



Introducing the new Agilent 7800 Solution-Ready ICP- MS



Agilent Technologies
2015



Agilent's 28 Years of ICP-MS Innovation

PMS series



- First computer-controlled ICP-MS

4500



- World's first benchtop ICP-MS
- Cool Plasma Capable

7500



- 9 orders detector range
- Octopole Reaction System

7700



- HMI
- ISIS-DS
- 3rd Generation ORS
- MassHunter SW

8800 ICP-QQQ



- World's First (and only) ICP-QQQ

7900



- Ultra high performance single quad ICP-MS
- UHMI
- ORS Detector system
- ISIS 3
- MassHunter 4.1

7800



- Simple
- Powerful
- Affordable

#1 selling ICP-MS !

1987

1994

2000

2009

2012

2014

2015



Agilent Technologies

2015: Introducing the New **Agilent 7800 ICP-MS**

Agilent 7800 ICP-MS replaces the **7700x**, and joins the **Agilent 7900** to cover the range of quadrupole ICP-MS applications from **routine** to **flexible, high-performance/research**



Agilent ICP-MS Product line up



8800 ICP-MS – High-end ICP-MS

- Unique power of **MS/MS**
- For difficult element and problematic interferences
- Maximum sensitivity and flexibility



7900 ICP-MS – Flexible ICP-QMS for all markets

- **Highest sensitivity** spec. in Single Quad ICP-MS
- **UHMI** – Enhanced robust performance
- **Fast TRA** mode for Single nanoparticle applications



7800 ICP-MS – For common, routine applications

- Simpler method development, SOPs for common applications
- **HMI** – Proven robust performance
- Proven **He mode** performance
- **10 orders** wide dynamic range

Solution-Ready

NEW

Key Features of 7800 Are Field-Proven in 7700x Updated with New Technology Developed for 7900

ISIS 3: High productivity option

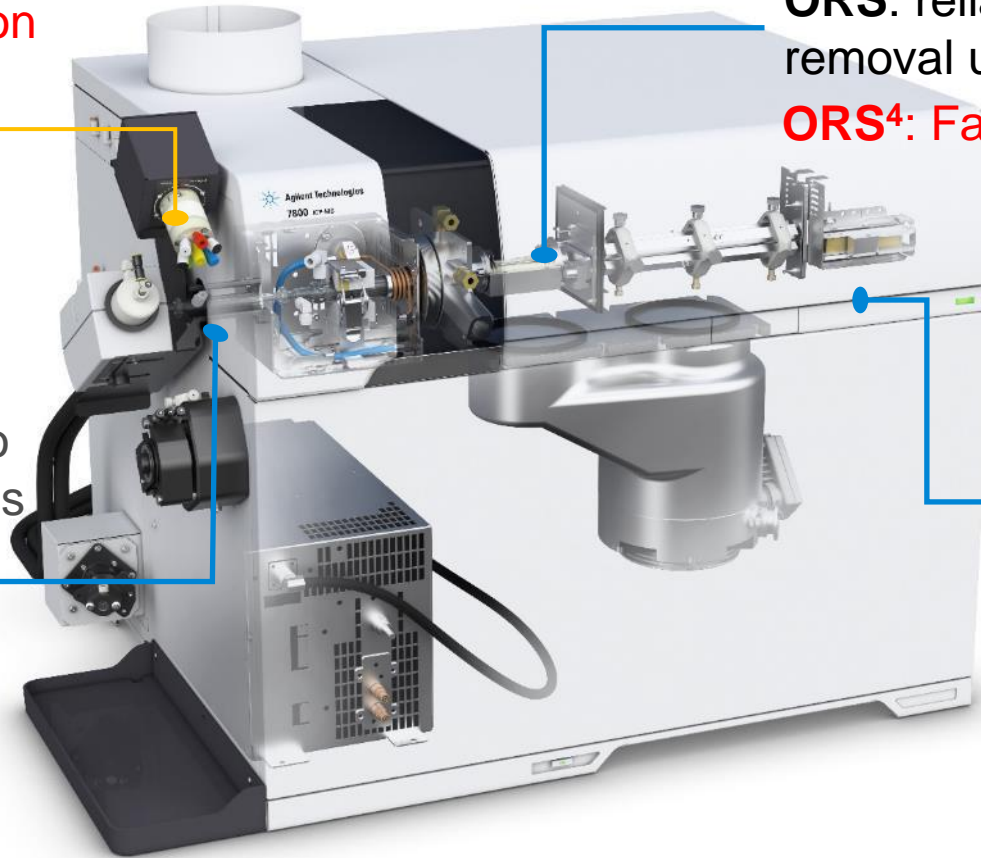
ORS: reliable interference removal using helium cell mode
ORS⁴: Fast cell gas switching

HMI: Handles sample types up to 3% dissolved solids

Wide linear dynamic range detector

ODS: Orthogonal Detector System

MassHunter 4.2 software platform



7800 – Solution-Ready ICP-MS

Simpler Routine Metals Analysis

The new Agilent 7800 includes proven, advanced hardware, and delivers high performance; but its unique feature is ***workflow simplification***:

- **Simpler sample preparation**
- **Simpler method setup**
- **Simpler routine operation**

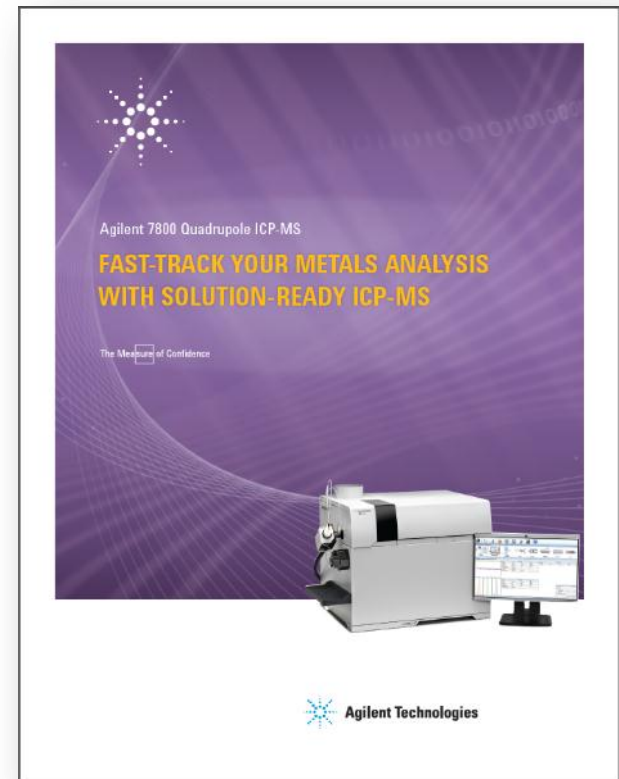


READY, SET, DETECT

Make life easier with the **Solution-Ready 7800 ICP-MS**

- Simplify setup and operation, with application packs for common methods
- Take the uncertainty out of complex or variable matrix sample analysis
- Make your laboratory more productive, and your results more reliable

[VIEW BROCHURE](#)



Agilent 7800 Quadrupole ICP-MS

**FAST-TRACK YOUR METALS ANALYSIS
WITH SOLUTION-READY ICP-MS**

The Measure of Confidence

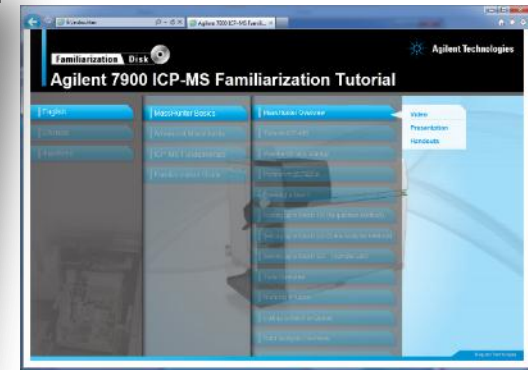
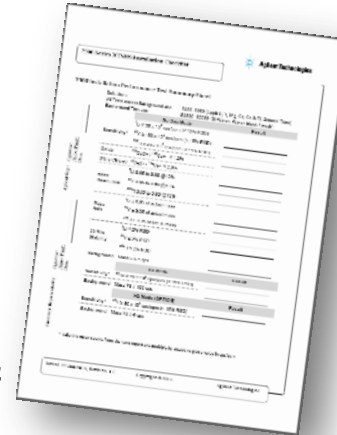
Agilent Technologies

Ready, Set, Detect

Three steps to consistently accurate results

Ready: The Agilent 7800 is configured for fast installation and simple setup:

- Guaranteed high-performance (checked on every instrument before shipment, and verified on-site)
- Tutorial disk with over 20 videos plus pdf and ppt files of key operations. Supports initial operator familiarization, and training for new users
- Standard Operating Procedures for common applications, so you can implement your methods quickly, and be confident they will deliver reliable results

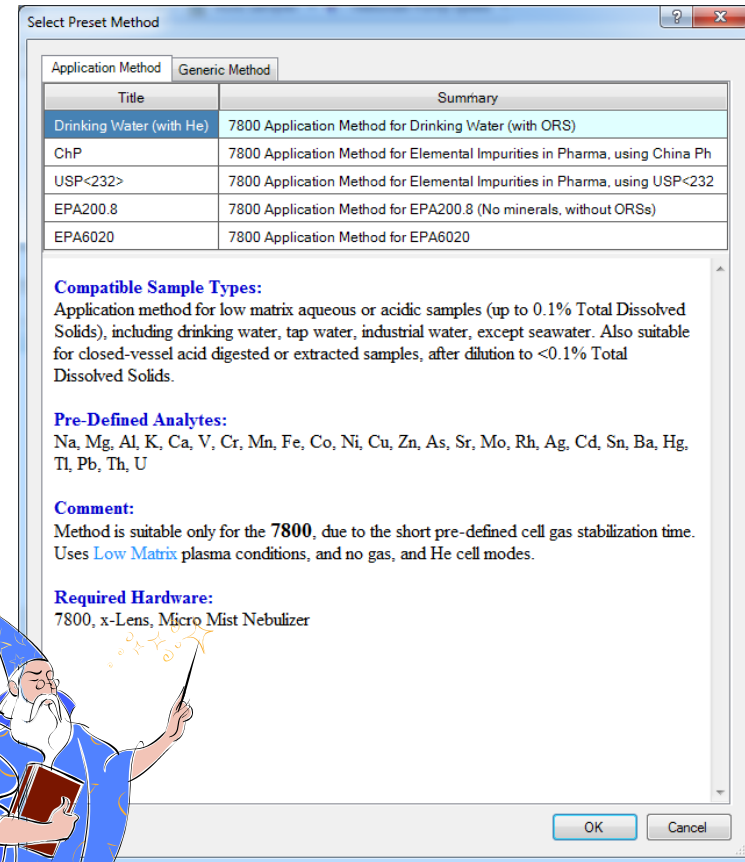


Ready, Set, Detect

Three steps to consistently accurate results

Set: The Agilent 7800 includes method setup and optimization tools to simplify your routine operation:

- Pre-set Methods provide easy setup of many common applications. Pre-set Methods pre-define the analytes, isotopes, ISTD elements, cell gas mode, integration time, and more
- For new or unusual sample types, the innovative Method Wizard can build a fully functioning method, based on a few simple questions about your samples
- Auto-optimization of hardware settings and tune parameters ensures consistent high-performance

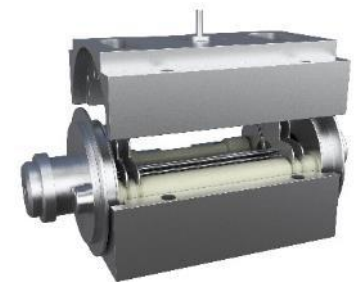
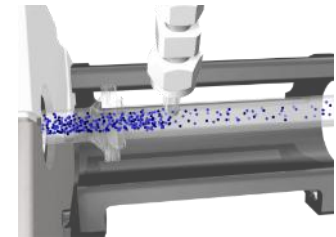


Ready, Set, Detect

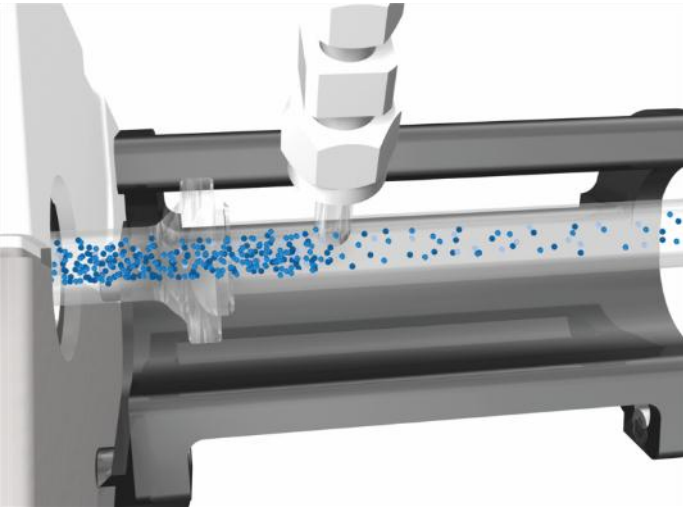
Three steps to consistently accurate results

Detect: The Agilent 7800 ICP-MS provides the performance to meet your needs:

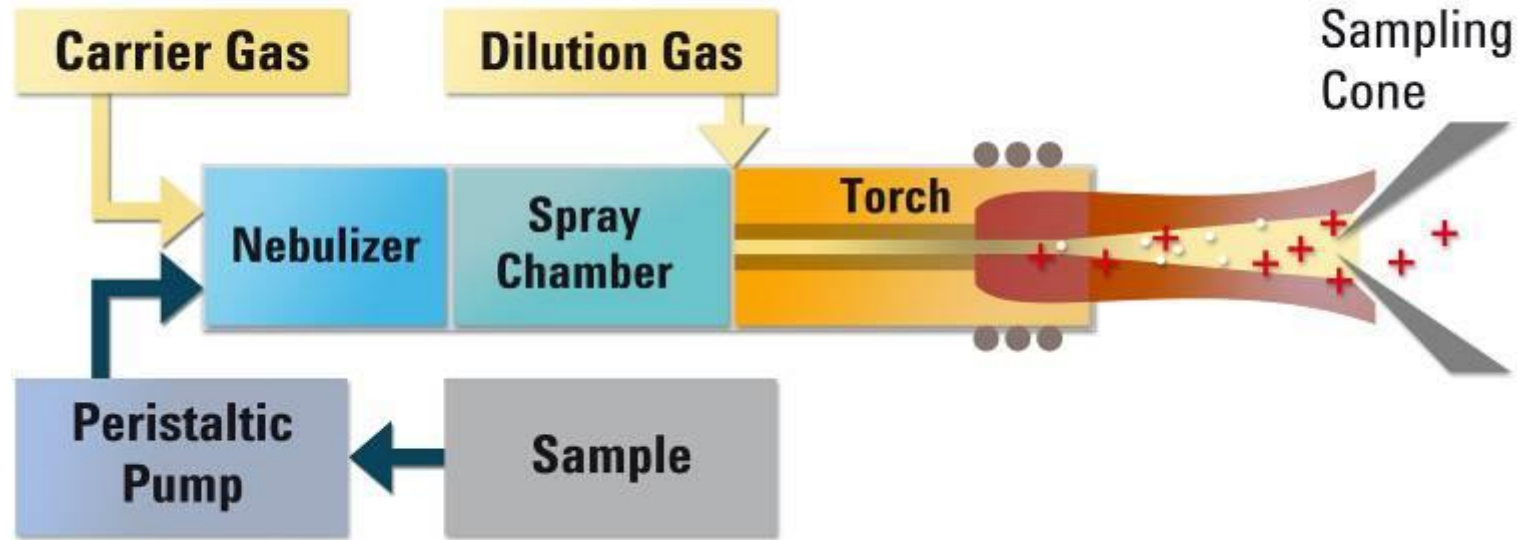
- Better matrix tolerance – **HMI** allows samples with up to 3% dissolved solids to be run directly, reducing the need for manual or auto-dilution, and minimizing the need for matrix-matched calibration standards
- **ORS⁴** collision/reaction cell with octopole ion guide is designed for helium (He) collision mode, to give reliable data for interfered elements in complex, variable matrices. No other ICP-MS system offers such simple, effective interference removal in He mode
- 10 orders dynamic range **ODS detector** ensures that majors and trace can be measured in one run, without specific setup or tuning. Wide dynamic range also means fewer over-range results, so higher productivity and simpler operation



7800 Performance: HMI – High Matrix Introduction

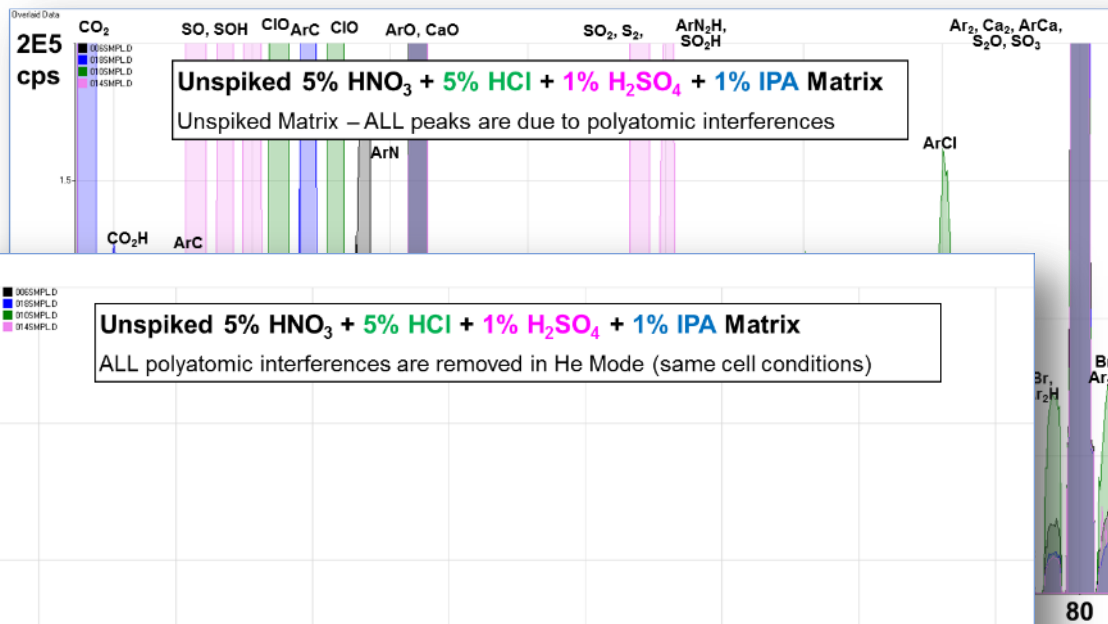
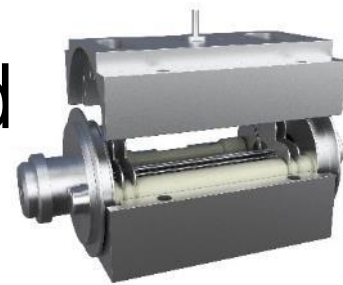


HMI is an aerosol dilution technique
It dilutes the sample using a make-up flow of argon gas, added after the spray chamber
Increases matrix tolerance 10x



ORS 4 - 7800 Uses Helium Mode as Standard

- He Mode Reduces Typical Polyatomic Interferences



He mode on the 7800 is effective against **all common polyatomic interferences** – even from unknown or variable matrices.

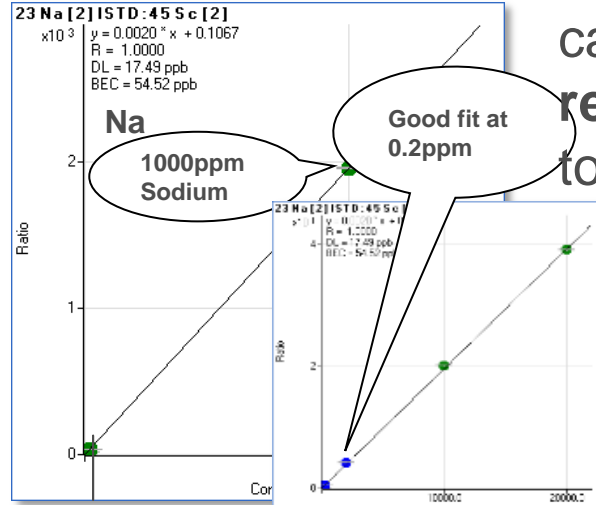
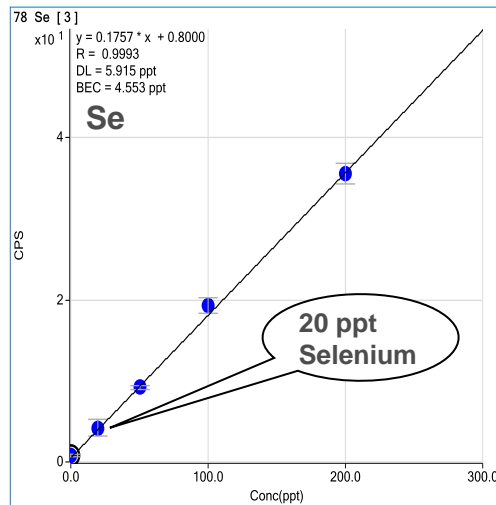
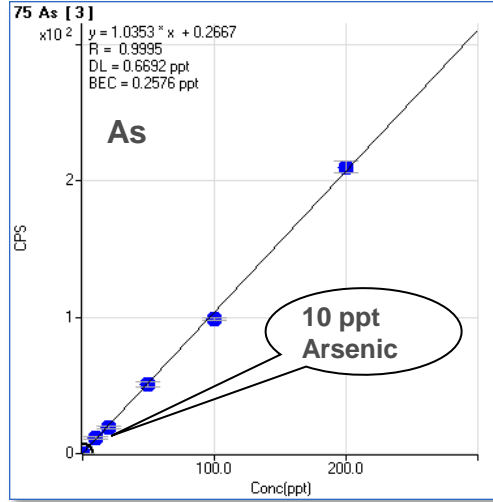
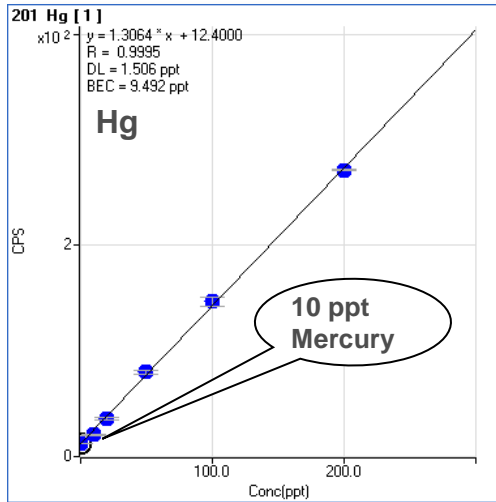
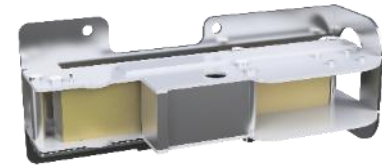
He mode **simplifies method development**, by allowing a **single set of cell conditions** to be used for all analytes in all typical matrices.

He Mode

Mixed matrix blank in no gas (top) and He mode (bottom)

Saves time and cost

7800 Detector: 10 Orders Dynamic Range - Simplifies Calibration and Analysis



The wide dynamic range (10 orders) orthogonal detector system (ODS) of the 7800 allows majors (Na, Ca,...) and traces (Hg, As, Se,...) to be run in a single acquisition.

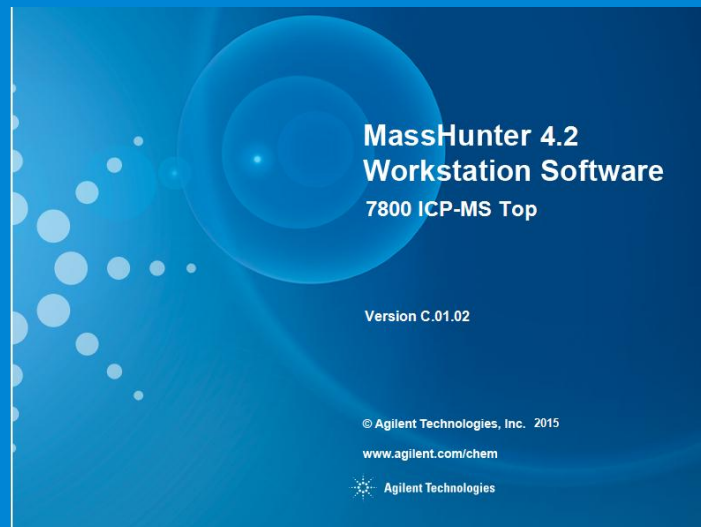
ODS simplifies your calibration strategy, and reduces sample re-runs due to over-range results.

Saves time and cost



Simpler, more intuitive,
more powerful than ever

ICP-MS MassHunter 4.2 The evolution continues



Outline of New MassHunter 4.2

- MassHunter 4 innovation continues

Continued simplification of User Interface based on customer input

- Simplify **Data Analysis**
 - Add **Data Analysis Gadget Bar**
 - Minimize **pull-down menus**
 - Move seldom used functions to “**Settings**”

Add Significant **new functions**

- Add **nanoparticle analysis support**
- Improve **Chromatographic Data analysis** usability
- Add **Agile2** parameter-less integrator
- Add updated support for all new **USP <232> requirements**
- The upper limit of TRA acquisition time is extended to **25 hours***.
 - Useful for **Laser Imaging**

*Previous limit: 2.8 hours

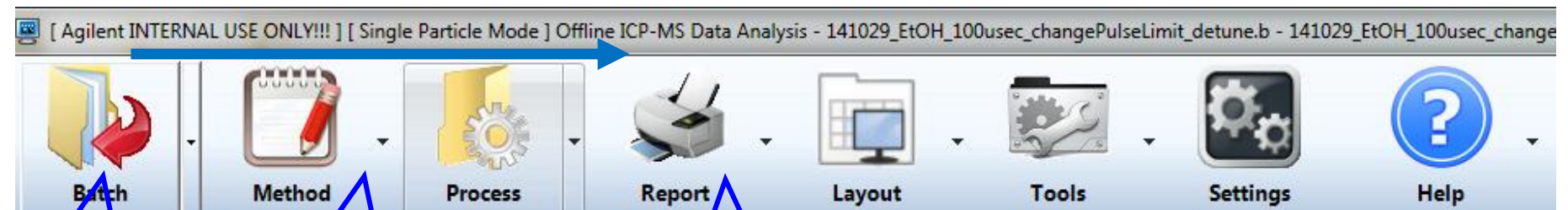
Gadget Bars Simplify Workflow

- **Big, easy-to-read icons**
- Arranged **from left to right** in the order they are used
- **Single click executes the most commonly used task** with no menus to select from

Data Acquisition



Data Analysis

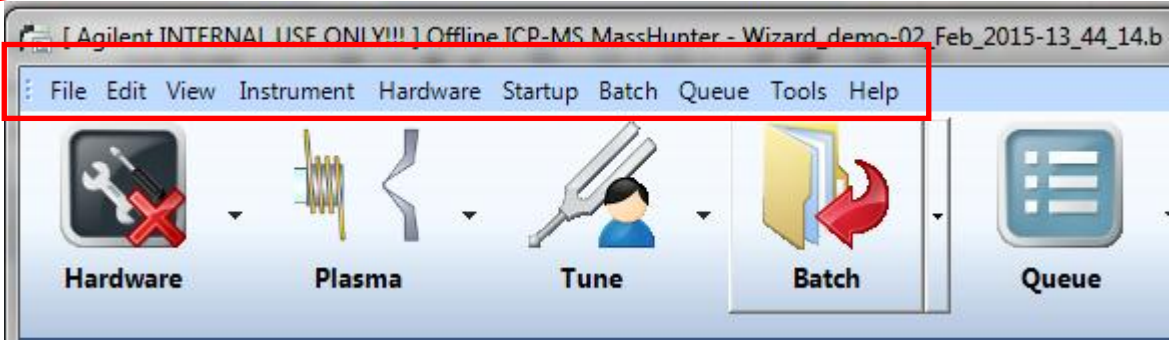
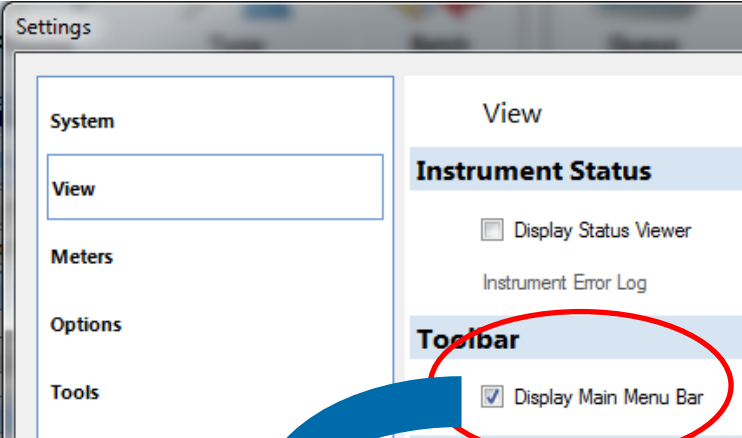


Batch at a
glance view

Method
Editor view

Generate
Report

Backward compatible for users who are familiar with existing pull-down menus



Common functions made easier to access Batch Acquisition via Hyperlink

The screenshot shows the Agilent MassHunter software interface. The main window is titled "Batch - nanotes2.b" and displays various acquisition parameters. A red circle highlights the "Advanced Configuration" link in the "Acq Option" section. A blue arrow points from this link to the "Configure Batch Acquisition" dialog box, which is open in the foreground. The dialog box contains several checkboxes and options for configuring the batch acquisition process.

Mass	Element Name	Monitor
6	Li	<input checked="" type="checkbox"/>
7	Li	<input type="checkbox"/>
9	Be	<input type="checkbox"/>
11	B	<input type="checkbox"/>
23	Na	<input type="checkbox"/>
24	Mg	<input type="checkbox"/>
27	Al	<input type="checkbox"/>
39	K	<input type="checkbox"/>
51	V	<input type="checkbox"/>
52	Cr	<input checked="" type="checkbox"/>
53	[V]	<input type="checkbox"/>
55	Mn	<input type="checkbox"/>

Configure Batch Acquisition

- Intelligent sequence
- Auto/semi auto tune before batch
- Print tune report
- P/A factor adjustment
- Print batch log at end
- Rinse after batch Set Rinse after Batch...

Calibration Import: <None>

Enhanced Stability Mode: None

OK Cancel

Updated USP<232>/<233> Pre-set Methods

- Accessible from Method Wizard for all hardware platforms



MassHunter Method Wizard

Preset Method

The following preset methods are available which meet your hardware configuration and matrix selection.

Preset Method:

7800 Application Method for Elemental Impurities in Pharma, using USP<232>

Compatible Sample Types:
Simple aqueous matrices and acid digested samples up to 0.4% dissolved solids

Pre-Defined Analytes:
V, Cr, Ni, Cu, As, Mo, Ru, Rh, Pd, Cd, Os, Ir, Pt, Hg, Pb

Comment:
Method is suitable only for the 7800, due to the short pre-defined cell gas stabilization time. Uses [Low Matrix](#) plasma conditions, mode only, but requires User Access Control option software is required for regulated pharma analysis. The selection of an appropriate internal standard should consider the analyte and the sample matrix.

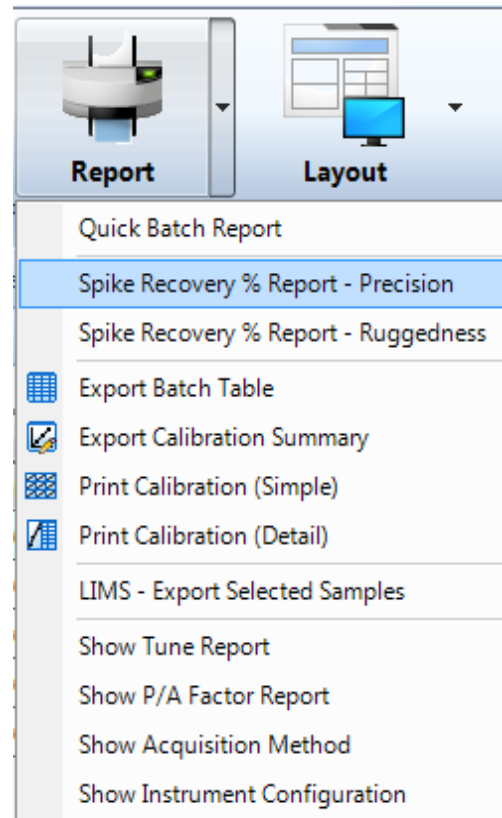
[Help](#)

Newly Updated USP<232>/<233> Method

Newly added features and functions

- Updated element list
- New sample types integrated to support:
 - Spike recovery
 - Precision (6 reps in a single batch)
 - Ruggedness (6 reps across multiple batches)
- New preconfigured report templates for all required QA/QC reports

Pre-configured report templates



Spike Recovery Report - does not require Intelligent Sequencing

Hardware Plasma Tune Batch Queue Data Analysis Report Setting

Batch - USP232_demo.b

Save Batch Add to Queue Validate Method Use Block List Import Sample List Auto Sampler Nebulizer Pump Speed

Acq Method	Data Analysis Method	Sample List	Skip	Sample Type	Sample Name	Comment	Vial#	Replicates
			<input type="checkbox"/>	CalBlk	Blank		1101	
			<input type="checkbox"/>	CalStd	Std 1		1102	
			<input type="checkbox"/>	CalStd	Std 2		1103	
			<input type="checkbox"/>	CalStd	Std 3		1104	
			<input type="checkbox"/>	CalStd	Std 4		1105	
			<input type="checkbox"/>	QC1	QC check 1		1106	
			<input type="checkbox"/>	QC2	QC check 2		1107	
			<input type="checkbox"/>	Sample	Blank		1201	
			<input type="checkbox"/>	Spike Ref	Spike Reference		1202	
			<input type="checkbox"/>	Spike	Spike 1		1203	
			<input type="checkbox"/>	Spike	Spike 2		1204	
			<input type="checkbox"/>	Spike	Spike 3		1205	
			<input type="checkbox"/>	Spike	Spike 4		1206	
			<input type="checkbox"/>	Spike	Spike 5		1207	
			<input type="checkbox"/>	Spike	Spike 6		1301	

Spike Recovery % Report

Analyte Table

Sample Name	9 Be [No Gas]		23 Na [No Gas]		24 Mg [No Gas]		27 Al [No Gas]	
	Conc. [ug/l]	Recovery%	Conc. [mg/l]	Recovery%	Conc. [mg/l]	Recovery%	Conc. [ug/l]	Recovery%
1 Test9	OR		7.161		26.862		OR	
2 Test10	OR		7.110	-5.1	26.544	-31.8	OR	
3 Test11	OR		14.103	694.2	53.254	2639.1	OR	
4 Test12	OR		7.130	-3.1	26.724	-13.8	OR	
Average			8.876	228.7	33.346	864.5		
RSD [%]			39.3	176.3	39.8	177.8		

Sample Name	39 K [No Gas]		44 Ca [No Gas]		51 V [No Gas]		52 Cr [No Gas]	
	Conc. [mg/l]	Recovery%	Conc. [mg/l]	Recovery%	Conc. [ug/l]	Recovery%	Conc. [ug/l]	Recovery%
1 Test9	1.091		81.498		OR		OR	
2 Test10	1.077	-1.4	80.634	-86.4	OR		OR	
3 Test11	2.143	105.2	160.915	7941.7	OR		OR	
4 Test12	1.089	-0.1	81.108	-39.0	OR		OR	
Average	1.350	34.6	101.039	2605.4				
RSD [%]		39.2	177.0	39.5				

Sample Name	53 Cr [No Gas]		55 Mn [No Gas]		56 Fe [No Gas]		59 Co [No Gas]	
	Conc. [ug/l]	Recovery%	Conc. [ug/l]	Recovery%	Conc. [ug/l]	Recovery%	Conc. [ug/l]	Recovery%
1 Test9	OR		OR		11.787		OR	
2 Test10	OR		OR		13.868	208.0	OR	
3 Test11	OR		OR		25.791	1400.4	OR	
4 Test12	OR		OR		14.517	273.0	OR	
Average					16.491	627.1		
RSD [%]					38.3	106.9		

Sample Name	60 Ni [No Gas]		63 Cu [No Gas]		65 Cu [No Gas]		66 Zn [No Gas]	
	Conc. [ug/l]	Recovery%	Conc. [ug/l]	Recovery%	Conc. [ug/l]	Recovery%	Conc. [ug/l]	Recovery%
1 Test9	OR		OR		OR		OR	

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Ruggedness Check Allows User to Easily Select Files From Different Batches.

Batch Folders: C:\agilent\ICPMH\1\DATA\ Batch1.b\, C:\agilent\ICPMH\1\DATA\ Batch2.b\, C:\agilent\ICPMH\1\DATA\ Batch3.b\

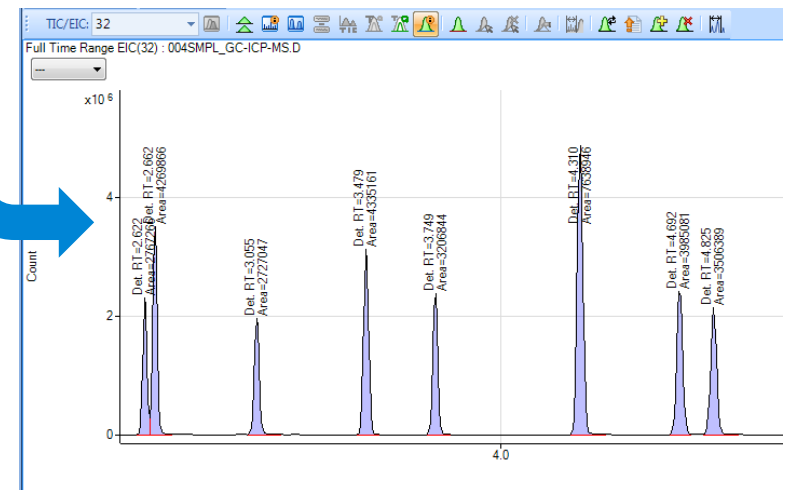
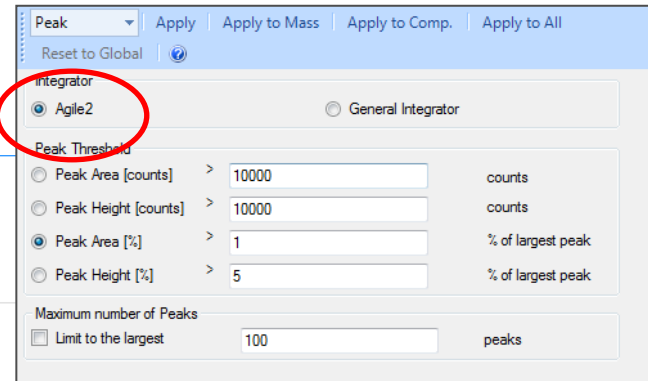
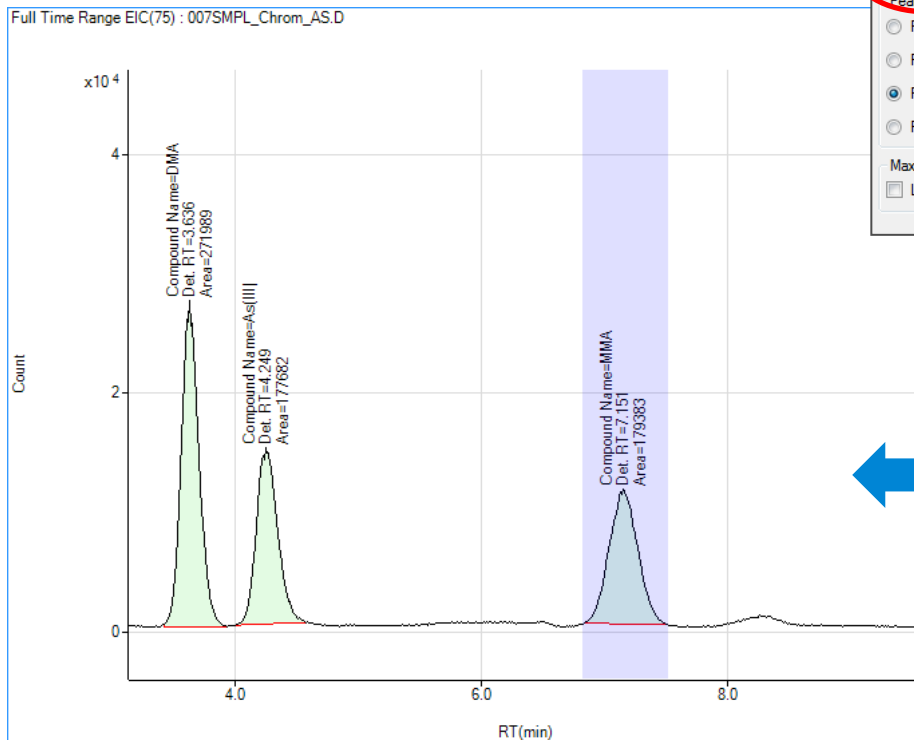
	Rjct	Acq.Date-Time	Analysis File	Data File	Sample Name	Type	Dilution
1		9/10/2010 3:05:13 PM	Batch1.batch.bin	005SPKREF.d	Test5	Spike Ref	1.0000
2		9/10/2010 3:10:12 PM	Batch1.batch.bin	015SPK.d	Test15	Spike	1.0000
3		9/10/2010 3:15:28 PM	Batch1.batch.bin	020SPK.d	Test20	Spike	1.0000
4		9/10/2010 3:21:01 PM	Batch1.batch.bin	025SPK.d	Test25	Spike	1.0000
5		10/10/2010 10:35:11 AM	Batch2.batch.bin	005SPKREF.d	Test5	Spike Ref	1.0000
6		10/10/2010 10:45:56 AM	Batch2.batch.bin	010SPK.d	Test10	Spike	1.0000
.
.
.
18		14/10/2010 1:15:35 PM	Batch3.batch.bin				1.0000

Data Analysis Enhancements

Improved Chromatography

- Easier to read peak labels
- Clearly defined integration windows

Simple, parameter-less, Agile2 integrator works for most peak types and shapes



Agilent 7800 and the All New Agilent SPS 4

The first all new autosampler for atomic spectroscopy from Agilent



Novel SPS 4 Design

Superior **corrosion resistance**

Higher speed (<3 seconds sample to sample at maximum distance)

Fully integrated **optional cover** takes no extra space

Smaller footprint, especially with cover compared to competitive units



More new features

Mechanical and electrical components located in top gantry away from samples and acid vapors.

Peri-pump, power switch, and all electrical connections are outside the cover for **easy accessibility**

Uses **standard Bel Art racks** and tubes or **96 well microtiter plates** with optional adapter kit

Optional **dual channel flowing rinse port**

USB Plug and Play connectivity



Agilent 7800 plus MassHunter 4.2 plus SPS 4 Autosampler – all new for 2015!

Across the board innovation from Agilent to provide a complete analytical solution to your metals analysis needs

