Skyray Instrument

Atomic Absorption Spectrometer
AAS6000

Precision Instruments Skyray Elaborates

Atomic Absorption Spectrometer

AAS6000

Product Introduction

A New Standard of Healthy Life

AAS6000 Series are Single Beam Atomic Absorption Spectrometers controlled and data processed by external computer and internal CPU chips. AAS6000 can be used to measure the concentration of macro, micro and trace metal elements and half-metal elements in various kinds of substances.

Atomic absorption spectrometry is a technique exploiting the fact that atoms at ground state may absorb the radiation of characteristic wavelength. As is known, the atoms are usually at ground state. For each element, the amount of energy required for an atom to transit from ground state to excited state is specific, and in general, is called characteristic wavelength. The Atomic absorption spectrometry typically makes use of hollow cathode lamp as the light source to emit the characteristic wavelength of a particular element. When the light passes through the atomic vapor, it is absorbed by the vapor. The concen -tration of the element can then be determined through the calculation of the absorption rate.

AAS6000 is provided with three reading methods Continuum, Retention and Peak Height for measuring absorbency, density and emission intensity. It has three signal modes: Atomic Absorption, Background Absorption and Background Correction Absorption, The reading time ranges from 0.5 s to 99s. AAS6000 include 8 computer controllable hollow cathode lamp holders. All working conditions of the instrument such as lamp number, lamp current, negative high voltage, working wavelength, slit, burner location, ignition/extinction and adjustment of burning ratio can be set by keyboard input. The functions of the instrument include automatic gain/ automatic zero, background correction, automatic energy balance, automatic peak location/wavelength scan, and automatic peak location on basis of the retrieval of peak values. All the readings, measurement results, calibration curves and operation conditions can be saved or printed out.

Application fields

- Metallurgy, steel, non-ferrous metals.
- Environmental analyses: air, water quality, soil and solid wastes.
- Petrochemical engineering, crude oil and related products, light industrial products.
- Food, biomedicine and health products.
- Building materials (glass, ceramic, paints, etc).

Steel and non-ferrous metals analysis

Soil and solid wastes analysis

Biomedicine and health products analysis

Food analysis……

Atomic Absorption Spectrometer

AAS6000

Atomic Absorption Spectrometer
AAS6000

Periphery equipments

PC (Brand computer, P4, LCD)	1 set
Printer (Canon, colorful ink-jet printer)	1 set
Air compressor	1 set

Main parts

- Narrow-line light source
- Gas control system
- Optical system
- Circuit control system

Optional components

- AC stabilized power supply
- Ultrasonic nebulizer
- Hydride generator

Power requirements

Single phase 220V±10%, 10A

One switchboard （220V, 10A） is needed. The instrument should be within the 10m range of the switchboard, and earthed.

Two plug boards（220V, 10A）

Gas

Purity of acetylene
Navigation mark acetylene

Usage of acetylene
1. 6L/min@0.2MPa

Specifications

Model: AAS6000
Optical system: all-reflective single-beam CT optical path
Focal length of monochromator: 350mm, oil/water proof air compressor
Blazed wavelength of gratings: 230nm
Number of grating grooves: 1800g /mm
Wavelength range: 190nm-900nm
Wavelength accuracy: ±0.1nm
Wavelength repeatability: ±0.1nm
Spectrum bandwidth: 01/0.2nm/0.4nm/0.7nm/1.4nm
Noise: 0.005 Abs(Static); 0.006 Abs(Dynamic)
Baseline drift: 0.003 Abs/0.5h; best performance
Background correction: D_2 lamp + self reversal
Number of the lamps: 8
Number of preload lamps: software controlled, ≤8
Gas path safety measures: yes
Atomizer: flame atomizer
Automation: lamp/slit/wavelength/ gas path/ignition/burner/protection/ C_2H_2 monitoring

Advanced features

Advanced eatures:

- C2H2 monitoring; flame measurement; all reflective, aberration corrected.
- Fully automated instrument, total automatic operation.
- 8 element lamps, time saved for changing lamps.
- Gas path safety measures, safer operation.
- USB interface allows you to operate the instrument conveniently and rapidly.
- 230nm grating blazed wavelength, multiplied sensitivity in the Ultra violet zone.
- 1800g /mm grating grooves, maximized resolution.
- Run in Windows operating system, the powerful software enables automatic qualitative and quantitative analysis. Automatic report generation in Excel format allows you to operate the instrument and process the data easily. You operation doest get any easier with our graphical interfaces.

Atomic Absorption Spectrometer

AAS6000

Test example

The following Figure is a test example of Pb content in liquid solvent taken with Skyray self- developed AAS6000 Atomic Absorption Spectrometer. With figurative interfaces and total automatic measurement, the instrument offers best test results. The advanced features of AAS6000 include: high sensitivity, low detection limit, good selectivity, uncompromised accuracy, simple operation, elemental range of 68 elements including both metals and non metals and organic chemicals.

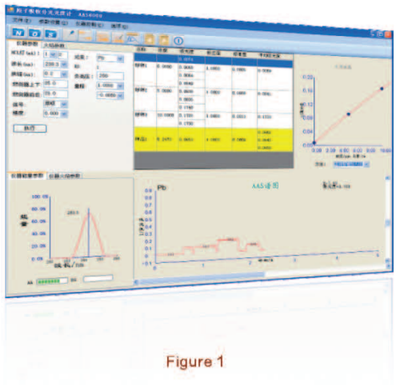


Figure 1

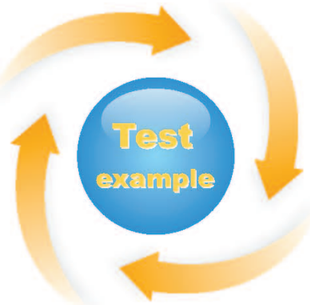


Figure 1 is good representation of the performance of AAS6000: good baseline stability, accurate wavelength peak location, powerful background correction, rapid, high efficient and precise analysis of liquid solvent, superior test results, intuitive display of instrument parameters, real-time absorbency and work curve, providing a better way to view the measurement results.

Figure 2 is energy spectrum, showing advanced features of our product as well: accurate wavelength, good repeatability, high resolution, intuitive display of instru -ment parameters and so on.

Note: As the hardware and software are in debug phase, the specifications of the instrument may be subject to changes without notice. Your kind under -standing is highly appreciated.

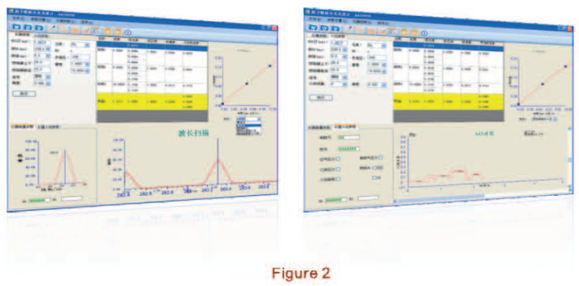
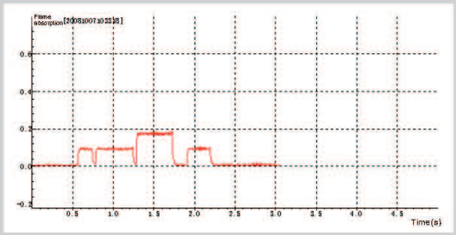
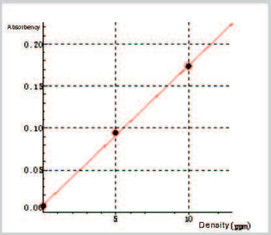


Figure 2

Test report

	Element: Pb Method: flame absorption	Wavelength(nm): 283.30
Instrument parameters	Spectral bandwidth (nm): 0.2 Lamp current (mA): 3.00 Flame type: Nitrous oxide -acetylene Fuel gas pressure (MPa) :0.10 Support gas flow rate (L/min):5.00 Height of burner head (mm):20.0	Negative high voltage (V) :256 Background correction Fuel gas flow rate (L/min):1.60 Support gas: air Support gas pressure (MPa):0.20
Analysis parameters	Sampling speed: 50 Delay(s):0 Ruler extension (0.1-100) :1.00	Integral time(s) :1 Calculation method: peak height Flame micro sample introduction: no
Spectrum		 Linear correlated coefficient: 0.9996 Curve equation: Y=0.0166*X+0.0082

Analysis results

Name	Times	ABS	Density (ppm)	SD	RSD (%)	Results*
Standard 1	1	0.0074				
	2	0.0069				
	3	0.0064				
		0.0069	0.0000	0.00052	7.50411	
Standard 2	1	0.0949				
	2	0.0938				
	3	0.0935				
		0.0941	5.0000	0.00078	0.082395	
Standard 3	1	0.1748				
	2	0.1722				
	3	0.1730				
		0.1733	10.0000	0.00078	0.76521	
Sample 1	1	0.0962				
	2	0.0945				
	3	0.0950				
		0.0953	5.2470	0.00087	0.90879	5.25
Sample 2	1	0.0083				
	2	0.0097				
	3	0.0101				
		0.0094	0.0723	0.00091	9.66425	0.07