

**Aurora**  
ILLUMINATING SOLUTIONS

# TRACE Series

Atomic Absorption Spectrometers



**SOLUTIONS FOR LIFE SCIENCE & ENVIRONMENTAL SCIENCE**

## TRACE Atomic Absorption Spectrometers

The advanced design of the TRACE series of atomic absorption spectrometers ensures the highest levels of sensitivity, accuracy and reproducibility are achieved, thereby reinforcing their utility in a wide range of applications. Switching between the various atomizers (flame, graphite furnace and vapor/hydride generator) can be easily achieved using the motorized platforms. The transversely-heated graphite furnace tube provides industry-leading heating rates while sustaining high throughput efficiencies with Aurora's Fast Dry technology.

The TRACE series combines excellent performance, powerful software and great value to offer a complete solution for trace metal analysis.

### Features

#### Auto-Aligned Six-Lamp Turret

- Computer-controlled turret holds up to six (6) pre-heated hollow cathode lamps

#### Quick Switch between F, GF and VG Atomizers

- Flame, graphite furnace and vapor/hydride generator atomizers quickly transition using the manual or motorized platforms

#### Switchable Single/Double Beam Optics

- Switch between single beam and true double beam optics with just a single click

#### Transversely-Heated GF Tube

- Unique design allows for a perfectly uniform temperature distribution, creating spatially isothermal atomization conditions

#### High GF Heating Rate

- Industry-leading GF tube heating rate (3800 K/s)

#### Teflon Nebulizer Chamber

- Chemically inert to provide superior resistance against the most corrosive of reagents, including organic solvents

#### Universal XYZ Autosampler

- Most advanced autosampler on the market
- Compatible with vials, plates, test tubes and more

#### Online Dilution

- Calibration curves created from a single standard solution

#### Built-In Power Supplies

- Independent power supplies for graphite furnace and high-intensity hollow cathode lamps

#### Regulatory Guidelines

- Compliant with EPA and CSA rules as well as FDA Title 21 part 11 requirements for electronic signatures

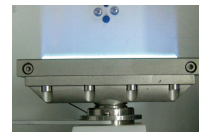
## Universal XYZ Autosampler

Aurora's extensive robotics experience has led to the creation of the most advanced autosampler on the market. This universal XYZ autosampler can be arbitrarily positioned in three-dimensional space as required. The freedom of movement in all directions permits it to adapt to almost any number and type of sample container. Furthermore, it is compatible with flame, graphite furnace and vapor/hydride generator atomizers.

### Flame (F) Atomizer

Advanced features include:

- Fully inert Teflon spray chamber
- Titanium burner head
- Pre-adjusted high-efficiency nebulizer
- Automatic gas flow rate optimization
- Extensive safety interlocks

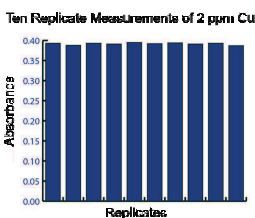


*Electronic interlocks to detect:*

- Combustion head type
- Gas pressure
- Liquid trap level
- Flame status
- Atomizer installation

*Power outage protection:*

- Automatic gas valve closure
- Internal air tank to prevent flashback



Flame Atomizer

### Graphite Furnace (GF) Atomizer

Aurora utilizes a transversely-heated graphite furnace tube to ensure a perfectly uniform temperature distribution over the length of the tube. Transverse heating eliminates "memory effects", while lower atomization temperatures and shorter atomization times extend the graphite tube life.



Graphite Tube

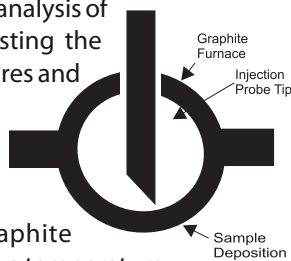
The digitally-controlled graphite furnace power supply enables maximum heating rates of up to 3800 K/s using as many as 30 programmable heating steps. This industry-leading heating rate ensures a more well-defined absorption peak with higher sensitivity, fewer matrix effects and decreased background noise.

### Advanced Temperature Control

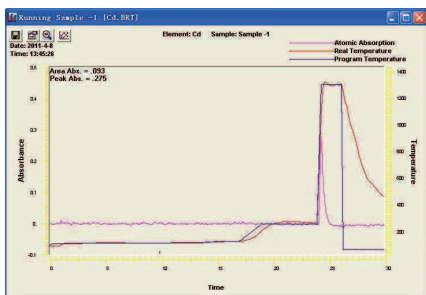
The specially-designed thermocouple temperature sensor provides accurate wide-range temperature control from room temperature up to 3000 °C.

## Fast Dry Furnace Technology

The Fast Dry technology allows for analysis of over 3 samples/minute. By adjusting the preheating and cooling temperatures and injection speeds, drying times are decreased.



Samples are injected at an optimized speed into the graphite furnace tube, which is preheated to a temperature higher than the solvent boiling point. Optimization of the sample injection speed and temperature results in decreased sample splattering and drying times. This in turn provides improved reproducibility, sensitivity and detection limits.



When used in conjunction with an autosampler, the absorbance value for 1 ppb cadmium is up to 0.45 Abs, with an RSD of less than 3%.

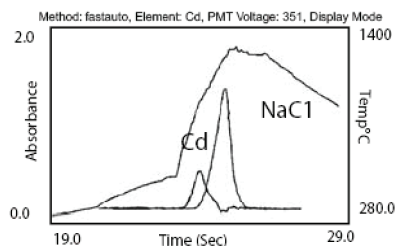
## Online Dilution

Online dilution allows for the creation of calibration curves from standard solutions using the digital micro-piston pump. This dramatically decreases sample preparation times and wastage.

## Background Correction

To resolve background interferences, the TRACE Series comes complete with the following background correction techniques:

- Deuterium
- Smith-Hieftje
- Time-resolved

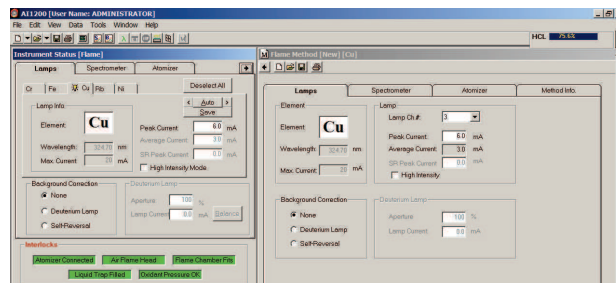


Clear, well-defined signals can be achieved using the time-resolved background correction.

## Software

### Key Features of the Software:

- Single and batch run modes
- Real-time data output
- Adjustable wavelength scanning range and speed
- LIMS support
- FDA Title 21 Part 11 compliance



## Vapor/Hydride Generator (VG)

Aurora's vapor/hydride generator provides enhanced sensitivities, reduced interference and incredibly low detection limits for the determination of sub-trace levels of mercury and hydride-forming elements.

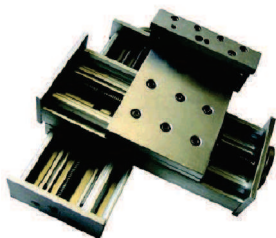


Hydride Generator & Atomizer

This system comes complete with an advanced gas-liquid separator which allows users to add a drying agent. By removing moisture, pressure fluctuations are minimized, thus enhancing the precision of measurements. Three mixing levels in the reaction/mixing manifold enable the convenient online addition of reagents required for acidity adjustments, pre-reduction/oxidation or masking of interferences.

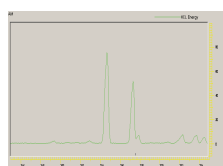
## Automatic Control

The flame and graphite furnace atomizers are configured to allow for a quick changeover using Aurora's motorized switch. This switch eliminates human intervention while allowing for a quick and easy changeover - literally within seconds.

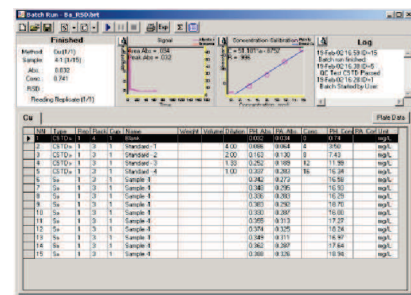


Mobile Platforms

AISPEC software is designed to give users complete control of all parameters required to achieve optimal instrument performance. The software's periodic-table-driven interface allows users to easily retrieve and modify the pre-developed method database.

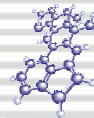


A11200 Wavelength Scanning



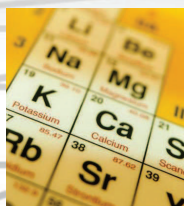
A11200 Batch Operation Mode

# Smart Solutions for Elemental Analysis



	<b>FOOD AGRICULTURE FISHING</b>	<b>ENVIRONMENTAL</b>	<b>MANUFACTURING</b>	<b>PETROCHEMICAL MINERALS METALLURGICAL</b>	<b>MEDICAL BIOCHEMICAL PHARMACEUTICAL</b>
<b>Flame AAS</b>	Trace elements in agricultural products, food and beverages.	Trace elements in soils.	Zn, Cd and Pb in cosmetics and toys. Mn in steel.	Fe in ore.	Mg, Na and Ca in physiological saline.
<b>Graphite Furnace AAS</b>	Trace As, Cd, Pb, Cr and Pb in fish, rice and tobacco.	Trace Cd and Pb in seawater.	Cu in industrial materials.	Pb in petroleum products.	Ta and Pb in urine. Cr in capsules.
<b>Vapor / Hydride AAS</b>	Trace As, Hg and Pb in food additives and tobacco.	Trace As, Hg and Pb in drinking water and lake water.	Sb and As in electroplating fluids.	Sb and As in ore.	Trace As and Hg in pharmaceuticals and traditional medicines.

	<b>Available Configurations</b>	<b>Dimensions</b>
<b>TRACE AI1200</b>	<ul style="list-style-type: none"> <li>TRACE AI1200 Flame (F)</li> <li>TRACE AI1200 Flame/Graphite Furnace (F/GF)</li> <li>TRACE AI1200 Flame/Vapor-Hydride Generator (F/VG)</li> <li>TRACE AI1200 Flame/Graphite Furnace/Vapor-Hydride Generator (F/GF/VG)</li> </ul>	With Autosampler: 76 x 61 x 70 cm Without Autosampler: 76 x 61 x 36 cm
<b>TRACE 1300</b>	<ul style="list-style-type: none"> <li>TRACE 1300 Flame/Graphite Furnace (F/GF)</li> <li>TRACE 1300 Flame/Graphite Furnace/Vapor-Hydride Generator (F/GF/VG)</li> </ul>	With Autosampler: 72 x 56.7 x 71 cm (Standard)



Aurora has achieved ISO 9001 certification for the development, manufacturing and marketing of analytical instruments.



PLEASE NOTE: Instrument specifications may change without notice due to ongoing product improvement.

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