QUALITEST™

ADVANCED TESTING TECHNOLOGIES

ICP-OES

INDUCTIVELY COUPLED PLASMA OPTICAL EMISSION SPECTROSCOPY

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Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES), is the premier choice for precise elemental analysis across various industries. This method excels in analyzing diverse sample types, from aqueous and organic liquids to solids, often requiring specific preparation techniques or accessories.

ICP-OES offers significant advantages over other methods like ICP-MS and AAS, including a broad linear dynamic range, high matrix tolerance, and fast analysis speed. The process uses an argon plasma, where electrons collide with argon atoms to form ions. When elements are introduced into the plasma, they emit photons at wavelengths characteristic of each element, allowing for precise identification and quantification.

Our product line features three models: **PLASMA 1500**, **PLASMA 2000**, and **PLASMA 3000**, each engineered for high performance and reliability in elemental analysis. Discover the perfect spectrometer to meet your analytical needs.

PRODUCT CATEGORIES

PLASMA - 2000

PLASMA - 1500

PLASMA - 3000

COMPARISON OVERVIEW

Plasma 1500

- Double grating design for high spectral resolution.
- Solid-state RF generator ensures stability and efficiency.
- Integrated torch tube with optimized sampling systems.
- High sensitivity PMT detector with a wide dynamic range.
- Powerful software system simplifies analysis methods.

Plasma 2000

- Echelle grating and crossed prism dispersion structure.
- Self-excited solid radio frequency generator.
- Enables quick quantitative analysis for metal and nonmetal elements.
- Quartz torch with optimized sampling systems.
- Large-area back-illuminated CCD detector.
- Tailored operation software for user convenience.

Plasma 3000

- Vertical torch dual view and cooled cone for a wider dynamic range.
- Self-excited solid radio frequency generator.
- Facilitates quick quantitative analysis for metal and nonmetal elements.
- Simplified torch installation with optimized sampling systems.
- Large-area back-illuminated CCD detector.
- User-friendly interface with an extensive spectral line library.

MATERIAL AND INDUSTRY APPLICATIONS

Environmental Science

Analyzes water, soil, and air for trace metals and pollutants, ensuring environmental safety and compliance.

Geology and Metallurgy

Determines mineral and metal compositions, ensuring quality control in mining, metallurgy, and exploration efforts.

Petrochemical Industry

Tests petroleum and catalysts for elemental content, optimizing refining processes and product quality.

Pharmaceuticals

Verifies drug purity and detects contaminants, upholding pharmaceutical safety standards.

Materials Science

Characterizes material compositions, aiding in the development of new materials and failure analysis.

Food and Drink Safety

Assesses nutrient levels and detects harmful elements in food and drink products, ensuring consumer safety and compliance.

ICP-OES SPECTROMETER

PLASMA 1500

Introducing **the Plasma 1500**, a cutting-edge single channel scanning ICP spectrometer designed for comprehensive element analysis across various industries.

The Plasma 1500 features **a double grating design**, providing high spectral resolution across the entire wavelength range. Its efficient solid-state RF generator and compact light source ensure rapid matching speed and long-term stability, guaranteeing high-precision results.

Equipped with **a dual channel high-sensitive PMT detector** and wide dynamic range signal processing technology, the Plasma 1500 delivers outstanding detection capabilities. It automatically employs a UV-dedicated PMT within the UV spectrum range for enhanced sensitivity.

The powerful software system of the Plasma 1500 simplifies the method development process, providing users with a straightforward and comfortable operation experience. Explore the Plasma 1500 and elevate your elemental analysis to new heights with unmatched efficiency and accuracy.

FEATURES/ADVANTAGES
PLASMA 1500

Stable and Efficient Performance:
Compact solid-state RF generator ensures precise operation and handles complex samples with long-term stability. The vertical torch tube design reduces cleaning needs and spare tube use. Low power standby mode and real-time monitoring enhance reliability.

Precision Optical System:
The Czerny Turner design uses a high line density plane holographic grating for excellent spectral quality. Precise wavelength driving and double grating provide high spectral resolution, while the optical filter system minimizes interference and noise.

Enhanced Sensitivity and Stability:
Gas atmosphere maintenance and multi-point gas charging improve UV spectrum sensitivity and stability. The independent gas path allows filling with nitrogen or argon, and the stereo temperature control system ensures long-term stability without drift.

Injection System:
Optimized for high salt and complex matrix samples, the system features a removable torch tube for easy maintenance and low cost. High precision flow control ensures stable test performance, while the 4-channel peristaltic pump provides consistent sample introduction.

Detector:
The high sensitivity PMT detector offers full spectrum response, wide dynamic range, and low noise. A special UV band PMT improves UV detection, and wide dynamic range signal processing enhances detection ability for rapid, accurate results.

Software System:
The user-friendly software has a spectral line library with over 70,000 entries, intelligently suggesting interference elements. It supports various analysis methods and data processing techniques, with easy test mode settings, intuitive results display, and multiple report formats.

TECHNICAL SPECIFICATION
PLASMA 1500

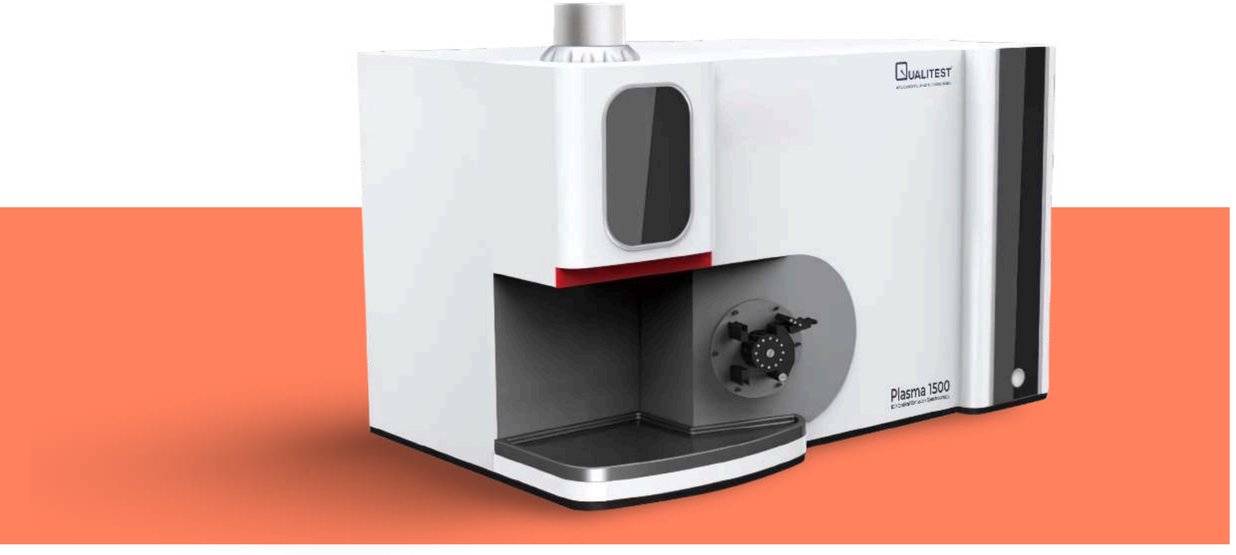
ITEM	SPECIFICATION
Output Power	700W-1600W, continuous 1W adjustable
Power Stability	≤ 0.1%
Frequency Stability	≤ 0.01%
Matching Method	Automatic matching
Electromagnetic Field Leakage Radiation Intensity	< 0.5V/m
Size (W x D x H)	159cm x 65cm x 75cm
Weight	200kg
Injection System	
Torch Tube Direction	Vertical placement
Torch Tube	Integrated, with 0.8mm, 1.5mm, and 2.0mm options (quartz or ceramic)
Atomizer	Concentric or parallel channel, 6mm outer diameter. Options include standard, high salt, and hydrofluoric acid atomizers.
Spray Chamber	Options include swirl, double barrel, and HF resistant chambers
Peristaltic Pump	4 channels, 12 rollers, continuously adjustable speed
Detector (High sensitivity PMT detector)	
Observation Mode	Vertical torch
Detection Limit	Sub ppb - ppb

Optical System			
Grating Marking (Optional)	2400g/mm	3600g/mm	4320g/mm
Double grating	4320g/mm + 2400g/mm		
Spectral Lines Range	165nm-800nm (2400g/mm)	165nm-550nm (3600g/mm)	165nm-450nm (4320g/mm)
Focal Length	1000mm		
Constant Temperature of Light Chamber	High precision constant temperature 33°C ± 0.1°C		
Resolving Power	≤0.012nm (2400g/mm)	≤0.008nm (3600g/mm)	≤0.006nm (4320g/mm)
Stability			
Short Term	RSD ≤ 1% (500s)		
Long Term	RSD ≤ 1.5% (2h, 500s)		
Work Environment			
Laboratory Humidity	Relative humidity 20% ~ 80%		
Purity of Argon	Not less than 99.95%		
Exhaust	Not less than 400 m^3/h		
Voltage	200V ~ 240V AC single phase; 50Hz ~ 60Hz; 4KVA (110V also available upon request)		

ICP-OES SPECTROMETER

PLASMA 2000

The Plasma 2000 is the ultimate solution for precise elemental analysis across various industries. With an array of rich spectral lines, lower detection limits, and enhanced stability, the Plasma 2000 ensures swift and accurate quantitative analysis for all metal and select nonmetal elements.



Capable of swiftly and accurately testing approximately 70 elements, from trace to normal amounts, the Plasma 2000 offers unparalleled versatility.

Its innovative **echelle grating** and **crossed prism dispersion structure**, coupled with **large-area CCDs**, enable simultaneous display of all spectral lines in a single exposure, empowering users with full-spectrum transient direct reading.

Designed with user convenience in mind, the programmable output power program boasts an automatic real-time tuning function, facilitating continuous 1W adjustment within the range of **800-1600W**, with stability exceeding **0.1%**.

Experience the power of Plasma 2000 to elevate your analytical capabilities.

FEATURES/ADVANTAGES
PLASMA 2000

Principle of Instrument:
Transforms samples into aerosols within a nebulizer before passing through the central plasma passage of the quartz torch. Light excites the sample, generating characteristic spectral lines on the CCD detector, whose concentrations are determined through computer data processing.

Light Source:
Equipped with a solid-state RF generator oscillating at 27.12MHz, the Plasma 2000 provides an output power of 800-1600W. Torch position adjustment and real-time tuning ensure stability >0.1%, with modular electrical controls for efficient communication.

Beam Splitting System:
Gas atmosphere maintenance and multi-point gas charging improve UV spectrum sensitivity and stability. The independent gas path allows filling with nitrogen or argon, and the stereo temperature control system ensures long-term stability without drift.

Detector:
The Plasma 2000 boasts a large-area backside CCD chip with high ultraviolet spectrum and quantum efficiency, along with a wide dynamic range. Its high-speed acquisition system provides simultaneous full-spectrum reading and real-time single pixel, subarray monitoring, facilitating quick analysis

Sampling System:
Utilize multichannel 12-roller peristaltic pump for stable sample introduction with optional nebulizers and fog chambers for diverse sample types, while a mass flowrate controller regulates carrier gas flow. Optional controllers for cooling gas and auxiliary gas flow are also available.

Safety Protection System:
The Plasma 2000 features all-round electromagnetic shielding to reduce electromagnetic radiation. It incorporates interlocking door protection and a UV-proof observation window for enhanced safety during operation.

TECHNICAL SPECIFICATION
PLASMA 2000

ITEM	SPECIFICATION
Light Source	
Oscillation Frequency	27.12MHz
Output Power Range	800-1600W
Optical System	
Spectral Range	165-900nm
Resolution	0.007nm at 200nm
CCD	1024x1024 pixels
Single Pixel Area	24umx24um
Specifications	
Dimensions (W x L x H)	(121cm x 74cm x 80cm)
Weight	200kg
Operating Environment	
Room Humidity	Relative Humidity: 20-70%
Argon Purity	Not Less Than 99.9997
Voltage	220-240V, Single Phase, 50-60Hz; 5KVA (110V also available upon request)

ICP-OES SPECTROMETER

PLASMA 3000

The Plasma 3000 is the ultimate solution for lightning-fast elemental analysis across diverse industries. With its rapid quantitative analysis capability for both metal and nonmetal elements.

Experience a wider dynamic linear range and reduced background interference with **Plasma 3000's vertical torch dual view and cooled core**, designed to eliminate plasma tail interference for enhanced accuracy.

Powered by a **self-excited solid radio frequency generator**, Plasma 3000 ensures efficiency, stability, and compactness without compromising precision. Its rapid turnaround time guarantees high-precision results and long-term stability for your analytical needs.

With the **echelle polychromator**, Plasma 3000 captures all emission lines across the entire spectral range simultaneously on a large-area CCD detector in a single exposure, maximizing efficiency and accuracy.

Streamline your analysis method development with Plasma 3000's powerful software system, tailored to meet the specific needs of various applications. Upgrade to Plasma 3000 and revolutionize your elemental analysis capabilities.

FEATURES/ADVANTAGES
PLASMA 3000

Optical System:
Combines radial and axial views for precise element measurement across a wide concentration range. Integration of a CaF2 prism enhances optical throughput, while advanced purging technology ensures sensitivity and stability.

RF Generator:
Features a self-excited solid radio frequency design, for efficiency and stability across diverse sample matrices. Innovative technology removes plasma tail with a cooled cone, enhancing measurement precision.

Sampling System:
Optimized sampling systems cater to various sample types, including organic solvents, high salinity/complex matrix samples, and those containing hydrofluoric acid. Mass flow controllers regulate gas flow rates to ensure long-term testing stability.

Detector:
Features a large-area back-illuminated CCD with superior sensitivity and quantum efficiency in UV. It offers an anti-blooming function, wide dynamic range, and fast signal processing. Single-exposure signal collection ensures faster and more accurate analysis.

Analysis Software:
The analysis software features a user-friendly interface for simplified operation and rapid analysis. It eliminates the need for complex method development. An extensive spectral line library aids in identifying potential interference elements quickly.

Safety Protection System:
The integrated EMC protection system reduces electromagnetic radiation, while interlocking door protection prevents loss due to misoperation. Additionally, a UV-proof observation window ensures safe and efficient operation.

TECHNICAL SPECIFICATION
PLASMA 3000

ITEM	SPECIFICATION
Dimensions (W x D x H)	(106 cm x 67 cm x 75 cm)
Weight	180 kg
Analysis Capability	
Detection Limit	Sub ppb - ppb
Short-term Stability	RSD ≤ 0.5% (500LOD)
Long-term Stability	RSD ≤ 1.0% (4h, 500LOD)
Optical System	
Spectral Range	165-870 nm
Resolution	0.006 nm @ 200 nm
Constant Temperature	38℃ ± 0.1℃
CCD Pixel	1024x1024
Single Pixel Area	24 μm x 24 μm

ITEM	SPECIFICATION
RF Generator	
Type	Self-excited solid radio frequency generator
Continuous adjustment	1 W
Oscillation Frequency	27.12 MHz
Output Power Range	500 W - 1600 W
Power Stability	≤ 0.1%
Operating Environment	
Room Humidity	Relative humidity: 20-80%
Argon Purity	Higher than 99.95%
Air Exhaust	Not less than 400 m^3/hr
Voltage	220-240V AC, single phase, 50-60 Hz; 4 KVA (110V also available upon request)

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About Qualitest

Qualitest's range of advanced Spectroscopy & Analytical Instruments are designed to meet and exceed your quality control requirements to test the quality of various materials and components.

Spectroscopy & Analytical Instruments from Qualitest are built to last and they comply with major North American and International standards such as ASTM, ISO, DIN and others. The modern design of our machines ensures that your quality lab setup is ready for the future.

Our state-of-the-art Spectroscopy & Analytical Technologies include XRF Spectrometers and Metal Analyzers, HPLC High Performance Liquid Chromatography, FTIR Spectrometer QualiFTIR-5000, UV-VIS Spectrophotometer, QT-AAS Series AAS Atomic Absorption Spectrophotometer, Atomic Absorption Spectrometer, Atomic Absorption Spectrometer, ICP-MS Mass Spectrometer, and more.

KEY QUALIBENEFITS

Best Price Guarantee: Qualitest is committed to delivering top-quality, competitive ICP-Optical Emission Spectroscopy at unbeatable prices. Our confidence in providing the highest value for your investment is backed by a price match guarantee.

Trusted Partner for Fortune 500 Companies: Join the ranks of Fortune 500 companies who choose Qualitest as their trusted vendor. Benefit from tailored solutions and proven excellence, gaining a strategic edge for business success.

Efficient Global Logistics: Enjoy quick delivery of standard products through our extensive network of worldwide distribution centers. Our high shipping volume enables us to offer the most competitive rates for global delivery.

Centralized Service & Support Coordination: Our central service department manages efficient customer service support directly or through our global QualiService authorized network, ensuring seamless assistance.

Exceeding Standards: Qualitest products are meticulously crafted to not only meet but surpass North American and global standards, ensuring uncompromised quality. Our dedication to excellence drives every aspect of our production process.

Qualitest Finance Packages: Explore affordable payment plans and flexible options through our QualiFinance program, making quality products and solutions accessible without compromising your budget.

QUALITEST™

ADVANCED TESTING TECHNOLOGIES

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