New Agilent 7900 ICP-MS Product Information

Redefining ICP-MS. Again!
Why Change the Market-Leading ICP-MS? Agilent 7700 Series already had the best:

- Matrix tolerance (HMI)
- Interference removal (ORS/He mode)
- Detection limits
- Dynamic range (9 orders)
How to Improve on the Best ICP-MS?

NEW Interface & Ion Lens for up to 15x Signal to Noise improvement

NEW detector technology for unprecedented 11 orders measurement range and Fast TRA Acquisition at 0.1msec dwell time

NEW Ultra HMI for analysis of up to 25% NaCl brine solutions without dilutions

NEW ORS$^4$ for ultra fast gas switching in less than 3 seconds
Presenting Agilent’s Game-Changing 7900 ICP-MS

We took the world’s best-selling, highest performing quadrupole ICP-MS, and made it 10x better!
7900 ICP-MS Performance Highlights
Agilent 7900 ICP-MS Key Performance Highlights
Rewriting the rules of ICP-MS

10x better signal to noise (S/N) – even lower detection limits
  - 2x higher sensitivity, 3-5x lower background

10x higher matrix tolerance – handles even tougher samples
  - Patented HMI is still unique to Agilent. On the Agilent 7900, the optional UHMI extends capability to matrix levels of up to 25%

10x wider dynamic range – increases upper measurement limit
  - 7700’s 9 orders was best in class and the 7900 extends this by up to 11 orders total measurement range, allowing % levels to be quantified - a first for ICP-MS

30x faster detector – faster transient signal measurement (TRA)
  - 0.1ms integration time means improved single nanoparticle analysis

Improved productivity -
  - New ultra fast ORS⁴ with less than 3 seconds switching time between modes
  - New ISIS-3 for fast unattended start-up, autotune and sample delivery; full EPA-6020 analysis with 2 gas modes for optimum measurement in <1 minute per sample
Agilent 7900; High Sensitivity Tune
CeO/Ce<2.5%

Uranium calibration in No Gas mode:

High sensitivity
1.38 GHz/ppm

Ultra-low background:
MDL: 1.3ppq; BEC: 0.48ppq;

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Matrix Tolerance Vastly Superior to Any Other ICP-MS Analysis of Brine (25% NaCl) with UHMI

No maintenance required for cones and lenses after 3.5 hour stability run. This matrix is even too high for some ICP-OES!

3.5 hrs Quant Recovery (25% NaCl matrix + 100µg/L spike)
Far Wider Measurement Range Than Any Other ICP-MS
11 orders - low and high level calibrations in a single run

Cd (1ppt - 1ppb) and Na (100ppb - 10,000ppm (1%)) in the same run

Both calibrations are linear.
Total concentration range covered from Cd blank (BEC of <0.1ppt) to Na top standard (1%) is 11 orders

Concentration range (11 orders) and upper measurement limit (>1%) are at least 10x better than any other ICP-MS
Fast Cell Gas Switching – ORS$^4$

7700 H$_2$: 6.0 ‡ 0 mL/min  
10 sec.

New ICP-MS H$_2$: 6.0 ‡ 0 mL/min  
Less than 2 sec.
Faster TRA mode for Transient Signal Analysis
Required for Single Nanoparticle analysis

Minimum dwell time is shortened from 3 msec on the 7700 Series to 0.1 msec to allow faster sampling of transient signals.
New 7900 ICP-MS; New Technology
New Integrated Sample Introduction System (ISIS 3)
Fully compliant multi-mode EPA 6020 analysis in <1 minute

New features in ISIS 3
• Close-coupled valve – very short tube length so minimal stabilization/rinse delay
• Piston pump for faster sample uptake
• 3-way valve to switch between on-line ISTD or tune solution
• ISIS is now compatible with Startup auto-optimization functions and full autotune
New Agilent 7900 ICP-MS

New Plasma interface & Vacuum design
Enables higher **Sensitivity**

New UHMI
Enables analysis of 25% brine

ORS$^4$
$<3$ sec. cell gas switching

New Orthogonal Detector system
- **Higher Sensitivity**
- **Lower Background**
- Extended Upper limit

New Processor card
New Firmware
0.1msec dwell time for fast transient and single nanoparticle analysis

**PLUS**
- New Humidifier
- Improved Usability
- 2 Days Installation
- Operating Video tool
- Remote Advisor
- Less Maintenance

New MassHunter 4.1
- Improved User Experience
- Method automation
- New reporting engine

New Productivity option (ISIS 3)
Faster and Fully automated from Start-up
New ICP-MS MassHunter Platform
MassHunter 4.1: Simpler and More Powerful Software
Dashboard with Gadgets replaces old mixed UI concept

Gadget icons are “live”; show current status
- Hardware on or offline
- Plasma on or off
- Queue status: idle, paused, running
- Most hardware properties and adjustments grouped under “Settings” menu item

Instrument status monitor (right) can be displayed on top of DA window, to show status and access top level functions without the need to open entire Top Level Application.
Software so Powerful it Can Write Your Methods!
A new era in simple method setup and ease of use

Method Wizard – Develops a complete method in three steps!
1. Select pre-set method template and choose matrix level
2. Confirm analytes and internal standards
3. Choose whether to optimize method for speed or DLs
Remote Monitor App (iOS and Android devices)
View instrument status and perform basic system control

An Industry First!
Summary – New Agilent 7900 ICP-MS
Better customer experience

Better Analytical performance experience
  ß Ultra high matrix tolerance
  ß Superior sensitivity and lower background noise
  ß Wider dynamic range
  ß New Productivity Option (ISIS 3)
  ß Ultra fast scan speed for Single Nanoparticle analysis

Better Software experience
  ß ICP-MS MassHunter 4.1
  ß Method Wizard
  ß Mobile device support