IFX-210

Atomic Absorption Spectrophotometer

FEATURES:

Innovated rich oxygen air-acetylene flame analysis technique

The patented flame analysis technique adopting rich oxygen air-acetylene flame as the substitution for nitrous oxide-acetylene flame for high temperature element analyses, such as Ca, Al, Ba, W, Mo, Ti, V, etc. Flame temperature is continuously adjustable between 2300-2950℃, which makes it possible to choose the best atomization temperature for different elements. It features easy operation, low analysis cost and wide flame AAS analytical range. Rich oxygen flame will not pollute the environment and is not harmful to human bodies. It's a break-through in flame AAS analysis.

Integrated flame/graphite furnace atomization system, changeable with flame emission burner

- Automatically controlled changeover of the integrated flame and graphite furnace atomizer featuring easy operation and time saving eliminates human labor.
- A flame emission burner head can be installed to perform flame emission analysis to akali metals as K, Na etc.

Accurate fully automated control system

- Automatic 6-lamp turret, automatic adjustment of lamp current and optimization of light beam position.
- Automatic wavelength scanning and peak picking
- Automatic spectral bandwidth changing
- Automatic changeover between flame and graphite furnace operation, automatic optimization of position parameters, automatic ignition and automatic gas flow setting

Reliable fully automatic graphite furnace analysis

- Adopting FUZZY-PID and dual curve mode light-controlled temperature control technique, temperature auto-correction technique, ensures fast heating, good temperature reproducibility and high analytical sensitivity. The temperature control accuracy is less than 1%.
- Graphite furnace with pneumatic control and pressure lock ensures constant pressure and reliable contact.
- Multi-function autosampler features automatic standard sample preparation, automatic correction of sampling probe depth, automatic tracing and correction of liquid surface height in the sample vessel, with the sampling accuracy of 1% and reproducibility of 0.3%, realizing fully automation of graphite furnace analysis.

Perfect safety protection measures

- Alarm and automatic protection to fuel gas leakage, abnormal flow, insufficient air pressure and abnormal flame extinction in flame system;
- Alarm and protection function to insufficient carrier gas and protective gas pressure, insufficient cooling water supply and over-heating in graphite furnace system.

Advanced and reliable electronic design

- Adopting large-scale programmable logic array and Inter I2C bus technology
- European type sockets and AMP adapters with high reliability to ensure long term reliability of the whole electronic system.

Easy and practical analysis software

- Easy-to-use AAS analysis software is made under Windows operating system, realizing fast parameter setting and optimization.
- Automatic sample dilution, automatic curve fitting, automatic sensitivity correction.
- Automatic calculation of sample concentration (content), mean value, standard deviation and relative standard deviation calculation.
- Multi-elements determination in sequence to the same sample.
- Measured data and final results can be printed out and edited in Excel format.

Comparison

Characteristic Mass of Some Elements using rich oxygen air-C_2H_2 flame and other flame methods

Element	Wavelength (nm)	Rich oxygen air-C_2H_2 flame	N_2O-C_2H_2 flame	Air-C_2H_2 flame
Ca	422.7	0.009	0.05	0.07
Yb	378.8	0.037	0.08	7.6
Eu	459.4	0.137	0.3	3.0
Al	309.3	0.4	0.7	
Sr	460.7	0.016	0.1	0.15
Ba	553.5	0.1	0.4	10.0
Mo	313.3	0.15	0.4	0.8
W	255.1	3.2	5.0	
Ga	287.4	0.4	1.0	1.3
Sm	429.7	2.92	8.5	
La	550.1	37.2	35.0	
Sn	224.6	0.8	3.0	50

SPECIFICATIONS:

Main Specification	Wavelength range	190-900nm
	Wavelength accuracy	Better than ±0.25nm
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.
	Baseline stability	0.004A/30min
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times. The S-H background correction capability at 1.8A is better than 30 times.
Light Source System	Lamp turret	Motorized 6-lamp turret (Two high performance HCLs can be mounted on the turret to increase the sensitivity in flame analysis.)
	Lamp current adjustment	Wide pulse current: 0~25mA, Narrow pulse current: 0~10mA.
	Lamp power supply mode	400Hz square wave pulse; 100Hz narrow square wave pulse + 400Hz wide square wave pulse .
Optical System	Monochomator	Single beam, Czerny-Turner design grating monochromator
	Grating	1800 l/mm
	Focal length	277mm
	Blazed wavelength	250nm
	Spectral bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm, auto switch over
Flame Atomizer	Burner	10cm single slot all-titanium burner
	Spray chamber	Corrosion resistant all-plastic spray chamber.
	Nebulizer	High efficiency glass nebulizer with metal sleeve, sucking up rate: 6-7mL/min
	Emission burner provided	
Graphite Furnace	Temperature range	Room temperature~3000°C
	Heating rate	2000°C/s
	Graphite tube dimensions	28mm (L) x 8mm (OD)
	Characteristic mass	Cd≤0.8 ×10^{-12}g, Cu≤5 ×10^{-12}g, Mo≤1×10^{-11}g
	Precision	Cd≤3%, Cu≤3%, Mo≤4%
Detection and Data Processing System	Detector	R928 photomultiplier with high sensitivity and wide spectral range.
	Software	Under Windows operating system
	Analytical method	Working curve auto-fitting; standard addition method; automatic sensitivity correction; automatic calculation of concentration and content.
	Repeat times	1~99 times, automatic calculation of mean value, standard deviation and relative standard deviation.
	Multi-task Functions	Sequential determination of multi-elements in the same sample.
	Condition reading	With model function
	Result printing	Measurement data and final analytical report printout, editing with Excel.
	Standard RS-232 serial port communication	
Graphite Furnace Autosampler	Sample tray capacity	55 sample vessels and 5 reagent vessels
	Vessel material	Polypropylene
	Vessel volume	3ml for sample vessel, 20ml for reagent vessel
	Minimum sampling volume	1μl
	Repeatable sampling times	1~99 times
	Sampling system	Accurate dual pump system, with 100μl and 1ml injectors.
Characteristic Concentration and Detection Limit	Air-C2H2 flame Rich oxygen Air-C2H2 flame	Cu: Characteristic concentration ≤ 0.025 mg/L, Detection limit≤0.006mg/L; Ba: Characteristic concentration ≤ 0.22mg/L Al: Characteristic concentration ≤ 0.4mg/L
Function Expansion	Hydride vapor generator can be connected for hydride analysis.	
Dimensions and Weight	Main unit	107X49x58cm, 140kg
	Graphite furnace	42X42X46cm, 65kg
	Autosampler	40X29X29cm, 15kg