



Agilent 7900 ICP-MS

# RAISE YOUR EXPECTATIONS WITH THE NEXT GENERATION OF ICP-MS

The Measure of Confidence



**Agilent Technologies**

RAISE YOUR EXPECTATIONS

## 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*.**

With 10x higher matrix tolerance, 10x wider dynamic range, 10x better signal to noise, and software so powerful it can write your methods for you, the new Agilent 7900 redefines ICP-MS... *again*.

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.

With matrix tolerance extended into the tens of % TDS range, a linear dynamic range of up to 11 orders of magnitude — plus the industry's most effective helium collision mode — the Agilent 7900 ICP-MS delivers superior data quality whatever your application.



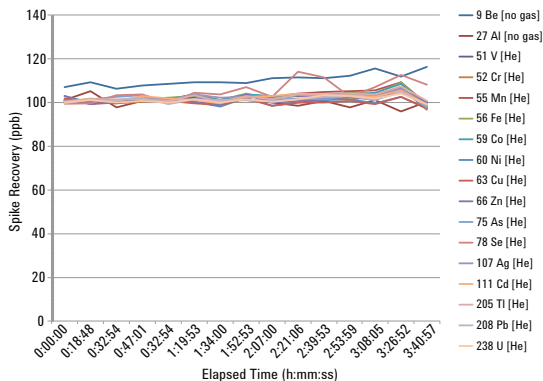
With automated setup, faster analysis, better interference removal, and a simplified MassHunter software interface, the Agilent 7900 ICP-MS blends high performance with unprecedented ease-of-use.

# Unrivalled performance driven by hardware innovation

## Unprecedented matrix tolerance

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

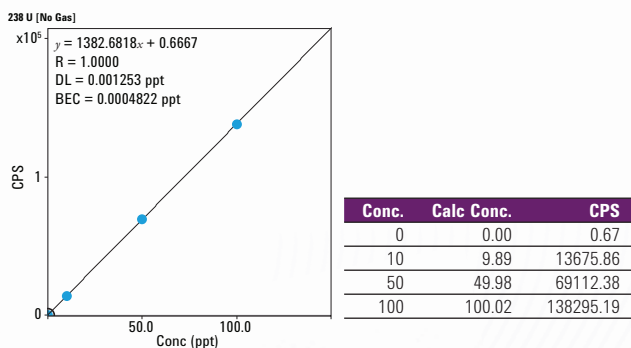
The ultra high matrix introduction (UHMI) option enables you to routinely measure samples containing up to 25% TDS — 100 times higher than the traditional limit, and far beyond the capability of any other ICP-MS.



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

## Better trace-level detection

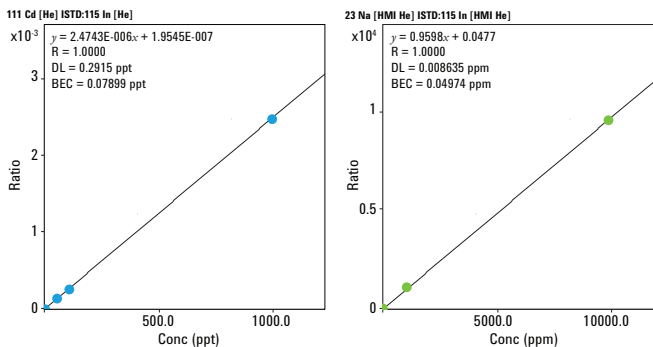
A novel interface design and optimized expansion-stage vacuum system increase ion transmission, providing >10<sup>9</sup> cps/ppm sensitivity at <2% CeO. What's more, the new orthogonal detector reduces background, dramatically improving signal to noise for lower detection limits and more accurate ultra-trace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



<sup>238</sup>U calibration demonstrating sensitivity >1.38 GHz/ppm and BEC < 0.5 ppq

## The widest dynamic range of any quadrupole ICP-MS

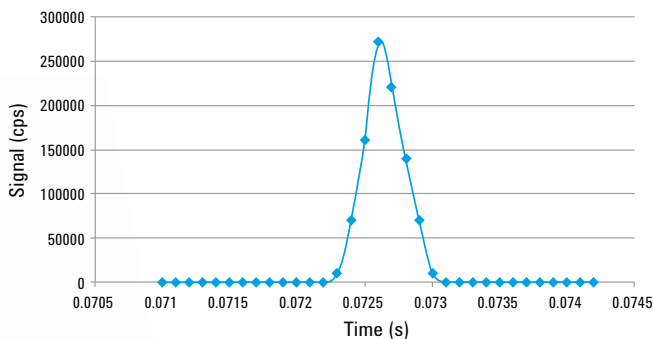
The new orthogonal detector system (ODS) delivers up to **11 orders of magnitude dynamic range**, from sub-ppt to percent-level concentrations. That means you can measure trace elements and majors in the *same run*, simplifying method development and virtually eliminating over-range results.



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 ultra-fast 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 long history of ICP-MS technological leadership embodied in the 7700 Series ICP-MS and 8800 ICP-QQQ, the Agilent 7900 ICP-MS has been re-engineered from the bench up, with every component optimized for the demands of busy laboratories today... and in the future.



### 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 7-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.

### INTERFACE AND CONES

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

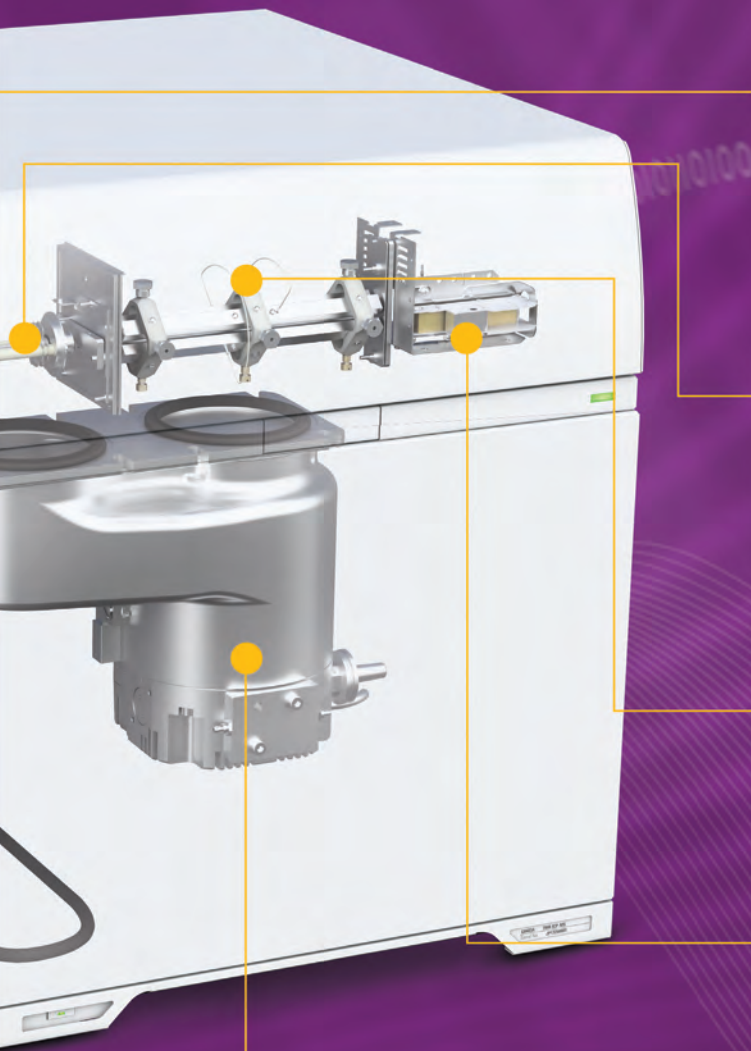
### COMPACT BENCHTOP DESIGN

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



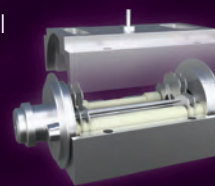


### OFF-AXIS ION LENS

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

### 4TH-GENERATION OCTOPOLE REACTION SYSTEM (ORS<sup>4</sup>)

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



### OCTOPOLE ION GUIDE

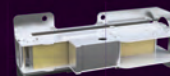
The octopole provides superior interference removal by KED in helium collision mode, and has been field-proven in thousands of Agilent ICP-MS installations.

### 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.



### 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.

### AGILENT PARTS AND SUPPLIES

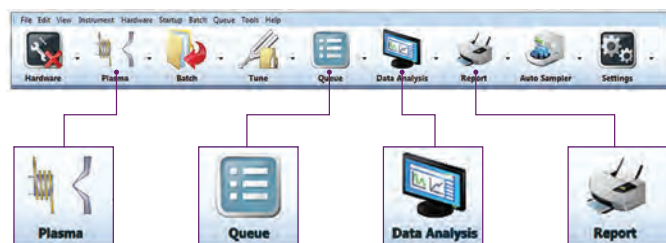
Manufactured to stringent specifications, and rigorously tested to ensure top quality and maximize instrument performance.



# 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.



## 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)
- On-screen flags for outliers and QC failures
- Graphical display of internal standard recovery, QC stability plots, and mass spectrum or chromatogram



## Automate your method development

ICP-MS MassHunter now includes an 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.

## Monitor and control your instrument *whenever you want, wherever you are*

In addition to the industry's most advanced auto-optimization and diagnostic functions, ICP-MS MassHunter lets you remotely check instrument status and run progress, and control key processes using your smartphone or tablet.



# ENHANCE THE CAPABILITY OF THE 7900 ICP-MS

## Automated sampling systems to optimize your laboratory's workflow



### Agilent I-AS Autosampler with pumped rinse station:

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



### Agilent ASX-500 Series:

A great choice for medium- and high-throughput applications, with rack configurations providing up to 360 vial positions.



### Agilent Integrated Sample Introduction System (ISIS 3):

High speed uptake pump, and close-coupled 7-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.

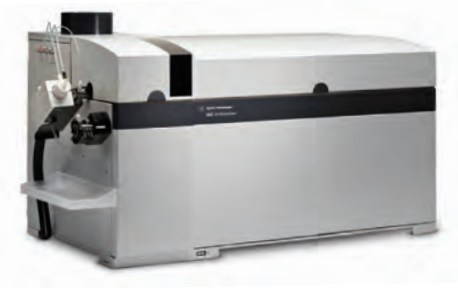
**Inert sample introduction kit** is O-ring free, and manufactured from PFA for low contamination levels. HF resistant and suitable for high-purity reagents.

**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 8800 Triple Quadrupole ICP-MS

## Leading the way in atomic spectroscopy innovation

- **Agilent's 8800 Triple Quadrupole ICP-MS** transforms ICP-MS technology, providing applications capabilities and research opportunities never possible before.
- **Agilent's 700 Series ICP-OES** is the world's most productive high performance simultaneous ICP-OES.
- The revolutionary **Agilent 4200 MP-AES** runs on air for lowest cost of ownership and improved safety.
- **Agilent's AA range** includes the world's fastest flame AA and the world's most sensitive furnace AA.

Learn more about Agilent's atomic spectroscopy portfolio at [www.agilent.com/chem/atomic](http://www.agilent.com/chem/atomic)

### For more information

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