Aurora
ILLUMINATING SOLUTIONS

TRACE Series

Atomic Absorption Spectrometers

TRACE 1800

TRACE A11200

SOLUTIONS FOR LIFE & ENVIRONMENTAL SCIENCES

TRACE Atomic Absorption Spectrometers

The TRACE series of atomic absorption spectrometers ensures the highest levels of sensitivity, accuracy and reproducibility. Aurora's industry leading optics provide the sharpest image possible for highly accurate elemental analysis. Switching between atomizers (flame, graphite furnace and vapor/hydride generator) is easy with one click in the software using 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 universal XYZ autosampler enables automated, high throughput analysis from almost any container. The TRACE Series combines excellent performance, reliable software and great values for a complete solution in trace metal analysis.

Features

Auto-Aligned 8-Lamp Array
- Computer-controlled turret holds up to eight (8) 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

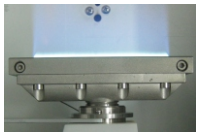
Built-In Power Supplies
- Independent power supplies for graphite furnace and high-intensity hollow cathode lamps

Regulatory Guidelines
- Compliant with EPA and CSA rules as well as Title 21 CFR 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 is compatible with all of the atomizers giving the most flexibility for automating protocols. The autosampler is fully capable of 3-dimentional movement and allows sampling from almost any container including bottles, tubes and microtiter plates (24, 96 and 384 well plates).

Flame (F) Atomizer

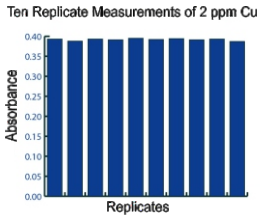


Advanced features include:

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

Safety 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

Graphite Tube

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.

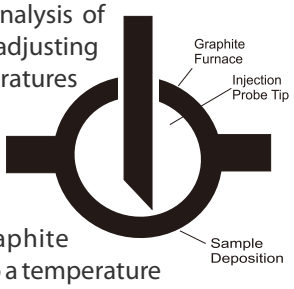
The digitally-controlled graphite furnace power supply enables maximum heating rates of up to 3800 K/s using as many as 30 programmable heating steps. This industry-leading heating rate ensures a more well-defined absorption peak with higher sensitivity, fewer matrix effects and decreased background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

Advanced Temperature Control

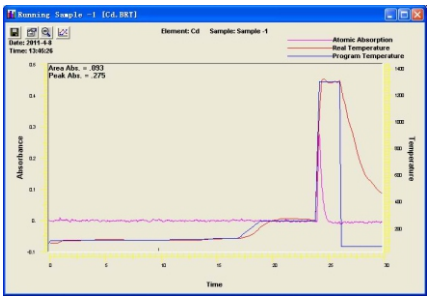
The specially-designed thermocouple temperature sensor provides accurate wide-range temperature control from room temperature up to 3000 °C.

Fast Dry Furnace Technology

The Fast Dry technology allows analysis of one samples under 30 seconds. 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%.

Vapor/Hydride Generator (VG)

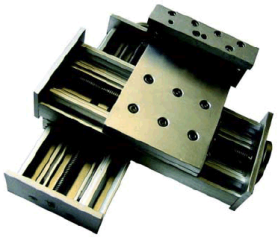
Aurora's vapor/hydride generator provides enhanced sensitivities, reduced interference and incredibly low detection limits for the determination of sub-trace levels of mercury and hydride-forming elements.

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

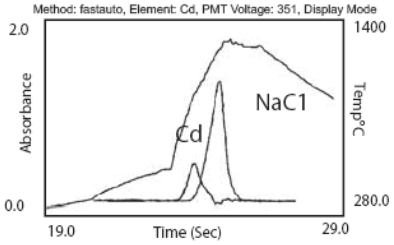
Online Dilution

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 potential contamination.

Background Correction

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

- Deuterium
- Smith-Hieftje
- Time-resolved

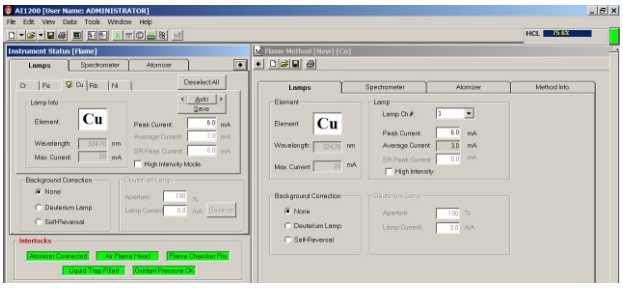


Clear, well-defined signals can be achieved using the time-resolved background correction.

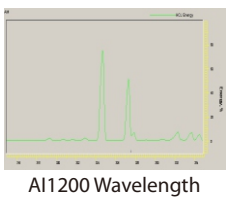
Software

Key Features of the Software:

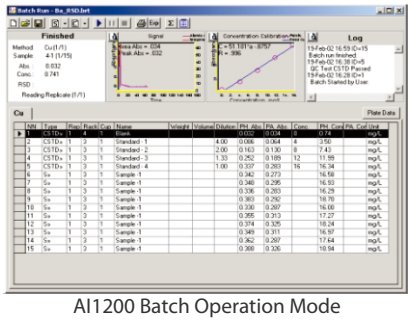
- Single and batch run modes
- Real-time data output
- Adjustable wavelength scanning range and speed
- LIMS support
- Title 21 CFR Part 11 compliance
- Data output to Excel



The TRACE software is designed to give users compete 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.



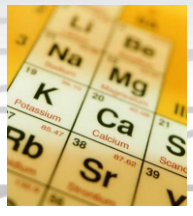
AI1200 Wavelength Scanning



AI1200 Batch Operation Mode

Smart Solutions for Elemental Analysis

Model		TRACE AI 1200 Trace AI 1200 F: F with optional GF, VG, and/or Autosampler	TRACE 1800 Trace 1800 F/GF: F /Gfsystem and Autosampler, with optional VG
Optics	Switchable single/double beam	Compact optional design with switchable optic single/double beam	All-reflective, high efficiency optic design, switchable optic single/double beam
	Monochromator	Czerny-Turner	
	Grating	1200 line/mm	1800 line/mm
	Wavelength	185-900nm	
	Wavelength scan rate	300nm/min	1200nm/min
	Lamps	6 lamp turret with automatic lamp selection, positioning and alignment	8 lamp 2-D motorized array with automatic lamp selection, positioning and alignment
Flame	Gas control	Automatic gas control with auto ignition, optimization, and change-over	
	Sensitivity	2 mg/L Cu: Abs≥0.4; RSD ＜0.5%	
	On-line dilution	Patented digitized flame online dilution	
Graphite furnace	Heating	Transversely-heated graphite tube, 3800K/s, up to 30 programmed steps	
	GF video	Optional GF monitor	Standard GF operation monitor
Auto sampler	Sample capacity	Universal sample tube rack: 96, 384 well microplate compatible, up to 100 μL	
	Patented micro volume flame analysis	Not available	Sample volume as low as 20 μL for flame
Other	Safety	Advanced safety features including: burner head identification, automatic gas control emergency gas shut down, gas pressure monitoring, flame sensor, over temperature and over current protection	
	Dimensions	750×600×370mm (without autosampler) 750×600×690mm (with autosampler)	840×685×735mm (with autosampler)



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

ISO 9001 REGISTERED

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

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