Agilent 1100 Series UV-Visible Detectors

High sensitive UV detection for a wide range of needs

The 1100 Series UV-visible detectors are designed to achieve high sensitivity and outstanding productivity. The detectors offer:

- State-of-the-art optics for high signal level, low baseline noise, low drift and minimum refractive-index effects. A wide range of flow cells allows you to adapt to all application needs.
- Convenient instrument control through the Agilent 1100 Series handheld controller with single-point instrument control and signal display or the Agilent ChemStation Plus for instrument control and convenient data evaluation, reporting and diagnostics.
- Built-in GLP/GMP compliance features, including automated wavelength verification, tracking of system performance and maintenance.
- Easy analytical method setup for all instrument parameters.
- Immediate results review of the separation process through monitoring of multiple signals and spectral data.
- Automated PQ through checks with chromatographic control criteria presets. A built-in system suitability software alerts the user and, if necessary, stops the system in time.
- Early maintenance feedback (EMF). Timely maintenance warnings at your own predefined limits help to keep your system operating at maximum productivity and lowest costs.

The Agilent 1100 Series UV-Visible detectors:

- **1100 Series variable wavelength detector** (G1314A)
- **1100 Series multiwavelength detector** (G1365B)
- **1100 Series diode-array detector** (G1315B)

Agilent Technologies

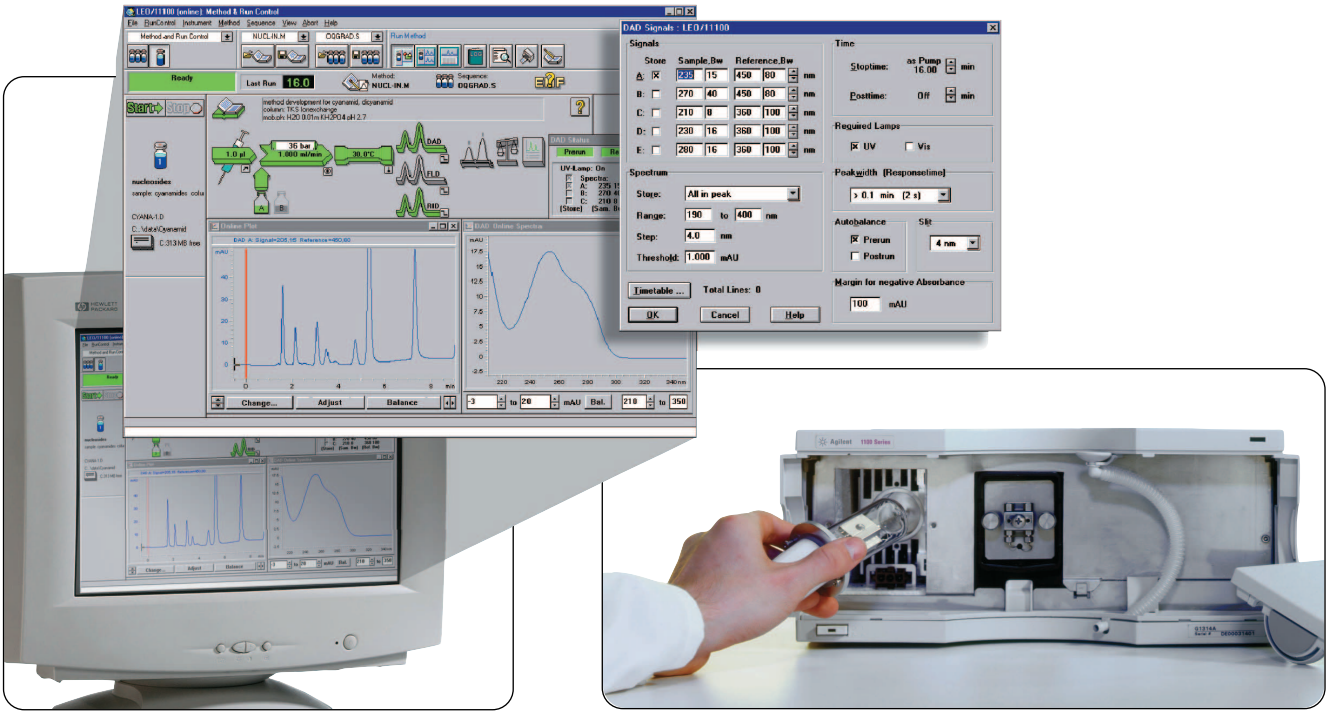
A choice of three detectors with high sensitivity that increase laboratory productivity

Whether you want a standalone UV-visible detector that extends your analytical range or an automated HPLC system with UV-visible detection for maximum productivity, the industryleading Agilent 1100 Series HPLC offers the UV-detector that best suits your needs.

The Agilent 1100 Series variable wavelength detector lowers your detection limits with a simplified design optimized for high sensitivity and low baseline drift.

The Agilent 1100 Series multiwavelength detector lets you detect up to five different wavelengths simultaneously without sacrificing sensitivity.

The Agilent 1100 Series diode array detector gives you the full power of multi-wavelength detection and spectral information with the highest resolution and sensitivity.

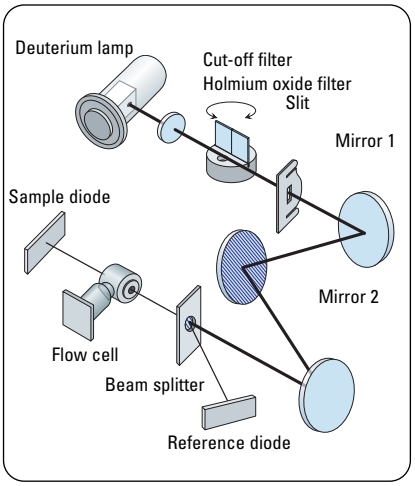


Agilent 1100 Series Variable Wavelength Detector

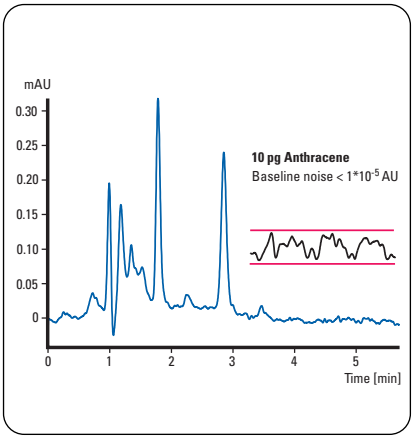
High sensitivity and stability

The Agilent 1100 Series VWD provides high sensitivity and improves productivity in routine work.
This detector offers:

- Minimum baseline noise and highest baseline stability for lowest detection limits.
- A wide linear range for reliable simultaneous quantitation of main and side products and impurities.
- Programmable wavelength switching for sensitivity and selectivity optimized to each analyte's elution.
- Stop-flow wavelength scanning for quick wavelength optimization.



The Holmium oxide filter swings into the light path to verify that your wavelenth matches the setpoints.



Reengineered optics give high signal level, low baseline noise, low drift and minimum refractive index effects.

Specifications

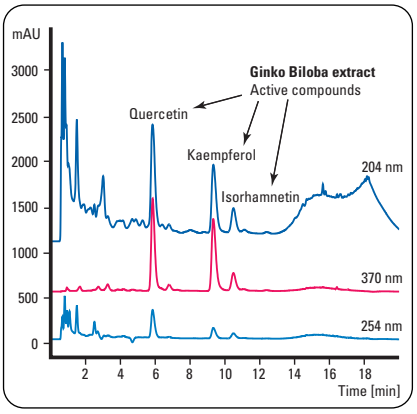
Detector type:		Double beam
Light source:		Deuterium lamp
Short-term noise:*		± 0.75 x 10-5AU at 254 nm
Drift:*		3 x 10-4 AU/h at 254 nm
Linearity:		> 2 AU upper limit
Wavelength range:		190 – 600 nm
Wavelength accuracy:		±1 nm, self-calibration with deuterium lines, verification with Holmium oxide filter
Slit width:		6.5 nm typical
Diode width:		not applicable
Wavelength bunching:		not applicable
Flow cells:	• Standard	14 µl, volume, 10 mm cell path length 40 bar (588 psi) pressure maximum
	• Semi-micro	5 µl, volume, 6 mm cell path length 40 bar (588 psi) pressure maximum
	• Micro	1 µl, volume, 5 mm cell path length 40 bar (588 psi) pressure maximum
	• Nano	Third party, contact Agilent for details
	• High pressure	14 µl, volume, 10 mm cell path length 400 bar (5880 psi) pressure maximum
Time programmable:		Wavelength, polarity, peak width, lamp on/off
Spectral tools:		Stop-flow wavelength scan
Analog output:		Recorder/Integrator 100 mV or 1 V, 1 output
Specials:		Optional cuvette holder

Agilent 1100 Series Multiwavelength Detector

More information and flexibility without any loss in sensitivity

This is the first dedicated multiwavelength detector that offers the same high sensitivity for both single- and multiwavelength detection based on a diode array design from 190 – 950 nm. A temperature management system make the optical design now even more tolerant to ambient temperature changes. The detector offers:

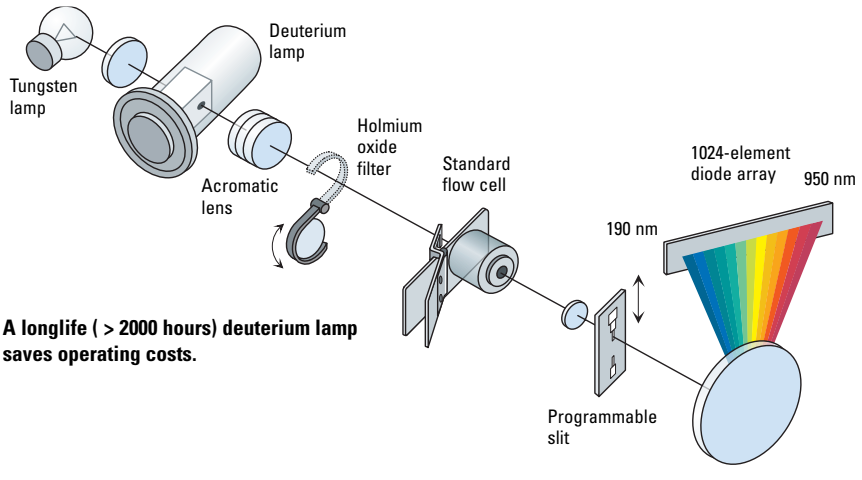
- Accelerated analytical observations by monitoring analytes and impurities simultaneously.
- Signal acquisition of up to 5 signals at different wavelengths during a single analysis– each optimized for a specific analyte and therefore highest sensitivity.
- Optimized selectivity and sensitivity through a programmable slit.
- Upgrade to full spectral capability.
- Use the wide linear range for reliable quantitation of side products and impurities, down to levels of < 0.05% of the main compound.



Sensitive quantitation of active compounds and impurities in a single run without wavelength switching.

Specifications

Detector type:		1024-element diode array
Light source:		Deuterium and tungsten lamp
Short-term noise:*		±1.0 x 10-5 AU at 254 nm and at 750 nm
Drift:*		2 x 10-3 AU/h at 254 nm
Linearity:		> 2 AU upper limit
Wavelength range:		190 – 950 nm
Wavelength accuracy:		±1 nm, self-calibration with deuterium, lines verification with Holmium oxide filter
Slit width:		Programmable: 1, 2, 4, 8, 16 nm
Diode width:		< 1 nm
Wavelength bunching:		Programmable: 2 to 400 nm, in steps of 1nm
Flow cells:	• Standard	13 µl, volume, 10 mm cell path length 120 bar (1760 psi) pressure maximum
	• Semi-micro	5 µl, volume, 6 mm cell path length 120 bar (1760 psi) pressure maximum
	• Micro	1.7 µl, volume, 6 mm cell path length 400 bar (5880 psi) pressure maximum
	• Nano	500 nanoliter, vol., 10 mm cell path length 40 bar (588 psi) pressure maximum
	• High pressure	1.7 µl, volume, 6 mm cell path length 400 bar (5880 psi) pressure maximum
Time programmable:		Wavelength, polarity, peak width, on/offlamp on/off bandwidth, autobalance
Spectral tools:		Stop-flow wavelength scan
Analog output:		Recorder/Integrator 100 mV or 1 V, 2 outputs



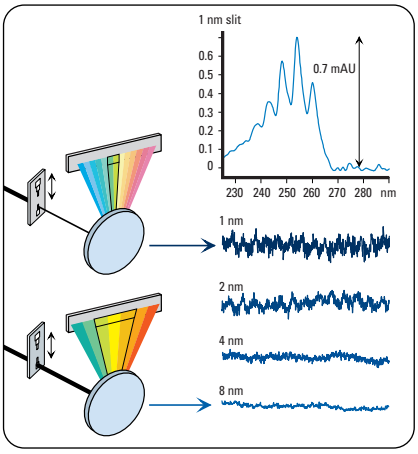
A longlife (> 2000 hours) deuterium lamp saves operating costs.

Agilent 1100 Series Diode Array Detector

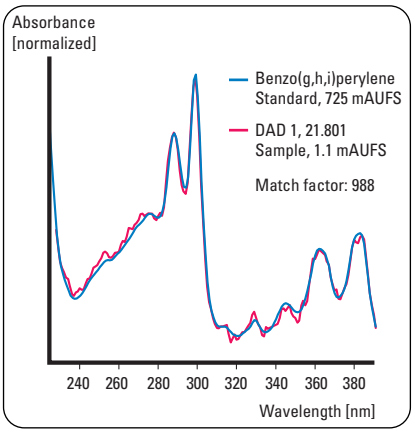
Complete confidence from spectral data

This detector is designed for highest optical performance and reliability. It offers:

- Expanded detection range through deuterium and tungsten lamps, offering 190 to 950 nm with highest intensity and lowest detection limit.
- 1024 diodes and a 1-nm slit for high spectral resolution.
- A programmable slit (1 to 16 nm) for rapid, optimized sensitivity, linearity and spectral resolution. A motor allow to program the slit as part of the method for optimum incident light conditions.
- Separation quality verification through peak purity, multiple signals and spectral libraries – interactively or automatically in the same run as the analytical quantification.
- A reference wavelength to eliminate background interferences.



Flexible slit setting from fine bands to highest sensitivity: At the setting of 1 nm the fine structure of benzene can be revealed – even at 0.7 mAUFS. A broad slit of 8 or 16 nm can be coosen to minimize baseline noise thereby enhancing sensitivity.



Quantitative and qualitative information in trace analysis.

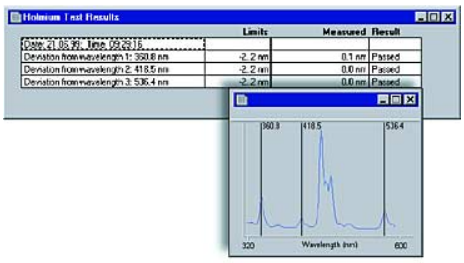
Specifications

Detector type:	1024-element diode array
Light source:	Deuterium and tungsten lamp
Short-term noise:*	±1.0 x 10-5 AU at 254 nm and at 750 nm
Drift:*	2 x 10-3 AU/h at 254 nm
Linearity:	> 2 AU upper limit
Wavelength range:	190 – 950 nm
Wavelength accuracy:	±1 nm, self-calibration with deuterium, lines verification with Holmium oxide filter
Slit width:	Programmable: 1, 2, 4, 8, 16 nm
Diode width:	< 1 nm
Wavelength bunching:	Programmable: 2 to 400 nm, in steps of 1nm
Flow cells: • Standard	13 µl, volume, 10 mm cell path length 120 bar (1760 psi) pressure maximum
• Semi-micro	5 µl, volume, 6 mm cell path length 120 bar (1760 psi) pressure maximum
• Micro	1.7 µl, volume, 6 mm cell path length 400 bar (5880 psi) pressure maximum
• Nano	500 nanoliter, vol., 10 mm cell path length 40 bar (588 psi) pressure maximum
• High pressure	1.7 µl, volume, 6 mm cell path length 400 bar (5880 psi) pressure maximum
Time programmable:	Wavelength, polarity, peak width, lamp bandwidth, autobalance, WL range, threshold, spectra storage mode
Spectral tools:	Data analysis software for spectra evaluation, including spectral libraries and peak purity functions
Analog output:	Recorder/Integrator 100 mV or 1 V, 2 outputs

Typical column length	Typical peak width	Recommended flow cell				
T <= 5 cm	0.025 min	500 nl flow cell				
10 cm	0.05 min		Semi-micro flow cell			High-pressure flow cell
20 cm	0.1 min			Standard flow cell		
>= 40 cm	0.2 min					For pressures above 100 bar
Typical flow rate		0.01 – 0.2 ml/min	0.2 – 0.4 ml/min	0.4 – 0.4 ml/min	1– 2 ml/min	0.01 – 5 ml/min
Internal column diameter		0.3 – 1 mm	2.1 mm	3.0 mm	4.6 mm	

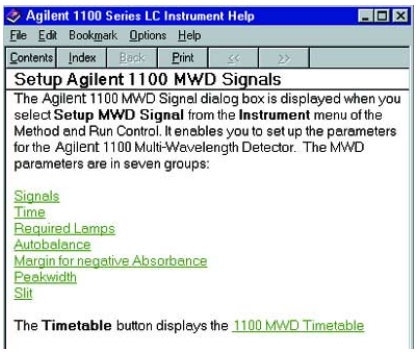
Do capillary HPLC with the 500-nanoliter flow cell to improve detection limits 50 to 100-fold compared to standard-bore HPLC.

Built-in tools that make your work easier and faster



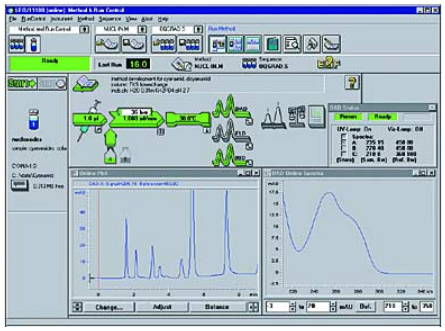
1. Validating the HPLC detector

Built-in automated tools for installation and performance verification prove the suitability of the complete Agilent 1100 Series HPLC system or the standalone detector. This makes it easy to comply with regulatory and quality standards that require routine verification of wavelength accuracy for UV-visible detectors. Results can be stored on a disk for easy review. A qualification workbook and standard operating procedures for such activities as wavelength verification are available.



2. Setting up the analytical method

System features such as an intuitive graphical user interface, context-sensitive help and an online tutorial save operator training time. You can use the Agilent ChemStation's color-coded system display or the cue card-like screens of the handheld control module to enter all detector parameters easily. You can store method information on a PC card in the handheld controller or on the computer's hard disk for GLP compliance. This includes all instrument parameters, even slit settings.

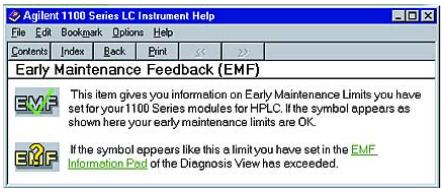


3. Reviewing results immediately

You can monitor separation progress online with the handheld control module or the Agilent ChemStation. Moreover, the Agilent ChemStation lets you view online plots of multiple signals and spectral data or take snapshots for evaluation while the run is underway. Combine the ChemStation with Agilent's Security Pack and you get FDA 21 CFR Part 11 compliance for electronic signatures and records.

4. Performance Qualification (PQ)

You can preset chromatographic quality control criteria for automated quality assurance. If the system does not pass your preset criteria, the built-in system suitability software alerts you and can stop the system before more time and samples are wasted. You can also define a lamp burn-time limit to prevent quality control failures.



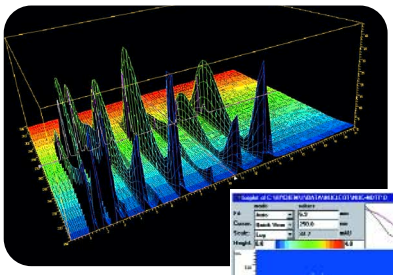
5. Saving costs of ownership

Time-programming, early maintenance feedback (EMF) and diagnostic software help to prevent costly instrument downtime. You can preserve the lamp for a longer productive life with automatic shutdown after analysis, or use clocktime programming to switch on the lamp and eliminate waiting periods at the start of the day. Pre-aligned for fast, error-free exchange, the lamp is easy to install from the front. The built-in diagnostic software lets you identify sources of chromatographic problems, such as a contaminated flow cell or failing lamp.

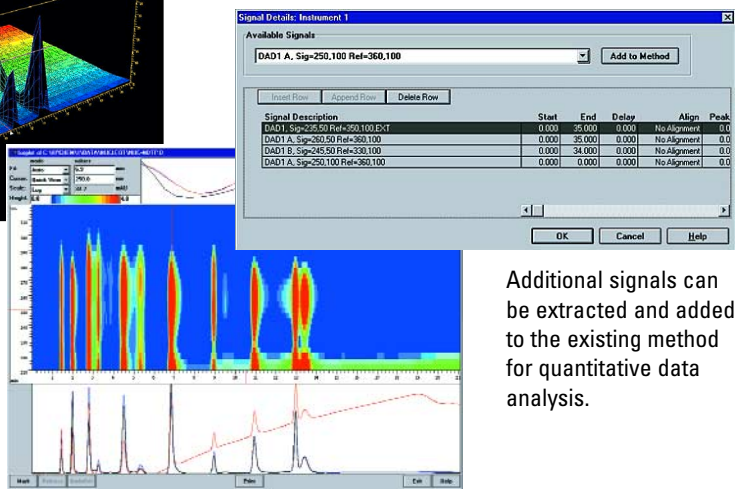
Spectral landscapes that enable faster sample characterization – *routinely*

The Agilent 1100 Series industry-standard diode array detector has made its way into routine laboratories because of its sensitivity, ease of use and automated features for spectral analysis. Now you can quantify and confirm the identity of analytes at the lowest trace-level amounts in a single analysis. With the Agilent 1100 Series diode array detector:

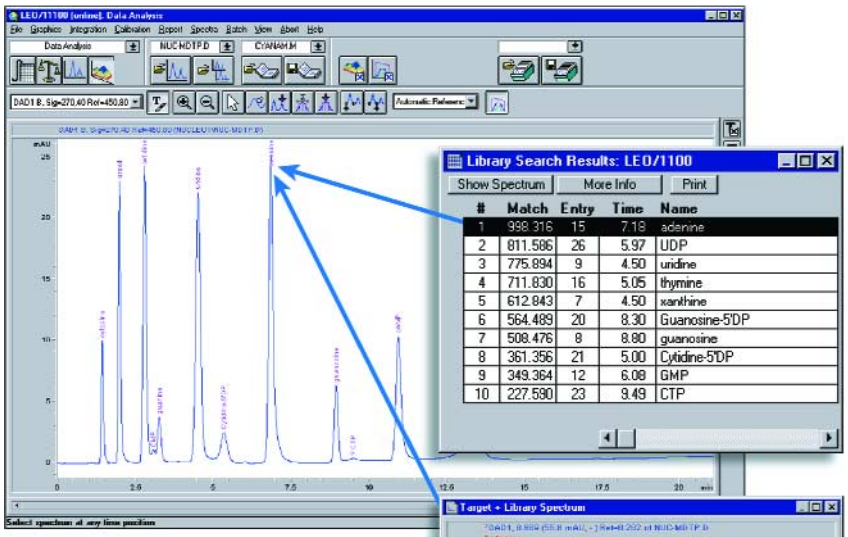
- A single method encompasses both quantitative and spectral routines for peak purity and peak confirmation.
- A variety of automatic spectral acquisition modes (all-spectra-in-run, peak-controlled, slopes and apex) are optimized for minimum file size. Collect only the wavelength range you want and it prevents your PC's hard disk from overflowing during unattended opera tion, even in high-throughput applications.
- Spectral libraries and sophisticated search routines support interactive or automatic compound confirmation.
- Impurity detection routines, such as peak purity algorithms, are advanced enough to detect irregularities at the front and tail of a peak – interactively or automatically, in research and quality control.
- Report templates let you present signal and spectral data tailored to corporate, regulatory or client standards, automatically.



A bird's eye view speeds up wavelength optimization and extraction of additional signals.
You can view the data from above and follow the contours of an analyte's isoabsorbance plot. Sliding the cursor throughthe spectral landscape lets you find the best signal response.



Additional signals can be extracted and added to the existing method for quantitative data analysis.

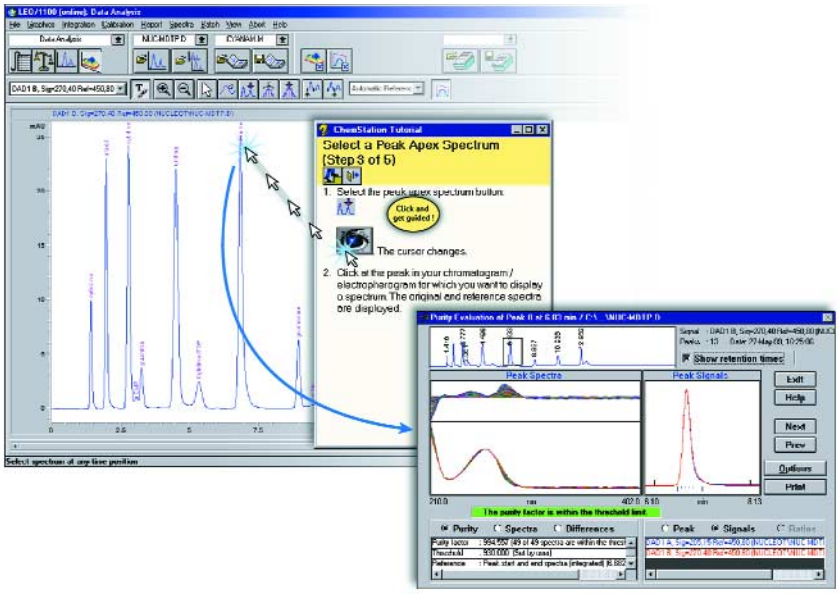


Combining search criteria enhances certainty.
Applying reference spectra, averaged reference spectra, retention time windows, smooth factors and absorbance thresholds refines your search procedure, for the best match.

You can create your own library of spectral standards and rapidly map unknown compound's spectrum.
The Agilent ChemStation lets you screen unknowns automatically. Interactively or unattended.

Various tools give you fast setup.
The Agilent ChemStation's graphical user interface makes it fast and simple to set up and run standards and store method-specific spectra together with search criteria. Online Show-me tutorials can greatly reduce operator training time.

Interactive online Show-me tutorials



An interactive online Show-me tutorial demonstrates step-by-step the simple route to peak purity.
You can take the simple route, or explore the depths with spectra similarity routines. The Agilent 1100 Series diode array detector combined with the Agilent ChemStation can reveal impurities as small as 0.1 percent – even when coeluting at the beginning or end of an otherwise well-resolved peak.

Specifications common to all UV detectors

Control:	Parameter entry, multi-signal display, online help and diagnostics on the Agilent 1100 Series control module, optional PC (PCMCIA) card for method, sequence and logbook storage. Agilent ChemStation for HPLC as computer platform for control and data evaluation.
Communications:	Controller-area network (CAN), HP-IB, RS-232C, APG. Remote outputs: ready signal. In- and outputs:start, stop and shutdown signals
Safety and maintenance:	Extensive diagnostics, error detection and display (through control module and Agilent ChemStation), leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas.
GLP features:	Early maintenance feedback (EMF) for continuous tracking of instrument usage in terms of lamp burn time with user-settable limits and feedback messages. Electronic records of maintenance and errors. Verification of wave length accuracy with built-in Holmium oxide filter.
Housing:	All materials recyclable
Environment:	0 to 55 °C constant temperature at < 95 % humidity (non-condensing)
Dimensions:	(h x w x d) =140 mm x 345 mm x 435 mm, (5.5 x 13.5 x 17 inches)
Weight:	11.5 kg (25.5 lbs)

www.agilent.com/chem/1100

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