Accurate. Robust. Reliable.

AGILENT 710 SERIES ICP-OES

The Measure of Confidence

Agilent Technologies

AGILENT 710 SERIES ICP-OES

Agilent Technologies is now your premier resource and partner for atomic spectroscopy. With the 2010 addition of Varian's world-renowned AA and ICP-OES products, together with our market-leading 7700 Series ICP-MS, Agilent offers you a comprehensive range of inorganic analytical instrumentation.

Outstanding value

The Aglient 710 Series ICP-OES offers uncompromised performance for laboratories with low to moderate sample loads performing routine ICP-OES analyses. Easy to use, the 710 Series is also ideal for educational institutes and industries that need to comply with WEEE/RoHS directives.

- Continuous wavelength coverage provides extended dynamic range and reduced interferences, giving you maximum confidence in your results
- Robust plasma ensures reliable and reproducible results — even with the most complex matrices
- One view, one step measurement of major, minor, and trace elements, plus the fastest warm-up increases throughput and productivity
- Choice of optimized axial (710) or radial (715) configurations to suit your application needs
- Intuitive, powerful, and easy-to-use software

Agilent is committed to continued product development across our entire range of atomic spectroscopy product lines. We are dedicated to delivering to you innovative technology, best-in-class quality and reliability, and unmatched support.

The Agilent 710 Series ICP-OES features a solid state CCD detector, ideal for laboratories with moderate sample loads that value uncompromised performance.

Agilent

1938 HP is formed

1965 HP enters the gas chromatography market

1976 HP 5992A introduced as the world's first benchtop GC/MS

1983 HP redefines 'reliability' in GC with the introduction of the HP 5890A

1994 Launch of the 4500 Series, the world's first benchtop ICP-MS

2009 Launch of the Agilent 7700 Series ICP-MS featuring Agilent's HMI & ORS^3 Cell

2010 Varian becomes a part of Agilent

Varian

1948 Varian Associates is formed

1957 Built components for world's first AA (as Techtron)

1991 Releases first sequential ICP-OES

1994 Axial ICP-OES with cooled cone interface released

1997 Patented Vista chip CCD detector with full wavelength coverage

2006 Launch of the 700 Series ICP-OES — world's fastest ICP-OES

Stable and accurate results for all sample types

With over 6,000 ICP-OES systems worldwide, Agilent's plasma generation is field-proven, robust, and consistently provides stable and accurate results, even with the most challenging samples.

- Superior plasma performance allows direct analysis of samples ranging from organic solvents to industrial waste and brines, minimizing sample preparation times.
- Agilent's innovative cooled cone interface eliminates the use of expensive shear gases, saving you money.
- Advanced optical design with no moving parts and robust plasma generation ensure superb long term stability.
- The CCD detector and optimized optical design give excellent signal-to-noise performance, ensuring low detection limits.
- The dedicated sample introduction system and axially-viewed plasma of the 710 Series ICP-OES provide maximum sensitivity for routine trace-level applications.
- The radially-viewed 715 ICP-OES features efficient sample introduction for maximum robustness, allowing you to analyze the most demanding samples with ease.
- Enhance the performance of the 710 Series with accessories such as the VGA for mercury and hydride forming elements, the fast SPS autosampler for unattended automation, the SVS switching valve for immediate rinsing and improved productivity, the AGM for organic matrices and the USN for lower detection limits with environmental samples.

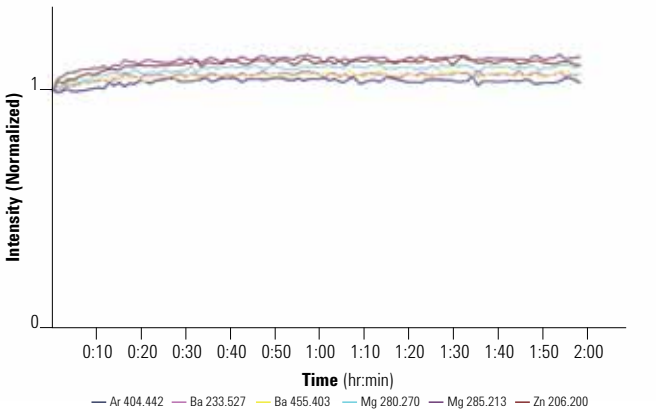
Industry leading performance

Achieve accurate and precise results for low wavelength elements at µg/L levels. Results are shown for toxic elements in polyethylene (European Reference Material EC681) measured on the 710 Series (corrected for 100-fold dilution).

	Certified range mg/kg	Measured value mg/kg
Hg 184.887	4.35 – 4.65	4.60
Cd 214.439	21.0 – 22.4	21.7
Pb 220.353	13.1 – 14.5	13.7
Cr 267.716	17.1 – 18.3	17.5

Fastest warm-up time

Shown is the rapid stabilization of Ar, Ba, Mg, and Zn following plasma ignition. Exceptionally fast warm-up time allows samples to be analyzed in less than 10 minutes after plasma ignition, minimizing delays and saving argon costs.



ONE-STEP ANALYSIS FROM ONE PLASMA VIEW

Productivity and dynamic range for environmental applications

The determination of major, trace and toxic elements in soils, waters, food and agricultural samples is fast and easy using a single plasma view. Agilent's 710 horizontal, axially-viewed plasma provides excellent sensitivity for trace-level determinations, and the flexibility to handle major levels. The robust plasma is able to handle a wide variety of sample matrices while still delivering the best detection limits. Agilent's unique Multi-Cal feature extends the linear range of analysis from parts-per-billion to percentage levels. Unlike dual view systems, the Agilent 710 Series provides extended range without having to analyze the sample twice.

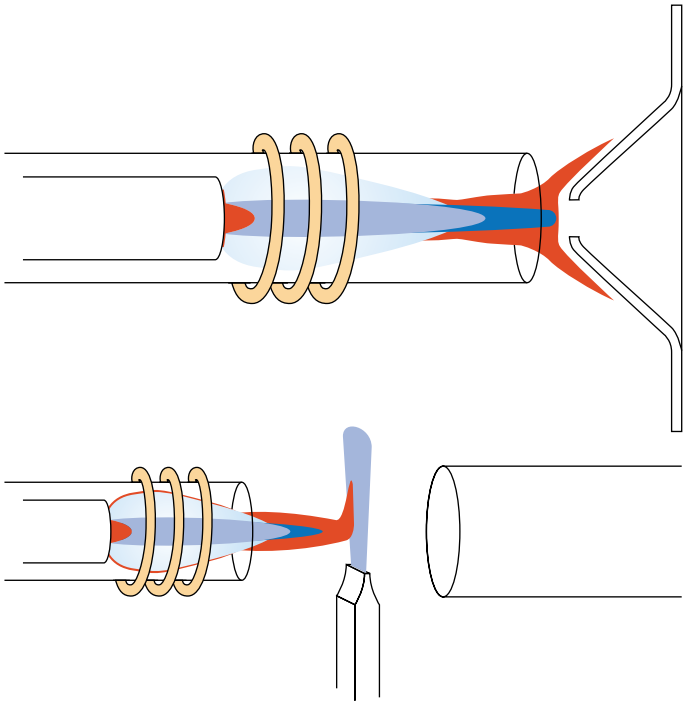
This extended linear dynamic range, coupled with the freedom from interferences offered by the CCD detector, makes the 710 ICP-OES ideal for environmental applications. When combined with microwave digestion the 710 can also be used for routine monitoring of heavy metals in plastic for compliance with RoHS and WEEE regulations.

The 710 axial system meets all US EPA Contract Required Detection Limits (CRDL) for waters and waste waters and is capable of routinely handling up to 5% dissolved salts. The stability, wide linear dynamic range and reduced chemical interferences of the 710 ICP-OES ensure that your laboratory can analyze more samples every day.

Fast, accurate analysis of environmental samples
Measurement of 22 target analytes required for compliance with USEPA ILM05.3 takes only 3 min 34 sec per sample.

Element	NIST 1643e certified (mg/L)	NIST 1643e measured LCS (mg/L)	CRQL (mg/L)	LCS % recovery
Ag 328.068	0.001062	<CRQL	10	–
Al 308.215	0.1418	0.153	200	108%
As 188.980	0.06045	0.0571	10	95%
Ba 585.367	0.5442	0.558	200	103%
Be 234.861	0.01398	0.0136	5	97%
Ca 370.602	32.3	32.3	5000	100%
Cd 226.502	0.006568	0.00650	5000	99%
Co 228.615	0.02706	0.0284	5	105%
Cr 267.716	0.0204	0.0209	50	103%
Cu 324.754	0.02276	0.0217	25	95%
Fe 258.588	0.0981	0.104	100	106%
K 769.897	2.034	2.13	5000	105%
Mg 279.800	8.037	7.85	5000	98%
Mn 257.610	0.03897	0.0409	15	105%
Na 589.592	20.74	21.0	5000	101%
Ni 231.604	0.06241	0.0632	40	101%
Pb 220.353	0.01963	0.0192	10	98%
Sb 206.834	0.0583	0.0591	60	101%
Se 196.026	0.01197	<CRQL	35	–
Tl 190.794	0.007445	<CRQL	25	–
V 311.837	0.03786	0.0361	50	95%
Zn 206.200	0.0785	0.0802	60	102%

Minimize interferences
The Cooled Cone Interface (CCI) efficiently removes the cool plasma tail (the red zone, top) away from the optical path. This minimizes self-absorption and recombination interferences to provide a wide linear dynamic range and low background for the best detection limits. Dual view plasmas (bottom), do not fully remove the cool plasma tail, degrading performance and linear dynamic range.



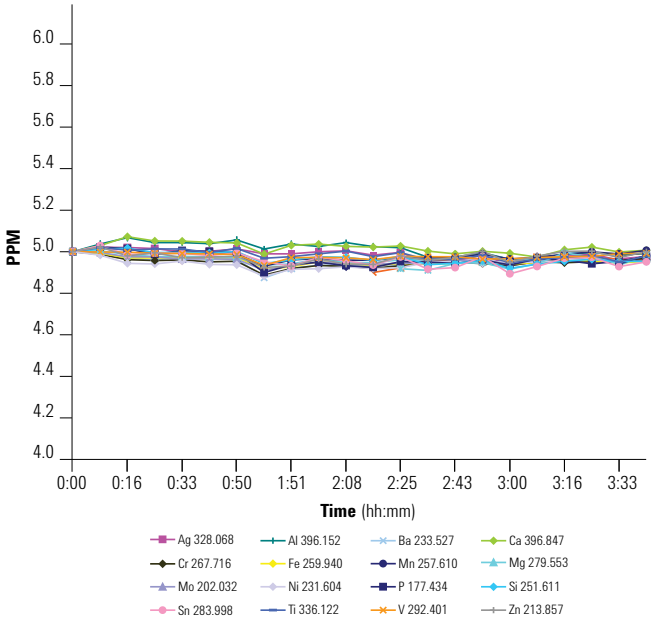
Robust performance for industrial applications

If long term analysis of the most difficult sample types is required, Agilent's 715 ICP-OES offers the benefits of robust operation with minimal maintenance. The radially-viewed plasma is vertically oriented, providing immediate venting of exhaust vapors for reduced injector tube blockage and long term stable performance with high levels of dissolved solids. Vertically orientated, radially-viewed plasma systems are the accepted standard in many industries including chemicals manufacture, salt production, wear metals analysis, petrochemical production and precious metals refining. Dual view plasma systems, which feature horizontal torches, cannot match the rugged, high dissolved salt performance of the 715 ICP-OES.

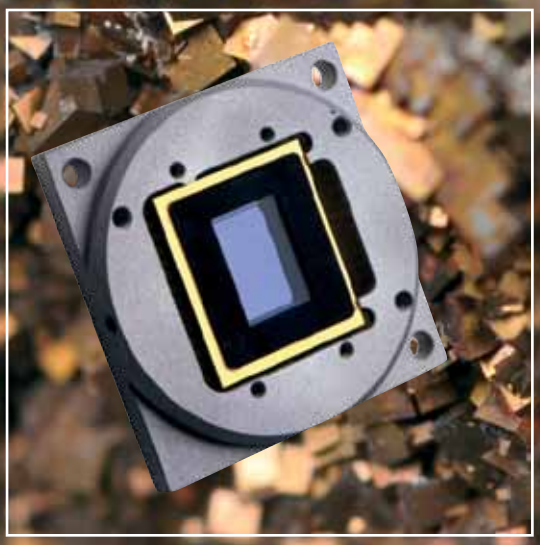
Agilent's robust RF generator system provides the rugged stability needed to ensure excellent long term stability with challenging samples. The radial configuration is also preferred for organic applications as the vertical plasma reduces carbon build up in the injector. Use the programmable viewing height to select the optimum viewing position in the plasma, reduce background, and eliminate interferences from carbon and oxygen based molecular emissions. This means improved detection limits are achieved without the use of oxygen.

Whether you are performing process control in the petrochemical industry, determining major, minor and trace compositions of rocks, soils or sediments, or measuring contaminants in used oils, the 715 ICP-OES offers stable, reliable performance for all sample types.

Stable and reliable performance
Four hour stability study for 5 mg/L S21 elements in directly aspirated kerosene shows the stable and reliable performance of the 715 ICP-OES for difficult organic solvents.



reliable



CLEARLY BETTER SOFTWARE

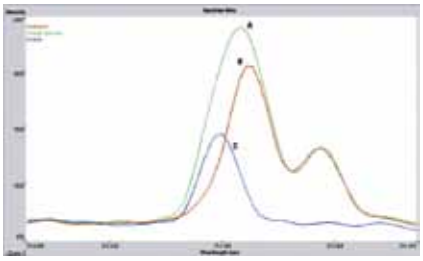
User friendly software with all instrument controls, sample results and signal graphics accessible from one window.

Software designed for real samples

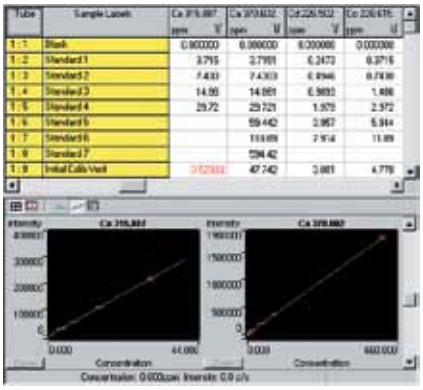
- Easy-to-use worksheet-based software contains wizards and videos to guide you through operation.
- Fitted background correction simplifies method development as you don't need to select correction points manually. This ensures fast method development and better correction.
- Agilent's Fast Automated Curve-fitting Technique (FACT) resolves complex spectral interferences, ensuring greater accuracy in difficult matrices. FACT modeling can be applied post-analysis.
- MultiCal extends the linear range giving you accurate results from a single measurement.
- The status display provides an overview of instrument settings and includes diagnostics for performance optimization and fast fault diagnosis.

Confirm your results automatically

Prove you have accurate results for unknown samples.
With MultiCal you can monitor results at two or more wavelengths for each element — giving you confidence in your results and confirming they are interference free.



Resolve spectral interference with FACT
Resolution of the difficult Fe interference at Cd 214.438 nm. Shown are:
a. Appearance of the peaks in a soil sample
b. FACT model of the interference (500 mg/L Fe)
c. Corrected signal for the Cd analyte.



Extend linear range
With MultiCal, results are automatically assigned either to the Ca 315.887 nm wavelength calibrated to 30 mg/L or the 370.602 wavelength calibrated to 600 mg/L. The Initial Calibration Verification standard is accurately recovered at 47.7 mg/L (%R = 106%).

SIMULTANEOUS ICP-OES

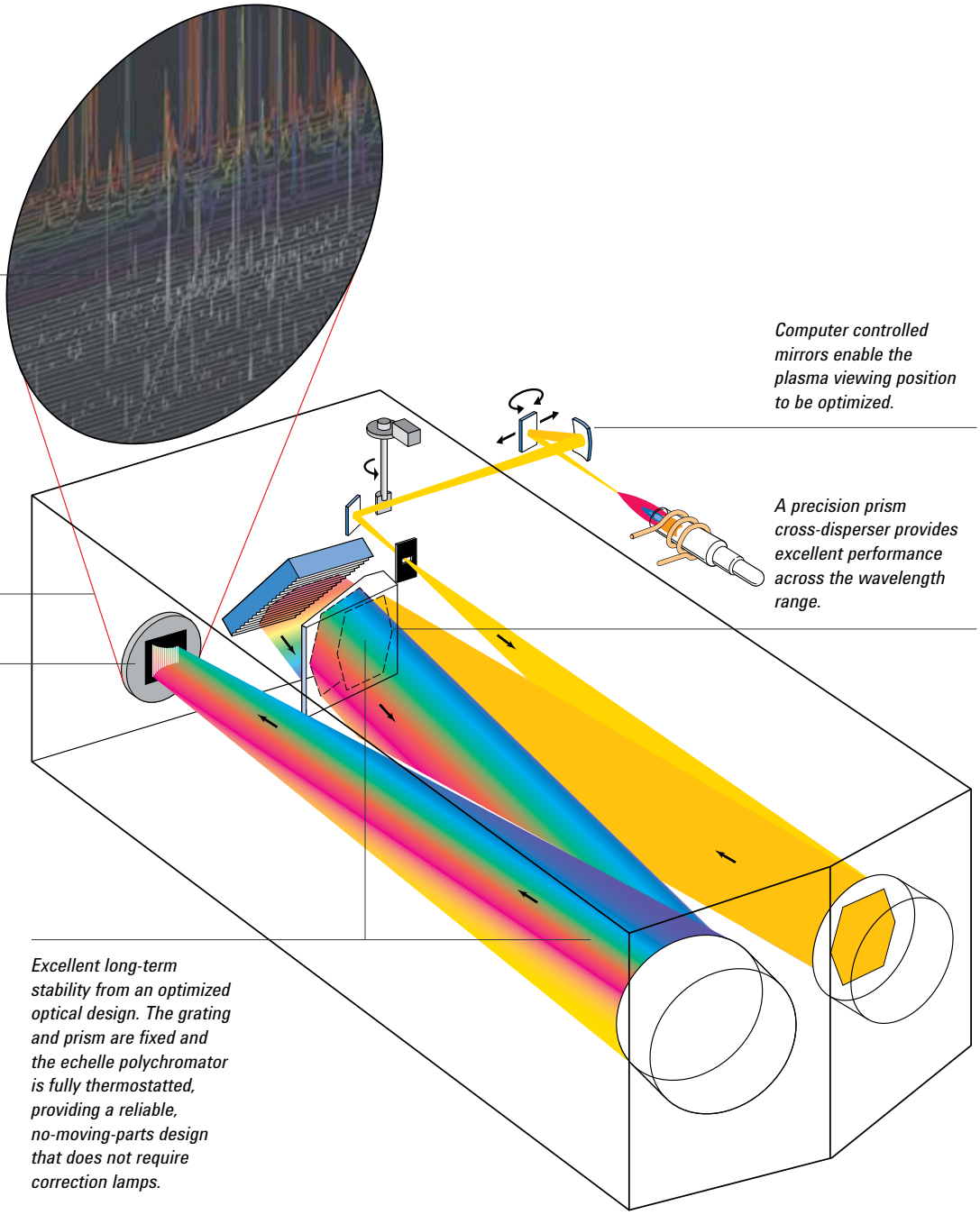
Whether you have tens or hundreds of samples to analyze each day, the Agilent 710 Series ICP-OES will save you time and money.

The detector provides over 1.1 million pixels in a large area, CCD array design. It captures the entire spectral image in one reading, saving you time and reducing running costs. Simultaneous ICP measurement means simultaneous background correction and internal standardization — resulting in more accurate and precise results with excellent long term stability. The unique CCD array detector is cooled to -30 °C for excellent low noise performance and best possible detection limits. For the best value simultaneous ICP-OES, choose the Agilent 710 Series.

The productivity of simultaneous ICP-OES — all wavelengths are captured in one reading without time consuming scanning.

To ensure data integrity and a wide dynamic range the CCD features the Clocked Recombination System (CRS) for anti-blooming protection.

Spectral interferences are easily avoided. Choose any line from 175–785 nm. Good spectral resolution ensures close adjacent wavelengths can be resolved. Unlike dual view ICP-OES designs, the 710 Series covers all the important wavelengths in the visible region without compromise.



Computer controlled mirrors enable the plasma viewing position to be optimized.

A precision prism cross-disperser provides excellent performance across the wavelength range.

Excellent long-term stability from an optimized optical design. The grating and prism are fixed and the echelle polychromator is fully thermostatted, providing a reliable, no-moving-parts design that does not require correction lamps.

THE COMBINED BENEFITS OF TWO LEADERS IN ATOMIC SPECTROSCOPY

With the 2010 addition of Varian, Inc., Agilent now offers an even greater range of instrumentation and the most comprehensive columns and supplies portfolio in the market. Just as important are the best-in-class service and technical support teams, focused on finding solutions for our customers. Agilent is here to provide the technology — and *the Measure of Confidence* — you need to be successful.

An expanded portfolio of solutions from the leader in ICP-MS

The range of Agilent AA, ICP-OES and ICP-MS instruments offers unmatched performance, and the highest level of reliability and ease-of-use. The instruments are backed by a combined global network of dedicated and experienced support staff.

Agilent 7700 Series ICP-MS offers unmatched matrix tolerance and interference removal, and the smallest footprint of any ICP-MS.

Agilent's AA range includes the world's fastest flame AA and the world's most sensitive furnace AA.

Our catalog of new applications is ever growing.

To learn about the latest, contact your local Agilent Representative or visit us at:
www.agilent.com/chem/

Find out how Agilent's Atomic Spectroscopy Solutions can deliver the productivity, reliability and accuracy you need.

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