

ICP-AES-3100

Atomic Emission Spectrometer



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

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

Inductive Coupling ATL-Atomic Emission Spectrometer (ICP-AES) is mainly used in the quantitative analysis of metallic element and partial non-metallic element in liquid sample (including the solid sample which can convert into solution by chemical processing). Import the sample solution into ATL torch in the form of aerosol. The sample will be evaporated and stimulated, and it will emit light with the characteristic wavelengths of its elements. Its spectral intensity is received by photoelectric element, converted to electrical signals and recorded after beam-splitting by beam-splitting system. According to the relationship of elemental concentration and spectral intensity, determine the content of each corresponding element in samples.

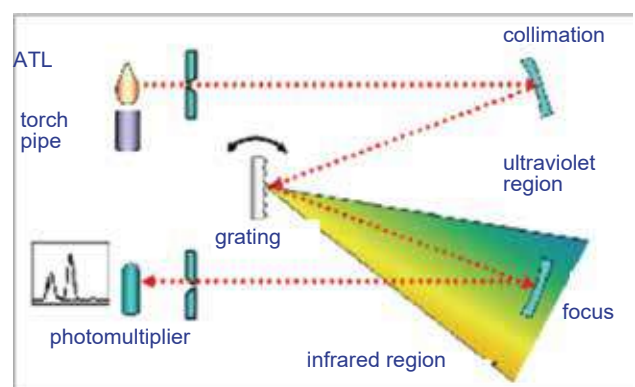
Our company launches ATL3100 Inductive Coupling ATL-Atomic Emission Spectrometer (ICP-AES) This instrument has the characteristics of good stability, low limit of detection (LOD), rapid analysis, low operation cost, easy maintenance, strong anti-interference capacity and so on.

▶▶ Application Fields

It can be used in geology, metallurgy, rare earth, magnetic material, environment, medicine and health, biology, ocean, oil, new chemical materials, nuclear industry, agriculture, food inspection, water quality and sample analysis of other fields and disciplines. It can detect nearly 70 elements, from trace to major, quickly and correctly.

▶▶ Principle of the Instrument

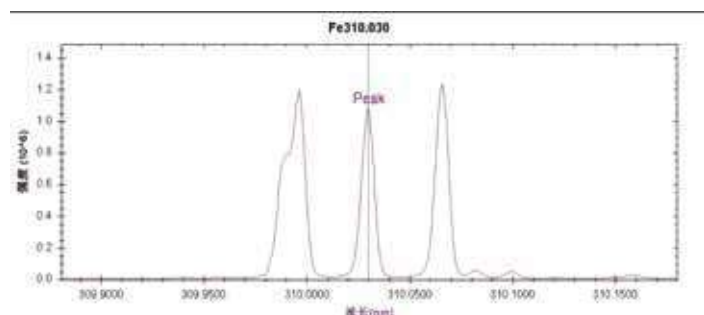
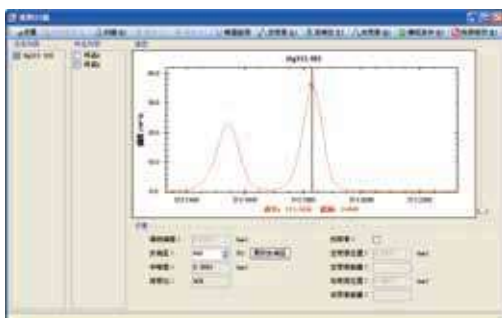
ATL ICP-AES system is composed of the host machine of spectrometer and a set of PC machine. The whole instrument can be divided into inlet system, high frequency generator system, beam-splitting system, as well as detective control and data processing system.



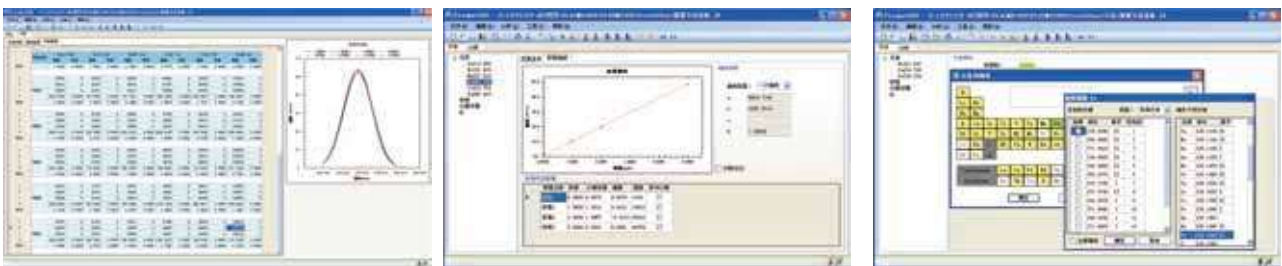
Its operating principles are as follow: the samples form aerosol by sprayer and inlet the central channel of quartz torch ATL; give out light through heating stimulation station of light source and diffract beam split through grating; position the characteristic spectral of elements to the exit slit accurately though turning the grating by stepper motor; convert the light intensity of spectral to light current by photomultiplier; and determine the content of elements by the data processing of computer after circuit processing.

►► Technical Features

- Analyze the full automation control of process and complete the software ignition and intelligent control of gas circuit;
- The output power can match tune automatically and program set of power parameter;
- Excellent optical system, advanced control system, accurate peak position and good signal-to-background ratio;
- Tiny matrix effect;
- The measuring range is wide. It can be from ultra micro analysis to constant analysis, and the dynamic linear ranger is from 5 to 6 orders of magnitude;
- The LOD is low, and the LOD of most elements can be ppb level;
- It has excellent measurement accuracy and the RSD of stability is less than or equal to 1.5% (5ppm) which is better than national A-level standard (JJG768-2005);
- The range of Rf output power is from 750W to 1500W and the stability of output is less than 0.1%;
- The negative high voltage of photomultiplier can be adjusted independently from 0 to 3100V. According to the independent setting conditions of different spectral of different element, its LOD is better than full spectrum instrument;
- NCS instrument adopts high shield and excellent ground connection to make sure the safety of operators;
- The constant temperature system of light room with high precision ensures the excellent long and short term accuracy of the instrument;
- The multichannel sample injection of peristaltic pump ensures the even sample injection and stable operation of the instrument;
- Use cymbal shrapnel and shielding glass of special process, and absorb the ultraviolet radiation, at the same time, make the radiation of the instrument is less than 2V/m (the regulations of JJG768-2005 is less than 10V/m).
- It has higher resolution ratio of spectral, it can distinguish double spectral of Hg313.15 and 313.183nm, as well as the quartet of iron.



- With humanized software design, and convenient operation, it has free upgrade for life. During the testing, the friendly human-computer interface analysis software with strong functions can make data process, method establish and result analyze, which is the true multitask working software; the data processing of this software is very strong and it provides many methods, such as internal standard calibration, IECS and QC monitory, and it can obtain the best background subtraction for interference elimination; it can print the output data directly or generate the result report by Excel format automatically.
- LOD of partial typical elements.



LOC(3 σ), $\mu\text{g/L(ppb)}$
 LOD < 1ppb

Be	Ca	Mg	Sr	Ba	Y	Sc	Eu	Yb	La
Lu	Co	Al	Dy	Tm	Fe	Zn	Gd	Ho	Er
Ag	Cd	Mn	Ti	V					

LOD: 1-10ppb

B	Si	Cr	Ni	Cu	Ga	Zr	Nb	Mo	Ru
Rh	Pd	W	Ir	Pt	Au	Ce	Pr	Nd	Sm
Tb									

LOD: 10-100ppb

P	Ge	As	Se	Rb	In	Sn	Te	Cs	Hf
Ta	Re	Os	Hg	Tl	Pb	Bi	Th	U	Sb

►► Technical Parameters

Beam-splitting system

- Grating groove: 2400 /mm Spectral Range : 190 ~ 800nm Resolution : 0.010nm
- Grating groove: 3600 /mm Spectral Range : 190 ~ 500nm Resolution : 0.008nm
- Grating groove: 4320 /mm Spectral Range : 190 ~ 420nm Resolution : 0.006nm
- Form of optical path: Czerny-Turner
- Constant temperature system of light room: (30± 0.2) °C
- Grating type: ion etching holographic flat grating
- Slit width of exit and incidence: 20µm
- Minimum driving step pitch of stepper motor: 0.0004nm
- Argon filling of light room (adjustable flow)
- High frequency generator
- Oscillating frequency: 40.68MHz
- Power stability: 0.1% (typical value of long-term 25°C)
- Oscillating type: auto-excitation type
- Operating coil: three circle hollow copper pipe coating with PTFE pipe

Inlet system

- Inlet method: peristaltic pump inlet and it is equipped with all kind of fog chambers (whirl cloud chamber, binocular fog chamber and anti hydrofluoric acid fog chamber).
- Atomizer: concentric atomizer
- Flow specification of carrier gas, auxiliary gas and cooling gas
- Cooling gas: 10-20L/min
- Auxiliary gas: 0-1.5 L/min
- Carrier gas: 0.4-1L/min

Work environment

- There is no aggressive gas in instrument room; the particle counter of air shall keep lowest; Indoor temperature is 18 ~ 26 ; room temperature shall keep stable and the rate of change of temperature ≤ 1 /h.
- Relative humidity ≤70 ;
- Ground wire: independent group connection below 4Ω

Size and weight

- 1550mm×759mm×1340mm (length× width ×height)
- Weight: 240 kg

Regulatory compliances



Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:



Analytical
Foundation

1. Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at Info@analyticalfoundation.org

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXIFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

Reach us @

