

# ATOMIC ABSORPTION SPECTROPHOTOMETER FLAME-GRAPHITE FURNACE (RIC-115/116/117)



## FEATURES:

### **Innovated rich oxygen air-acetylene flame analysis technique (ONLY FOR RIC-117):**

The 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°C, with 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 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 labour.

A flame emission burner head can be installed to perform flame emission analysis to alkali metals as K, Na etc. (RIC-117 & RIC-116).

### **Accurate fully automated control system**

Automatic multi-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 and automatic ignition

### **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

### **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

### **Advance 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

## SPECIFICATIONS:

Wavelength Range: 190-900nm

Wavelength Accuracy:  $\pm 0.25$ nm

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:  $\leq 0.004$ A/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.( only for RIC-117 & RIC-116)

### Hollow Cathode Lamps:

Lamp turret: 6-lamp turret (RIC-117 & RIC-116), 4-lamp turret (RIC-115); Auto-alignment, fully automated scan and peak-picking.

Lamp current adjustment: 400Hz square wave pulse

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 (RIC-117 & RIC-116)

### Optical System:

Monochromator: Single beam, Czurney-turner design grating monochromator

Grating: 1800l/mm

Focal length: 277mm

Blazed wavelength: 250nm

Spectral bandwidth: 0.1nm, 0.2nm, 0.4nm, 1.2nm automatic change

### 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 with (RIC-117 & RIC-116)

### Graphite Furnace:

Temperature range: Room temperature~3000°C

Heating rate: 2000°C/s

Graphite tube dimensions: 28mm(L)×8mm(OD)

Characteristic mass: Cd $\leq 0.5 \times 10^{-12}$ g, Cu $\leq 5 \times 10^{-12}$ g, Mo $\leq 1 \times 10^{-11}$ g

Precision: Cd $\leq 3\%$ , Cu $\leq 3\%$ , Mo $\leq 4\%$

### Detection and Data Processing System:

Detector: R928 photomultiplier with high sensitivity and wide spectral range

Software: Windows Operating System

Analytical method: Window curve auto-fitting; standard addition method; automatic sensitivity correction, automatic calculation of concentration and content.

Repeat times: Maximum 20 times of repeat measurement, automatic calculation of mean value, standard deviation and relative standard deviation

Multi-task function: Sequential measurement of multi-elements in one sample

Condition reading: With model function

Result printing: Measurement data and final analytical report printout, editing with excel.

Standard RS-232 serial port communication

### Characteristic Concentration and Detection Limit:

Normal Air-C<sub>2</sub>H<sub>2</sub> flame: Cu: Characteristic concentration $\leq 0.025$ mg/L, Detection limit $\leq 0.006$ mg/L

Ba: Characteristic concentration  $\leq 0.22$ mg/L

Rich oxygen Air-C<sub>2</sub>H<sub>2</sub> flame: Al: Characteristic concentration  $\leq 0.4$ mg/L

**Function Expansion:** Hydride vapor generator can be connected for hydride analysis.

**Dimensions and weight:** 102 (L) X 49 (W) X 54 (H) cm (main unit), unpacked 80 Kg

Graphite furnace: 42×42×46cm, unpacked 50kg



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