Raise Your Expectations With the Next Generation of ICP-MS

Agilent 7900 ICP-MS

The Agilent 7900 ICP-MS Opens Up a New Dimension in Quadrupole ICP-MS

Could the world's bestselling quadrupole ICP-MS really get 10 times better?
The answer is yes.

The 7900 ICP-MS has 10x higher matrix tolerance, 10x wider dynamic range, and 10x better signal-to-noise than the model it replaces. It has software so powerful it can write your methods for you.

Innovative technology and a new MassHunter software platform combine to make the Agilent 7900 the world's most powerful, and most automated quadrupole ICP-MS.

Matrix tolerance has been extended into the tens of %TDS range and the 7900 has a linear dynamic range of 11 orders of magnitude. Plus, the updated octopole reaction system (ORS) supports the industry's most effective helium collision mode. The Agilent 7900 ICP-MS delivers superior data quality whatever your application.

With automated setup, faster analysis, better interference removal, and a simplified MassHunter software interface, the Agilent 7900 ICP-MS blends high performance with unprecedented ease-of-use.

Unrivaled Performance Driven by Hardware Innovation

Unprecedented matrix tolerance

Historically, ICP-MS has been limited to samples that contain <0.2% total dissolved solids (TDS). The robust plasma (indicated by a CeO/Ce ratio <1%) enables the 7900 ICP-MS to easily tolerate this matrix level.

The Ultra High Matrix Introduction (UHMI) option enables you to routinely measure samples containing up to 25% TDS. This is 100 times higher than the traditional limit, and far beyond the capability of any other ICP-MS.

Signal stability over 3.5 hours (100 ppb spiked in 25% NaCl)
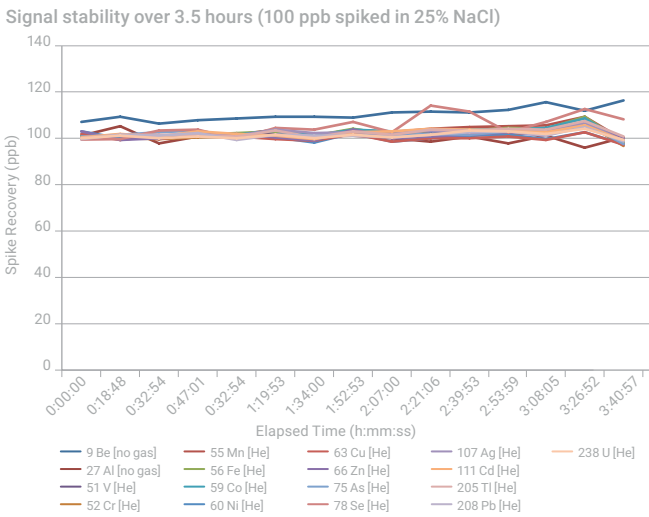
Long-term (3.5 hours) stability of 100 µg/L spike in 25% NaCl brine

Better trace-level detection

A novel interface design and optimized expansion-stage vacuum system increase ion transmission, providing >10^9 cps/ppm sensitivity at <2% CeO. What's more, the new orthogonal detector reduces background, dramatically improving signal-to-noise for lower detection limits and more accurate ultratrace measurements.

238 U [No Gas]

Conc.	Calc Conc.	CPS
0	0.00	0.67
10	9.89	13675.86
50	49.89	69112.38
100	100.02	138295.19
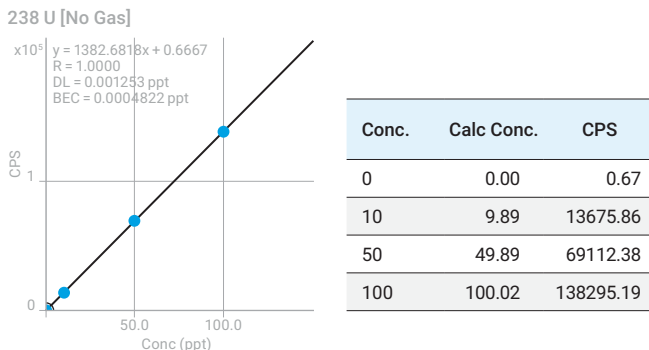
[238]U calibration demonstrating sensitivity >1.38 GHz/ppm and BEC < 0.5 ppq

The widest dynamic range of any quadrupole ICP-MS

The new Orthogonal Detector System (ODS) delivers up to 11 orders of magnitude dynamic range, from sub-ppt to percent-level concentrations. That means you can measure trace elements and majors in the same run, simplifying method development and virtually eliminating over-range results.

111 Cd [He] ISTD:115 In [He]

23 Na [HMI He] ISTD:115 In [HMI He]
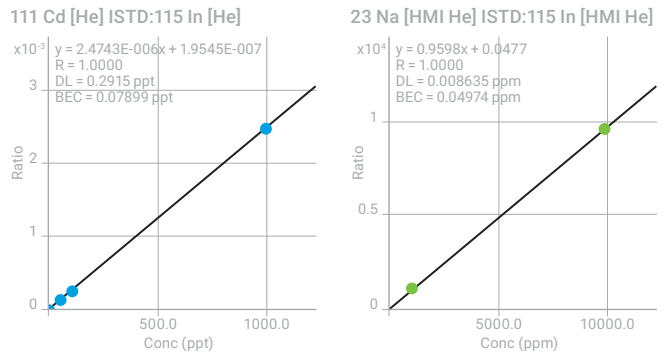
Calibrations for Cd (BEC < 0.1 ppt) and Na (top standard 10,000 ppm (1%))

Faster analysis of transient signals

Fast transient signal measurement—used for applications such as capillary chromatography, single-nanoparticle analysis, and laser ablation—requires an instrument with very short integration times. The 7900 ICP-MS provides ultrafast data acquisition, with 10,000 separate measurements per second.
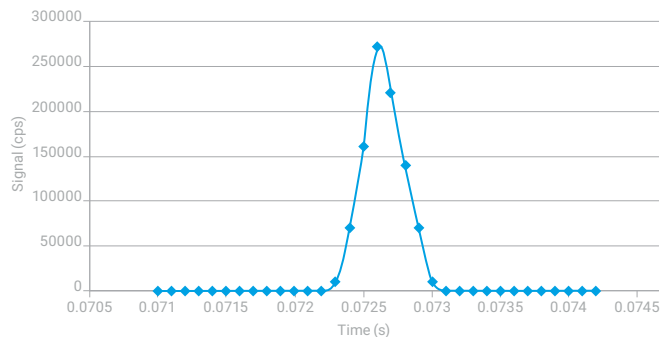
Time Resolved Analysis signal for single 30 nm Au nanoparticle (dwell time 0.1 ms)

Usability By Design

Every component of the Agilent 7900 ICP-MS is engineered for performance and reliability

Based on Agilent's history of ICP-MS technological leadership, the 7900 ICP-MS has been re-engineered from the bench up, with every component optimized for the demands of busy laboratories.

Sample introduction

The standard low-flow, Peltier-cooled sample introduction system increases operational stability and consistency. The Integrated Sample Introduction System (ISIS 3)* adds a piston pump and close-coupled seven-port valve for high-speed discrete sampling.

Ultra High Matrix Introduction (UHMI)*

Increases matrix tolerance up to 25% total dissolved solids (TDS). UHMI also improves plasma robustness, dramatically reducing matrix suppression.
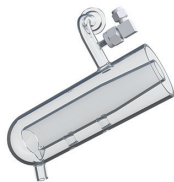
Plasma and Shield Torch System (STS)

Provides precise ion energy control, ensuring high sensitivity and effective interference removal in helium mode. The torch auto-aligns with the interface following maintenance.

27 MHz plasma RF generator

The fast, frequency-matching RF generator increases the tolerance of changing matrices. Even volatile organic solvents can be introduced without affecting plasma stability.
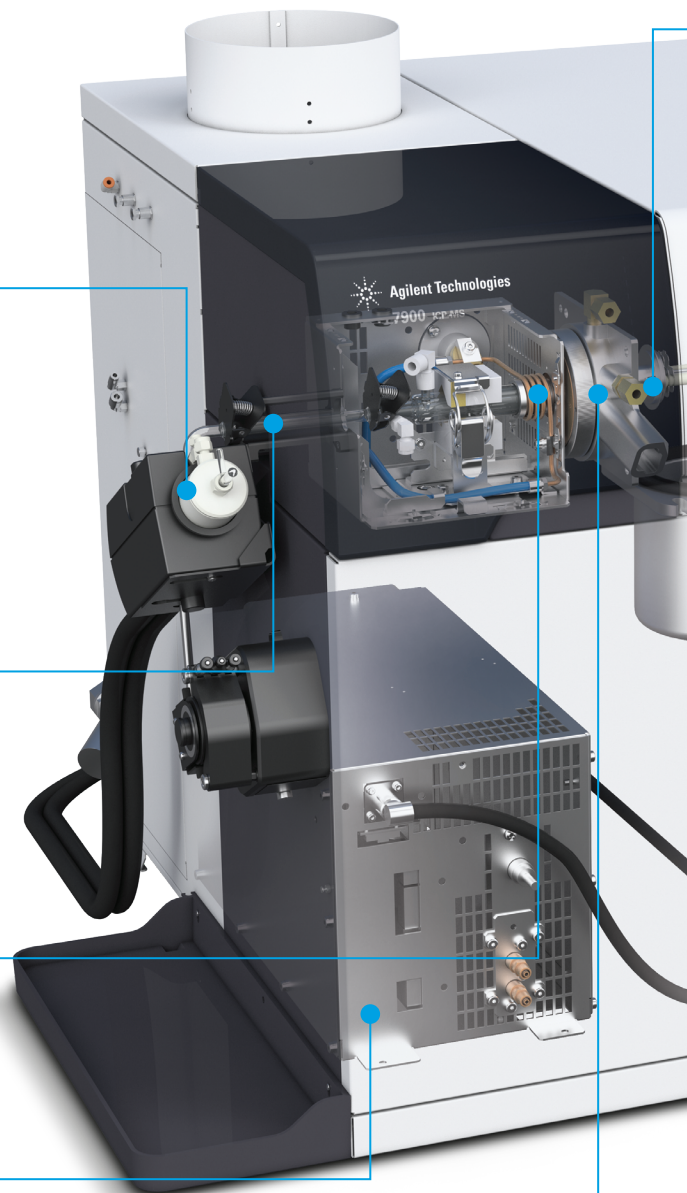
Interface and cones

Standard Ni, or optional Pt-tipped cones increase ion transmission and matrix tolerance. Screw-threaded for easy removal during maintenance.

*Some items shown are optional at additional cost.
Contact your Agilent Representative for further details.*
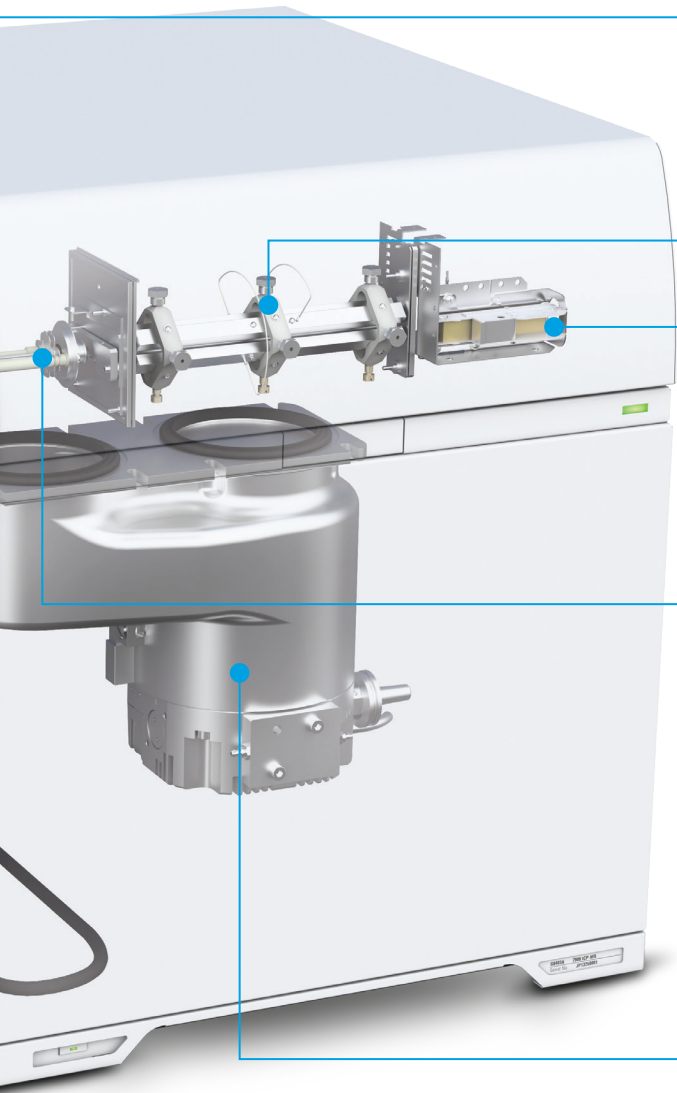
Off-axis ion lens

Improves ion transmission across the mass range, without the need for mass-specific voltage optimization.

Hyperbolic quadrupole

The only hyperbolic quadrupole used in ICP-MS. It delivers superior peak separation and abundance sensitivity, without the need for custom quadrupole settings to separate adjacent peaks.

Orthogonal Detector System (ODS)

The ODS delivers higher sensitivity, lower background, and a wider measurement range—up to 11 orders of magnitude from 0.1 cps to 10 Gcps—virtually eliminating over-range results.
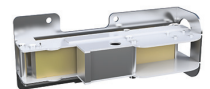
4th-Generation Octopole Reaction System (ORS[4])

Temperature-controlled collision/reaction cell with a new gas controller for fast cell gas switching in less than 3 seconds.
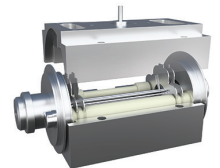
Octopole ion guide

The octopole provides superior interference removal by KED in helium collision mode, and has been field-proven in thousands of Agilent ICP-MS installations.

Vacuum system

A single, high-performance split-flow turbo pump and external rotary pump optimize vacuum in the interface region, increasing sensitivity while improving matrix tolerance.

Compact benchtop design

The world's smallest ICP-MS system saves valuable bench space while ensuring easy access for servicing and maintenance.

Agilent parts and supplies

Manufactured to stringent specifications, and rigorously tested to ensure top quality and maximize instrument performance.

The World's Most Powerful ICP-MS Software

Simplify your workflow

Our next generation ICP-MS MassHunter software features a dashboard layout with gadgets that guide you through every step of your analysis: hardware configuration, instrument optimization, sample acquisition, data analysis, and reporting. This user-friendly interface makes learning and using the software easier and more intuitive, without compromising power and flexibility for advanced or research applications.
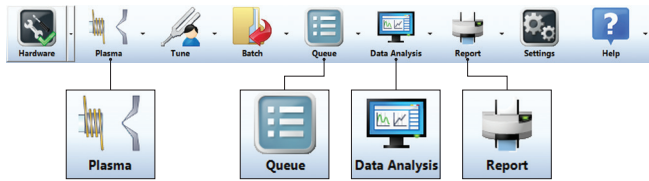
For labs that follow a well-defined, routine analytical workflow, our browser-based, touch-compatible user interface, ICP Go, is also available as an option.

Automate your method development

ICP-MS MassHunter includes an enhanced innovative matrix-specific Method Setup Wizard, enabling all users, experienced and new, to consistently obtain high-quality data. Simply answer a few questions about your application—or introduce a typical sample—and let the Wizard build a fully functional method for you.

Increase the quality and speed of your data review

MassHunter's batch-at-a-glance data table gives you a customizable overview of the current batch—including counts, concentrations, RSD, and replicate data. Other functions of the interactive data table include:

– Comprehensive real-time results, updated during sequencing

– Interactive calibration plot display (12 plots or single plot)

– Onscreen flags for outliers and QC failures

– Graphical display of internal standard recovery, QC stability plots, and mass spectrum or chromatogram

Simplify your nanoparticle/single cell analysis

The fully integrated and updated Agilent nanoparticle and single cell application module incorporates the process of particle or cell determination into ICP-MS MassHunter software. The Method Wizard guides you through the creation of methods and supports data acquisition in both FFF-ICP-MS and single nanoparticle/single cell modes. With a few clicks, the method is set up and ready to run. This includes optimized acquisition parameters, reference material values, and data analysis parameters.
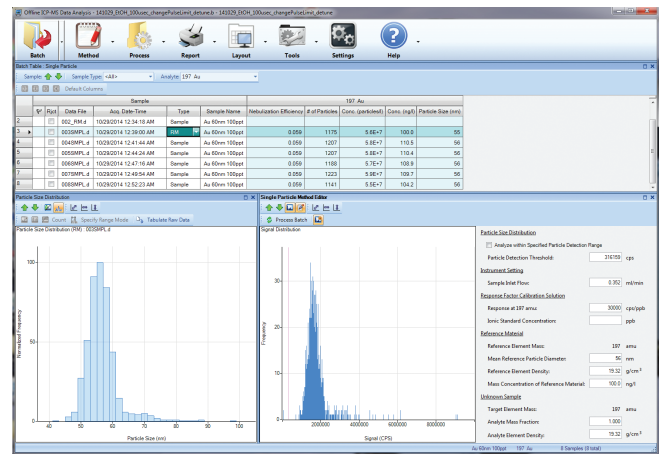
Final batch results are reported in tabular and graphical formats. Tab through individual samples in the table and review individual graphical results with powerful optimization tools.

Meet Elemental Impurity analysis requirements of USP<232>/<233> and ICH Q3D easily

The fully integrated, and updated pharmaceutical compliance functionality meets the requirements of the new USP and ICH guidelines with preset methods and advanced pharma-specific reporting.

Enhance the Capability of the 7900 ICP-MS

Automated sampling systems to optimize your laboratory's workflow
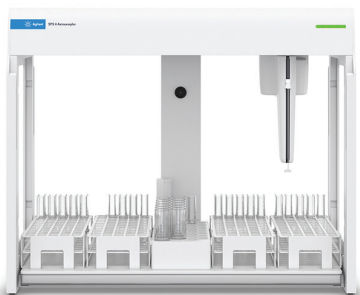
SPS 4 Autosampler

A great choice for high-throughput laboratories requiring a fast, high-capacity (up to 768 samples) autosampler. An environmental enclosure, rinse, and probe options also make it ideal for ultratrace applications.

Agilent I-AS Autosampler with pumped rinse station

Ideal for ultratrace analysis and small sample volumes (0.5 mL). Flexible rack configurations offer a maximum capacity of 89 vials, plus 3 rinse vials.

Agilent Integrated Sample Introduction System (ISIS 3)

High-speed uptake pump, and close-coupled seven-port switching valve provide highest possible throughput with discrete sampling.

Industry-leading speciation measurement

The Agilent 7900 ICP-MS links seamlessly with Agilent HPLC and GC systems through field-proven interfaces, integrated software control, documentation, and fully developed application kits. Other hyphenated techniques including CE, IC, and FFF are also easily configured.

As the leading supplier of ICP-MS and chromatography systems, Agilent can help you identify the right instrument for your application, develop methods, and train your staff. Factory-qualified engineers are also available to support your coupled systems.

Optional accessories support a range of configurations and applications

Nebulizer options—including low-flow, concentric, inert (HF resistant), and parallel path—suit your unique sample types and volumes.

Inert sample introduction kit is O-ring free, and manufactured from PFA for low contamination levels. HF resistant and suitable for high-purity reagents.

Organics kit contains the sample introduction parts you need to run volatile organic solvents.

Laser ablation enables direct sample analysis for bulk and time-resolved applications.

Software control

Virtually unlimited possibilities for optional accessories are now available via Agilent's new open-source Software Developers Kit (SDK).

Agilent CrossLab: Real insight, real outcomes

CrossLab goes beyond instrumentation to bring you services, consumables, and lab-wide resource management. So your lab can improve efficiency, optimize operations, increase instrument uptime, develop user skill, and more.

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