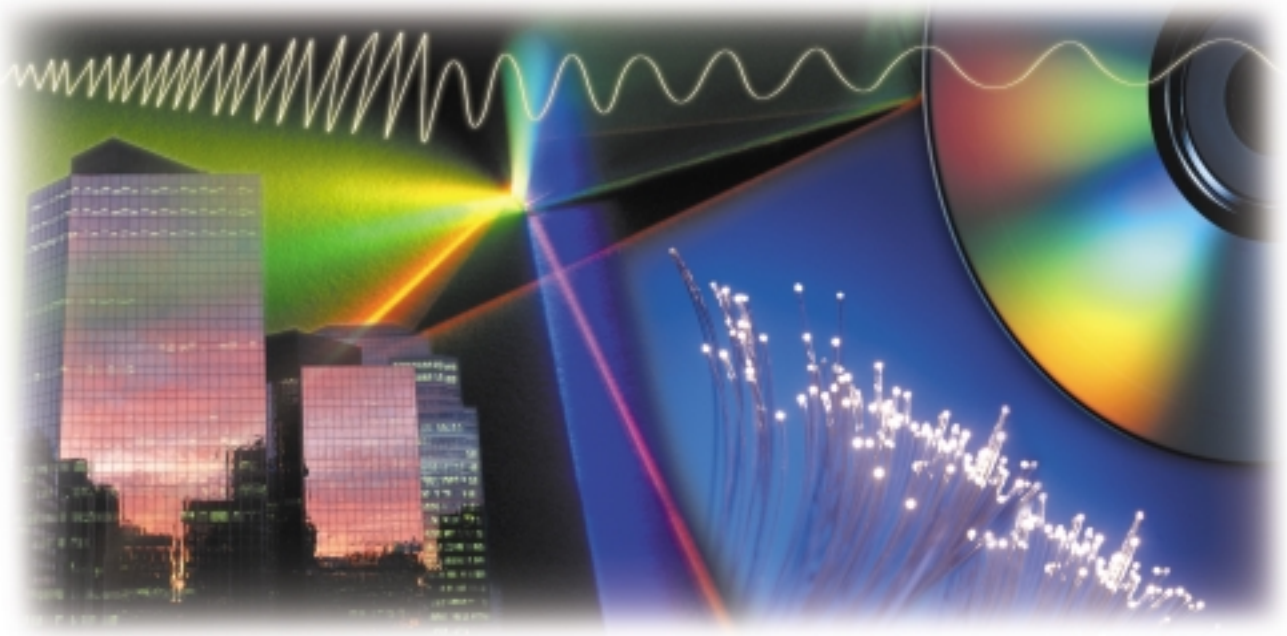
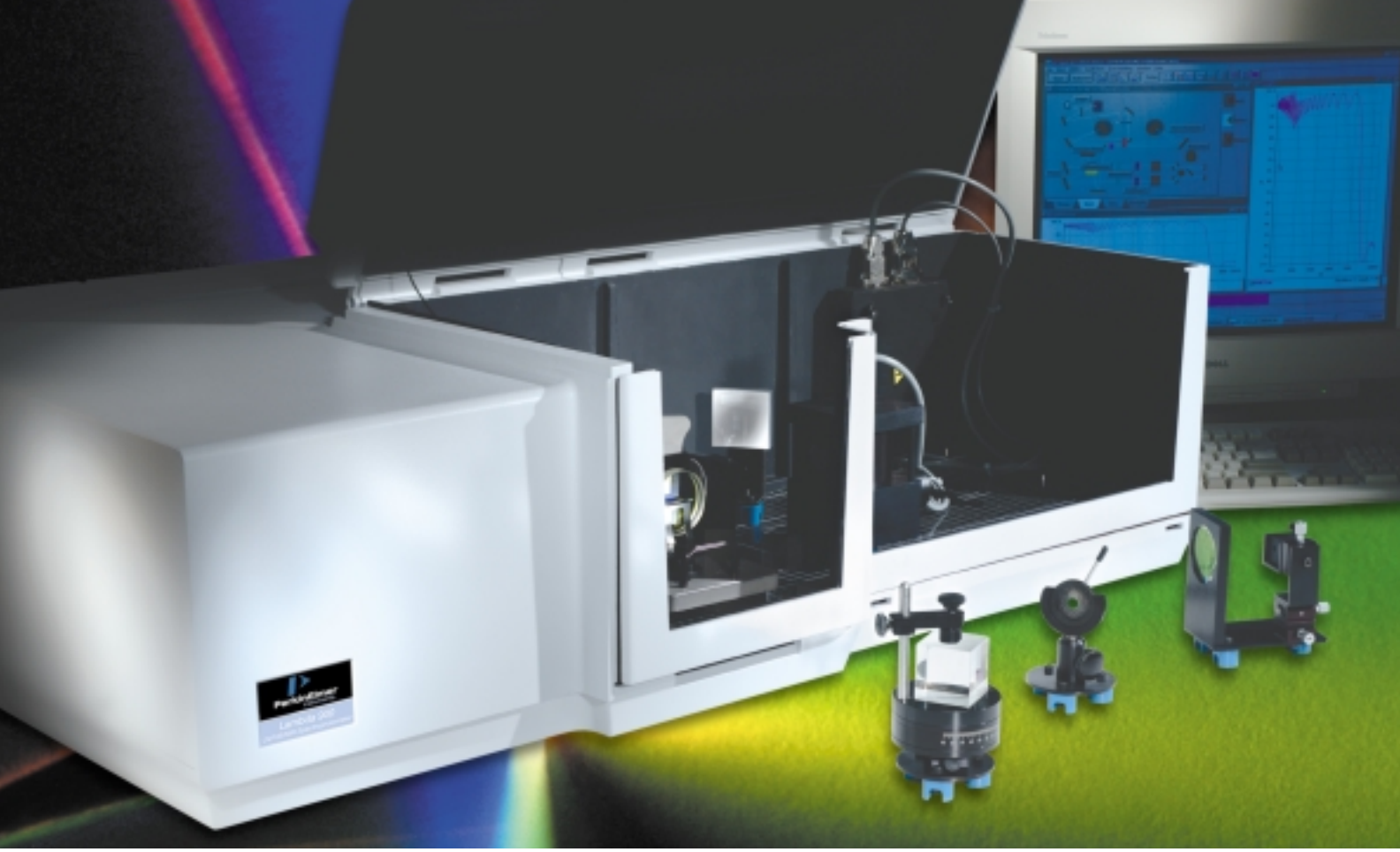
LAMBDA 800 UV/VIS and 900 UV/VIS/NIR Spectrophotometer Systems



customer satisfaction

at the speed of light.

PerkinElmer®
precisely.



Both the Lambda 800 and 900 share the same high-performance optical bench allowing the same array of accessories to be used. The Lambda 800 is shown with the optional General Purpose Optical Bench (GPOB).

The only versatile, high-performance **CHOICE** for your lab or production floor from the world-leader in UV/Vis

Only the PerkinElmer Lambda 800 UV/Visible or Lambda 900 UV/Visible/NIR spectrophotometers combined with a vast array of sampling accessories provides your laboratory with the industry's finest tool to get the data you need, the way you need it. PerkinElmer's tradition of spectrophotometer excellence continues with the Lambda 800 and the Lambda 900. Both of these state-of-the-art instruments provide the accurate spectroscopic measurements your work requires, the reliability you demand, and the flexibility you desire to meet all your current and future needs.

For sampling flexibility and superior data quality, the PerkinElmer Lambda 800 UV/Vis and Lambda 900 UV/Vis/NIR spectrophotometers are the industry standards for excellence. Perhaps it's because the numerous accessories they have in common make it more cost-effective than ever to own the highest performance spectrophotometers available. With decades of experience, PerkinElmer is unparalleled in creating knowledge bases to support you now and into the future.

With either the Lambda 800 or Lambda 900, you're getting a premier, double-beam optical system providing accurate, stable and repeatable results.

TECHNICAL DESCRIPTION AND SPECIFICATIONS	LAMBDA 900	LAMBDA 800
Principle	Double beam, double monochromator, ratio recording UV/Vis/NIR spectrophotometer with microcomputer electronics, controlled by DELL PC or compatible Personal Computer.	Double beam, double monochromator, ratio recording UV/Vis spectrophotometer with microcomputer electronics, controlled by DELL PC or compatible Personal Computer.
Optical System	All reflecting optical system (SiO_2 coated) with holographic grating monochromator with 1440 Lines/mm UV/Vis blazed at 240 nm and 360 Lines/mm NIR blazed at 1100 nm, Littrow mounting, sample thickness compensated detector optics.	All reflecting optical system (SiO_2 coated) with holographic grating monochromator with 1440 Lines/mm UV/Vis blazed at 240 nm, Littrow mounting, sample thickness compensated detector optics.
Beam Splitting System	Chopper (46+ Hz, Cycle: Dark/Sample/Dark/ Reference, Chopper Segment Signal Correction CSSC).	Chopper (46+ Hz, Cycle: Dark/Sample/Dark/ Reference, Chopper Segment Signal Correction CSSC).
Detector	Photomultiplier R6872 for high energy in the whole UV/Vis wavelength range. Peltier cooled PbS detector for NIR.	Photomultiplier R6872 for high energy in the whole UV/Vis wavelength range.
Source	Pre-aligned tungsten-halogen and deuterium.	Pre-aligned tungsten-halogen and deuterium.
Wavelength Range (N_2 purge required below 185 nm)	175 nm–3300 nm	175 nm–900 nm
UV/Vis Resolution	< 0.05 nm	< 0.05 nm
NIR Resolution	< 0.20 nm	—
Stray Light		
At 200 nm (12 g/L KCl USP/DAP method)	> 2 A	> 2 A
At 220 nm (10 g/L Nal ASTM method)	< 0.00008 %T	< 0.00008 %T
At 340 nm (50 mg/L $NaNO_2$ ASTM method)	< 0.00008 %T	< 0.00008 %T
At 370 nm (50 mg/L $NaNO_2$ ASTM method)	< 0.00008 %T	< 0.00008 %T
At 1420 nm (H_20 1-cm pathlength)	< 0.00040 %T	—
At 1690 nm ($CHCL_3$ 4-cm pathlength)	< 0.00150 %T	—
At 2365 nm ($CHCL_3$ 1-cm pathlength)	< 0.00050 %T	—
Wavelength Accuracy	+/- 0.08 nm UV/Vis +/- 0.30 nm NIR	+/- 0.08 nm
Wavelength Reproducibility		
UV/Vis (Deuterium Lamp Lines)	< 0.020 nm	< 0.020 nm
NIR (Deuterium Lamp Lines)	< 0.080 nm	—
Standard deviation of 10 measurements UV/Vis	< 0.005 nm	< 0.005 nm
Standard deviation of 10 measurements NIR	< 0.020 nm	—
Photometric Accuracy		
Double Aperture Method 1 A	+/- 0.0006 A	+/- 0.0006 A
Double Aperture Method 0.5 A	+/- 0.0003 A	+/- 0.0003 A
NIST 1930D Filters 2 A	+/- 0.003 A	+/- 0.003 A
NIST 930D Filters 1 A	+/- 0.003 A	+/- 0.003 A
NIST 930D Filters 0.5 A	+/- 0.002 A	+/- 0.002 A
$K_2Cr_2O_7$-Solution USP/DAP method	+/- 0.010 A	+/- 0.010 A
Photometric Linearity		
(Addition of filters UV/Vis at 546.1-nm, Slit 2 nm, 1-sec. Integration Time)		
At 1.0 A	+/- 0.001 A	+/- 0.001 A
At 2.0 A	+/- 0.002 A	+/- 0.002 A
At 3.0 A	+/- 0.006 A	+/- 0.006 A
(Addition of filters NIR at 1200 nm, Gain 1, 1-sec. Integration Time)		
At 1.0 A	+/- 0.002 A	
At 2.0 A	+/- 0.007 A	

TECHNICAL DESCRIPTION AND SPECIFICATIONS	LAMBDA 900	LAMBDA 800
Photometric Reproducibility		
1 A with NIST 930D Filter at 546.1-nm Standard Deviation for 10 measurements	< 0.00016 A	< 0.00016 A
0.5 A with NIST 930D Filter at 546.1-nm Standard Deviation for 10 measurements	< 0.00008 A	< 0.00008 A
0.3 A with NIST 930D Filter at 546.1-nm Standard Deviation for 10 measurements (2-nm Slit, 1-sec. Integration)	< 0.00008 A	< 0.00008 A
Photometric Range	7 A (with SRATT)	7 A (with SRATT)
Photometric Display	Unlimited	Unlimited
Bandpass	0.05 nm–5.00 nm in 0.01-nm increments UV/Vis range 0.20 nm–20.00 nm in 0.04-nm increments NIR range Fix resolution, constant energy or slit programming.	0.05 nm–5.00 nm in 0.01-nm increments UV/Vis range Fix resolution, constant energy or slit programming.
Photometric Stability (After warm-up at 500 nm, 0 A, 2-nm Slit, 2-sec. Integration Time, Peak to Peak)	< 0.0002 A/h	< 0.0002 A/h
Baseline Flatness (Lambda 900: 190 nm–3100 nm, 2-nm Slit, Gain 1 NIR, 0.20-sec. UV/Vis–0.24-sec. NIR Integration Time, no smoothing applied) (Lambda 800: 190 nm–860 nm, 2-nm Slit, 0.20-sec. Integration Time, no smoothing applied)	+/- 0.001 A	+/- 0.001 A
Photometric Noise RMS		
0 A and 190 nm	< 0.00010 A	< 0.00010 A
0 A and 500 nm	< 0.00005 A	< 0.00005 A
2 A and 500 nm	< 0.00020 A	< 0.00020 A
4 A and 500 nm	< 0.00100 A	< 0.00100 A
6 A and 500 nm	< 0.00500 A	< 0.00500 A
0 A and 1500 nm	< 0.00004 A	—
2 A and 1500 nm	< 0.00100 A	—
3 A and 1500 nm	< 0.00500 A	—
(2-nm Slit, 1-sec. Integration Time, Gain 1 NIR)		
Sample Compartment Instrument (W x D x H)	200 mm x 300 mm x 220 mm	200 mm x 300 mm x 220 mm
Purging		
Optics	YES	YES
Sample Compartment	YES	YES
Instrument Dimension (W x D x H)	1020 mm x 630 mm x 300 mm	1020 mm x 630 mm x 300 mm
Instrument Weight	~ 65 kg	~ 55 kg
Digital I/O	RS 232 C	RS 232 C
Light Beam	90 mm above the base plate 120 mm beam separation 3 mm–12 mm beam height	90 mm above the base plate 120 mm beam separation 3 mm–12 mm beam height
Instrument Requirements		
Power	90 VAC–250 VAC, 50/60 Hz; 400 VA	90 VAC–250 VAC, 50/60 Hz; 400 VA
Temperature	10°C–35°C	10°C–35°C
Recommended Humidity	10–70% relative humidity, non-condensing	10–70% relative humidity, non-condensing

The Lambda 900 UV/Vis/NIR

The industry standard for high-performance UV/Vis/NIR spectrophotometers

Unparalleled in optical capability, the Lambda 900 is the ultimate instrument for those who simply demand the best.

With a wavelength range from 175 to 3300 nm, and a dynamic range to 7 OD, there are few samples beyond the capability of the Lambda 900.

More built-in features such as reference and sample beam attenuators and a common beam mask will save you time and money. The ability to tailor the optical bench performance to suit a given analysis makes the Lambda 900 the ideal tool for any lab or manufacturing site. The capability to scan the optical bench to zero order means quick alignment of accessories by using white light.

From the most experienced researcher to the most junior operator, the power of the Lambda 900 is only a mouse click away.

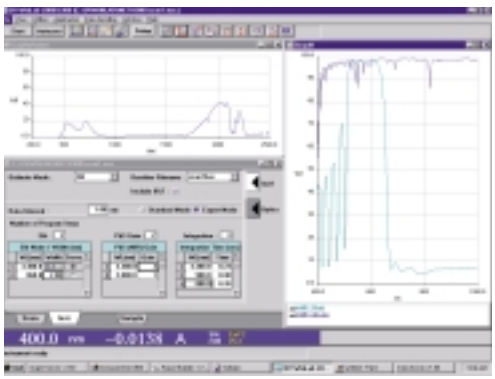
Lambda 800/900 System

KEY FEATURES	UNRIVALED BENEFITS
Wavelength Scanning to 175 nm	No additional option is required to scan below 185 nm (N_2 purging must be used)
High Sensitivity PMT	Gridless PMT design provides improved signal to noise in the UV region
Standard Sample and Reference Beam Attenuators	Included in basic instrument. No loss of sample compartment room
Standard RS232 Interface	No computer compatibility problems

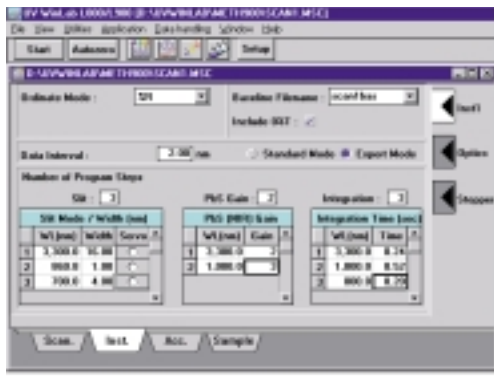
Powerful UV WinLab™ Software

Advanced features yet easy to navigate

The proven capability and stability of the Windows operating system-based UV WinLab software and standard RS232 Communications protocol all add up to a family of products unrivaled in the industry.



UV WinLab makes getting the data you need a snap. Taking full advantage of the powerful Windows multitasking feature, spectra can be collected while method parameters are being edited.



Expert mode provides another level of customization for key instrument parameters on a wavelength-specific basis, further enhancing performance.

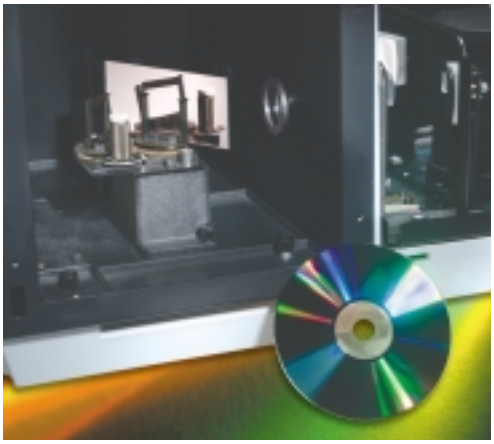
You get more than outstanding value

Of course the Lambda series of high-performance spectrophotometers provides the value you expect from PerkinElmer. You also get the unsurpassed accuracy your customers demand. With the Lambda 800 and Lambda 900 you get high-quality performance, reliable operation and convenience features at a realistic price. And, you get something that's unavailable anywhere else—the support of PerkinElmer's global service organization. You'll also find that the array of sampling tools provides a new level of flexibility from R&D through Manufacturing. Sample variety will no longer be a bottleneck to your operation.

Increased accuracy for complete confidence

At PerkinElmer we know the importance of providing your customers with accurate results day in and day out. So we designed the Lambda 800 and Lambda 900 to provide a level of measurement that gives you a competitive edge. They're high-quality instruments with the right accessories for success when results are critical. Whether your requirements are absolute reflectance at fixed or variable angles, or highly absorbing filters, the Lambda 800 and Lambda 900 provide a new level of confidence in the data you use for design or to supply to your customers.

The accuracy of a measurement is dependent upon or affected by polarized energy and you'll find the Lambda series gives you more flexibility than any other instrument without sacrificing sample compartment space. An optional common beam depolarizer provides true random energy for the system. The optional motor-driven polarization unit can be user-programmed to step through any angle of polarization required. As a matter of fact, all its features are fully programmable in our powerful UV Winlab™ software environment.

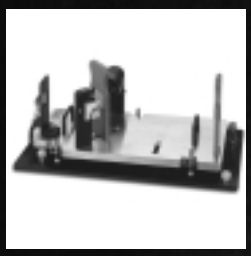


Large sample compartment with removeable front panel affords easy access to sample.

The standard sample compartment of the Lambda 800/900, the largest in the industry, provides room for multiple accessories to be used when the analysis requires it. Here transmission measurements are being made on a glass sample using the motor-driven polarizer option. And there is still room to spare. Additionally, the floor of the sample compartment can be removed, allowing for even larger samples to be analyzed. The Standard Detector module has also been replaced with the optional Sphere Detector module which adds additional measurement capability to the system.

UV WinLab software makes setup and running easy

Our powerful UV WinLab software allows you to benefit from years of PerkinElmer experience in developing platforms based on the Windows® operating system. Now it's easy for your engineers or technicians to set up and begin generating useful data in the shortest time possible.



Absolute fixed angle reflectance accessory

6° Relative reflectance accessory

Running your manufacturing operation 24 hours a day? Then you'll appreciate:

- Security features such as a Locked Methods Function so you'll have no downtime or bad product from an inadvertent change of method
- Defined methods for any class of sample can be locked, making unauthorized changes impossible

With the Lambda 800 and Lambda 900 you get the data you need any way you need it. All normal modes of operation are included along with the added feature of an Expert Mode of operation. This mode allows a knowledgeable user of the instrument to customize the system operation whenever necessary. Report templates are easy to create so you can see your results the way you or your customers need.

FAST FACTS

Lambda 800/900 Spectrophotometers

→ The only UV/Vis, UV/Vis/NIR spectrophotometer to offer the advanced Q-COM concept

→ Choice of formats for storing or transferring data: ASCII, Binary, JCAMP

→ Product specialists available to provide training and applications consultation services

→ Full testing, certification, validation and support services provided by factory-trained customer support engineers

Made smart to improve reliability

For years PerkinElmer has recognized the importance of reliable instruments. They have to do more than provide the results you need—they have to do it reliably. To ensure optimum performance, the Lambda 800 and Lambda 900 perform self-diagnostic tests every time they are turned on. The user can also initiate a wavelength calibration of the instrument at any time. Our global service organization also provides IQ/OQ services that prove the instrument is working according to specifications and that your results are accurate.

Designed for your convenience

The Lambda 800 and Lambda 900 utilize the Quick Change Optical Modules (Q-COM) concept. These large sample compartment/detector modules can be rapidly changed from a standard configuration to a 150-mm integrating sphere to a General Purpose Optical Bench (GPOB) to a VN specular reflectance/collection sphere module. This allows you to easily analyze your samples the way you want.

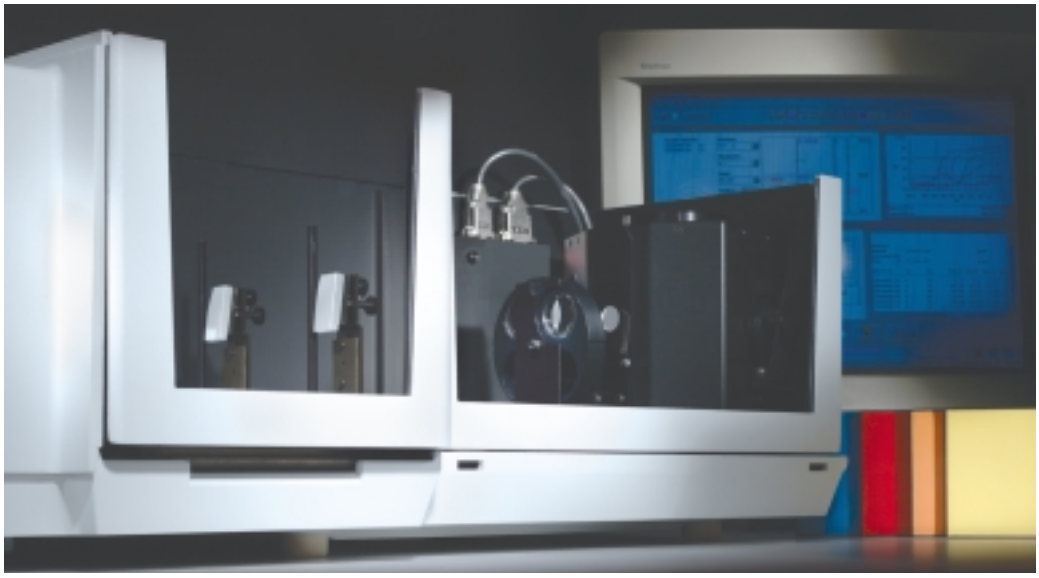
The extensive use of locating pins, kinematic mounts and magnetic mounts provides a convenient, rapid means of swapping accessories and sample holders. The GPOB with magnetic optical mounts allows you to create an optical system to handle a wide range of sample types including lenses and telescopes—convenience when you need it.

Quick and easy maintenance

Maintenance is a fact of life but it doesn't need to be a concern. With the Lambda 800 and Lambda 900 you'll find:

- Pre-aligned UV and Visible lamps for quick replacement
- There's no alignment necessary when a lamp change is required, so there's no service call, no downtime and no delayed shipment

These features alone are a production manager's and technician's dream come true. Plus, a remote diagnostics capability is available to isolate a problem prior to a service engineer's visit, saving you time and money.



The Lambda 800/900 with the optional 150-mm sphere accessory is the perfect tool for analysis of color, glass and textiles.

Accessories to fit your application

The Lambda 800 and Lambda 900 share a comprehensive array of sampling accessories. Any one of them can be easily changed to accommodate the next sample requirement. With their open architectural design, adding new accessories, now and in the future, is simple.

Innovative accessories, like the General Purpose Optical Bench, allow you to develop your own sampling configurations in just minutes. The new Sphere Detector module makes it a snap to perform analysis on difficult optical components.

When an application requires the use of an integrating sphere for analysis of color or glass, the Lambda series has what it takes. Both 60- and 150-mm spheres are available. And these, like all Lambda accessories, are designed to be installed in a minimal amount of time. Many different designs are available for all your needs. Diffuse, specular, and absolute reflectance are all easily performed. Now, liquid samples and transmission measurements on a wide range of materials are no problem.

All these accessories, and an array of others, will keep you on the cutting edge of optical spectroscopy. With an investment in PerkinElmer's high-performance UV/Vis and UV/Vis/NIR technologies, you'll achieve the standard of excellence your customers demand and a higher standard to which your competition will be held.

The Lambda 800 UV/Vis

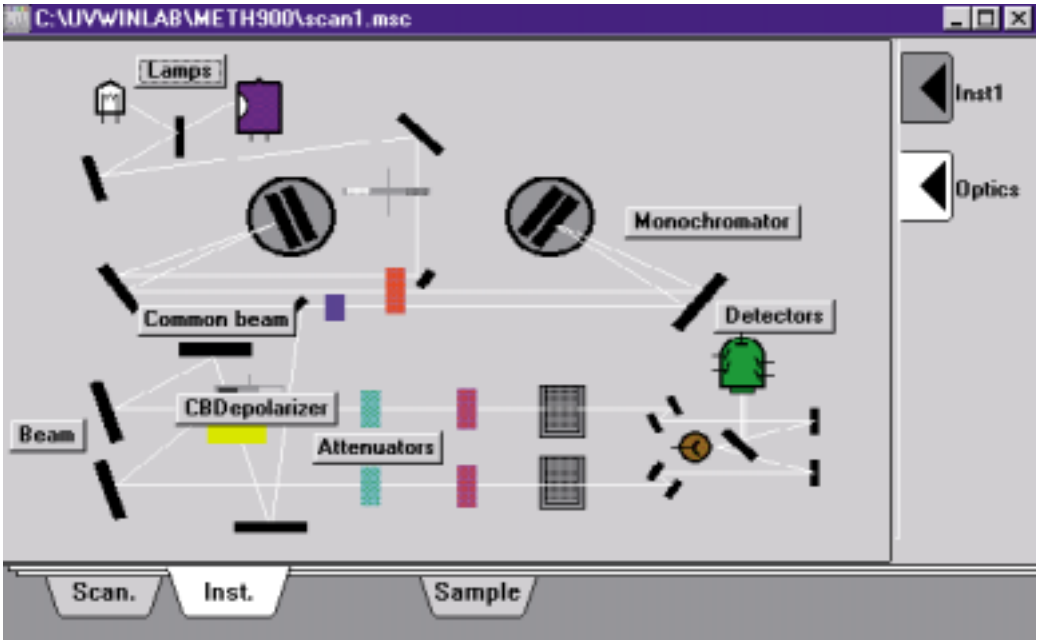
The newest addition to our series of superior spectrophotometers

The Lambda 800 offers the same level of performance you expect from one of the world's highest quality instruments, the Lambda 900 UV/Vis/NIR. For world-class performance from the deep UV through the Visible region (175 to 900 nm) there's no need to look further than the Lambda 800. The unique photomultiplier design offers the widest dynamic range possible to handle your most optically demanding samples.

Fiberoptic stages designed to maximize energy input to fiber under test

Solid sample holder

Variable angle reflectance accessory



The user can modify many optical bench parameters through UV WinLab to optimize performance for a particular analysis.

Scanning methods

- Full range scans (175 to 3300 nm) for the Lambda 900, (175 to 900 nm) for the Lambda 800, with real-time graphical display
- Abscissa modes for Reflectance, Transmission, Absorbance
- Easy transfer of scan data to report builder as well as third-party software packages
- End-Run Application Support for post-processing of data
- Calculate, display, and report 1st through 4th derivative spectra
- Wavelength programming
- Energy scanning modes for both Sample and Reference Beams

Time-based methods

- Graphical real-time display of absorbance versus time experiments
- Automatically determine slope for a specified time period, and multiply by a user-factor
- List experimental data (A and time) to optional external printer
- All data stored for future use

Quantitative analysis

- Calibration curves with 1 to 3 wavelengths, peak area, peak height, 2nd or 4th derivative, or absorbance ratio
- Calibration curves of 1st, 2nd, 3rd order, or segmented (bracketed interpolation) with floating or forced intercept
- Custom quantitation modes can be user-programmed
- Automatic calculation of kinetic rate, based on linear regression and user-input start- and end-times

Accessories to reduce beam size are available

9 +9 Peltier-controlled cell changer accessory

PerkinElmer, Inc.

PerkinElmer, Inc. is a global technology leader focused in the following businesses — Life and Analytical Sciences, Optoelectronics, and Fluid Sciences. Combining operational excellence and technology expertise with an intimate understanding of its customers' needs, PerkinElmer creates innovative solutions that accelerate drug discovery, enhance research productivity, help meet regulatory requirements, improve time-to-market and increase manufacturing efficiencies.

There are over 60 years of experience built into every product we make, backed by an unparalleled service and support team that serves customers in more than 125 countries around the world. And online consumables, reagents and accessories ordering lets you get your hands on what you need fast.

Additional information on the company is available through www.perkinelmer.com or 1-877-PKI-NYSE.

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