

Applications

FOOD SAFETY, AGRICULTURAL	ENVIRONMENTAL	PHARMACEUTICAL	PETROCHEMICAL, MINING, METALLURGICAL	CLINICAL
As, Hg, Pb, Sb, Se	Hg, Pb, Cd, Zn, As, Sb, Se	Hg, Pb, As, Se	Ge, Hg, Se, As in Sb, Te in Cu	Se, Pb, Hg, As
Dairy, Wine, Meats	Wastewater	Active Ingredients	Rocks & Minerals	Blood & Urine
Food & Animal Byproducts	Soil & Sludge	Fillers	Steel & Alloys	Tissue
Cigarettes	Drinking Water	Catalyst Residues	Oil & Gas	Hair & Nails

LUMINA SERIES Atomic Fluorescence Spectrometers

Specifications

	LUMINA 3500	LUMINA 3400
Sample Introduction	Continuous flow injection	Sequential injection
Dimensions (WxLxH)	66 x 59 x 44 cm / 26 x 23 x 17 in	66 x 48 x 38 cm / 26 x 19 x 15 in
Autosampler Dimensions (WxLxH)	56 x 56 x 38 cm / 22 x 22 x 15 in	56 x 56 x 38 cm / 22 x 22 x 15 in
Weight	52kg/115 lb	30 kg / 66 lb
Electrical Requirements	AC 110/220 V, 50/60 Hz, 10 A	AC 110/220 V, 50/60 Hz, 10 A



LUMINA Atomic Fluorescence Spectrometers

The LUMINA Atomic Fluorescence Spectrometer (AFS) series is ideal for ultra-trace analysis of mercury and all other hydride-forming elements through vapor/hydride generation. The system's design offers the highest levels of sensitivity, versatility, reproducibility and accuracy on the market through an advanced dual gas/liquid separator and reaction mixing manifold.

LUMINA AFS series is unrivaled solution for a wide range of research sectors, providing a cost-effective method to measure detection limits unattainable by common mass spectrometry methods.

Sample Introduction

Sample introduction is performed *via* continuous flow (LUMINA 3500) or sequential quantitative injection (LUMINA 3400). Continuous flow reduces signal drifting and liquid phase interference, greatly increasing signal to noise ratio. Sequential quantitative injection reduces the consumption of sample and reagents, eliminates signal drifting, improves detection limits, and enables online dilution.



Sample Introduction by sequential injection and continuous flow

Vapor/Hydride Generator

Aurora's unique vapor hydride generator further enhances sensitivity, reduces interference, and obtains ultra low detection limits for the determination of sub-trace levels of mercury and hydride-forming elements.



Vapor/Hydride generator

Reaction/Mixing Manifold

The reaction/mixing manifold includes multi-mixing levels for easy combination and unlimited flexibility in mixing patterns.

Revolutionary Gas/Liquid Separator

The high efficiency flow-through design and dual stage gas/liquid separator optimizes the separation of hydride and mercury cold vapor. Pressure fluctuations are minimized, enhancing the precision of measurements.

Covered Optical Design

The shield optic design greatly reduces light interference and enhances the signal to noise ratio, thereby increasing the sensitivity and precision of the measurement. This short focus, non-dispersive and closed optic system intensifies the fluorescence signal to noise ratio. The high quantum efficiency solar blind photo multiplier tube provides better detection sensitivity.



Dual Channel Analysis

Dual Channel Simultaneous Analyses

Specially designed high-intensity hollow cathode lamps, with independent powers supply allows for selection between simultaneous analyses of two elements or independent analysis of a single element, greatly increasing the efficiency of measurements while decreasing sample consumption.

Integrated Exhaust System

The instrument's build-in exhaust system effectively displaces waste gas/vapor into the external environment through a ventilation pipe, eliminating the need to invest in expensive lab ventilation systems.

Universal XYZ Autosampler

Aurora's extensive experience in robotics is behind the most advanced autosampler on the market. This universal XYZ autosampler can be positioned in three-dimensional space as required. Freedom of movement in all directions allows the AFS to accommodate any number and type of sample containers.



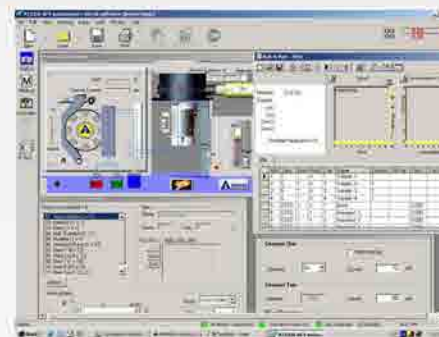
Autosampler

Software & Methods

User-Friendly (Windows-Based) Software

The schematic software is intuitive and easily operated for instrument/autosampler control, data acquisition and analysis. Features include:

- Total parameter control for timing optimization
- Real-time display of fluorescence intensity for both channels
- Single or dual channel selection
- LIMS-compatible reporting formats



LUMINA's point-and-click software interface

Standard Methods Compliance

EPA Method 245.7 and 7474

Mercury Determination in Water and Sediment

ASTM Standard D6350

Mercury Sampling and Analysis in Natural Gas

Sample Preparation and Introduction

LUMINA 3500	<ul style="list-style-type: none"> • Six-channel, continuous flow peristaltic pump with two adjustable pressure control clamps and programmable speed control • High performance mixing section • Gas-liquid separator for cold-vapor mercury and hydride generation determinations.
LUMINA 3400	<ul style="list-style-type: none"> • Sequential sample injection by syringe pump • Two syringe pumps for sample and reagent addition. Software controlled. • Significantly decreased detection limits • Increased reliability
Gas/Liquid Separator	<ul style="list-style-type: none"> • High efficiency and throughput. • Dual stage gas/liquid separator
Mixing Manifold	<ul style="list-style-type: none"> • Up to five mixing layers • One additional draining layer • Versatile tubing connection options

Detection Limit*

Element	Detection Limit (ng/L)
As, Se, Pb, Bi, Sb, Te, Sn	10 ppt
Hg, Cd	1 ppt
Zn	2000 ppt
Ge	50 ppt

*Actual performance depends on lab conditions and reagents used

Sample Atomization

Atomizer	Dual layer quartz tube furnace
Carrier Gas	Argon
Shield Gas	Argon