

INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY

ICP-MS-9K

SINGLE QUADRUPOLE ICP-MS

Precision elemental analysis with ppt-level sensitivity



WHY CHOOSE ICP-MS-9K

01

PPT-LEVEL DETECTION

Sub-ppt detection limits with 3-5x sensitivity boost over conventional ICP-MS for ultra-trace elemental analysis.

02

9-10 ORDERS DYNAMIC RANGE

Dual-mode 13-pole electron multiplier delivers linear response across nine to ten orders of magnitude.

03

HIGH-SALT CAPABLE

Online argon dilution handles up to 10% TDS. Direct analysis of seawater and brines without dilution.

04

INTELLIGENT SOFTWARE

21CFR Part 11 compliant with auto-tune, auto-calibration, internal standard correction, and method library.

KEY ADVANTAGES

- All-solid-state 27.12 MHz RF with frequency matching
- 3-axis torch positioning with <0.05 mm precision
- Dual vacuum chambers at 10^{-6} ~ 10^{-7} Torr
- Auto-tune optimizes ion optics in under 5 minutes
- Split torch with TEC-cooled spray chamber
- Online argon dilution up to 100x for high-salt samples
- Auto-diagnostics for continuous system monitoring
- Patented collision/reaction cell with quadrupole mass filtering
- Dual-mode 13-pole electron multiplier, 9-10 orders range
- Pure Mo quadrupole rods with temperature-resistant RF
- Auto-calibration with internal standard drift correction
- CID, KED, and reaction modes for interference removal
- Method library with 70+ pre-optimized elements
- Windows-based software with 21CFR Part 11 compliance

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CORE TECHNOLOGIES & FEATURES



Detachable Torch Design

Split torch with self-aligning socket enables rapid maintenance and sample injector exchange without full disassembly.

Solid-State RF Ion Source

Self-excited 27.12 MHz all-solid-state RF with balanced drive reduces ion energy dispersion for high sensitivity.

Ion Transport & Collision Cell

Dual off-axis multipole rod guiding with compound lens eliminates neutral particles and polyatomic interferences.

Quadrupole Mass Analyzer

Precision quadrupole with patented closed-loop RF and anti-temperature drift technology for stable operation.

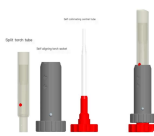
CORE TECHNOLOGIES

Engineered for maximum sensitivity, stability, and interference removal



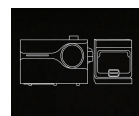
COLLISION/REACTION CELL

- CID mode for structural confirmation
- KED mode with He for polyatomic removal
- Reaction mode: H₂, O₂, NH₃, CH₄
- Quadrupole mass filtering in CRC cell



QUADRUPOLE ANALYZER

- High-precision 2 μm tolerance rods
- Closed-loop adaptive RF power supply
- Anti-temperature drift technology
- Stable at (15~35)°C, (20~80)% RH



SAMPLE INTRODUCTION

- Split torch for rapid maintenance
- TEC-cooled spray chamber
- Online argon dilution to 100x
- 3-axis positioning <0.05 mm



PERFORMANCE PROOF

Superior Sensitivity & Stability

IDL: Be <0.5 ppt, In <0.1 ppt, U <0.1 ppt. Stability ≤1.5% RSD. Background <1 cps. Oxide <3%. 9-10 orders dynamic range. Dual vacuum 10⁻⁶~10⁻⁷ Torr.

APPLICATION AREAS

ENVIRONMENTAL

Water, soil, air monitoring per EPA methods

PHARMACEUTICAL

Elemental impurities per USP 232/233, ICH Q3D

CLINICAL

Blood, urine, tissue trace element analysis

SEMICONDUCTOR

High-purity chemicals, wafer contamination

FOOD SAFETY

Heavy metal analysis in food and beverages

FORENSIC

Toxicology, trace evidence elemental profiling

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TECHNICAL SPECIFICATIONS

MASS SPECTROMETER

Mass Range	2 ~ 260 amu
Resolution	Unit mass, adjustable
RF Frequency	27.12 MHz, 700-1600 W
RF Stability	< ±0.01%
Sensitivity (Li)	≥ 50 Mcps/ppm
Sensitivity (In/Y)	≥ 300 Mcps/ppm
Sensitivity (Tl/U)	≥ 300 Mcps/ppm
Background	< 1 cps (220 amu)
Oxide (CeO ⁺ /Ce ⁺)	≤ 3%
Doubly Charged	≤ 3%
Detection Limit (Li/Be)	≤ 0.5 ppt
Detection Limit (In/Tl/U)	≤ 0.1 ppt

SAMPLE HANDLING

Torch Position	3-axis, <0.05 mm precision
Spray Chamber	TEC-cooled, -15 to 20°C
Argon Dilution	Online, up to 100x
Torch Design	Split-type, quick-change
Max TDS	Up to 10% direct analysis
Main Pump	> 400 L/s turbo
Fore Pump	Rotary vane
Pump-Down Time	< 35 minutes

PERFORMANCE HIGHLIGHTS

≤0.5 ppt
Detection Limit Li/Be

≥300 Mcps
Sensitivity In/Y

≤1.5% RSD
Short-Term Stability

2-260 amu
Mass Range

COLLISION/REACTION CELL

CRC Modes	Standard / Collision / KED / Reaction
CRC Gases	He, H ₂ , O ₂ , NH ₃ , CH ₄
Mass Filtering	Quadrupole in CRC cell

SOFTWARE & DATA SYSTEM

Operating System	Windows
Compliance	21CFR Part 11
Auto-Tune	< 5 minutes
Auto-Calibration	Internal standard correction
Auto-Diagnostics	Continuous monitoring
Method Library	70+ pre-optimized elements

ELECTRICAL & ENVIRONMENT

Operating Temp	15 ~ 35°C
Operating Humidity	20 ~ 80% RH
Vacuum Design	Dual cavity
Vacuum Level	10 ⁻⁶ ~ 10 ⁻⁷ Torr