Specifications

Model no: Cary win 50

Monochromator: Czerny-Turner

Beam splitting system: Beam splitter

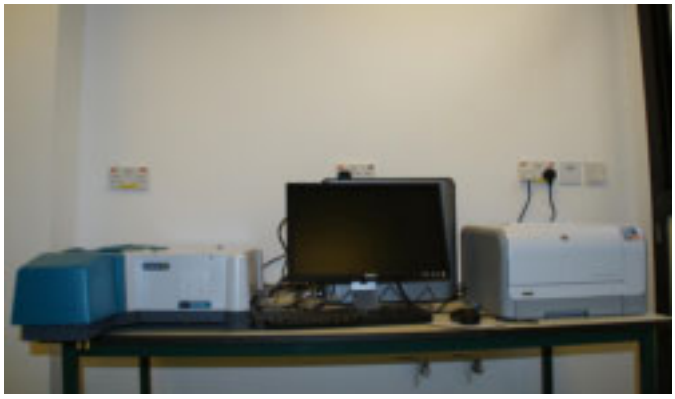
Detectors: 2 silicon diode detectors

UV-Vis limiting resolution (nm): ≤ 1.5 nm

Wavelength range (nm): 190–1100 nm

Wavelength accuracy (nm): ± 0.5 at 541.94

The Cary Win 50



The principles of spectroscopic analysis rely on passing light of a known wavelength through a sample and measuring how much of the light is absorbed. (An alternative to this is to measure how much light is reflected.) A spectrophotometer must therefore be able to generate discrete wavelengths of light, pass these through a sample and measure the absorption that has

occurred.

Cary 50 Design

The Cary 50 features a unique design that uses a Xenon flash lamp as the source of UV-Vis radiation. This offers many advantages over traditional and diode array UV-Vis spectrophotometers.

The ultraviolet-visible (UV-Vis) spectrophotometer is an instrument commonly used in the laboratory that analyzes compounds in the ultraviolet (UV) and visible (Vis) regions of the electromagnetic spectrum. The principles of spectroscopic analysis rely on passing light of a known wavelength through a sample and measuring how much of the light is absorbed. Unlike infrared spectroscopy (which looks at vibrational motions), ultraviolet-visible spectroscopy looks at electronic transitions. It allows one to determine the wavelength and maximum absorbance of compounds. From the absorbance information and using a relationship known as Beer's Law ($A = \varepsilon bc$, where A = absorbance, ε = molar extinction coefficient, b = path length, and c = concentration), one is able to determine either the concentration of a sample if the molar extinction coefficient is known, or the molar absorbtivity, if the concentration is known. Molar extinction coefficients are specific to particular compounds, therefore UV-Vis spectroscopy can aid one in determining an unknown compound's identity. Furthermore, the energy of a compound can be ascertained from this technology by using the equation $E = hc/\lambda$ (where E = energy, h = Planck's constant, c = speed of light, and λ = wavelength). Since photons travel at the speed of light, and h and c are constants, one can find the energy.

Cary 50 features include:

- The most accurate data for temperature-dependant, physiological applications. The platform provides unparalleled temperature stability and precision up to 45.0 °C. Perform Scanning & Kinetics measurements at specific temperatures for added versatility.
- No sample wastage. With as little as 25 µL needed to collect reproducible data.
- Measure 384 samples in less than 100 seconds.
- Controlled by the powerful Cary WinUV Microplate Reader software , which includes built-in method parameters for various life science applications.

- The maximum scan rate is 24 000 nm per minute. That means you can scan the whole wavelength range of 190-1100 nm in less than 3 seconds .
- Data collection rate of an impressive 80 points per sec.
- The Cary 50 can measure samples up to 3 Abs.
- As the Xenon lamp is very intense, the Cary 50 can use a beam splitter without the loss in energy causing excessive photometric noise. The beam splitter allows simultaneous reference beam correction, so peaks will not shift as the scan speed changes .
- The Cary 50's super-concentrated beam makes it ideal for fiber optic work.

- The light beam is narrow and very intense, so even if you are using microcells you will still get excellent noise performance.
- The Cary 50 is unaffected by room light. You can operate with the sample compartment open or closed.

Application

- The spectrophotometer series enables a wide variety of physical and optical measurements. A versatile sample compartment and accessory range permit a wide range of sample types, and very high optical performance enables measurement at the highest limits of performance.
- Wavelength: Used to measure wavelength and wave no of specific samples.
- Concentration: The Concentration application is used to determine the concentration of an absorbing sample, using up to a 30-point calibration for quantitative analysis. The application allows you to select from several curve fit types for the calibration: linear, direct linear and quadratic. Based on the fit type selected, it then calculates the coefficients of the fit equation and the correlation coefficient and prints these in the Report area. The concentration values of samples are then obtained by measuring each sample against the calibrated fit equation. The result obtained is the concentration of the sample and can be viewed in the Report area.