

Efficient. Accurate. Flexible.

AGILENT CARY 60
UV-VIS SPECTROPHOTOMETER

The Measure of Confidence



Agilent Technologies

efficient



AGILENT CARY 60 UV-VIS

Agilent Technologies is your premier resource and partner for molecular spectroscopy. With the addition of the world-renowned Cary product line, encompassing FTIR, UV-Vis-NIR and Fluorescence, Agilent offers you a comprehensive range of molecular spectroscopy solutions.

Answers you can trust

The Agilent Cary 60 UV-Vis spectrophotometer is efficient, accurate and flexible, and is designed to meet your immediate and future challenges. With remote sampling options, proven performance and low cost of ownership, you can be sure that the Agilent Cary 60 UV-Vis will give you answers you can trust.

- Lowest cost of ownership — with an exceptionally long lifetime of 3 billion flashes, the lamp typically lasts 10 years, minimizing lamp replacement and instrument revalidation costs.
- No need for cuvettes — the optional fiber optic probe delivers more accurate results in a fraction of the time, and with no cuvette or sipper, sample measurements are less prone to error.

- Measure precious samples with ease — the highly focused beam image of the Agilent Cary 60 is perfect for measuring small volumes accurately and reproducibly. Preserve your samples by using $< 4 \mu\text{L}$ instead of mLs.
- Exceptionally fast data collection — with a scan rate of up to 24,000 nm/min, you can scan the entire wavelength range (190–1100 nm) in under 3 seconds.



Molecular Spectroscopy Innovations

1947 First commercial recording UV-Vis, the Cary 11 UV-Vis	1954 Release of the Cary 14 UV-Vis-NIR	1969 First rapid-scanning fourier transform infrared spectrometer, the FTS-14	1977 Release of the Cary 219 UV-Vis	1979 First commercial diode-array spectrophotometer, the 8450A	1989 Release of the acclaimed Cary 1 and 3 UV-Vis	1995 Launch of the 8453A, the first small-footprint, full-featured diode-array
1997 Cary 50 Series released to coincide with 50th anniversary of Cary 11	1999 Launch of the Cary Eclipse Fluorescence Series	2000 First ATR chemical imaging system	2002 Cary 4000/5000/6000i research grade UV-Vis-NIR series released	2008 Launch of the 600 Series FTIR spectrometers, microscopes and imaging systems	2011 Agilent offers out-of-lab FTIR solutions	2011 Release of the Cary 60 UV-Vis

FOR YOUR APPLICATION

Agilent is committed to providing solutions for your application. We have the technology, platforms, and expert guidance you need to be successful.



ACADEMIA

Common applications for the Agilent Cary 60

Characterization of unknown or newly synthesized compounds
 Monitoring kinetics of chemical or biological reactions that occur at sub-second rate
 Measurement of films and optical components
 Analyzing photochemical reactions in-situ during sample irradiation



BIOTECH & PHARMA

DNA and protein quantification
 Measuring cold biological samples (4 °C) immediately after removal from the refrigerator
 Preparation of fluorescent liquid samples prior to emission measurements
 Analyzing small amounts of precious sample (< 4 µL)



CHEMICALS

Quality control of raw materials and finished goods
 Color measurements and color matching
 Analysis of nutrients in water, food and agriculture
 Analysis of turbid solutions or relatively highly absorbing samples
 Analysis of bulk optics (e.g., sunglasses)
 Study of pigments in art conservation through reflectance measurements

Common accessories for the Agilent Cary 60

Fiber optic transmission and reflectance probes and coupler
 Thermostatted single and multicell holders with temperature probes
 Solid sample holder
 Rectangular, cylindrical, micro and flow cells

Fiber optic microprobe (liquids)
 Thermostatted single and multicell holders with temperature probes
 Micro-volume cuvettes
 Rapid mix accessory

Fiber optic transmission and reflectance probes and coupler
 Thermostatted single and multicell holders with temperature probes
 18 position cell holder
 Rectangular, cylindrical, micro and flow cells

accurate



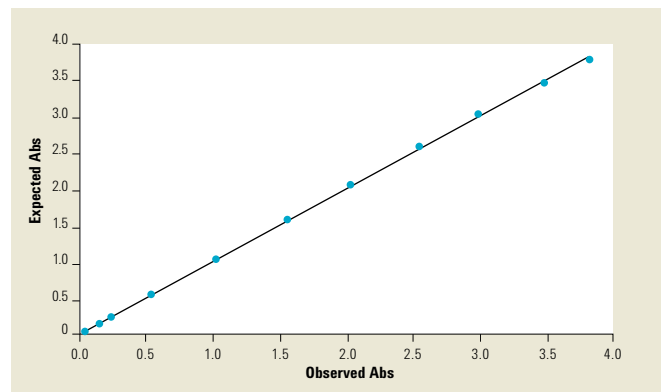
QUALITY AND PERFORMANCE BY DESIGN

Our proven record of optical design excellence and innovation ensures you get the right answer every time.

The power of Xenon

The Agilent Cary 60 leverages the leadership and proven performance of its predecessor the Cary 50, the pioneer in UV-Vis xenon flash lamp technology. The Agilent Cary 60 is:

- Room-light immune — the unique optical design enables measurements to be made with the sample compartment open, allowing large or odd-shaped samples to be measured. The highly-focused beam also provides superior coupling to fiber optics, making the Agilent Cary 60 the best choice for UV-Vis fiber optic measurements.
- Robust — the combination of the xenon lamp and superior mechanical design ensures the Agilent Cary 60 is inherently reliable. This significantly reduces the cost of ownership — most Cary 50 instruments purchased over a decade ago are still running with the same lamp today.
- Efficient — the lamp only flashes when a reading is taken, resulting in zero warm-up time and very low electrical energy use and maintenance requirements. Photodegradation is also eliminated, as precious or light-sensitive samples are not excessively exposed to UV light or heat.
- Flexible — with a maximum power requirement of just 38 W, the Agilent Cary 60 can be run from a 12 V mains voltage inverter, making it suitable for mobile laboratories.



Superior accuracy and photometric linear range

Using certified standards (Starna, S/N 14727, set type RM-9ND) and measuring the absorbance at 525 nm using a 1 second signal averaging time, the above demonstrates that the photometric range of the Agilent Cary 60 extends above 3.5 absorbance units with a correlation co-efficient of 0.999.

Excellent noise performance

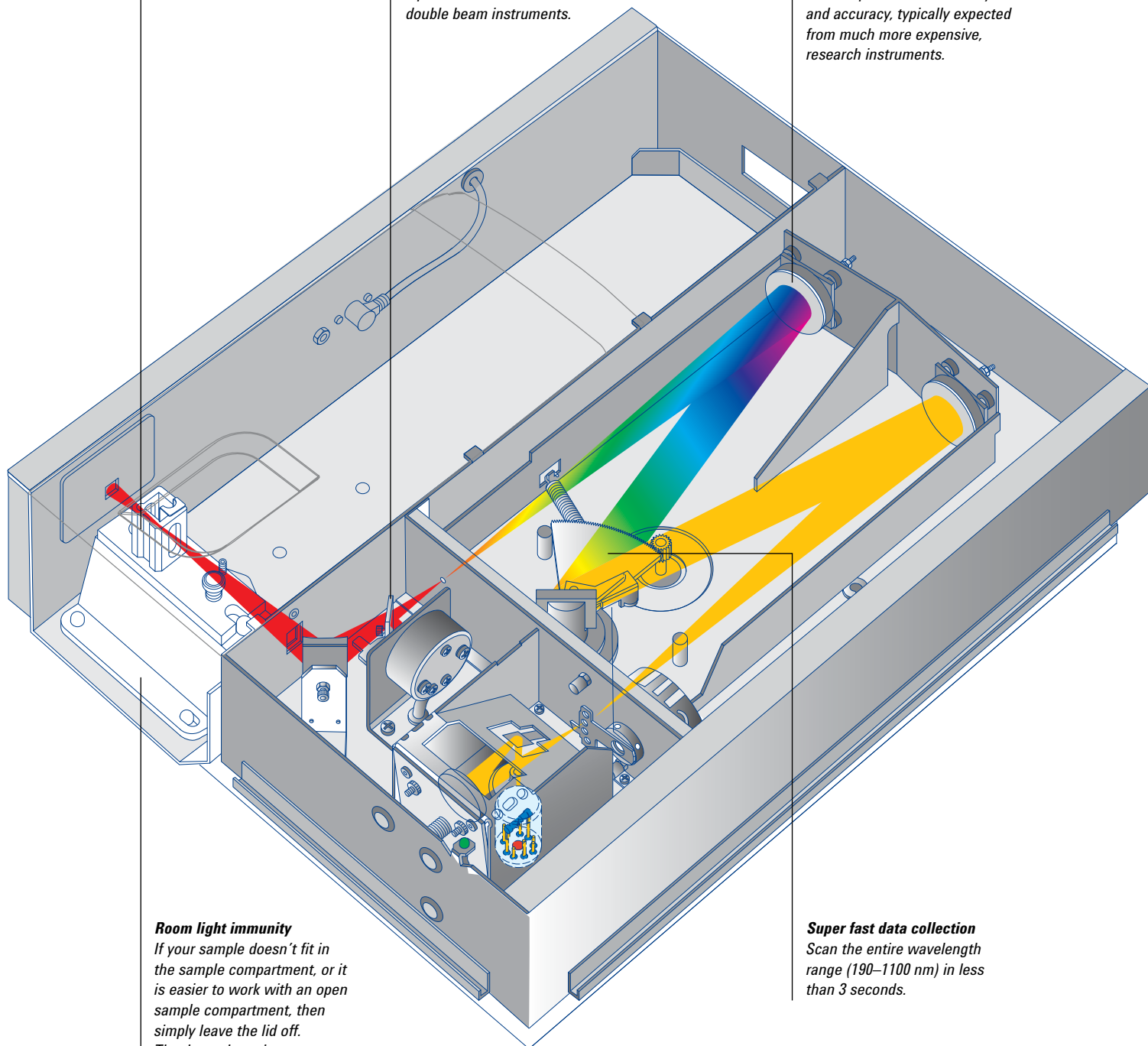
The light beam is very intense — less than 1.5 mm x 1.0 mm at its focus — ensuring excellent noise performance even when using small aperture microcells.

Simultaneous reference correction

Maintain peak integrity at every scan speed through simultaneous sample and reference beam measurements — equivalent to traditional double beam instruments.

Superior and proven optical design

Leveraging design capabilities from our research grade Agilent Cary spectrophotometers, the Agilent Cary 60 provides excellent optical performance, such as photometric linearity and accuracy, typically expected from much more expensive, research instruments.



Room light immunity

If your sample doesn't fit in the sample compartment, or it is easier to work with an open sample compartment, then simply leave the lid off. Thanks to the unique properties of the Xenon flash lamp, the Agilent Cary 60 is not affected by room light.

Super fast data collection

Scan the entire wavelength range (190–1100 nm) in less than 3 seconds.

flexible



YOU CAN DO IT ALL WITH A CARY

The Agilent Cary 60 UV-Vis spectrophotometer is complemented by a range of accessories and software designed specifically for your application needs.

Performance enhancing accessories

The vast range of accessories for the Agilent Cary 60 UV-Vis ensures you can handle the widest variety of sample sizes and types¹.

Accessories for liquid samples include:

- Fiber optic probes and couplers for fast accurate measurements without cuvettes.
- Peltier and water thermostatted single and multicell holders for precise temperature control.
- Temperature probes to measure the temperature inside the cuvette.
- Micro volume sampling cells to measure volumes <4 μL .
- Rapid mix accessory for stopped-flow kinetics measurements.

Accessories for solid samples include:

- Solid sample holder.
- Fiber optic reflectance probe and coupler.
- Fixed angle specular reflectance accessories (SRA).

Consumables for UV-Vis

- Agilent's range of UV-Vis consumables includes cuvettes, flow cells and lamps



Measure multiple samples fast

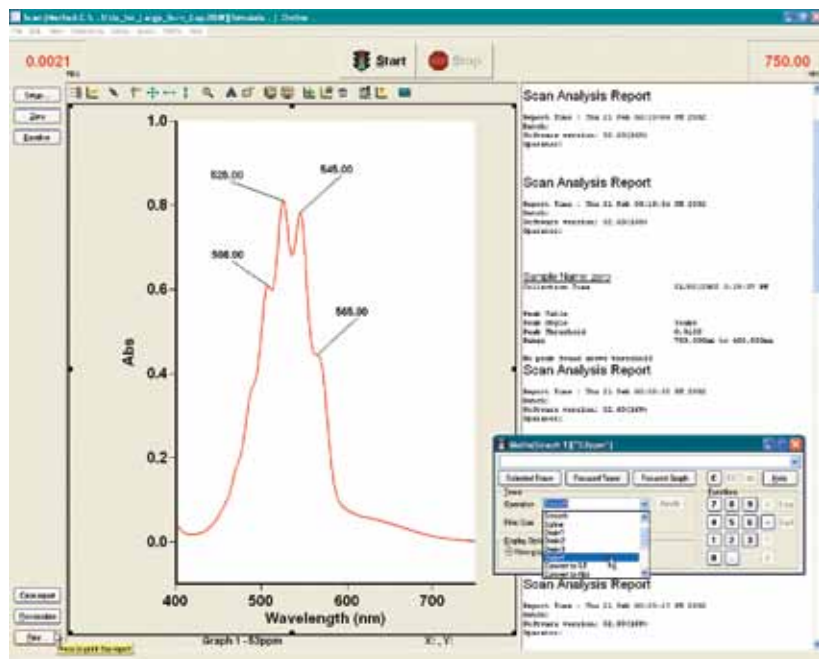
The multicell holder houses up to 18 cells and can be connected to a water bath for accurate temperature control.

DISTINCTLY BETTER SOFTWARE

User friendly, application focused software provides complete instrument control.

Software designed for real samples

The modular design of the Agilent Cary WinUV software means that it can be tailored to suit your analytical requirements — whether it's a QA/QC industrial application requiring wavelength scanning or concentration measurements, or life science applications that require advanced enzyme kinetics or thermal control.



Dedicated software applications

Streamline your measurements and save time with the easy-to-use WinUV software. Calculate DNA purity or concentrations using the RNA/DNA module or study biological process with the enzyme kinetics module.

Enhanced graphics features

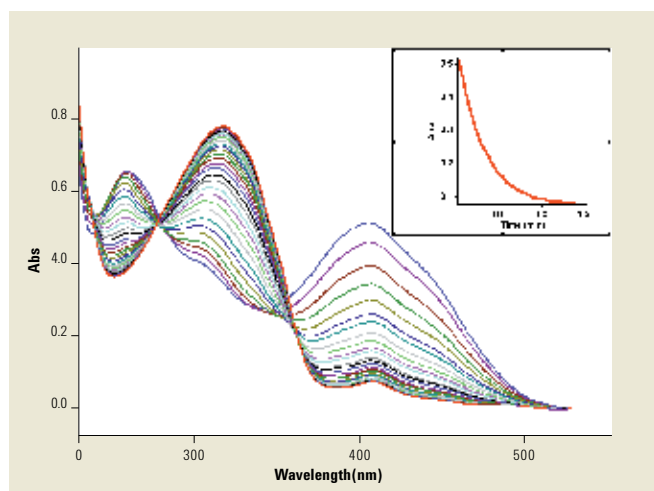
The graphics control module has automatic peak labelling, zoom, free and tracking cursor, multiple ordinate and abscissa formats, smart copy/paste and overlay modes, making spectral interpretation and presentation for publications a breeze.

Advanced data processing

Use the spectrum calculator to apply mathematical operations, including addition, subtraction, division, multiplication, log and square root functions, to spectra. The calculator also features mean, normalization, smoothing, up to fourth order derivatives, integration and the Kubelka-Munk correction algorithm.

Meet your application challenges

Use the powerful built-in Applications Development Language (ADL) to tailor the WinUV software to meet your most specific applications.



Obtain kinetics curves easily

With a mouse-click you can obtain a kinetics curve from a series of repetitive curves. The insert shows the kinetics curve at 410 nm.

reliable



CHEMICALS (QA/QC) APPLICATIONS

When you need to consistently and cost-effectively deliver the highest quality finished products, innovative, reliable analytical solutions are essential to your success. The Agilent Cary 60 provides flexible sampling options and proven robustness, ensuring you can measure your samples with the highest accuracy.

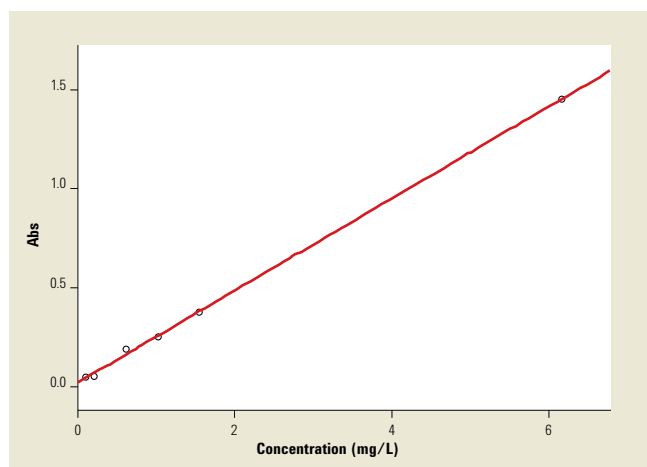
QA made easy

- WinUV software supports up to 30 standards and 5 replicates, to give you maximum flexibility to set precision levels.
- Flexibility to run basic methods and if needed advanced control, for method development.
- Pre-configured applications include single point reads, scanning, concentration and kinetics measurements.

Flexible sampling

With a large sample compartment and room light immunity, the Agilent Cary 60 with fiber optic probes is ideal for QC laboratories:

- Speed up production. Use fiber optic probes to take measurements on the production line, rather than transfer liquid samples to cuvettes.
- Probes accommodate a wide range of sample volumes — from very large to microliter samples.
- Eliminates flowcell uptake times and system problems such as tubing leaks, degradation and bubbles.



Nitrate analysis of water

The concentration of Nitrates in waste water was measured on the Agilent Cary 60 using the fiber optic dip probe. This reduced the time of analysis by over 50%, compared to traditional cuvette-based measurements, without compromise in data quality, as shown by the excellent linearity of the calibration curve of Abs vs. $[\text{NO}_3^-]$ mg/L. The fiber optic dip probe comes in a range of pathlengths (up to 40 mm) to cater for very low absorbing species.

ACADEMIC APPLICATIONS

When you need to cater to a variety of applications and user levels, flexibility and proven reliability are essential to your requirements. The Agilent Cary 60 provides accuracy and low ongoing cost of ownership, ensuring you can meet your immediate and future challenges.

Powerful and intuitive software

- Intuitive interface makes it ideal for university teaching and research laboratories.
- Flexibility to run simple, pre-configured methods for undergraduate students, through to advanced methods for academic research.
- Applications include scanning, concentration, kinetics, and RNA/DNA measurements.

Advanced kinetics analysis

- Data collection rates can be varied to collect more data when you need it. The Kinetics software also accommodates long, slow reactions and is capable of collecting data for up to 5 days without limiting the number of data points collected.

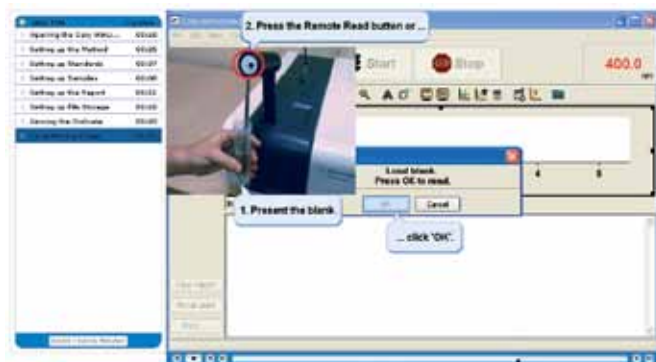
Flexible data collection

- Wide range of accessories to cater for a diversity of uses.
- Fiber optic probes eliminate the need to transfer liquid samples to cuvettes, reducing sample loss and user error.



Eliminate cuvette and sipper hassles

By using fiber optics probes, you'll never have to purchase or clean a cuvette again.



Self-paced learning

The Agilent Cary 60 WinUV software includes step-by-step wizards and video clips to help bring users up to speed quickly.



Solid sample measurements

The solid sample holders are compatible with a range of sample types.

protected



BIOTECH AND PHARMA APPLICATIONS

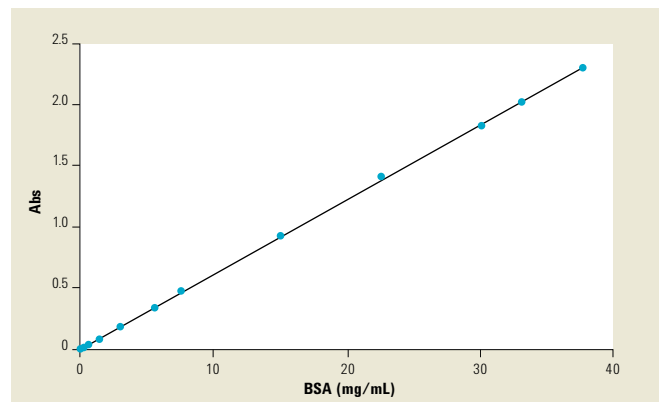
In a field that demands accuracy, productivity and regulatory compliance, your challenges have never been greater. The Agilent Cary 60 provides superior temperature control and protection for precious samples, ensuring you can measure your samples with the highest accuracy.

Protect precious samples

- The fiber optic microprobe and micro volume sampling cell enable measurements of $< 4 \mu\text{L}$ for precious biological and chemical samples.
- Photosensitive samples are not exposed to continuous light as the lamp flashes only to acquire a data point, preventing photodegradation.
- Sample compartment temperature is stable, as the lamp does not produce heat, ensuring accurate and reproducible data.

Compliance and validation

- Optional 21CFR Part 11 control for all software applications.
- Validate software module, provided as standard, includes built-in USP, EP and BP instrument performance tests.
- Validation test automation using the multicell holder accessory — just press start and walk away.
- Complete qualification services (IQ/OQ) for the Agilent Cary 60 hardware, software and accessories.
- Robust design and efficient xenon flash lamp reduce instrument down-time, minimizing lamp replacement and instrument re-validation costs.



Measure micro volume samples

Determine the amount of BSA protein over a wide range of concentrations using $< 4 \mu\text{L}$ of sample in a micro volume sampling cell. The exceptional photometric linearity of the Agilent Cary 60 ensures data is accurate and reproducible, and eliminates sample dilution prior to measurement.



Stopped flow kinetics

The rapid mix accessory is ideal for stopped flow kinetics measurements.

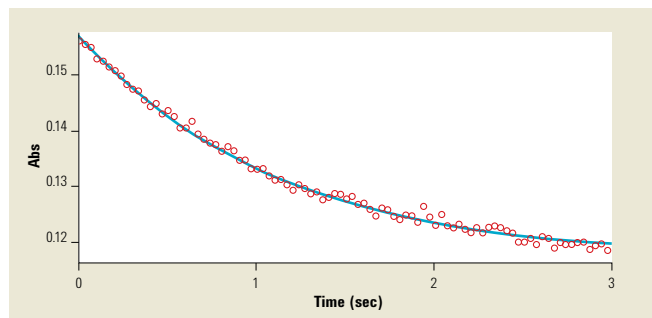


Monitor temperature

The temperature probe enables the temperature inside the cuvette to be measured, providing the most accurate data for temperature dependent experiments. The WinUV software monitors the temperature directly from the probe, ensuring data is collected at the correct temperature.

Rapid and precise kinetics measurements

- Collect data at 80 points per second, and pause data collection at any time to add reagents without affecting performance.
- Extend collection times during a run.
- Collect your kinetics data and perform enzyme kinetics calculations all in the same application. Lineweaver-Burk, Eadie-Hofstee, Hanes-Woolf, Eadie-Scatchard, V_0 vs [S] and Dixon $1/V_0$ vs [I] plots are available.



Measure short-lived reactions

The rapid mix accessory enables you to automatically start an analysis in less than 1/10th of a second after the two components are mixed.



Measure cold samples straight from the refrigerator!

Use the fiber optics probe to perform measurements on cold samples. As the microprobe is completely submerged in the sample there are no condensation problems, which are difficult to eliminate when using cuvettes.

Trust Agilent to keep your lab running at peak productivity

Agilent's Advantage Service protects your investment in Agilent instruments and connects you with our global network of experienced professionals who can help you get the highest performance from every system in your lab. Count on us for the services you need at every stage of your instrument's lifecycle – from installation and upgrade to operation, maintenance and repair.

For customers who require full system validation, Agilent offers complete qualification services (Installation and Operational Qualification) for the Agilent Cary 60 UV-Vis hardware, software and accessories.



And if ever your Agilent instrument requires service while covered by an Agilent service agreement, we guarantee repair or we will replace your instrument for free. No other manufacturer or service provider offers this level of commitment.

Further information

For full details of the Agilent Cary range of molecular spectroscopy products, ask for a brochure or visit our web site at www.agilent.com/chem/UV/



Cary 100/300 Series Spectrophotometers
Publication Number 5990-7785EN

Cary Eclipse Fluorescence Spectrophotometer
Publication number 5990-7788EN

8453 UV-Vis Spectrophotometer
Publication number 5989-8680EN



Cary Molecular Spectroscopy Portfolio
Publication number 5990-7825EN

Our catalogue of new applications is ever growing.

To learn about the latest, contact your local Agilent Representative or visit us at: www.agilent.com/chem/

Find out how Agilent's Molecular Spectroscopy Solutions can deliver the performance, accuracy and flexibility you need.

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This information is subject to change without notice.

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Printed in U.S.A., May 1, 2011

5990-7789EN

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