

LIQF-B10

 LABTRON



ICP SPECTROMETER

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ICP Spectrometer LICP-B10 is an instrument which measures elements in ppb levels with least interference and reduces the time taken for analysis by detecting 5 to 6 elements in 1 min. Excellent analytical precision, high optical resolution, fully automated, wide wavelength range with 2400 line grating, powerful analysis software, high performance solid-state RF system, high accuracy etc. are some of the characteristic features. The equipment consist of a Scott-type spray chamber, quartz torch, spectrophotometer with Czerny-Turner monochromator, detector with photomultiplier tube and data processing system which allows multi-element measurement along with high resolution. It finds applications in environmental, food safety, metallurgy, pharmaceutical etc. fields.

Features:

- Highly advance optical design
- Holographic grating for minimum scattering of light
- Correction of spectral interference to improvise detection
- System controlled torch movement for optimized position
- System controlled mass flow controller for carrier gas, auxiliary gas and plasma gas
- 27.12 MHz RF generator for efficient ionization
- Auto-coupling system
- Peristaltic pump for stable flow rate and drainage of sample
- Argon gas cylinder last up to 8 hours
- Auto-sampler can be provided
- Software Details
 - o Allows selection of multiple elements and parameters for analysis
 - o Faster Calibration function
 - o Correction of background interference
 - o Report generation with single button press
 - o Many export options
 - o Real-time graphical display of instrument status
 - o Plasma ignition with one button press
 - o Large database to select spectral lines according to requirement

Applications:

It used for quantitative and qualitative analysis of elements in the given sample. Various fields like petrochemicals, pharmaceuticals, agriculture, environmental, food industry, metallurgy, processing industry etc. require it for several operations.

Protocol:

Preparation of sample (Digested Solution) → Sample analysis in ICP → Analysis of data with software

Specifications:

Model No	LICP-B10
Monochromator Specifications	
Optical type	Czerny turner
Resolution	$\leq 0.015\text{nm}$ (3600 line grating) $\leq 0.030\text{nm}$ (2400 line grating)
Focal length	1000 mm
Grating specifications	holographic grating with 3600 L/mil or 2400 L/mil, 80 mm × 100 mm of ruling area
Wavelength range	195 to 500 nm for 3600 line grating, 195 to 800 nm for 2400 line grating
Solid State Power Specifications	
Frequency	27.12 MHz, Frequency stability: < 0.05%
Spray chamber	Scott double pass spray chamber
Output power	800W to 1600W, adjustable with power efficiency more than 65%
Output power stability	$\leq 0.05\%$
Induction coil	25 mm × 3 ID (ID-internal diameter), equipped with three concentric quartz torch tubes 35 mm ED (ED-external diameter)
Technical Specifications	
Suitable sample content range	Liquid sample: 0.01 ppm to several thousand ppm Solid or power sample: 0.001% to 70%
Repeatability	short-term stability: $\text{RSD} \leq 1.5\%$ Long-term stability: $\text{RSD} \leq 2\%$
Test speed	5 to 8 elements / min
Limits of detection (LOD, $\mu\text{g/L}$) for most elements	1ppb to 10ppb
Control Circuit	
Photomultiplier tube specification	R212 / R928
Negative high voltage	-50 to -1000 V
Circuit measuring range	$(10^{-12}$ to $10^{-4})$ A
Signal acquisition	VF conversion

Working Environment	
Temperature for storage and transportation	15°C to 25°C
Humidity for storage and transportation	≤ 70%
Power Stability	220 ± 10V; 50 to 60 V
Humidity	≤ 70%
Temperature	15°C to 30°C
Other Details	
Packaging Dimension and Gross Weight (4 case)	1st case: 188 × 111 × 105 / 348 kg 2nd case: 60 × 60 × 55 / 25 kg 3rd case: 59 × 67 × 97 / 80 kg 4th case: 38.5 × 38.5 × 63 / 47 kg

Detection Limits:

Element	Be	Mg	Ca	Sr	Ba	Sc	Y	Eu	Yb
Wavelength(nm)	313.041	279.553	393.366	407.771	455.403	335.373	371.03	381.967	369.419
Detection limit (µg/L)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Element	Lu	La	Gd	Dy	Hg	Er	Tm	Zn	Cd
Wavelength(nm)	261.541	408.672	342.247	353.17	253.652	337.271	313.126	213.856	226.502
Detection limit (µg/L)	< 3.0	< 3.0	< 10.0	< 3.0	≤ 15.0	< 3.0	< 3.0	< 3.0	< 3.0
Element	Fe	Ti	Cu	Mn	V	B	Ni	Cr	Co
Wavelength(nm)	239.562	276.787	324.754	257.61	310.230	249.773	232.003	267.716	228.616
Detection limit (µg/L)	< 3.0	< 3.0	< 3.0	< 3.0	< 5.0	< 10.0	< 5.0	< 5.0	< 3.0
Element	Zr	Mo	Ag	Au	Si	Al	Ir	Pr	Ce
Wavelength(nm)	343.823	281.615	328.068	242.795	251.611	396.152	224.268	414.311	413.765
Detection limit (µg/L)	< 5.0	< 5.0	< 3.0	< 5.0	< 10.0	< 5.0	< 10.0	< 5.0	< 5.0
Element	Nd	Sm	Gd	Tb	Ho	Pt	Pd	Rh	Ru
Wavelength(nm)	401.225	360.946	342.247	350.917	345.600	265.945	340.458	343.489	240.272
Detection limit (µg/L)	< 5.0	<10.0	<10.0	< 3.0	< 3.0	< 5.0	< 5.0	< 10.0	< 5.0

Element	Sb	Bi	Ta	Nb	Ga	Se	Sn	Te	Os
Wavelength(nm)	206.833	223.061	226.230	313.340	294.364	203.985	242.949	214.281	255.353
Detection limit ($\mu\text{g/L}$)	≤ 15.0	≤ 10.0	< 5.0	< 5.0	≤ 10.0	≤ 10.0	≤ 20.0	≤ 10.0	≤ 15.0
Element	Th	Re	Ge	W	K	La	Pb	Ga	Li
Wavelength(nm)	283.730	227.525	209.426	281.615	766.490	408.672	220.353	294.364	670.784
Detection limit ($\mu\text{g/L}$)	≤ 10.0	≤ 5.0	< 15.0	≤ 10.0	≤ 60.0	< 3.0	≤ 15.0	≤ 10.0	< 3.0
Element	Se	Na							
Wavelength(nm)	283.730	588.995							
Detection limit ($\mu\text{g/L}$)	≤ 30.0	≤ 20.0							

Standard Accessories:

Accessories No	Accessories Name
1	Gas pressure regulator
2	Water cooling system
3	Voltage stabilizer
4	ICP 2060T power cable
5	Copper cable for ground
6	Sampling system: nebulizer, spray chamber, plasma torch

Optional Accessories:

Auto-sampler

Internal Configuration:

