



Biochrom WPA Biowave II For University Teaching Laboratories

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UV/Visible spectrophotometers are used in the teaching laboratories of all major Universities and the Biochrom WPA Biowave II has seen considerable success in this market since its launch in January 2006. The following document highlights the main features of the product that enable it to meet the customer's requirements within this sector which include:

- **UV & Visible wavelengths to cover all different practical sessions**
- **Small & Lightweight**
- **Easy to use**
- **Robust**
- **Spill proof**
- **Low cost of ownership**
- **Quick to operate**
- **Flexibility**



Ideal for Teaching Laboratories

The Biowave II was designed and is manufactured at the Biochrom factory on the Cambridge Science Park. The instrument meets the requirements of a University Teaching laboratory in the following ways:

UV & Visible Wavelengths

The Biowave II covers the wavelength range from 190 to 1100nm giving the flexibility to carry out practical sessions from DNA quantitation in the UV region through to inorganic metallic salts around the 1070nm area.

Small & Lightweight

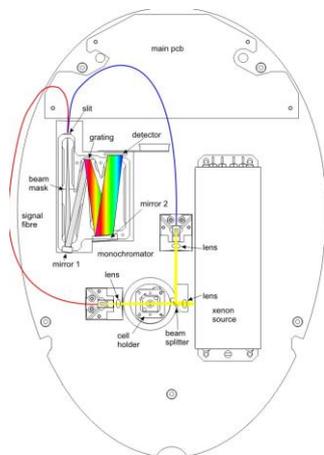
Instruments used in the teaching laboratory are only put onto the bench for the particular practical sessions they are used for and hence must be stored elsewhere when not in use. The smaller an instrument is the less storage space it takes up, the lighter the instrument the easier it is for the technicians to set up the practical sessions, an important factor when you may have to set up large numbers of instruments.

The Biowave II is 26cm wide, 39cm deep and only 10cm high. This lack of height means that many instruments can be stored on vertical racking in a small space. Customers with multiple units often stack their Biowave II instruments 4 deep for storage meaning a large number of instruments can be stored in a small space. Weighing only 3.4Kg the Biowave II is extremely easy to move around. The optional built in printer is permanently attached to the unit and increases the size by only 10cm in depth and 0.2Kg in weight.



Biowave II stored in customer laboratory

Robust



The Biowave II has a simple optical system with no moving parts all mounted on a solid aluminium base plate. The light from the Xenon lamp goes through the sample, is transferred into the sealed monochromator unit using fibre optics and the CCD array detector is mounted on the back of the monochromator unit. The lack of moving parts and the use of the fibre optics means that there is no chance of the system going out of alignment when it is continually moved around the laboratory. The lack of mirrors in the system (with the exception of those in the sealed monochromator) also means that there are no optical surfaces that could potentially get dusty leading to a decrease in performance and requiring a service visit to clean them.

Biowave II optical layout.

Spill Proof



Within education it is not a question of if a student will spill sample into the sample holder but when they will do it!

The Biowave II cell holder has an integral drain and the whole cell holder can be removed for thorough cleaning. The sealed, membrane keypad of the Biowave II is impervious to spills

Low Cost of Ownership

It is hard enough to find money to purchase equipment for a teaching laboratory and even harder to commit valuable budgets to maintain this equipment going forward so cost of ownership of the system is an important part of the decision making process. The Biowave II has a Xenon lamp which not only gives a high energy output but also offer a very long lifetime. The lamp is guaranteed for 3 years but in practice will last many years longer in the teaching laboratory as the instrument is used on a sporadic basis. Many competitive instruments use a Deuterium lamp to cover the UV region and with replacement lamps costing approximately £300 and lasting only up to 1000 hours this older style technology can be extremely expensive in a multi instrument installation.

The Xenon lamp in the Biowave II combined with the lack of mirrors and moving parts mean there is very little to go wrong with the instrument.

Easy to Use

The Biowave II instrument has a large, clear graphical display with on-board software to carry out all standard UV-Visible measurements. There are pre-stored methods for standard life science applications such as DNA Quantitation & purity, protein and cell density measurement along with standard Spectrophotometry software for wavelength scanning, generation of calibration curves, running of kinetic assays and multi-wavelength measurements.

Applications

-  Single Wavelength
-  Multi Wavelength
-  Concentration
-  Absorbance Ratio
-  Wavescan
-  Kinetics
-  Standard Curve

Methods

-  1st year practicals
-  2nd year practicals
-  3rd year projects
-  Chris research group
-  Methods 5
-  Methods 6
-  Methods 7
-  Methods 8
-  Methods 9

The Biowave II allows up to 90 methods to be stored in 9 separate folders each of which can be named. These methods can be password protected to ensure they cannot be deleted by students. This allows instruments to be set-up for the whole year's practical session during the quieter summer months with no risk of students deleting any stored methods.

Free Of Charge Teaching Aid

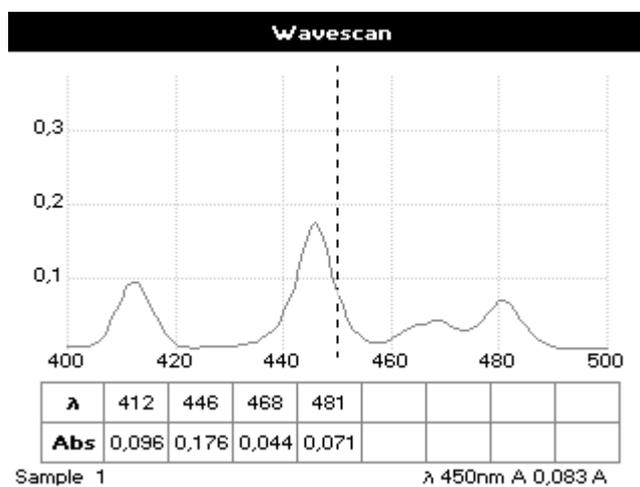
Biochrom can also supply a PC based simulation program that can be used as a tutorial for students. This can be run on a PC connected to a projector and the whole student group can be shown how to operate the instrument in one go however large the group may be. Screen shots can also be saved from this program and pasted into Word documents so the instructions for the practical can be made as detailed as possible.



Quick to Operate

The Biowave II takes 3 seconds to initialise from switch on and is ready to take readings immediately. Navigation to the required application is a maximum of 3 button presses and with a measurement time of 3 seconds a full wavelength scan can be quickly displayed on the screen. Printing a full graphical scan to the optional in-built is also fast at approximately 15 seconds.

Display of wavelength scan



Flexible

As the use of these instruments in the teaching laboratory is sporadic often the instruments are used within other laboratories when not required in the teaching laboratory. The Biowave II has the flexibility within its software to cover the majority of applications and also the optical performance. For laboratories carrying out DNA analysis the ability to work with a 10ul volume of sample is advantageous and the ability to connect to a PC using the USB connector and Print via Computer software means it is easy to export data.

Data Output

There are several options to allow the export of data from the Biowave II

- **Direct connection to PC via USB cable** - This is the cheapest option as the cable and software are supplied with the instrument and multiple instruments can be connected to a single PC using a USB hub. Each instrument can be configured to automatically print data or save into defined directories in Excel, Windows Metafile graphics format, text or ASCII file formats.
- **Built in printer** - This printer is permanently attached to the unit and gives a quick graphical printout of displayed results
- **Bluetooth** – this accessory fits within the instrument and sends the results to a PC fitted with Bluetooth without the use of cables. This accessory is not recommend if more than 10 instruments are to be used in the same lab as the amount of data being transferred can slow down transmissions. Note Bluetooth cannot be fitted at the same time as the built in printer or SD card accessory.
- **SD card accessory** – this accessory fits with the instrument and stores data on a standard SD card. This data can then be loaded into a PC running the PVC software where the data can be viewed, printed or exported in Excel, Windows Metafile graphics format, text or ASCII file formats. The SD card accessory can also be used to clone instruments – one instrument is set up and then the method/folder configuration is stored onto an SD card for loading into other instruments. Note SD Card accessory cannot be fitted at the same time as the built in printer or Bluetooth accessory.

Summary

Many instruments currently used in teaching laboratories and certain competitive instruments only offer a simple, numerical display of display of Absorbance at a single wavelength. The advent of the modern design of the Biowave II now allows users the greater flexibility of on-board wavelength scanning, calibration curves and kinetics without having to pay a large price premium. This extra functionality means that experiments can be more detailed than on the more basic instruments thus increasing the amount of knowledge the student gains from the practical session.

About Biochrom

Biochrom is a leading manufacturer of scientific instruments with over 40 year's experience. The Biochrom Group consists of five well-known instrument brands covering amino acid analysis, UV/Vis spectroscopy, and microplate instrumentation. Hospitals and laboratories worldwide trust our products and we are a valued OEM partner of many of the world's finest scientific instrumentation companies. The Biochrom spectroscopy range includes the Novaspec, Ultrospec, and GeneQuant, plus the Biochrom Libra and Biochrom WPA brands. Biochrom also manufactures two major brand names in the microplate instrumentation market - Biochrom Asys and Biochrom Anthos.

All our instruments are available through a growing global network of independent distributors, backed by our commitment to customer support. Biochrom is a Harvard Bioscience Company.

Distributors worldwide

Biochrom Ltd 22 Cambridge Science Park,
Milton Rd, Cambridge CB4 0FJ UK
Tel: +44 1223 423723
Fax: +44 1223 420164
Email: enquiries@biochrom.co.uk
www.biochrom.co.uk

Biochrom US 84 October Hill Road,
Holliston, MA 01746-1388 USA
Tel: (Toll free): 877- BIO-CHROM (877-246-2476)
Fax: 508-429-5732
Email: sales@biochrom-us.com
www.biochrom-US.com

