

The Value of Knowing

Agilent Atomic Spectroscopy:
AA, MP-AES, ICP-OES, ICP-MS, ICP-QQQ



Knowing the Right Information at the Right Time

Information can help you cut through the everyday complexities of your samples, instrument needs, regulations, other demands on your time and resources—and help you handle unexpected challenges. The most valuable thing an analytical solution can deliver is the confidence of knowing you'll get the answers you need, when you need them. Driven by insights from customers from around the world, Agilent has created an innovative atomic spectroscopy portfolio—spanning instruments, consumables, standards, services, software, and more—to bring that confidence to your lab.



AA

Atomic Absorption Spectroscopy

Know your flame measurements will be quick and your furnace sensitive

Fast analysis—boost productivity and slash running costs by measuring all elements in a single sample aspiration using our Fast Sequential mode

Sensitive furnace AA—the Agilent 240Z and 280Z Zeeman Graphite Furnace AA systems are productive and precise, providing outstanding furnace performance and accurate background correction for challenging samples

Rugged and reliable—the Agilent 55B AA standalone instrument is ideal for remote sites and harsh environments

Simultaneous flame and furnace—our DUO AA configurations double your productivity by allowing flame and furnace operation at the same time, without atomizer change-over delays

For further details refer to the Agilent 55B AA Spectrometer brochure, publication number: [5990-6617EN](#) and Agilent Atomic Absorption Spectrometers brochure, publication number: [5990-6495EN](#)

MP-AES

Microwave Plasma-Atomic Emission Spectroscopy

Know you can measure samples without gas—just air

Lowest cost of ownership—the Agilent 4210 MP-AES runs unattended without expensive flammable gas supply, dramatically reducing your operating costs

Improved laboratory safety—the 4210 eliminates flammable gases and the need to manually transport and handle gas cylinders

High performance—a magnetically excited microwave plasma source provides superior detection limits to flame AA. A range of accessories extends the performance for your toughest samples

Ease-of-use—application-specific software applets and plug-and-play hardware ensure any analyst can use the instrument with minimal training

Remote control—the Automation Software pack allows remote control of the instrument

For further details refer to the Agilent 4210 MP-AES brochure, publication number: [5991-7237EN](#)



ICP-OES

Inductively Coupled Plasma-Optical Emission Spectroscopy

Know your lab will be productive and your results reliable

The Agilent 5800 and 5900 ICP-OES use smart software features to deliver accurate results in the quickest time.

The right answer every time—software tools such as IntelliQuant think like an expert to provide insight about your samples, reducing sample remeasurement

Uncompromised performance—measure your toughest samples with a vertical torch and enjoy minimal interferences with a Cooled Cone Interface. A high speed intelligent detector delivers fast, simultaneous measurement over the full wavelength range, irrespective of concentration or signal strength

Self-diagnosis and health tracking—with their inbuilt sensors, the 5800 and 5900 ICP-OES pro-actively alert the analyst when maintenance is needed, avoiding unplanned downtime

Designed for lab productivity—the 5900 Synchronous Vertical Dual View (SVDV) ICP-OES uses ingenious optics to measure both the axial and radial views of the plasma at the same allowing the measurement of samples in half the time and with half the gas of other ICP-OES instruments

For further details refer to the Agilent 5800 ICP-OES brochure, publication number [5994-1276EN](#) and Agilent 5900 ICP-OES brochure, publication number [5994-1277EN](#)

ICP-MS and ICP-QQQ

Inductively Coupled Plasma-Mass Spectrometry

Know your results will be accurate at all concentrations, whatever the sample type

Our single quadrupole ICP-MS instruments address measurements from routine, regulated analysis to advanced research. Our triple quadrupole ICP-MS will give you the confidence of knowing you can resolve interferences—even in your most difficult samples—delivering results you can trust.

Agilent 7850 ICP-MS

Combining high performance and simple workflows, the 7850 is ideal for ICP-MS laboratories using routine and regulated methods to measure typical sample types. The Agilent 7850 ICP-MS is the smart way to free your ICP-MS analysis workflow from common time traps. It will reduce wasted time so busy staff can focus on tasks that bring more value to the lab, making lab-life easier, employees more productive, and results more reliable.

Reduce sample preparation—Ultra High Matrix Introduction technology enables the 7850 to measure samples with up to 25% dissolved solids, reducing dilutions and the need for matrix matched calibrations

Simplify method development—proven, predefined methods and standard operating procedures for regulated and routine analyses save you weeks of method development and documentation time. Only our helium collision cell and half-mass correction resolve polyatomic and doubly-charged interferences without the need for complicated reaction gas methods

Reduce wasted time—an early maintenance feedback function uses sensors and counters to determine when maintenance is required. Color coded alerts ensure that maintenance tasks are performed when needed. For further details refer to the Agilent 7850 ICP-MS brochure, publication number: [5994-2302EN](#).



Agilent 7900 ICP-MS

With application-specific configurations and a range of accessories, the 7900 is ideal for more demanding applications, including chromatographic coupling, laser ablation, semiconductor process chemicals, and research. The instrument is perfect for laboratories that must be ready for any sample type, from seawater through to semiconductor raw materials.

Superior matrix tolerance—a robust plasma and Ultra High Matrix Introduction technology enable the measurement of samples containing up to 25% total dissolved solids

Widest dynamic range—the orthogonal detector system delivers high sensitivity, low background, and up to 11 orders of dynamic range—allowing you to measure trace elements and majors in the same run

Fast transient signal detection—fast, dual mode detector electronics (integration times as short as 0.1 ms) support the analysis of transient signals from single nanoparticles, laser ablation, and chromatographic separations

For further details refer to the Agilent 7900 ICP-MS brochure, publication number: [5991-3719EN](#)

Agilent 8900 ICP-QQQ

The Agilent 8900 triple quadrupole ICP-MS uses the power of MS/MS to deliver consistent interference control and the highest analytical performance. The 8900 addresses the most demanding applications—from measuring trace elements in high matrix samples, to impurities in high purity semiconductor chemicals

Effortless high performance—the 8900 offers higher sensitivity and lower background than single quadrupole ICP-MS, delivering lower detection limits. MS/MS unlocks the true potential of reaction mode to resolve spectral overlaps, eliminating the uncertainty and errors associated with reactive cell gases on single quadrupole and bandpass instruments

Handle difficult samples—the 8900 has the robustness and matrix tolerance to handle the most challenging applications and sample types

Excel in demanding applications—the 8900 provides reliable measurement of previously difficult elements—S, P, Si, Cl. MS/MS significantly reduces peak tailing (abundance sensitivity $<10^{-10}$), dramatically improving the resolution of adjacent mass overlaps, further improving data integrity in high matrix samples

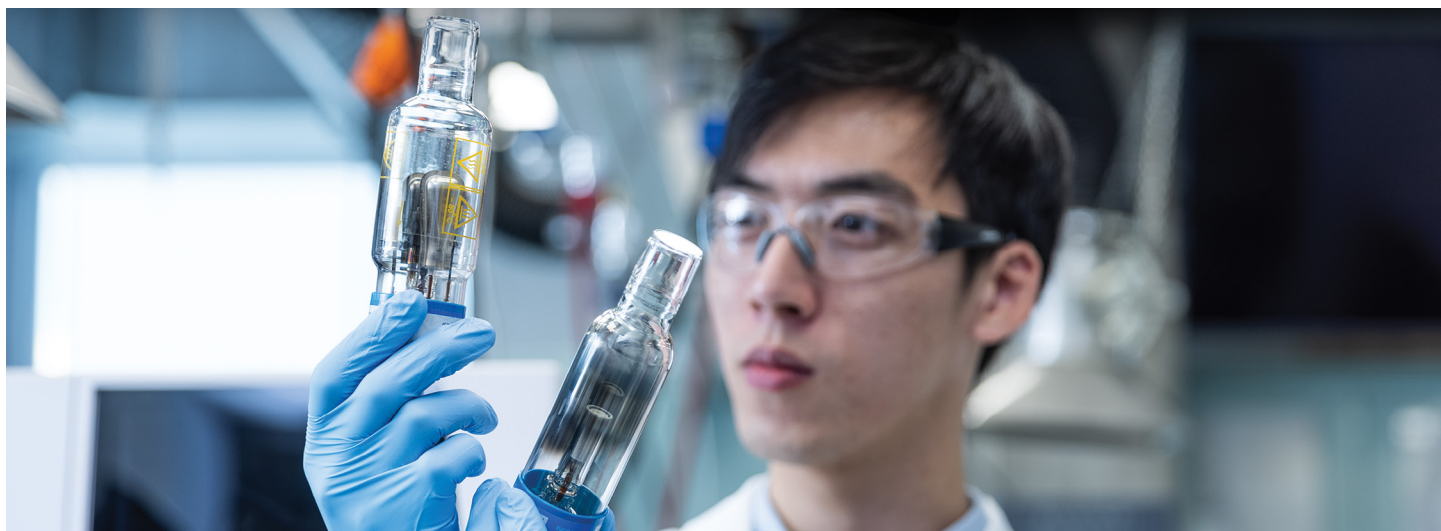
Tailored solution—the 8900 ICP-QQQ is available in a range of configurations, suitable for routine analysis through to advanced research

For further details refer to the Agilent 8900 ICP-QQQ brochure, publication number: [5991-6900EN](#)



Service and Support

Agilent—focused on your organization's scientific and business goals.



CrossLab instrument services

Methods and applications

We assess, develop, and deploy workflows ranging from sample preparation through to final report. We can assist with data transfer, restoring and transferring methods and transitioning equipment to meet changing laboratory demands.

Service and repair

Our CrossLab service solutions provide laboratories with comprehensive maintenance coverage to suit your specific needs and budget. We provide service contracts for software and instrumentation from any major manufacturer. We also offer on demand repairs in the event of an incident, repair parts and supplies for in-house use, and preventive maintenance plans.

Compliance

To help you achieve regulatory compliance, Agilent has developed an automated compliance solution designed to support the end-to-end Analytical Instrument Qualification process. The Automated Compliance Engine (ACE) is an electronic, audit-ready qualification solution that addresses data integrity and intended use requirements.

Additionally, Agilent offers custom validation services such as computer system validation, audits/assessments, custom procedure writing, and more.

Consumables

Parts and supplies

Agilent provides a comprehensive range of supplies for all Agilent atomic spectroscopy instruments. All Agilent supplies are backed by unmatched technical support—plus a 90-day warranty from the date of shipment.

For a complete list of Agilent atomic spectroscopy supplies, including hollow cathode lamps and supplies for AA, ICP-OES, ICP-MS, and MP-AES products, visit us online at: www.agilent.com/chem/supplies

Standards

Agilent has an extensive list of chemical standards, matched by expertise in designing and formulating custom standards to exacting specifications. Agilent products are available through our global distribution channels, and with our logistics capabilities we offer rapid turnaround time on all orders. More information at:

www.agilent.com/chem/standards

Agilent university

From basic operations courses to in-depth training that covers advanced workflow techniques, our team of industry experts can help wherever it's most convenient for you. Learn in an Agilent classroom, at your site or online.

More information is available online at: www.agilent.com/crosslab/university

Which Agilent Instrument is Right for Your Lab?

Agilent instruments deliver sensitive, accurate, and precise measurements across a wide dynamic range, from percentage to low ng/L, with reliable control of matrix interferences. Each instrument has unique performance characteristics, so you can be sure there will be an Agilent system that meets your analytical needs and your requirements for sample matrix, throughput, and budget.

This table will help you select the right Agilent instrument to meet your needs.

Criteria	Flame AA	GFAA	MP-AES	ICP-OES	ICP-MS	ICP-QQQ
Measurement range						
> 10%				•		
1–10%	•		•	•		
1–10,000 ppm	•		•	•	•	•
100–1,000 ppb	•	•	•	•	•	•
1–100 ppb		•	•	•	•	•
ppt		•			•	•
<ppt					•	•**
Number of samples						
Few	•	•	•	•	•	•
Several	•		•	•	•	•
Many				•	•	•
Number of elements per sample						
Single/few (1–5)	•	•	•	•	•	•
Intermediate (5–10)	•		•	•	•	•
Many				•	•	•**
Sample matrix						
< 3% solids	•	•	•	•	•	•
3–10%*	•	•		•	•	•
> 10%		•		•	•	•
Advanced applications						
Chromatographic coupling					•	•
Nanoparticle characterization					•	•
Isotopic analysis/IDMS					•	•
Laser bulk analysis				•	•	•
Laser imaging					•	•

*Agilent ICP-MS systems with UHMI tolerate up to 25% total dissolved solids.

**ICP-QQQ offers improved overall performance compared to ICP-MS, including higher sensitivity, lower detection limits, and better control of interferences using MS/MS reaction cell methods.

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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