of operation. The JXA-8230 has various features such as trace-element detection using large probe current and wide-area analysis using stage scan.



JAMP-9510F

Field Emission Auger Microprobe

The JAMP-9510F is a high-grade field-emission Auger Microprobe, featuring high-throughput chemical-state analysis achieved by a hemispherical electrostatic energy analyzer (HSA) and large probe current even at small probe diameter offered by an FEG. Combining a eucentric tilt stage and a charge neutralizing gun allows analysis of insulating materials as well as metals. Auger analysis extends from chemical composition to chemical-state information for any sample.



JPS-9200

Photoelectron Spectrometer (XPS)

The JPS-9200 is an XPS that combines a magnetic-field lens and an accelerating lens, enabling high-sensitivity analysis from macro to microareas. XPS software incorporates a ribbon-style GUI, offering a user-friendly environment in which all operations can be performed with the mouse.



JPS-9030

Photoelectron Spectrometer (XPS)

The JPS-9030 is a multi-purpose XPS adopting newly-developed software for greater ease-of-use. A new Kaufman-type etching ion source is installed in the specimen exchange chamber to prevent contamination of the measurement chamber. In addition to the standard Mg/Al twin anode, an infrared heating system and an Ar gas cluster ion source are available.



NMR Spectrometers

JNM-ECZR series

FT NMR System

The JNM-ECZR series offers the high-end models with a high level of expandability. The greater degree of circuit integration makes it possible to further improve reliability and reduce the console size. These instruments outperform the conventional systems with the expandability to support multi-channel conversion and high output power amp upgrades.

The advanced software and automation technology support advanced cutting-edge measurement, while automating all of the routine measurement tasks.

JNM-ECZR series

	400	500	600	700	800
Spectrometer	Oscillator, receiver, power amplifier				
Magnet					
SCM Field strength	9.4T	11.74T	14.01T	16.43T	18.8T
Bore diameter (mm)	54	54	54	54	54
Probe	5 mm Digital auto tuning probe				



JNM-ECZ500R

JNM-ECZS series

FT NMR System

The JNM-ECZS series consists of entry-level models that offer nearly the same functionality as the high-end ECZR series for liquid 2 channel measurements, with a footprint that is about 60% smaller than conventional compact models.

Advanced software and automation technology deliver automation all of the routine measurement tasks. By installing an ultra-high sensitivity auto-tune probe that incorporates cryogenic probe technology, such as a SuperCOOL probe, these instruments achieve the world's best-in-class sensitivity, providing advanced capabilities for a variety of applications.

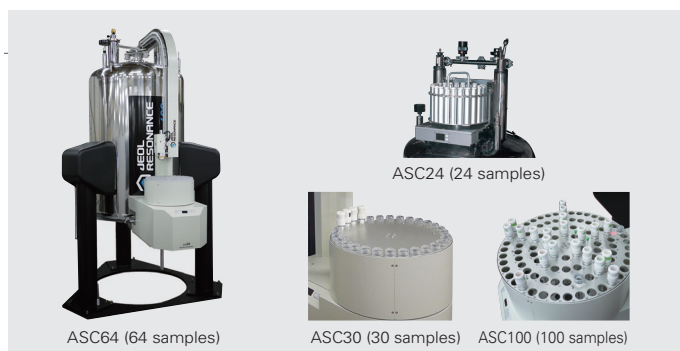


JNM-ECZ400S

ASC series

Auto Sample Changer

An automatic sample changer makes it possible to measure many samples sequentially by exchanging multiple samples automatically one by one. Four changer models are available for 24 samples, 30 samples, 64 samples and 100 samples.



ASC64 (64 samples)

ASC24 (24 samples)

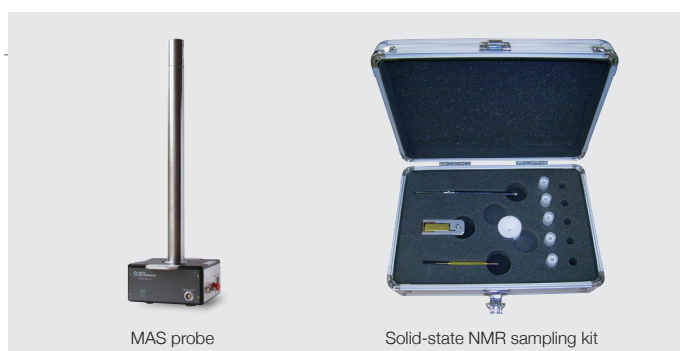
ASC30 (30 samples)

ASC100 (100 samples)

JNM-ECZR series

Solid-state NMR

Solid-state NMR is a technique to measure solid samples (powder or film-like samples). This technique is also effective for measurement of samples not soluble in solvents (inorganic samples, etc.) and of crystalline polymorph that is meaningful to measure in the solid state.



MAS probe

Solid-state NMR sampling kit

ESR Spectrometers

JES-X3 series

ESR Spectrometers

Recently, it has been widely accepted that even relatively few unpaired electrons in a sample can affect the function of the material, so a lower detection limit (higher sensitivity) is required of ESR measurements. The JES-X3 Series has achieved higher sensitivity by developing a low-noise Gunn oscillator for its new spectrometer.

	X310	X320	X330
Maximum Magnetic Field	0.65 T	1.3 T	1.4 T
Sweep Width	±0.01 ~ 250 mT	±0.01 ~ 500 mT	
Pole Gap	60 mm	60 mm	75 mm
Frequency Range(GHz)	8.750 ~ 9.650		
Field Resolution (μT)	2.35		
Correction by Marker	Standard		
Operating System	Windows® 7		



ES-CT470

Liquid Helium Variable Temperature Controller

The ES-CT470 varies the sample temperature in the temperature range between 2.5 K and 470 K. Temperature setting is performed by digital display and the set temperature is kept constant by automatic control circuits. Combined use with a UV Irradiation device is possible. A GaAs element is used as a temperature sensor, enabling high-accuracy temperature setting.

Variable temperature range : 2.5 K to 470 K

Temperature stability : ±0.01 K for 2.5 K to 4.2 K
±1% or 0.5 K for 4.2 K to 470 K

Required cooling time : 20 min to 25 min from room temperature

Liquid helium consumption : 0.8 to 2 L/h

Dewar adapter : 5/8 inch

Power supply : 90 – 125/180 – 250 V AC
50 Hz/60 Hz

Sample tube O. D. : 5 mm

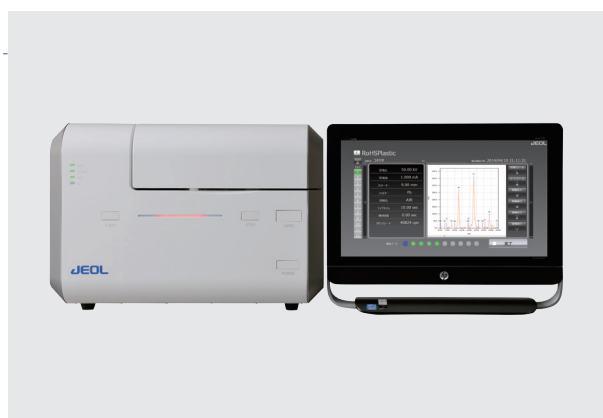


X-ray Fluorescence Spectrometers

JSX-1000S

Energy-dispersive X-ray fluorescence spectrometer

By adoption of a new optical system, abundance of filter configurations and SDD, the JSX-1000S energy dispersive X-ray fluorescence spectrometer provides even higher sensitivity. Other new features are a touch panel that allows intuitive operation, automated measurement menus provided by the solution application, as well as a smart FP method of standard-less analysis with enhanced accuracy.



Mass Spectrometers

JMS-800D UltraFOCUS™

Mass Spectrometer Dedicated to Dioxin Analysis

The JMS-800D UltraFOCUS™, conforming to international standards on dioxin analysis, including EPA, EN, and JIS methods, focuses on analysis of ultra-trace amounts of dioxins, PCBs, PBDEs, and POPs components. Equipped with a socket-type ion chamber, a standard sample inlet system with automatic ON/OFF function, and a photo-multiplier detector, the JMS-800D is optimum for detecting dioxins with ultrahigh sensitivity and ultrahigh selectivity.



JMS-700 MStation

High-Performance Double-Focusing Mass Spectrometer

The JMS-700 MStation is a multi-purpose high-resolution double-focusing mass spectrometer, which accommodate optional CI / FD / FI / FAB ion sources in addition to the standard EI ion source, thus suitable for a variety of applications. The JMS-700 has a wide mass range (up to m/z 2,400 with 10 kV accelerating voltage) that supports analysis of single-charge ions generated by FAB or FD ionization for a high molecular weight sample.



JMS-S3000 SpiralTOF™

Ultra High Resolution MALDI-TOFMS

The JMS-S3000 SpiralTOF™ is a MALDI-TOFMS* incorporating JEOL's unique SpiralTOF™ ion optical system. With superior capabilities than conventional MALDI-TOFMS, the JMS-S3000 provides state-of-the-art analytical solutions for a wide range of research needs, including functional synthetic polymers, materials chemistry, and biomolecules.

* Matrix Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometer



JMS-T100LP AccuTOF™ LC-plus 4G

Atmospheric Pressure Ionization High-Resolution TOFMS

The AccuTOF™ LC-plus 4G, the third generation of the successful AccuTOF™ LC series, is a simple, robust and versatile atmospheric pressure ionization high-resolution time-of-flight mass spectrometer (API-HRTOFMS). It can provide solutions for a wide variety of fields with JEOL's unique ionization technologies, DART and ColdSpray, in addition to the standard electrospray ionization (ESI), the most widely used ionization technique for LC/MS.



JMS-T100LP + DART™ Ion Source

Ambient Ionization High-Resolution TOFMS

DART (Direct Analysis in Real Time) is a new ion source that can analyze samples with various shapes and states without any sample preparation.

DART was born in 2003 at the mass spectrometry applications laboratory of JEOL USA, Inc. Among a series of new ionization techniques, which were later termed "ambient ionization," DART was the first to have been invented and the first to have been commercialized in 2005. You can acquire high mass-resolution, accurate-mass spectra in real time by simply presenting samples of various shapes and states to the DART™ ion source without any sample preparation. DART can handle samples with arbitrary shapes or "dirty" sample that conventional analytical method cannot deal with.

The DART™ was developed for the JEOL AccuTOF™ series of mass spectrometers. AccuTOF™ LC-plus 4G and DART are the perfect combination.



JMS-T200GC AccuTOF™ GCx

High Performance Gas Chromatograph – TOFMS

The AccuTOF™ GCx is a superior gas chromatograph time-of-flight mass spectrometer (GC-TOFMS) that simultaneously accomplishes high-resolution analysis, high mass accuracy, and high-speed data acquisition.

The AccuTOF™ GCx is the most advanced mass spectrometer of the AccuTOF™ GC series products. This further-upgraded fourth generation of the AccuTOF™ GC provides much more solutions in a variety of applications.



JMS-Q1500GC MasterQuad

GC-QMS

The JMS-Q1500GC is an innovative, quadrupole mass spectrometer (QMS) that achieves the highest-level sensitivity in QMS. It has a high evacuation ability due to the use of a split flow turbo-molecular pump system (400 L/s) that simultaneously evacuates the ion source and the detector. The use of a high-accuracy hyperbolic quadrupole mass analyzer provides high resolution.



MS-62070STRAP HS

Headspace Autosampler

The MS-62070STRAP HS is a next-generation headspace autosampler providing ultra-low concentration measurement, which was not possible with the headspace (HS) method using a conventional sample loop. In addition, the HS-GCMS system, combined with a JMS-Q1500GC quadrupole MS, guarantees detection of mold odor in water down to 1 ppt.



Photo : JMS-Q1500GC
+ Headspace autosampler system

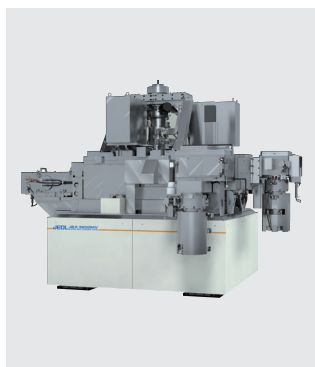
Semiconductor Equipment

JBX-3200MV

Electron Beam Lithography System

The JBX-3200MV is an electron beam lithography system developed for the production of next generation, ultra-high-precision masks and reticles. This system employs a variable shaped electron beam of 50 kV and a step & repeat specimen stage.

- High throughput enabled by a new PEC (Proximity Effect Correction) system
- High-speed data-transfer system for a large quantity data
- High-precision design for mask/reticle production



JBX-9500FS

Electron Beam Lithography System

The JBX-9500FS is a spot beam lithography system developed to meet a wide range of applications with high throughput and high precision performance.

This system covers fields from the nanotechnology research to the production of leading edge devices.

- Accelerating voltage : 100 kV
- Electron beam source : ZrO/W Schottky emitter
- Substrate size : maximum 300 mm wafer



JBX-8100FS

Electron Beam Lithography System

The JBX-8100FS is a Gaussian beam lithography system that performs superior accuracy and writing speed. Upgradable platform offers various options to meet the fields from high-end nanostructure applications to batch production of compound semiconductor.

- Accelerating voltage : 100 kV/ 50 kV/ 25 kV
- Electron beam source : ZrO/W Schottky emitter
- Scanning speed : 125 MHz to 250 Hz
- Substrate size : up to 200 mm wafer



JBX-6300FS

Electron Beam Lithography System

The JBX-6300FS is a spot beam lithography system developed to meet a wide range of applications with high resolution and high precision performance.

This system covers fields from the nanotechnology research to the development of next generation devices.

- Accelerating voltage : 25 kV/50 kV/100 kV
- Electron beam source : ZrO/W Schottky emitter
- Substrate size : maximum 200 mm wafer

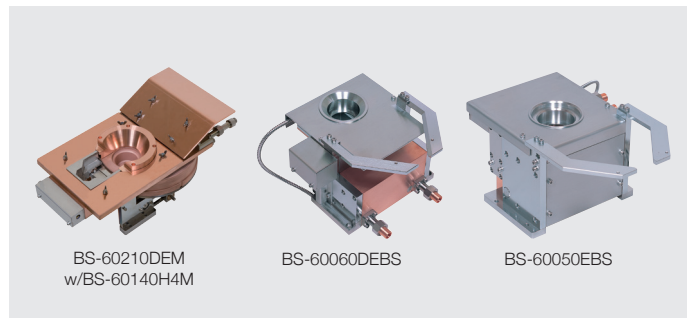


Industrial Equipment for thin-film formation and material processing

BS/EBG series

Electron Beam Source

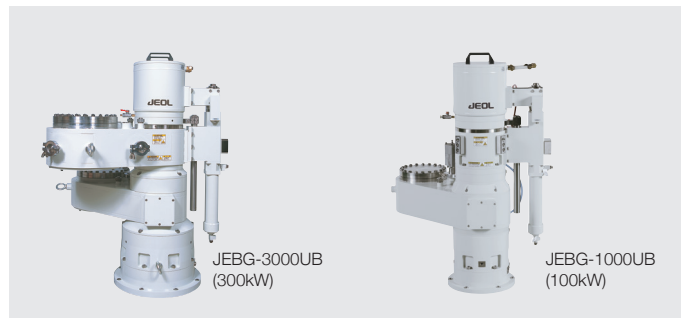
Electron beam sources for vacuum evaporation of metal and metal-oxide thin-films. We offer a wide variety of electron beam sources, crucibles and power supplies. They have features of excellent beam spot and energy density, and high-speed sweeping.



JEBG series

High-power Electron Beam Source

High-power electron beam sources for vacuum evaporation of metal and metal-oxide for wide plastic films or large glass plates that are continuously fed. And they can also be used for vacuum melting of high-melting point metals.



BS-8001BPG/BS-8002CPPS

Plasma Source

Plasma Sources are installed in a vacuum chamber and generate high-density plasma.

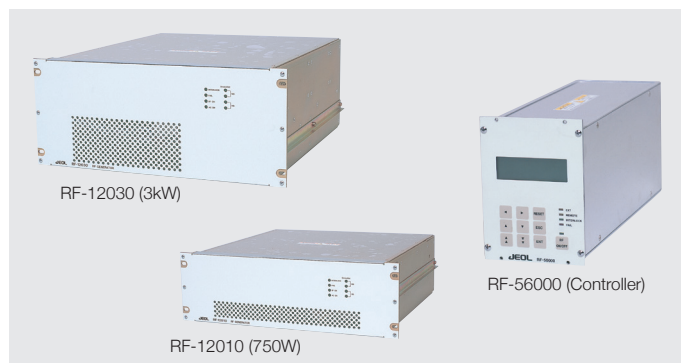
Used for Ion Plating (Plasma Assisted Deposition) and it is possible to improve film properties for optical thin films, protective films and functional films. Because high density plasma can be generated in a mass space, high-rate deposition to a large area is possible.



RF-120 series

RF Generator

13.56 MHz radio-frequency power supplies for plasma generation, which are used for sputtering, CVD, etching and ion-plating. We offer 750 W to 6 kW generators and matching networks.



TP-40020NPS

RF Induction Thermal Plasma System

Thermal plasma around 10,000°C (18,000° F) by RF inductive coupling. This thermal plasma is used for nano powder synthesis, fine powder spheroidization/surface reforming, chemical reaction, thick film synthesis, CVD and harmful gas decomposition.



TP-99010FDR

Powder Feeder

Fine powder feeder that can feed 0.1 to 100 μm size fine powder continuously with carrier gas. We offer optional feeding rate controller and large capacity hopper.



Clinical Chemistry Analyzers



JCA-BM series

SIEMENS HEALTHCARE DIAGNOSTICS

Clinical Chemistry Analyzer BioMajesty™ Series

JEOL's micro volume technology and unique sample pre-dilution mechanism realizes high throughput chemistry analysis with reduced sample and reagent volume.

More than 5,000 systems have been placed in clinical laboratories all over the world.

BioMajesty™ Series

JCA-BM 6010

JCA-BM 6050*

JCA-BM 6070*

JCA-BM 9130

JCA-BM 8000G Series

* These products are distributed outside Japan by Siemens Healthcare Diagnostics under the ADVIA™ brand name.



JCA-BM8000 series

Ultra High Throughput Clinical Chemistry Analyzer

JCA-BM8000 series offer ultra high throughput chemistry analysis, up to 9000 tests/hour.

The pre-dilution unit, one of the BioMajesty™ family features, also continues the strong tradition in these series with interconnected multiple analysis modules; the key factors that accomplish brilliant high throughput as well as downtime reduction with back-up capability.



JCA-BM8060

JCA-BM6010/C

Compact & High Performance Clinical Chemistry Analyzer

JCA-BM6010/C is a compact, but efficient automatic analyzer that maintains the basic concept of the BioMajesty™ series while achieving the excellent capability of microanalysis with sample volume as small as 1 µL. BM6010/C also offers fully automated HbA1c analysis with on-board hemolysis. Simultaneous measurement of Glucose and HbA1c improves laboratory workflow.



JCA-BM6070

High Throughput High Performance Clinical Chemistry Analyzer

A clinical chemistry analyzer with incomparable speed and accuracy, which achieves high throughput of 2400 tests/hour (including ISE).

The incorporated compact workstation and user-friendly interface with excellent operability leads the new trend of the laboratory testing.



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ARGENTINA
 COASIN S.A.C.IyF.
 Virrey del Pino 4071,
 C1430CAM-Buenos Aires
 Argentina
 Tel. 54-11-4552-3185
 Fax. 54-11-4555-3321

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

AUSTRIA
 JEOL (GERMANY) GmbH
 Gute Aenger 30
 85356 Freising, Germany
 Tel. 49-8161-9845-0
 Fax. 49-8161-9845-100

BANGLADESH
 A.Q. CHOWDHURY SCIENCE & SYNERGY PVT. LTD.
 87, Suhrawardy Avenue, Floor 2
 Baridhara, Dhaka 1212
 Bangladesh
 Tel. 8802-9682272, 8953450, 8953501
 Fax. 8802-9854428

BELGIUM
 JEOL (EUROPE) B.V.
 Planet II, Gebouw B
 Luuvensteenteweg 542,
 B-1300 Zaventem
 Belgium
 Tel. 32-2-720-0560
 Fax. 32-2-720-6134

BRAZIL
 JEOL Brasil Instrumentos Cientificos Ltda.
 Av. Jabaquara, 2958 5° andar conjunto 52 ;
 04046-500 Sao Paulo, SP
 Brazil
 Tel. 55-11-5070 4000
 Fax. 55-11-5070 4110

CANADA
 JEOL CANADA, INC.
 3275 Tere Rue, Local #8
 93-Hubert, QC J3H 8Y6, Canada
 Tel. 1-450-676-8776
 Fax. 1-450-676-8694

CHILE
 ARQUIMED INNOVATION
 Arturo Prat 828,
 Santiago, Chile
 Tel. 56-2-634-6266
 Fax. 56-2-634-4633

CHINA
 JEOL(BEIJING) CO., LTD.
 Zhongkeziyuan Building South Tower 2F,
 Zhongguancun Nanshan Street No. 6,
 Haidian District, Beijing, P.R.China
 Tel. 86-10-6804-6321
 Fax. 86-10-6804-6324

JEOL (BEIJING) CO., LTD., SHANGHAI BRANCH
 Room 1505/1506, No. 3000X Kang Road,
 Jing an Dist., Shanghai, 200040, China
 Tel. 86-21-6249-4893/4487/4537/4404
 Fax. 86-21-6248-4075

JEOL (BEIJING) CO., LTD., GUANGZHOU BRANCH
 N1601, World Trade Center Building,
 #371-375, Huan Shi Road East, Guangzhou,
 Guangdong Prov., 510095, P.R.China
 Tel. 86-20-8778-7848
 Fax. 86-20-8778-4268

JEOL (BEIJING) CO., LTD., WUHAN BRANCH
 Room A2118, Zhongshang Plaza Office Bldg.,
 No. 7 Zhongnan Road, Wuhan,
 Hubei, 430071, P.R.China
 Tel. 86-27-8713-2567
 Fax. 86-27-8713-2567

JEOL LTD. (BEIJING) CO., LTD., CHENGDU BRANCH
 1807A Zongfu Building,
 NO. 35 Zhongfu Road, Chengdu, Sichuan, 610016
 P.R. China
 Tel. 86-28-86622554
 Fax. 86-28-86622564

EGYPT
 JEOL SERVICE BUREAU
 3rd Fl. Nile Center Bldg., Nawal Street,
 Dokki, (Cairo), Egypt
 Tel. 20-2-3335-7220
 Fax. 20-2-3339-1188

FRANCE
 JEOL (EUROPE) SAS
 Espace Claude Monet, 1 Allée de Giverny
 79290, Croissy-sur-Seine, France
 Tel. 33-13015-3737
 Fax. 33-13015-3747

GERMANY
 JEOL (GERMANY) GmbH
 Gute Aenger 30
 85356 Freising, Germany
 Tel. 49-8161-9845-0
 Fax. 49-8161-9845-100

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

GREECE
 N. ASTERADIS S.A.
 56-56,S, Tirkoupi Str. P.O. Box 26140
 GR-10022, Athens, Greece
 Tel. 30-1-823-5383
 Fax. 30-1-823-9567

HONG KONG
 FARMING LTD.
 Unit No. 1009, 10/F., Prosperity
 663 King's Road, North Point, Hong Kong
 Tel. 852-2815-7299
 Fax. 852-2581-4635

INDIA
 JEOL INDIA Pvt. Ltd.
 Unit No. 305, 3rd Floor,
 ABW Elegance Tower,
 Jasola District Centre,
 New Delhi 110 025, India
 Tel. 91-11-4672-2578
 Fax. 91-11-4060-1235

JEOL India Pvt. Ltd. Mumbai Branch
 Regus Mumbai
 Levels Ground & 1, Trade Centre Bandra Kurla Complex 1108,
 Bandra (E) Mumbai, 400051, India
 Tel. : +91-22-40700700

INDONESIA
 PT. TEKNOABINDO Penta Perkasa
 Komplek Gading Bukit Indah Blok I/11
 Jl. Bukit Gading Raya Kelapa Gading Permai,
 Jakarta 14240, Indonesia
 Tel. 62-21-45847057/58
 Fax. 62-21-45842729

ITALY
 JEOL (ITALIA) S.p.A.
 Palazzo Piacentini - Milano 3 City,
 Via Ludovico il Moro, 6/A
 20090 Basiglio(MI) Italy
 Tel. 39-02-9041431
 Fax. 39-02-90414343

KOREA
 JEOL KOREA LTD.
 Dongwoong Bldg. 7F, 1443, Yangjae Daero,
 Gangdong-Gu, Seoul, 05355, Korea
 Tel. 82-2-511-5801
 Fax. 82-2-511-2635

KUWAIT
 Ashraf & CO, Ltd.
 P.O.Box 3555 Safat 13036, Kuwait
 Tel. 965-1805151
 Fax. 965-24335373

MALAYSIA
 JEOL(MALAYSIA) SDN.BHD.
 508, Block A, Level 5,
 Kelana Business Center,
 97, Jalan SS 7/2, Kelana Jaya,
 47301 Petaling Jaya, Selangor, Malaysia
 Tel. 60-3-7492-7722
 Fax. 60-3-7492-7723

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

Middle East
 JEOL GULF FZE
 P.O. Box No. 371107
 Dubai Airport Free Trade Zone East Wing 5EA No. 404,
 Dubai, UAE
 Tel. 971-4-609-1497
 Fax. 971-4-609-1498

PAKISTAN (Karachi)
 ANALYTICAL MEASURING SYSTEM (PVT) LTD.(AMS LTD.)
 14-C Main Sehar Commercial Avenue Lane 4,
 Khayaban-e-Sehar,
 D.H.A-VII, Karachi-75500, Pakistan
 Tel. 92-21-35345581/35340747
 Fax. 92-21-35345582

PANAMA
 PROMED S.A.
 Parque Industrial Costa del Este
 Urbanización Costa del Este
 Apartado 0816-01755, Panama, Panama
 Tel. 507-303-3100
 Fax. 507-303-3115

PHILIPPINES
 PHILAB INDUSTRIES INC.
 7487 Bagtikan Street, SAV Makati,
 1203 Metro, Manila Philippines
 Tel. 63-2-896-8658
 Fax. 63-2-897-7732

PORTUGAL
 IZASA Portugal Lda.
 R. do Proletariado, 1
 2790-138 CARNAXIDE, Portugal
 Tel. 351-21-424-73-00
 Fax. 351-21-418-60-20

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

SAUDI ARABIA
 ABDULREHMAN ALGOSAIBI G.T.C. (Riyadh)
 Algosaiji Building-Old Airport Road
 P.O. Box 215, Riyadh-11411, Saudi Arabia
 Tel. 966-1-477-7932

SCANDINAVIA
 JEOL (Nordic) AB
 Hammarbacken 6A, Box 716, 191 27 Sollentuna
 Sweden
 Tel. 46-8-28-2800
 Fax. 46-8-29-1647

SINGAPORE
 JEOL ASIA PTE.LTD.
 2 Corporation Road
 #01-12 Corporation Place
 Singapore 618494
 Tel. 65-6565-9889
 Fax. 65-6565-7552

SOUTH AFRICA
 ADI Scientific (Pty) Ltd.
 370 Angus Crescent,
 Northlands Business Park, 29 Newmarket Road
 Northriding, Randburg, Republic of South Africa
 Tel. 27-11-462-1363
 Fax. 27-11-462-1368

SPAIN
 IZASA Scientific SLU,
 Argoneses, 13, 28108 Alcobendas,
 Madrid, Spain
 Tel. 34 902 20 30 80
 Fax. 34 902 20 30 81

SWITZERLAND
 JEOL (GERMANY) GmbH
 Gute Aenger 30
 85356 Freising, Germany
 Tel. 49-8165-77346
 Fax. 49-8165-77512

TAIWAN
 JIE DONG CO., LTD.
 7F, 112, Chung Hsiao East Road,
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 Tel. 886-2-2395-2978
 Fax. 886-2-2322-4655

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 Tel. 886-2-8990-1779
 Fax. 886-2-8990-2559

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 East Dist., Hsinchu City 30066,
 Taiwan (R.O.C.)
 Tel. 886-3-571-5656
 Fax. 886-3-571-5151

THAILAND
 JEOLTHAI BANGKOK EQUIPMENT & CHEMICAL CO., Ltd.
 900 Phaholyothin Rd, Phayathai, Bangkok 10400,
 Thailand
 Tel. 66-2-615-2929
 Fax. 66-2-615-2350/2351

JEOL ASEAN TECHNICAL CENTER (JATC)
 MTEC building room 533
 114 Moo9, Thailand Science Park
 Pathoayothin Rd, Klong 1, Klong Luang,
 Pathumthani 12120
 THAILAND
 Tel. 66-2-564-7738
 Fax. 66-2-564-7739

THE NETHERLANDS
 JEOL (EUROPE) B.V.
 Lirweg 4, NL-2153 PH Nieuw-Vennep,
 The Netherlands
 Tel. 31-252-623500
 Fax. 31-252-623501

TURKEY
 Iksker A.S.
 Kartal Cad. No: 55/3 Inonu Wah,
 Atasehr 34755, Istanbul, Turkey
 Tel. 90-216-5736470
 Fax. 90-216-5736475

USA
 JEOL USA, INC.
 11 Dasturam Road, Peabody, MA 01960, U.S.A.
 Tel. 1-978-535-5900
 Fax. 1-978-536-2205/2206

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

VENEZUELA
 GOMISA Service and Supply C.A.
 Urbanization Montalban III
 - Residencias Don Andres - Piso 7 - Apartamento 74
 Avenida 3, entre calles 7 y 6
 Montalban, Caracas, Venezuela
 Tel. 58-212-443-4342
 Fax. 58-212-443-4342

Vietnam
 TECHNICAL MATERIALS AND RESOURCES
 IMPORT-EXPORT JOINT STOCK COMPANY(REXCO)
 Hanoi Branch
 SALES & SERVICE
 155-157 Lang Ha Street, Dong Da District, Hanoi, Vietnam
 Tel. +84 (43) 582 0516
 Fax. +84 (43) 853 2511