페이지 인쇄

Atomic Absorption Spectrophotometer

광분석장치 > 원자흡광분광광도계

AA-7000

시마즈 원자 흡수 분광 광도계 AA-7000 시리즈는 고감도 분석은 물론, 유연한 시스템 구성 및 설치면적 축소 등 편리한 사용성을 추구하고 있습니다. 또한 세계 최초로 진동 센서를 내장하는 등 안전에도 최선을 다하고 있습니다.
AA-7000 시리즈는 실험실에서 작업을 효율적이고 편안하게 합니다.

제품정보

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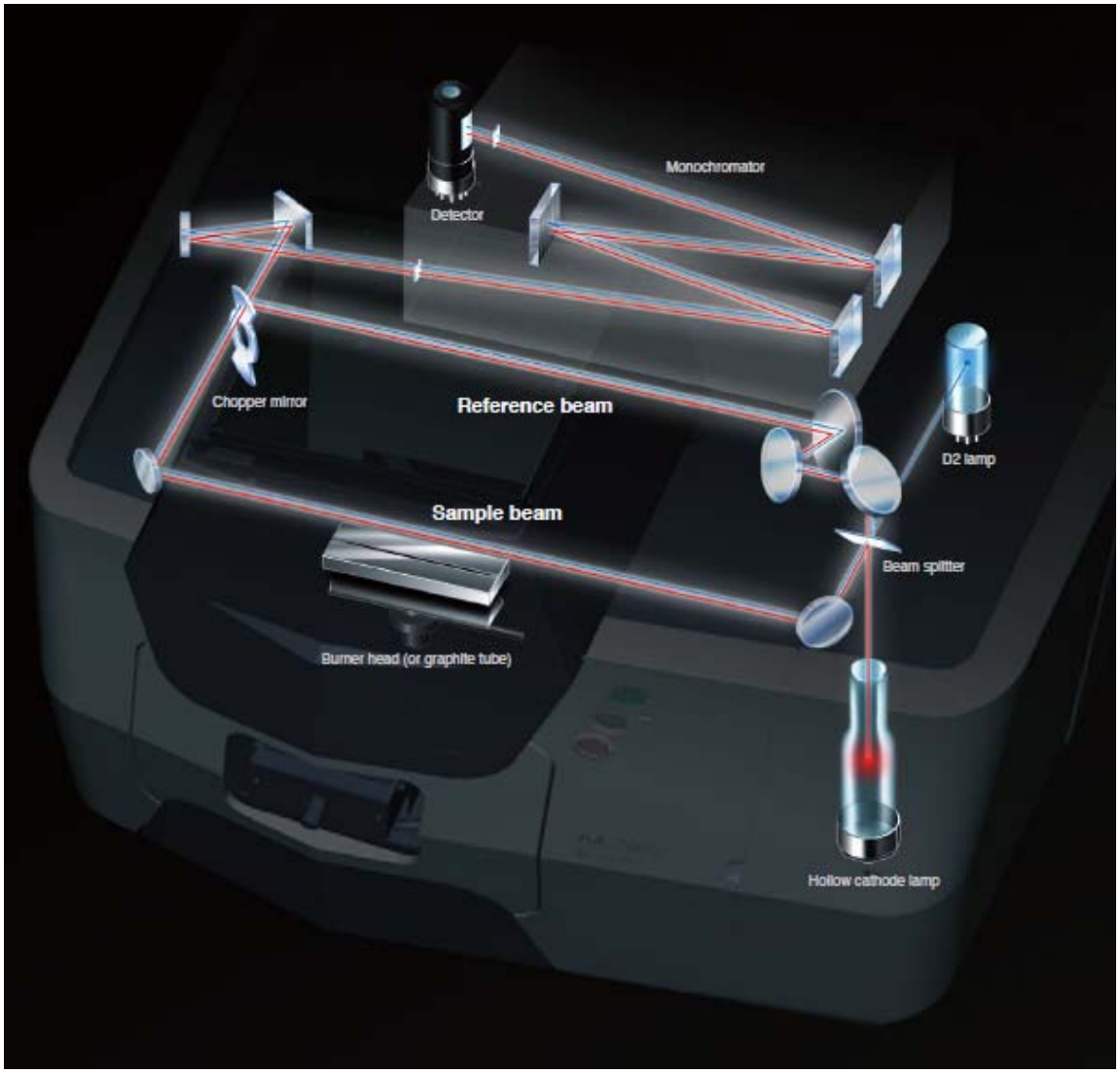
▸세계 최고 초고감도

-더블 빔 광학계에 의한 뛰어난 안정성을 제공

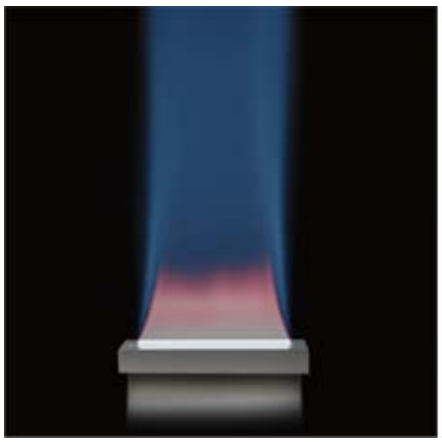
신개발 3차원 광학부 탑재하고 있습니다. 측광 시스템은 프레임 측정 시 더블 빔, Furnace 측정 시 High Throughput 싱글 빔으로 자동 설정됩니다. 최적의 광속 조정, 광속 연산 디지털 필터 탑재로 광량 손실을 억제하기 위한 광학 부품을 채용하여, 각각의 측정 방법으로 최대한의 성능이 발휘되도록 설계되어 있습니다.



-최고 Furnace 검출 하한을 실현

광학계의 추가와 새로운 디자인의 흑연 원자로는 Furnace 분석 감지 하한 성능이 향상되었습니다(기존 대비). 각 분야의 분석에 탁월한 성능을 발휘합니다.

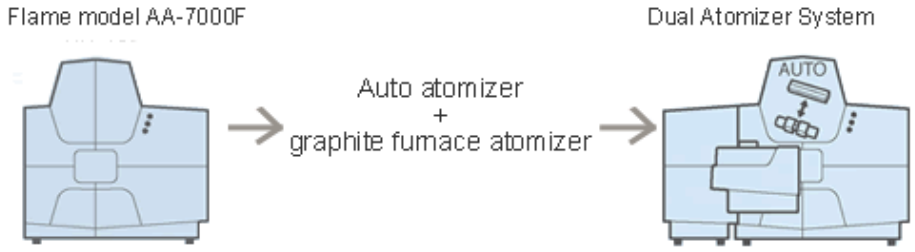
▸첨단 안전 기술



아세틸렌 가스를 사용하는 프레임 원자 흡수 분광 광도계에 있어서 안전이 중요합니다. AA-7000에서 진동 센서를 세계 최초로 기본장착 했습니다. 또한, 가스 누출 검사 장치를 비롯한 각종 안전장치가 갖추어져 있습니다.
※ 2008 년 11월 현재 당사 조사

▸간단, 쉽게 설계된 소프트웨어 'WizAArd'
Windows XP/Vista를 지원하는 오퍼레이션 소프트웨어 'WizAArd'의 지시안내를 따라하는 것만으로도 초보자도 손쉽게 측정환경을 조절할 수 있습니다.

▸사용자의 요구에 맞는 발전 시스템 구성
프레임 모델 AA-7000F에 Auto Atomizer Changer AAC-7000 (옵션)을 장착하면, 버너와 Furnace가 일체화되어 연소실에 설치 가능합니다. 또한, 원자 화부의 일체화로 공간 절약을 실현하고 있습니다.
※ Flame model AA - 7000G에 AAC-7000을 장착하는 것은 불가능



유닛 추가장착 시스템

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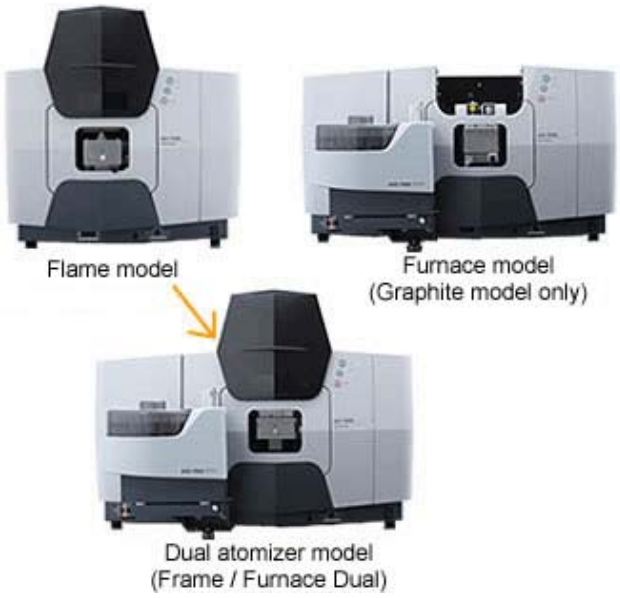
AA-7000 시리즈는 분석 대상을 처리하기 위해 시스템에 장치를 추가하여 업그레이드할 수 있으며, 다양한 분석 애플리케이션을 광범위하게 지원합니다.



응용 프로그램 분야

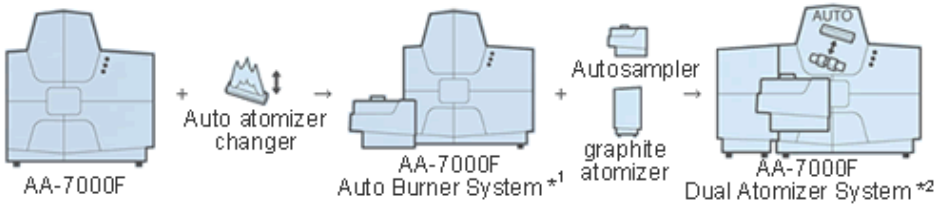

환경 - 바닷물, 강물, 유출물, 슬러지, 공기 매개로 먼지


금속, 반도체, 세라믹 - 금속, 광물, 유리, 세라믹, IC 칩


석유, 화학 물질, 폴리머 - 석유, 석유, 촉매, 화학 제품, 바이오 디젤


의학, 생물학, 제약 - 혈액, 동물, 식물, 의약품, 식품

*1 자동 버너 시스템
버너 높이를 버너모델 AA - 7000F 및 Auto Atomizer Changer AAC를 사용하여 PC로 제어할 수 있습니다.



*2 Dual Atomizer 시스템
일체형 버너와 보일러가 연소실에 설치되어 Atomizer 부품, 파이프 제거 및 배선의 귀찮은 교환이 필요하지 않습니다. 새로 개발된 드라이브 메커니즘은 시마즈 기존 제품과 비교하여 Flame/furnace 측정 전환시간이 반으로 단축 되었습니다.

Upgrade from furnace mode

제품사양 △top

Main Unit

-Basics		
Optics	**Wavelength range**	185.0 to 900.0 nm
	Monochromator	Aberration-corrected Czerny-Turner mounting, Number of grating grooves: 1800 lines / mm, Focal length: 300 mm
	Bandwidth	0.2, 0.7, 1.3, 2.0L nm (4-step automatic switching)
	Detector	Photomultiplier tube
	Optics	Optical double-beam
	Background correction method	∗ BGC-SR (high-speed self-reversal method) (185.0 to 900.0 nm) ∗ BGC-D2 (D2 lamp method) (185.0 to 430.0 nm)
	Number of HC lamps	6-lamp turret, 2 lamps simultaneously lit (1 for measurement, 1 warming up for next measurement)
	Lamp mode	EMISSION, NON-BGC, BGC-D2, BGC-SR
Data processing	**Software requirements**	Microsoft Windows Vista Business / XP Professional
	Parameter setting	Wizard method
	Measurement mode	Flame continuous method, flame micro sampling method, furnace method, flame emission method
	Concentration computation mode	∗ Calibration curve method (select primary, secondary, tertiary) ∗ Standard addition method, simple standard addition method (primary expression)
	Repeat analysis	Up to 20 repetitions. Mean value, standard deviation (SD) and coefficient of variation (RSD) display Automatic exclusion of deviant values by setting SD and %RSD
	Baseline correction	Automatic correction of baseline drift by offset correction in peak height / peak area modes.
	Signal processing segment setting	Signal processing segments can be changed in peak height / peak area modes.
	Sensitivity correction	Automatic calibration curve correction function using sensitivity monitoring
	Analog output	2 channels (atomic absorption/energy signal, background signal) Output range: 5.0, 2.5, 1.25, 0.625 Abs./V (each settable in 4 stages) Fixed at 1 V F.S. in EMISSION mode.
	Tabular data processing	Final concentration calculations based on sampled volume, dilution rate, fixed volume, and factor inputs
	Recall of parameters	Template functions available
	Procedure/result display	MRT (Measurement Results Table) worksheet
	Report generation	Summary report
	QA/QC	Select whether to continue or discontinue measurements based on results of evaluation on coefficient of correlation, %RSD, ICV.ICB, CCV.CCB, PB, LCS, SPK, PDS, and DUP.
	Re-analysis	∗ Select whether on not to conduct re-analysis. ∗ Automatic dilution and re-analysis of unknown samples via autosampler (flame micro sampling method, furnace method)
	Digital recording	∗ Management by login ID and password .Control user access authority by user level ∗ Log record .Audit trail .Electronic signatures
Power requirements		Choose from 100, 120, 220, or 230 VAC, 50/60 Hz (Power is required separately for the personal computer.)

Dimensions and weight	* AA-7000F/AAC: 700 W × 588 D × 714 H mm, 75 kg .. * AA-7000F: 700 W × 588 D × 714 H mm, 72 kg * AA-7000G: 700 W × 580 D × 538 H mm, 65 kg (Protruding parts and optional equipment are not included.)
Ambient temperature / humidity	10 to 35 °C, 20 to 80% (less than 70% when temperature is higher than 30 °C)

-Flame		
Burner unit	**Type**	Air-cooled pre-mix type
	Burner head	T.itanium 10 cm slot (5 cm titanium slot for N2O-C2H2 flame available as an option)
	Nebulizer	* Pt-Ir capillary * PTFE orifice * ceramic impact bead (capable of handling hydrofluoric acid)
	Chamber	Engineering plastics
	Positioning	* AA-7000F .. -Lateral/vertical manual adjustment * AA-7000F/AAC .Automatic flame/furnace switching by motor -Automatic search of optimum burner height
	Angle adjustment	0 to 90° (Angle adjustment is not possible if the optional GFA-7000 is installed on the AA-7000F/AAC.)
Gas control	**Flow rate control**	* Automatic fuel gas flow rate setting (0.1 L/min step) . * Automatic search of optimum gas flow rate
	Safety measures	* Automatic gas leak check * Automatic Air-N2O switching as C2H2 flow rate increases * Flame monitor * Prevention of wrong burner head use . * Gas pressure monitor . * Drain tank level monitor . * Automatic flame extinction upon power outage or sudden power interruption * Automatic flame extinction via flame vibration sensor . * Internal fan stop sensor

Furnace(GFA-7000)	
Heating temperature range	-Ambient to 3,000 °C
Heating control system	-Drying: Digital current control with automatic temperature calibration function . -Ashing, Atomization: Digital temperature control via optical sensor
Setting heating conditions	-Maximum 20 stages .Heating mode: RAMP/STEP .Inner gas type: Dual automatic switching type . -High-sensitivity mode setting .Enrichment in furnace: Maximum 20 times . -Optimum temperature program search support function .Inner gas flow rate: 0 to 1.50 L/min
Safety measures	-Cooling water flow rate monitor .Gas pressure monitor . -Overcurrent protection unit (double check by circuit protector and optical sensor) -Furnace block cooling check
Positioning	* AA-7000G -Lateral/vertical manual adjustment * AA-7000F/AAC -Automatic flame/furnace switching by motor
Power requirements	200, 220, 230, or 240 VAC ±5%, 6000 VA, 50/60 Hz
Dimensions and weight	260 W × 560 D × 510 H mm, 46 kg

Personal Computer requirements

Operating environment	Microsoft Windows Vista Business / XP Professional
CPU	Intel® Celeron 420 (1.60 GHz or higher) To use GFA-TV, Intel® Pentium DualCore E2180 (2 GHz) or higher is required.
RAM	1 GB or higher (Vista) or 512 MB or higher (XP) To use GFA-TV, 1 GB or higher (GFA-TV)
Monitor	XGA (1024 × 768 dots) or higher
Storage device	One CD-ROM drive (for installing a software) Requires 60 MB min. hard disk space for AA installation. To use GFA-TV, a separate partition of HDD (HDD inside PC) from than that for OS and AA measurement data storage is recommended to use for movie recording.
I/O port	One serial port (for AA control) USB 2.0 port (for GFA-TV)
peripheral device	Monitor, keyboard, mouse, printer

Personal computer, display, software for operating system, and printer are not included in the standard setup.

옵션 악세사리 / 관련제품 △top

For Flame Analysis

Part Name	P/N	Remarks
High-temperature burner head	206-77530-91	Made of pure titanium. Air-cooled. 5 cm slot for N2O-C2H2 flame -Extremely corrosion-resistant . -Can also be used for Air-C2H2 flame.
		
Flow meter kit	206-77617-91	Float-type flow meter for support gas
Sample platform	206-77655-91	Dimensions: 250 W × 130 D × 170 H mm Vial mounting platform: 220 W × 95 D mm Vial positions: 5-step switching
Atomic Booster	206-50957-91	Improves sensitivity with Air-C2H2 flame. N2O-C2H2 flame is not applicable. * High-salt-concentration samples may decrease the quartz tube life-span.
Air compressor	208-91753-91	100 VAC, 50/60 Hz, with mist separator
Low-noise air compressor	208-91750-36	100 VAC, 50/60 Hz, with mist separator
Mist separator kit	206-52458-91	Required if using an air compressor other than above.
YR-71 compressed gas regulator	040-72020-01	For C2H2
MAF-85S compressed gas regulator	040-72019-11	For dinitrogen oxide gas
Micro sampling kit	206-77540-91	Required to use the flame micro sampling method. ASC-7000 and ASK-7000 (or ASC stand kit) are also required.
O-ring set	206-77620-92	O-ring set for organic solvents

For Furnace Analysis

Part Name	P/N	Remarks
GFA-7000 graphite furnace atomizer	206-77700-XX	■Specifications Heating control system: Drying: Digital current control

		(with automatic temperature calibration function) Ashing, atomization: Digital temperature control via optical sensor Heating temperature range: Ambient to 3000 °C Inner gas type: Dual automatic switching type Inner gas flow rate: 0 to 1.50 L/min, 0.01 L/min increments Ar gas: 3.5 L/min max. Cooling water: Cooling water circulation unit or tap for process water Water temperature: 10 to 30 °C, flow rate: 0.6 to 1.5 L/min * Separately order the parts below.
Graphite Furnace Camera GFA-TV	206-52950-91	Provides viewing inside the graphite tube. Including Video View Software (CD-ROM)
High-density graphite tube	206-50587	Select one of the three types of graphite tubes according to the aim of the analysis.
Pyro-coated graphite tube	206-50588	Argon gas cylinder
Platform tube	206-50887-02	For cooling GFA, 100 VAC, 1100VA
MAF-106S compressed gas regulator	040-72019-21	Argon gas cylinder
CA-1114A-1 cooling water circulation unit	044-01809-07	For cooling GFA, 100 VAC, 1100VA
Parts for cooling water connections		
Cooler connection kit	206-84373-91	For connecting GFA and CA-1112
Cooling water tube ASSY	206-51028-91	Connecting tubes when using tap water to cool GFA
Regulator ASSY	206-86147-91	Decompression valve when using tap water to cool GFA

Autosampler

Part Name	P/N	Remarks
ASC-7000 autosampler	206-77600-XX	■Specifications System: Flame / furnace Function: Zero-point detection, auto rinse, auto diagnosis, random access Maximum reagent / sample positions: Reagents: 8 positions, samples: 60 positions * Separately order the parts below.
 		
ASC stand kit	206-77650-91	Required to mount ASC-7000 to conduct flame analysis only.
ASK-7000 extension unit for furnace analysis	206-77550-91	Permits both flame and furnace analysis.
Nozzle ASSY, HVG	206-67563	Required to use ASC-7000 and HVG-1.

Dual Atomizer System

Part Name	P/N	Remarks
AAC-7000 auto atomizer changer	206-77701-91	Required to add GFA-7000 to AA-7000F to conduct furnace analysis. AAC-7000 auto atomizer changer 206-77701-91 Permits automatic burner position setting for flame analysis with AA-7000F.

Hollow Cathode Lamps

Part Name	P/N	Remarks

L-233 series	200-38422-XX	
L-2433 series	200-38456-XX	For SR method

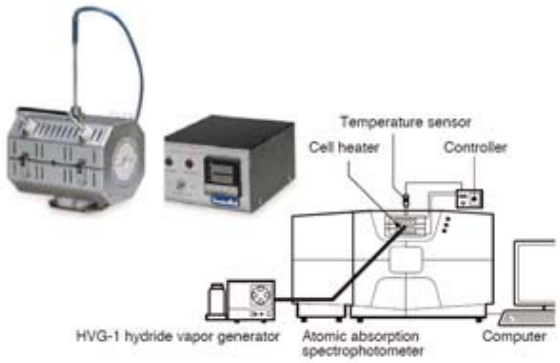
Other Accessories

Part Name	P/N	Remarks
Analog output cable	206-77707-91	Used for analog output to a pen recorder, etc. One cable required per channel (atomic absorption/energy signal, background signal).

For High-Sensitivity As, Se, Sb Analysis

Part Name	P/N	Remarks
HVG-1 hydride vapor generator	206-17143-XX	Environmental standards prescribe the hydride generation method as one method of As, Se, and Sb analysis. 1. Used with the AA-7000 Series, HVG-1 permits the rapid and accurate quantitation of elements such as As, Se, Sb, Sn, Te, and Bi at several-ppb levels. 2. Used with an ASC-7000 autosampler, it permits the automated serial analysis of up to 60 samples. * Nozzle ASSY, HVG (P/N: 206-67563) is required to use HVG -1 with an ASC-7000 Series instrument. Order separately. ■Specifications Measurement method: continuous flow Sample consumption: 0 to 7 mL/min, variable Reagent consumption: 0 to 2.5 mL/min, variable Atomizer: Heated absorption cell (heated by Air-C2H2 flame in standard system) Carrier gas: Ar pressure: 3.2 kg/cm2, consumption: 70 mL/min Power requirements: 100, 115, 220, 240 VAC, 30 VA, 50/60 Hz Dimensions: 340 W × 220 D × 200 H mm ■Standard Major Items Hydride vapor generator, absorption cell (P/N: 200-66584-03) Reagent bottles (P/N: 204-09363-01), gas hose, drain tube, etc.
		

For Higher Sensitivity with the Hydride Generation Method

Part Name	P/N	Remarks
SARF-16C atomic muffle furnace (Electronic Cell Heater)	208-97249	1. This dedicated furnace permits higher sensitivity measurements using the hydride vapor generator than the flame heating method. 2. The temperature controller provides optimal control of the quartz cell temperature. 3. Good temperature reproducibility. Extends cell life by preventing damage due to overheating. * The atomic muffler cannot be used when an AAC-7000 is installed on an AA-7000F.
		
Mounting adaptor	206-52135-91	For AA-7000F
	206-83755-91	For AA-7000G

For High-Sensitivity Hg Analysis

Part Name	P/N	Remarks
MVU-1A mercury vaporizer unit	204-21932-XX	This mercury vaporizer unit permits analysis using the reduction vaporization atomic absorption method. It permits easy, high-sensitivity water quality analysis. ■Specifications Vaporization method: reduction vaporization with a reducing agent Measurement method: recirculation Flow cell: optical path length 100 mm (with quartz window) Sample volume: 250 mL max. Exhaust contamination prevention: adsorption trapping in mercury trap bottle Dimensions: 200 W × 288 D × 287 H mm Weight: Approx. 10 kg ■IStandard Major Items MVU-1A unit: 1 Reaction vial (P/N: 200-93018): 5 Reaction vial lid (P/N: 204-21989): 2 Stirrer tip (P/N: 046-00617-06): 10 Mercury trap bottle (P/N: 038-00218): 1 *Separately order the parts below. . Gas flow cell (P/N: 201-98687) . Holder for gas flow cell (P/N: 206-77703-91) . Hg hollow cathode lamp (P/N: 200-38422-28)

ICP Emission Spectrometers

ICPE-9000	Remarks
	Offers both high throughput and easy analysis. Does not require processing of large data volumes, such as spectral line selection, which was problematic with the conventional Multi-ICP. Various assistant functions allow anyone to rapidly perform accurate analysis. Light source: Axial observation, compatible with mini torch Monochromator / detector: Echelle CCD Wavelength range: 167 to 800 nm (using vacuum monochromator)