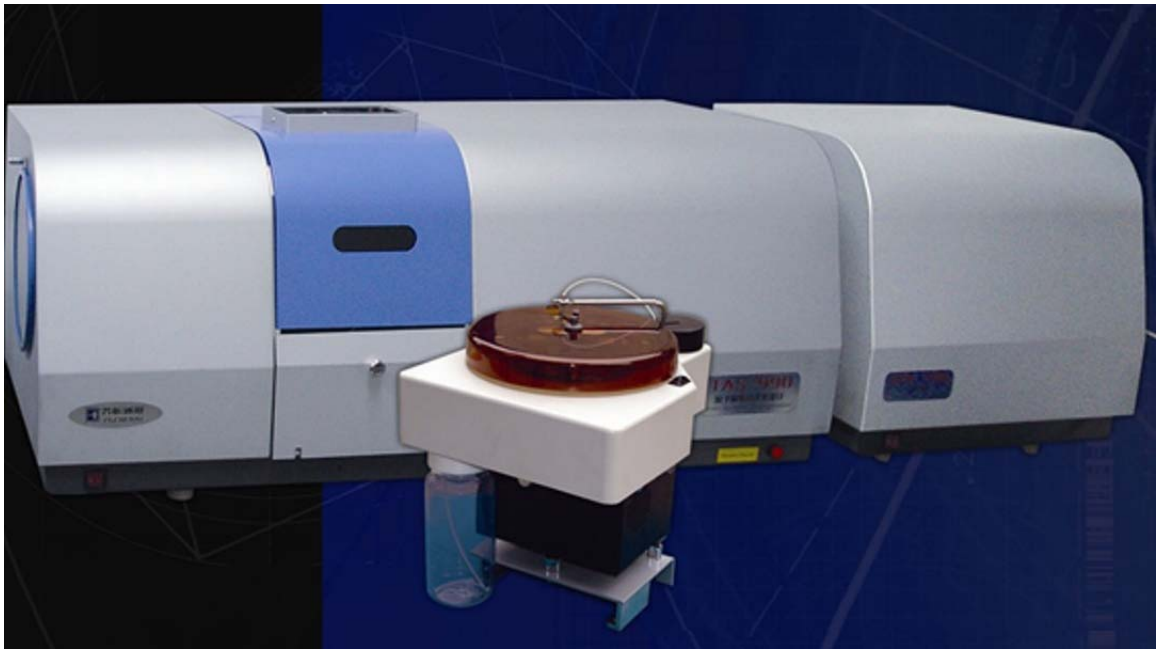
***Biotech Engineering Management Co. Ltd. (UK)***

**ISO 9001**

# ATOMIC ABSORPTION SPECTROPHOTOMETER

# Phoenix-986



**The Phoenix-986 Atomic Absorption Spectrophotometer is available in the following configuration:**

- **Flame Only**
- **Graphite Furnace**
- **Combined Flame and Graphite Furnace with the option for up to nine heating ramps.**

**The system is fully controlled from a PC with AAWin Software. The main features of the system are:**

**1- The flame and graphite furnace is integrated into one instrument. The change over from one technique to another is carried out by simple keystrokes within the software.**

**2- The instruments have a motorised 8 hollow cathode lamp turret which allows the automatic positioning and optimisation of each hollow cathode lamp by the software.**

**3- The control of the gas flows for the fuel gas (C2H2) and the Positioning of the burner is also carried out directly from the software thus allowing optimisation of the instruments for the best analytical parameters for a selected analysis.**

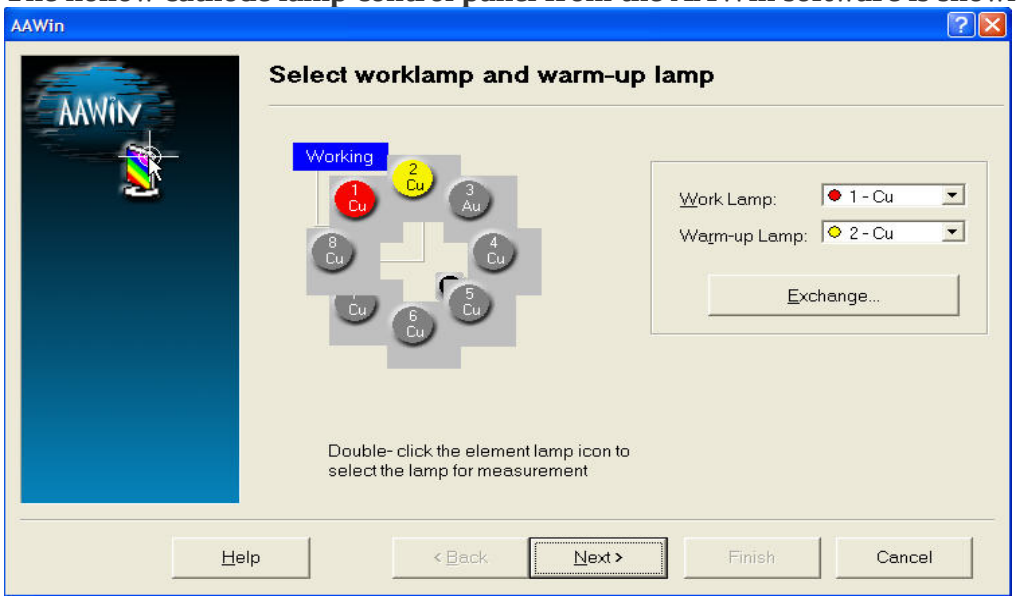
**4- Two methods of background correction are available. The first utilises a deuterium lamp and the second is the proven method of self reversal.**

**5- The location of the wavelength and peak selection is automatic and controlled from the software.**

**6- The spectral bandwidth is automated and is available with a choice of five slit sizes.**

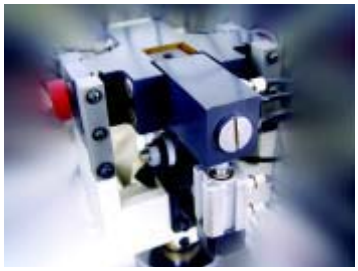
**7- The ignition of the flame is computer controlled and the various safety interlocks offer a very safe operating system.**

**The hollow cathode lamp control panel from the AAWin software is shown below:**



# ADVANCED GRAPHITE FURNACE:

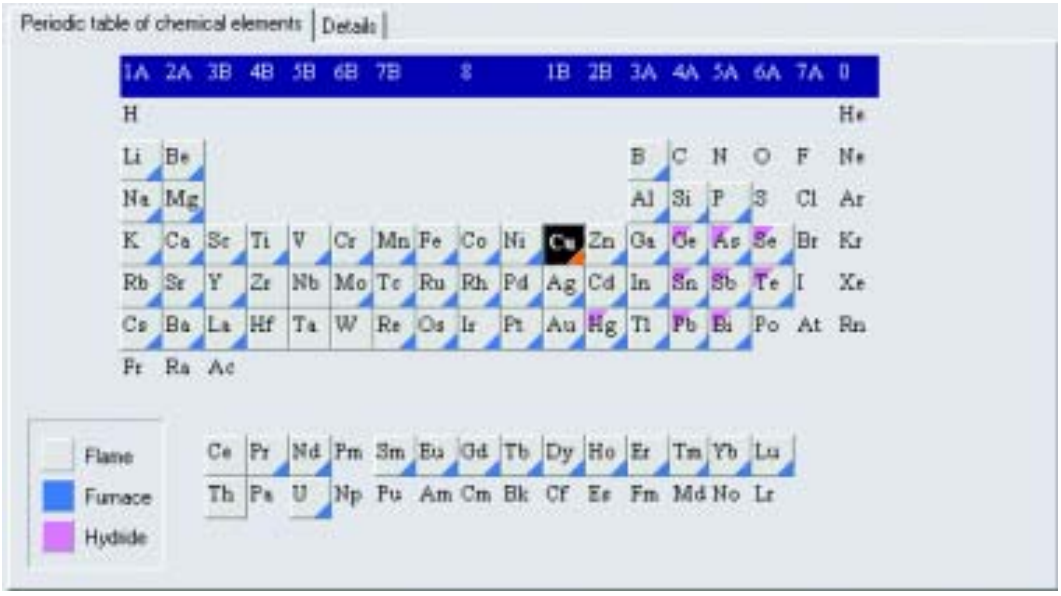
- **The unique design of the graphite furnace reduces the chemical interference effects and memory effects by uniformly heating the graphite electrode.**
- **The computer controlled heating program allows the user to select the best heating program for the analysis.**
- **The optical temperature during the atomisation stage ensures the rapid heating and rapid analysis. This helps to extend the life of the graphite tube and enhances analytical accuracy.**



# PROVEN SAFETY FEATURES:

- **The flame conditions are continuously monitored and should the flow rates change an audible alarm sounds.**
- **The pressure of the support gas (oxidant) is monitored constantly. If the pressure changes then the flow of the fuel gas will be stopped and the flame will be safely extinguished.**
- **A sensor monitors the level of liquid in the drain and will prevent ignition if too low. The flame will also be extinguished of the level of liquid in the drain changes significantly.**
- **The argon pressure for the graphite furnace is constantly monitored and should it change the heating cycle for the graphite electrode will immediately cease and the graphite electrode will be de-energised.**
- **Cooling water flow rates for the graphite furnace are also monitored for changes and should changes occur the heating program will cease.**
- **If the graphite tube should facture during the heating program the heating will cease.**

## Elements that can be analysed with the Phoenix-986:



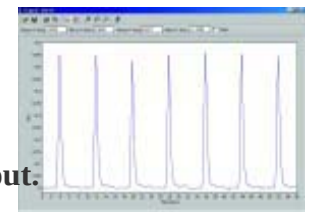

## INNOVATIVE DESIGN OF THE PHOENIX-986:

▪ **The user friendly software requires a Windows platform and operates within Win95, Win98, Win NT, Win 2000 and WinXP. The system uses a number of software wizards to guide the operator through setting up procedures.**

▪ **The software controls the automatic switch over for the Hollow Cathode Lamps and automatically optimises working parameters for the system. The software also allows manual input of data to ensure that the operator always stays in control. The software will automatically complete the configuration of the system for analysis.**

▪ **The user has the choice of two methods of background correction namely the self reversal system OR the traditional deuterium lamp background correction system.**

▪ **During the analysis cycle of both the flame and graphite furnace the software shows the entire measurement process. This includes measured values, temperature steps, time etc. all signal and temperature data is stored for future re-call and printout.**



▪ **Detailed reporting and QC control software is included within AAWin allows printout of spectra, standard calibration curves, analysis and signal data. Full printout of operating parameters is also available for user references.**

▪ **The following methods of analysis can be carried out using the Phoenix-986 system Absorption, emission, graphite furnace analysis, hydride and cold vapour analysis.**

# SPECIFICATIONS:

## Optic System:

| | |
|---|---|
| **Wavelength Range:** | **190nm - 900nm** |
| **Monochromator:** | **Czerny-Turner configuration** |
| **Spectral Bandwidth:** | **0.1nm, 0.2nm, 0.4nm, 1.0nm, 2.0nm (5 steps. with automatic changeover)** |
| **Wavelength Accuracy:** | **0.25nm** |
| **Wavelength Repeatability:** | **0.15nm** |
| **Baseline Stability:** | **0.005A/30 min** |

## Flame analysis:

| | |
|---|---|
| **Sensitivity (Cu):** | **0.03 µg/ml/1%** |
| **Burner Head:** | **Titanium alloy burner** |
| **Nebulizer:** | **High-efficiency glass nebulizer** |
| **Atomization Chamber:** | **Corrosion-resistant material** |
| **Position Adjustment:** | **Automatic changeover of flame and furnace**<br>**Automatic setting of optimum height for flame burner** |
| **Safety:** | **Automatic ignition and of mixing air-acetylene gas with safety control** |

## Graphite furnace analysis:

| | |
|---|---|
| **Character Value (Cd):** | **0.5Pg** |
| **Temperature Range:** | **Ambient - 2650** |
| **Heating:** | **Voltage feedback control when drying and ashing;**<br>**Optical temperature control when atomizing** |
| **Heating program:** | **Up to 9 steps with choices of ramp, temperature increase and full-power heating** |

## Background correction:

| | |
|---|---|
| **Deuterium Lamp Background Correction:** | **Abs** |
| **Self-Reversal Background Correction:** | **3.0 Abs** |

## Data processing:

| | |
|---|---|
| **Analytical method:** | **flame, graphite furnace and hydride** |
| **Determination method:** | **calibration curves using 1st , 2nd and 3rd order of fit, standard addition method** |
| **Repetitions:** | **1-20 with calculations of average , SD and RSD** |
| **Result Printout:** | **output of parameters, data, spectra and calibration curves** |

## Mainframe:

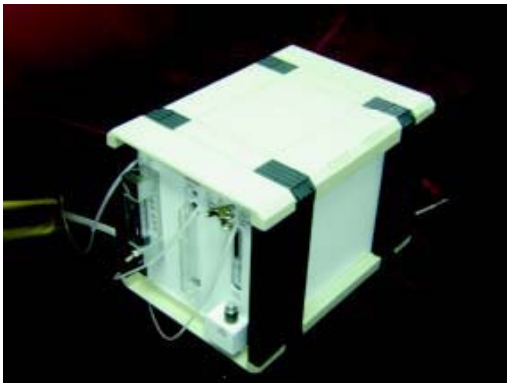
| | |
|---|---|
| **Light Source:** | **8 hollow cathode lamp turrets with 2 lamps simultaneously lit ( one lamp pre-heated )** |
| **Power Supply:** | **110V/60Hz or 220V/50Hz three-phase AC 200W (mainframe) 5000W (graphite furnace)** |
| **Dimensions:** | **mainframe 110 cm x 50cm x 45cm graphite furnace 50cm x 50cm x 45cm** |

**Note: Typical response: 2 g/ml Cu gives about 0.38Abs.**

# ACCESSORIES:

## HYDRIDE AND COLD VAPOUR ANALYSIS:

**A hydride generator is available for the determination of elements such as Arsenic, Selenium, Antimony, Tellurium and mercury at ultra low levels. The hydride generator is supplied with an absorption cell, and electrical absorption cell heater and controller and all necessary burner fittings.**

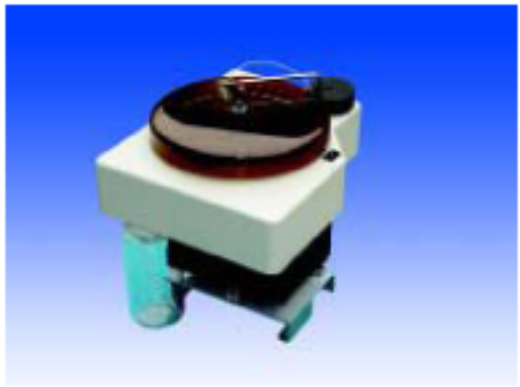


## AAS FLAME AUTOSAMPLER:

**Sequential auto-sampler allows the automated analysis of 50 or more samples and calibration standards. The system allows for automatic update of standard values and curve parameters by using up to 8 standards, blanks and QC standards. A double wash station with facility for use of sample blank or pure water for probe wash avoids sample and standard contamination. An inert Teflon probe is supplied.**

## GRAPHITE FURNACE AUTOSAMPLER:

**The graphite furnace auto-sampler system allows automatic update of calibration data, matrix modifications and automatic dilution of samples.**



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