

ICP-OES-3200

Full Spectrum ICP Spectrometer



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

3200 has rich spectral lines, lower detection limit and more stable performance, capable of quick quantitative analysis for all metal elements and some nonmetal elements. It is widely used for element analysis in such fields as metallurgy, geology, material, environment, food, medicine, petroleum, chemical industry, biology and water quality.

- The echelle grating and crossed prism dispersion structure in combination with large-area CCDs for simultaneous display of all spectral lines of single exposure and “full-spectrum transient direct reading”.
- The programmable output power program has an automatic real-time tuning function for continuous 1W adjustment within 800-1600W, with a stability of above 0.1%.
- Application engineers joined in the software design team to provide tailored operational software for users.

►► **Operating Principle**

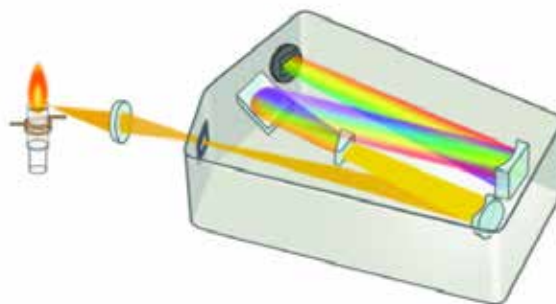
The test sample is first changed into aerosol in a nebulizer and then enters the central ATL passage of the quartz torch, etc. The light excited by heating from the light source is split by a prism and echelle grating to form characteristic spectral lines of elements on the CCD detector. A spectrogram is generated after processed in the circuit. The element concentrations are determined by means of computer data processing.

►► **Light source**

- The efficient solid-state RF generator is compact in size and has high efficiency.
Oscillation frequency: 27.12MHz; Output power: 800-1600W (with real-time tuning capable of continuous adjustment by 1W, with stability better than 0.1%).
- The torch position can be adjusted electrically, and the software has the automatic torch position optimization function.
- The electrical control system is modularized and can provide high-performance CAN industrial field interfaces to ensure efficient and reliable communication.
- The system operating parameters are monitored in real time; and the system is provided with built-in protection logic for interlocking protection of gas, water, temperature, and door switch, etc.

►► Beam Splitting System

- The echelle grating and cross prism dispersion structure in combination with large-area CCDs for simultaneous display of all spectral lines of single exposure and “full-spectrum transient direct reading”.
- The optimized optical design and aspherical optical elements prevents astigmatism, guarantees the best image quality, and increases luminous flux and spectrum acquisition efficiency.
- The intelligent multi-point charge system improves the ultraviolet sensitivity; the independent gas circuit in the light chamber can be filled with argon or nitrogen, and the dehydration device is arranged in the gas circuit.
- The three-dimensional temperature control system has a control precision of 0.1



►► Detector

- Large-area backside CCD chip, high ultraviolet spectrum and quantum efficiency, and wide dynamic range.
- The largest chart among similar products, with millions of pixels, single pixel area of 24umx24um, low noise and excellent stability.
- The high-speed acquisition system provides for simultaneous full-spectrum reading and real-time single pixel, subarray monitoring and quick analysis.



►► Sampling System

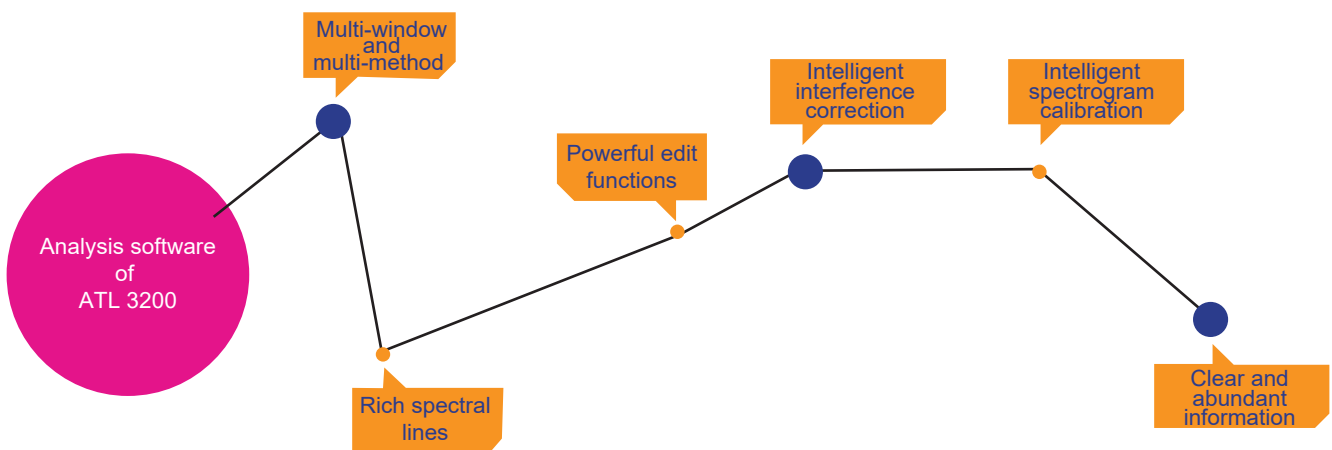
- Multichannel 12-roller peristaltic pump, with less data fluctuation caused by different physical properties of samples;
- Optional Meinhard quartz nebulizer, hydrofluoric acid resistant nebulizer with double platinum meshes and V-groove nebulizer for analysis of high salt content samples;
- Quartz torch, and optional quartz torch with ceramic central tube for analysis of samples containing hydrofluoric acid
- Double-cylinder fog chamber, vortex fog chamber or hydrofluoric acid resistant fog chamber;

- Abundant system accessories not only guarantees stable and quick sampling, but also caters for analysis with different media and solutions of varying salinity.
- Mass flowrate controller for carrier gas flow control. It can be regulated by 0.01L continuously.
- Optional mass flowrate controller for cooling gas and auxiliary gas flow control. It can be regulated by 0.1L continuously.

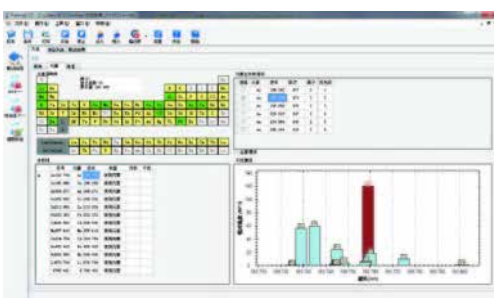
►► Safety Protection System

- All-round electromagnetic shielding to reduce electromagnetic radiation;
- Interlocking door protection to prevent loss caused by misoperation;
- UV-proof observation window

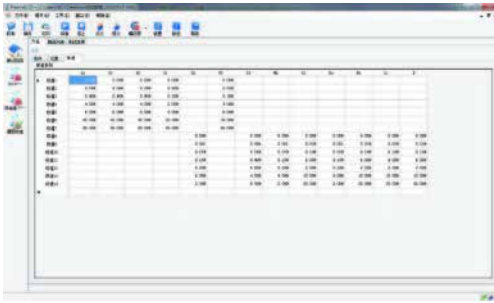
►► Analysis Software



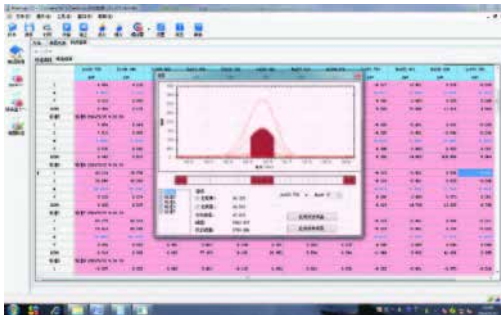
The multi-window and multi-method analysis program enables simultaneous measurement, edition and view of data of different sorts.



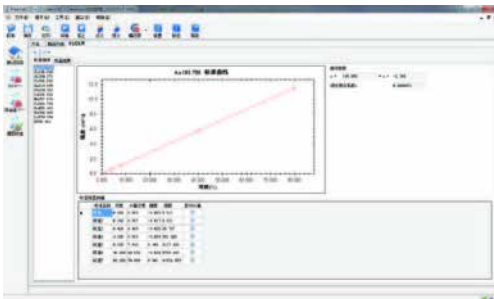
The software library includes more than 70,000 spectral lines, enabling display of potential interfering elements and helping the user to select reasonable spectral lines.



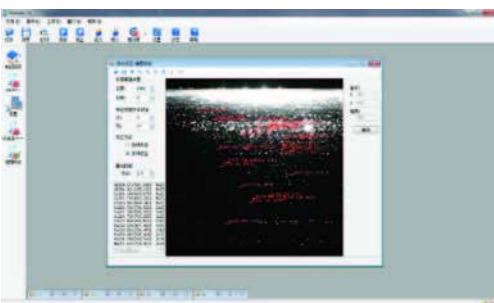
Diversified standard edition methods are available to support various curve calibration, including testing before setting, and "sandwich" sample testing.



The software supports analysis using the standard curve method and standard addition method, and provides multiple data processing methods, including blank deduction, sample blank deduction, internal standard correction and interference correction.



The software has three modules, i.e. method selection, sampling and result output, which are available throughout the testing process, providing user-friendly interfaces with clear data display and multiple report formats.



The intelligent spectrogram calibration function provides for drifting of automatically and manually calibrated spectral lines.

►► Metal Analysis

High-carbon ferrochrome slag	Al ₂ O ₃	CaO	MgO	SiO ₂	Cr ₂ O ₃
Average value(%)	16.43	1.89	42.47	35.30	2.18
Standard deviation(%)	0.061	0.023	0.096	0.064	0.024
Relative standard deviation(RSD)	0.37	1.21	0.23	0.18	1.12
Chemical value (%)	16.37	1.84	42.40	35.37	2.18

- ATL3200 not only has excellent performance in steel analysis, but also is suitable for non-ferrous metal analysis, even analysis of pure substances.

Elements analyzed	Amount adding standard%	Amount detected%	RSD%	Elements analyzed	Amount adding standard%	Amount detected%	RSD%
Ag	0.0010	0.00100	1.91	Bi	0.0010	0.00120	5.05
Mn	0.0010	0.00099	1.78	Ni	0.0010	0.00102	3.02
Si	0.0010	0.00083	5.56	Cd	0.0010	0.00105	3.72
Al	0.0010	0.00096	3.21	La	0.0010	0.00106	1.21
Fe	0.0010	0.00104	1.22	Zn	0.0010	0.00105	1.06
Pb	0.0010	0.00102	2.54	Cr	0.0010	0.00096	2.06
Sn	0.0010	0.00114	4.45	Sb	0.0010	0.00095	3.01
Co	0.0010	0.00104	1.78	Zr	0.0010	0.00099	1.99
As	0.0010	0.00120	5.09				

►► Ore Analysis

- The test solution of ATL3200 is suitable for ore analysis. ATL3200 exhibits excellent performance in ore analysis.

Lead concentrate	Zn	Fe
Measured value (%)	3.31	12.13
Specified value (%)	3.30	12.00

Nickel concentrate	Ni	Co	Al ₂ O ₃	MgO	CaO
Measured value (%)	9.00	0.201	1.040	6.22	1.18
Specified value (%)	9.01	0.200	1.041	6.30	1.16

Manganese concentrate	TMn	TFe	Al ₂ O ₃	MgO	CaO	BaO
Measured value (%)	26.69	10.93	7.08	0.780	2.36	0.810
Specified value (%)	26.53	11.01	6.99	0.774	2.31	0.88

►► Technical Parameters

- **Light source**

Oscillation frequency: 27.12MHz

Output power range: 800-1600W

- **Optical system**

Spectral range: 165-900nm

Resolution: 0.007nm at 200nm

CCD: 1024x1024 pixels

Single pixel area: 24umx24um

- **Specifications**

Dimensions: W X L X H (121cmX74cmX80cm)

Weight: 200kg

- **Operating environment**

Room humidity: relative humidity: 20-80%

Argon purity: not less than 99.95%

Air exhaust: not less than 400m³/hr

Power supply: 220V±10%, single phase, 50-60Hz; 4KVA

Element	As	Ba	Al	Ca	Cd	Co	Mg	Mn	P
LTD	7.0	0.5	0.5	0.5	0.5	3.0	0.5	0.5	15.0
Element	Pb	S	Se	Tl	Cu	Sb	Hg	Cr	Zn
LTD	8.0	10.0	8.0	7.0	5.0	8.0	7.0	4.0	0.5

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HPLC Servicing :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

Trainings :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

AMC's/CMC :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

Validations :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

Instruments :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



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Spectro 2080+
Double Beam



Infra FTIR



Optima Gas
Chromatograph
3007



Optima Gas
Chromatograph
2979 Plus



Flash
Chromatograph



Atomic Absorption
Spectrophotometer



Liquid Particle
Counter



Optical Emission
Spectrophotometer



DSC/TGA



Semi Auto Bio
Chemistry Analyzer



HEMA 2062
Hematology
Analyzer



Micro Plate
Reader/Washer



URINOVA 2800
Urine Analyzer



Total Organic
Carbon 3800



Fully Automated
CLIA



NOVA-2100
Chemistry Analyzer



PCR/Gradient PCR/
RTPCR



TOC
Analyzer



Laser Particle
Size Analyzer



Ion Chromatograph



Water purification
system

Regulatory compliances



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Analytical
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