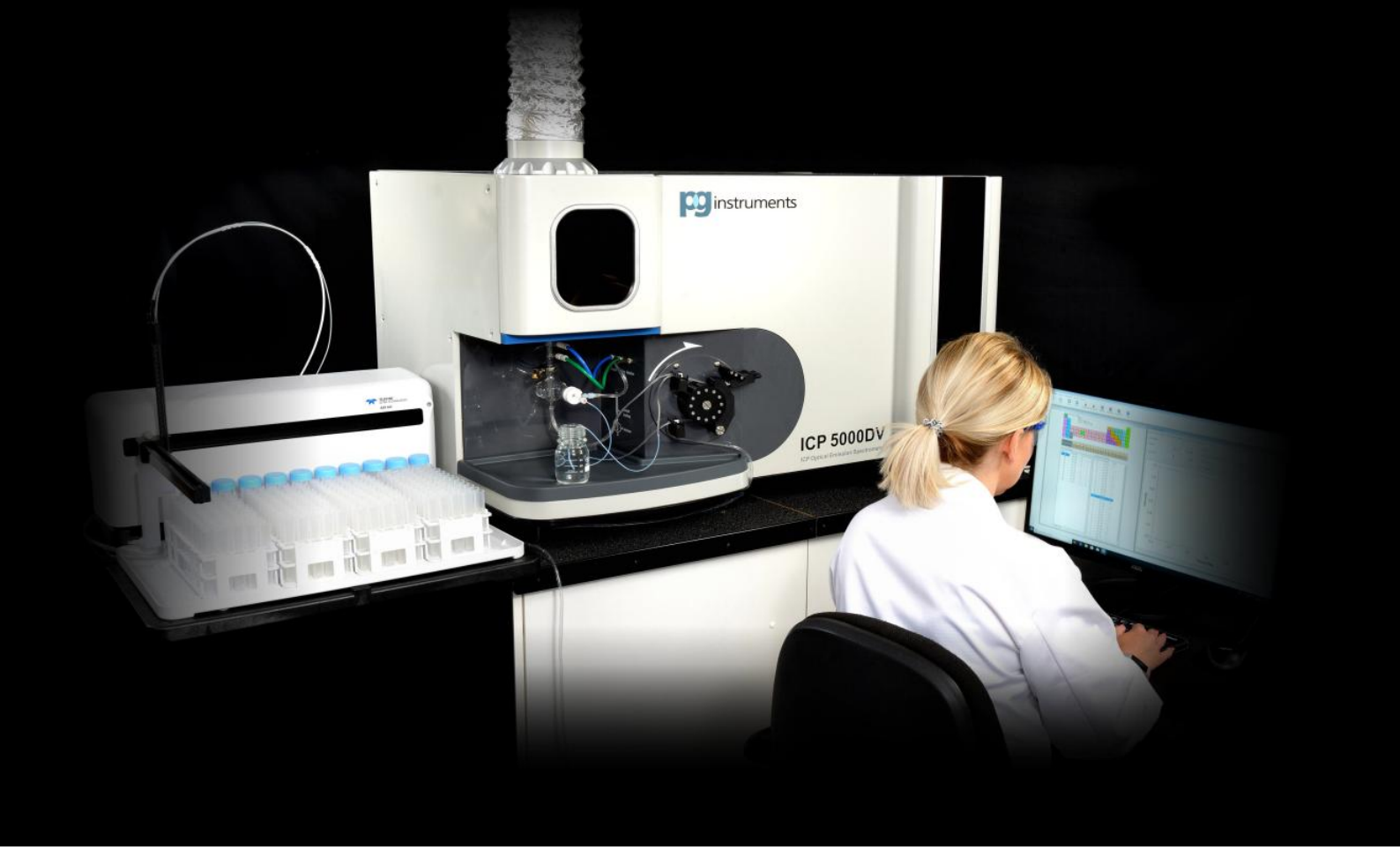
analytical instruments for science

ICP 5000DV

ICP Optical Emission Spectrometer



The ICP 5000DV is a Fully Automated, Fast Dual View Simultaneous system with CCD Detector (Charged Coupled Device). The Purged Spectrometer, with a 0.4m Focal Length, offers a wavelength range of 160-900nm.

An Echelle Grating provides the FULL Spectrum in a compact area. The system is fitted with a solid state 27.12Mhz RF Generator offering selectable power from 750 to 1600 Watts.

Due to the versatility and high performance, the instrument can be used in almost any laboratory for a wide range of applications such as:

Agricultural
Food
Geological
Clinical
Metal
Petrochemical
Environmental
Mining
Pharmaceutical

analytical instruments for science

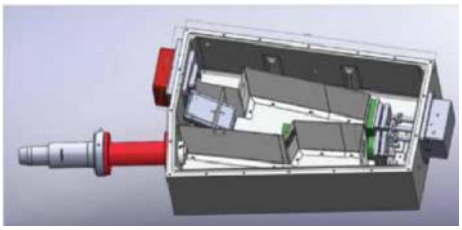
ICP5000DV Spectrometer

PG Instruments, a leader in the development of first class scientific instruments, is pleased to introduce its brand new ICP 5000DV.
The ICP 5000DV offers Low Detection limits with a wide analytical working range, enhanced stability and fast collection of quantitative and qualitative analytical data.

Features&Functions

Optical System

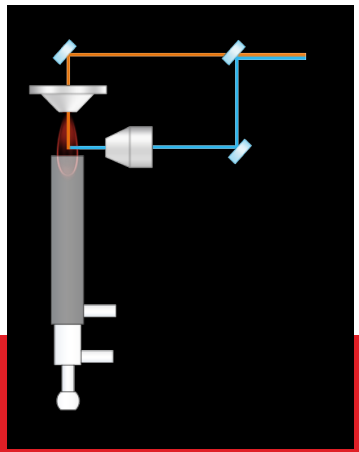
The Purged Spectrometer in the ICP 5000DV has a focal length of 0.4m and a spectral wavelength range of 160 - 900nm. The Spectrometer has an Echelle grating and Prism Cross Dispersion System which allows the simultaneous display of all spectral lines in a single exposure and the analysis of the complete spectrum in a compact area. The thermally stabilised optical system is argon purged to allow the analysis of elements in the far UV.



Basic Optical design of Spectrometer

Pre-Optical Path

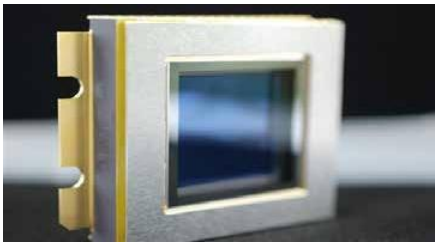
The pre-optics feature computer controlled high precision dual view simultaneous axial and radial plasma views which are purged to allow low wavelength analysis down to 165nm. The sealed pre-optical design offers reduced interferance and maximised linear range.



Dua Veiw pre-Optical path of Spectrometer

Detection System

The detection system is a CCD (Charged Coupled Device) 1024 x 1024 Pixels (CCD Pixel Size 24µm x 24µm). The high speed acquisition system of 500KHz provides a simultaneous Full-Spectrum reading and real-time single pixel sub-array monitoring allowing very fast analysis. The triple stage Peltier device gives superior and fast cooling providing lower dark current and noise. All pixels of the CCD feature anti blooming protection for improved resolution and seperation of simultanious analytical peaks.



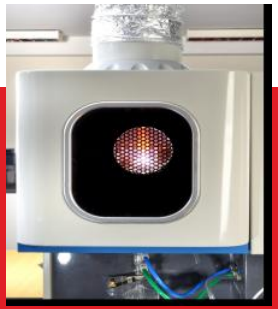
CCD Detector

Excitation Source (Plasma)

The 'on–board' Solid State RF Generator operates at a frequency of 27.12MHz and has a computer controlled forward power range of 750 - 1600 Watts with real time automatic tuning and stability better than 0.1%. The plasma ignition and generator output is fully monitored and controlled via the ICP-Win Software.

ECO Mode

When selected, the RF power is reduced to approx 500W, the sample uptake is reduced by 50% and the gas consumption is reduced to approx 0.5L/min.



Plasma Box

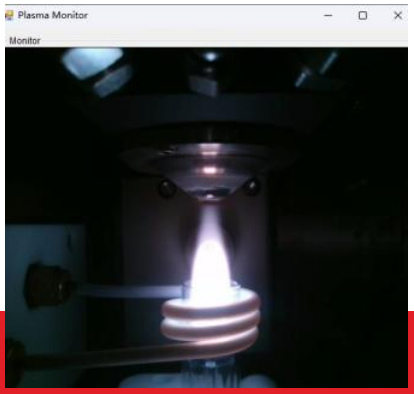
Sampling System

The sample introduction system is via a multi-channel (5 channel) 12 roller peristaltic pump (controlled via the software). A De-mountable Torch, cyclonic spray chamber and a concentric glass nebuliser are supplied as standard (Further options available on request).

Standard Sample Introduction System

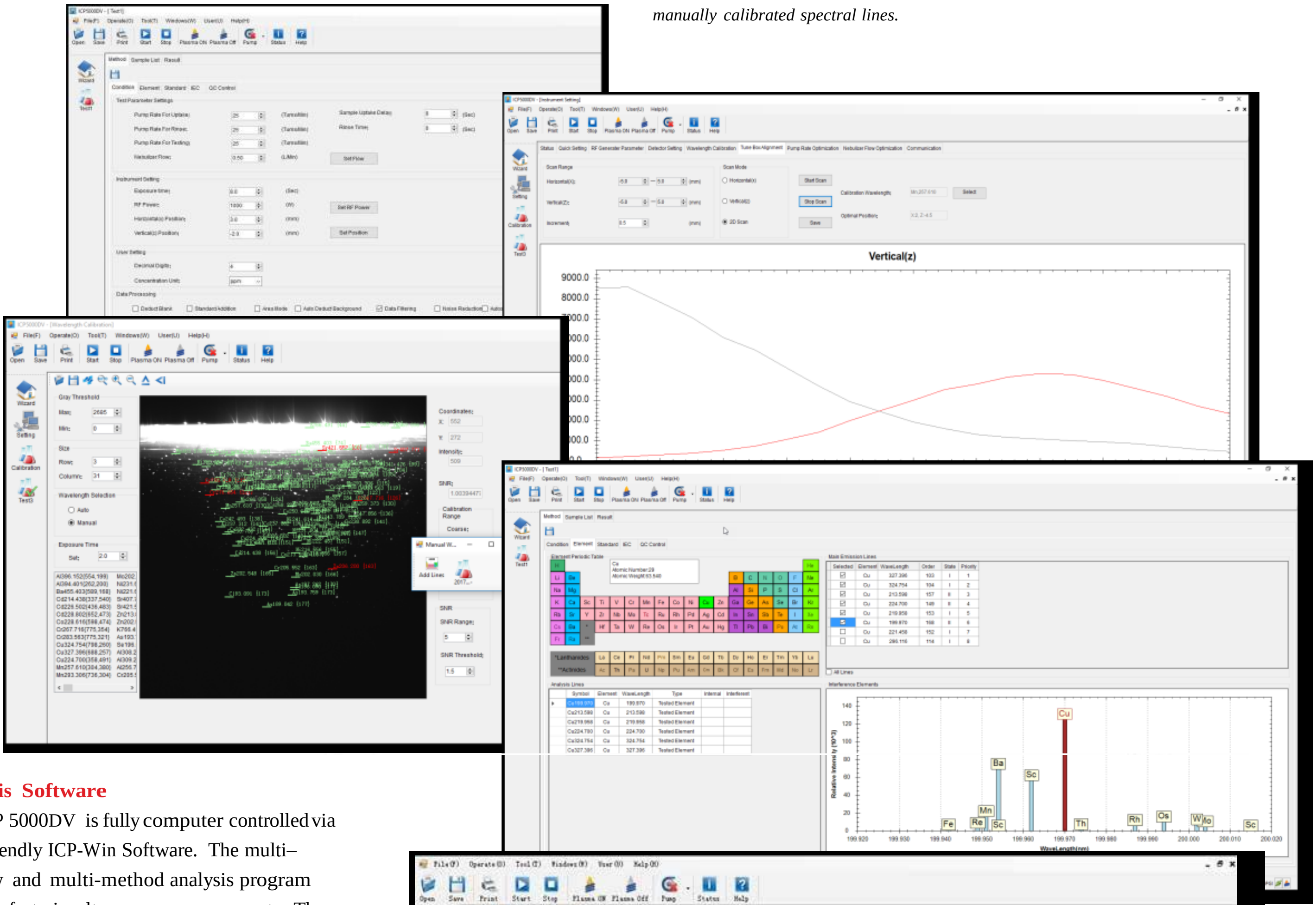
Plasma Monitor

The built in high resolution digital camera offers live monitoring of the plasma torch. It is especialy useful for monitoring the flare produced by organic samples.



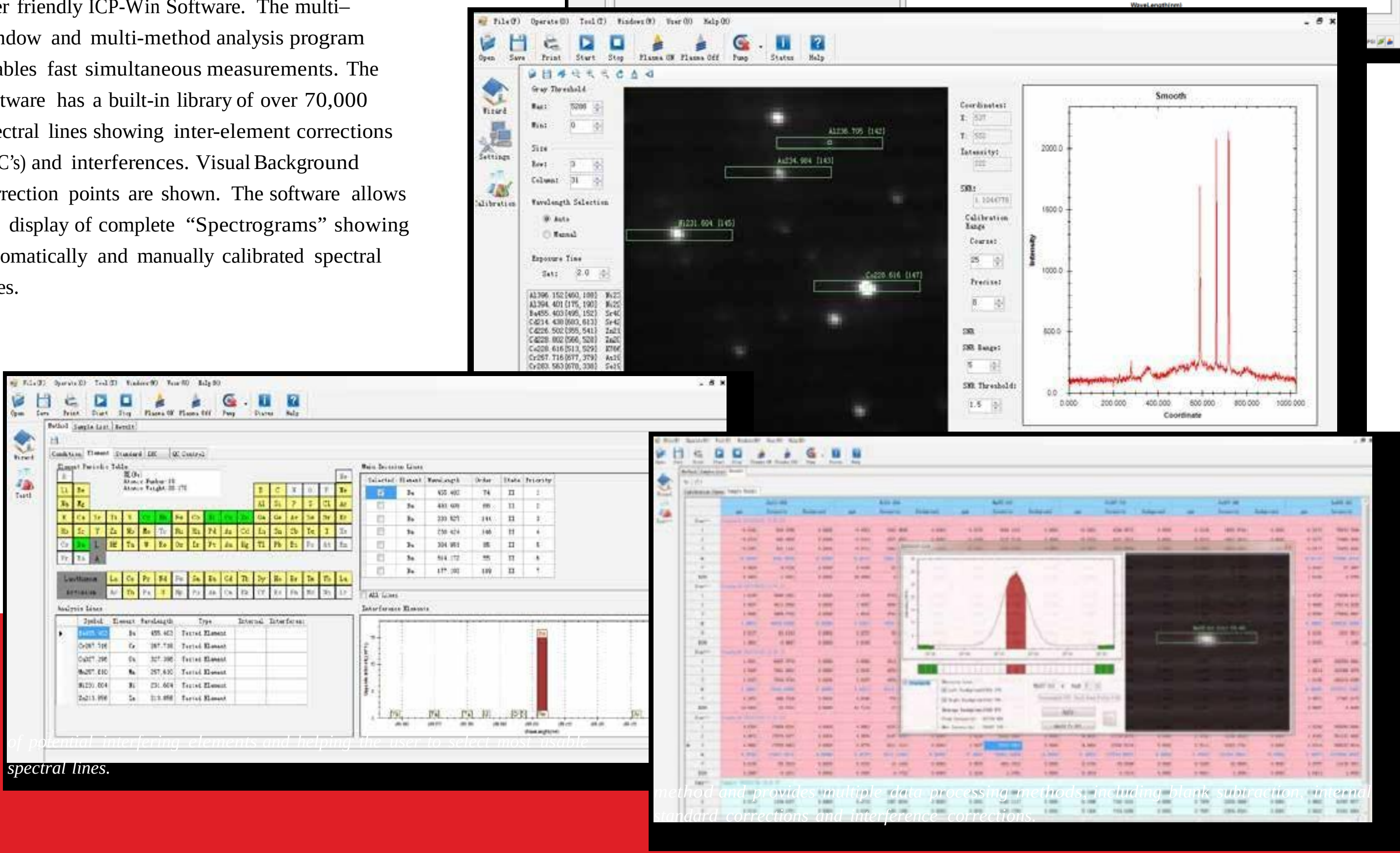
Plasma Monitor

The Intelligent Spectrogram Calibration function provides a display of automatically and manually calibrated spectral lines.



Analysis Software

The ICP 5000DV is fully computer controlled via user friendly ICP-Win Software. The multi–window and multi-method analysis program enables fast simultaneous measurements. The software has a built-in library of over 70,000 spectral lines showing inter-element corrections (IEC's) and interferences. Visual Background correction points are shown. The software allows the display of complete "Spectrograms" showing automatically and manually calibrated spectral lines.



of potential interfering elements and helping the user to select most suitable spectral lines.

method and provides ... standard corrections and interference corrections.

Specifications

Optical System

Grating	*Echelle Grating 50grooves/mm*
Prism	*Cross Dispersion Device*
Focal Length	*400mm*
Temperature Control	*38C +/- 0.1˚C*
Detector	*CCD (Charged Coupled Device)*
Pixel Size	*24µm x 24µm*
Detector Pixels	*1024 x 1024 pixels*
Detector Cooling	*-38C (Triple Peltier Device)*
Wavelength Range	*160nm - 900nm*
Resolution	*0.006nm @ 200nm*
Purge	*Spectrometer and optical path*

RF Generator

RF Frequency	*27.12MHz*
Power Range	*750 – 1600 Watts (automatic control)*
Optical View	*Dual View simultaneous Axial and Radial*
RF Stability	*<0.1%*
Generator	*Solid State (low voltage)*
RF Coil Cooling	*Water Cooled*
Optical Height	*Adjustable*
Plasma Monitoring	*High Resolution Live Camera*
Plasma ECO Mode	*Standby for lower Power, Gas and Sample Uptake*

Sample Introduction

Torch	*Fully Demountable Quartz (Other Options Available)*
Spray Chamber	*Cyclonic Quartz Glass (Other Options Available)*
Nebuliser	*Concentric (Other Options Available)*
Sample Introduction	*5 Channel 12 Roller Peristaltic Pump*

Software

Operating Software	*ICP-Win Software*
Element Library	*>70000 Spectral Lines*
Element Corrections	*IEC (inter-element corrections) and Background*
Computer	*PC, Windows 10 operating system, monitor and printer*

Dimensions	*106(W) x 67(L) x 75(H)cm*
Weight	*180Kg*
Voltage (Stabilised)	*120 - 240V 50/60Hz*

Accessories

Random Access Auto-sampler

Continuous Flow Hydride system

Voltage Stabiliser

Nebulisers - Quartz Concentric, V-Groove, HF resistant etc. available on request.

Programmable Temperature Controlled Spray Chamber

Sample Introduction – HF Acid resistant available on request.

Qualification Kit.

PG Instruments Ltd., Alma Park,
Wibtoft, Leicestershire LE17 5BH
England

t: 0044 (0) 1455 220131
f: 0044 (0) 1455 220025
e: info@pginstruments.com
www.pginstruments.com

Designed and produced by PG Instruments Ltd

The highly qualified and long experienced team at PG Instruments Ltd are recognised experts in Spectroscopy, Electrochemistry and Relevant Technologies. They have been developing and manufacturing analytical instruments for science for over a decade and have a worldwide recognised reputation for excellence in their field.