

Agilent 1290 Infinity III Fluorescence Detector

High-sensitivity UHPLC fluorescence detection for more
confident trace-level decisions



Confidence at trace level

The Agilent 1290 Infinity III Fluorescence Detector (FLD) combines high sensitivity, UHPLC-ready performance, and a wide linear working range in one advanced fluorescence detector. It reveals ultratrace analytes with outstanding clarity while maintaining chromatographic fidelity. Rapid excitation and emission wavelength switching, low-dispersion flow cells, and intuitive operation help laboratories generate high-quality fluorescence data with confidence.

With spectral data in both excitation and emission dimensions, the detector delivers more reliable quantitation, stronger peak confirmation, and faster analytical decisions across biopharma, food safety, and environmental UHPLC workflows.



Features

- **Superior fluorescence sensitivity:** Achieve Raman S/N > 2500 and Raman S/N versus dark > 30000 for cleaner baselines, stronger peaks, and confident trace-level detection.
- **UHPLC-ready peak integrity:** Protect narrow UHPLC peaks with low-dispersion 2 and 13 μ L flow cells, high acquisition speed, and fast switching for reliable integration.
- **More evidence per injection:** Confirm in one run with up to five Ex/Em pairs, online 200 to 800 nm spectra, and < 250 ms wavelength switching for fewer follow-up injections.
- **Fast wavelength switching:** Maintain selectivity in fast methods with < 250 ms switching for demanding multiwavelength workflows.
- **Wide linear working range:** Support reliable quantitation across demanding concentration ranges with strong sensitivity, low noise, and stable UHPLC signal fidelity.
- **Easy front-access service:** Minimize downtime with quick, front-access, tool-free exchange of lamp, flow cell, and window, supported by a 2000-hour guaranteed lamp lifetime for reliable routine operation.
- **Broad pH compatibility:** Support method flexibility across chemistries with broad pH tolerance from 1.0 to 12.5 for biopharma and routine QC workflows.
- **High-energy optical design:** Use a 150 W Hg-Xe lamp and high-performance optics to deliver strong excitation energy, stable output, and low-noise signal quality.
- **Broad software support:** Supports Agilent software workflows for integrated instrument control and routine operation.
- **Biopharma-ready flexibility:** Biocompatible wetted materials and UHPLC-optimized fluidics support demanding analytical workflows with high data confidence.

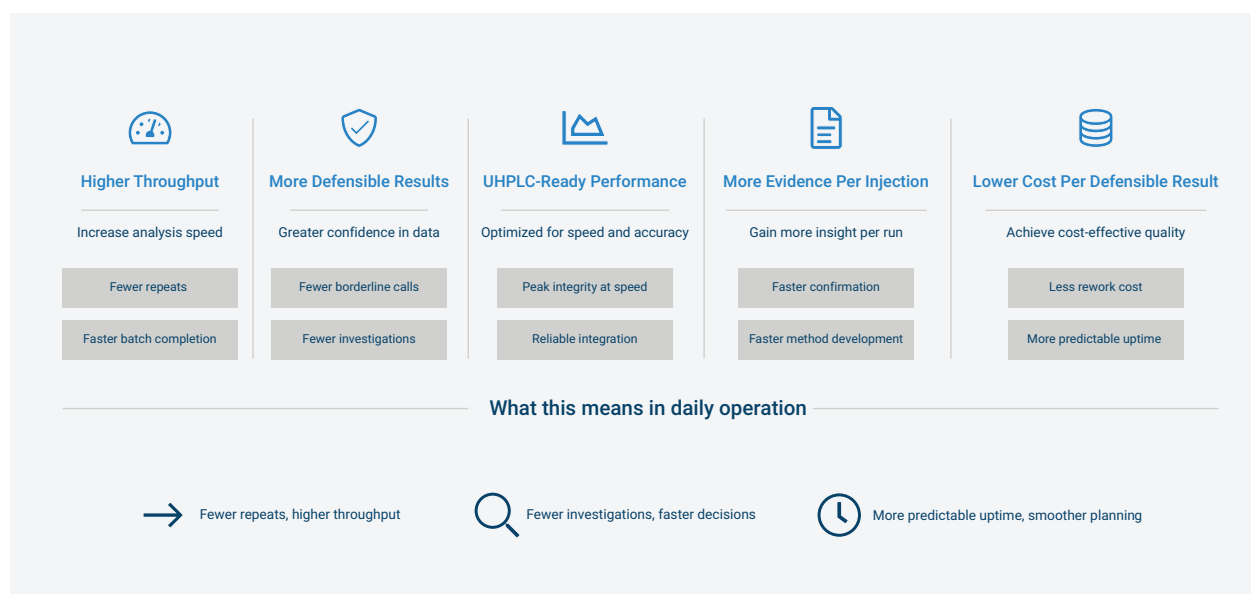
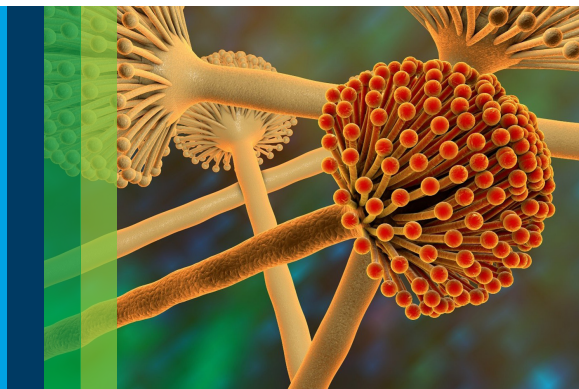


Figure 1. Feature and value overview of the Agilent 1290 Infinity III Fluorescence Detector for confident UHPLC fluorescence analysis.

Aflatoxins

Sensitive detection without postcolumn derivatization

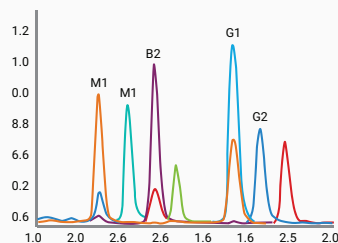


Aflatoxin analysis leaves little room for compromise. The Agilent 1290 Infinity III FLD combines UHPLC speed, trace-level sensitivity, and simplified operation in one solution by enabling aflatoxin analysis with a low-dispersion 13 μL flow cell and without postcolumn derivatization. This reduces method complexity and operating burden while delivering calibration from 1 to 100,000 ng/L, R^2 values of 0.99998 or higher, and a fast five-minute UHPLC method.

The business value for food labs is immediate: simpler workflows, lower operational effort, and greater confidence in results near regulatory thresholds. Instead of adding derivatization hardware and extra process steps, laboratories can achieve the required sensitivity in a more streamlined setup that supports faster turnaround and more reliable decision-making. In the cited study, all aflatoxin LODs were below 1 fg/ μL , with LOQs at ≤ 1 ng/L for G2, B1, B2, and M2 and < 2 ng/L for G1 and M1, alongside strong repeatability with retention time RSDs typically below 0.15% and area RSDs below 0.38%.

Sensitive quantitation without derivatization

Skip derivatization, keep sensitivity



1 to 100,000 ng/L

$R^2 \geq 0.99998$ across all six aflatoxins



No postcolumn
derivatization

RT RSD < 0.15% Area RSD < 0.38%



LODs below 1 fg/ μL



5-minute UHPLC
method

Lower method complexity. Faster routine testing. Greater confidence near regulatory limits.

Figure 2. Aflatoxin application highlight showing sensitive UHPLC quantitation without postcolumn derivatization, enabling lower workflow complexity, faster routine testing, and confident decisions near regulatory limits.

PAHs

Fast wavelength switching for selective UHPLC analysis

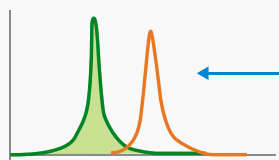


Polycyclic Aromatic Hydrocarbon (PAH) analysis requires more than sensitivity alone. The Agilent 1290 Infinity III FLD combines fluorescence selectivity, UHPLC-ready speed, and fast wavelength switching to help laboratories analyze complex PAH mixtures with greater confidence. In the Agilent application note, the detector was used with online excitation and emission scans to optimize a 16-compound PAH method, supporting rapid separations with low-dispersion detection and high-speed acquisition.

The benefit for environmental labs is immediate: Improved selectivity in demanding PAH workflows and robust quantitation across wide concentration ranges. The study reports a typical linear dynamic range above five decades with LOQs in the lower ng/L region. For benzo(a)pyrene, the method delivered an LDR of 5.5 decades, $R^2 = 0.99987$, and an LOQ of 19 ng/L. With wavelength switching around 120 ms, the detector also enabled selective analysis of closely eluting compounds such as benzo(a)anthracene and chrysene at their individual wavelength optima, supporting faster methods without compromising confidence in the result.

Selective PAH analysis at UHPLC speed

Fast switching preserves selectivity in fast methods



■ Benzo(a)anthracene
Ex 283 nm / Em 390 nm

■ Chrysene
Ex 266 nm / Em 382 nm

~120 ms
wavelength switching

Fast enough to analyze benzo(a)anthracene and chrysene at their individual wavelength optima

Note: the above chromatograms are examples only, and are not based on actual datasets.



Typical LDR
> 5 decades



LOQs in the lower
ng/L region



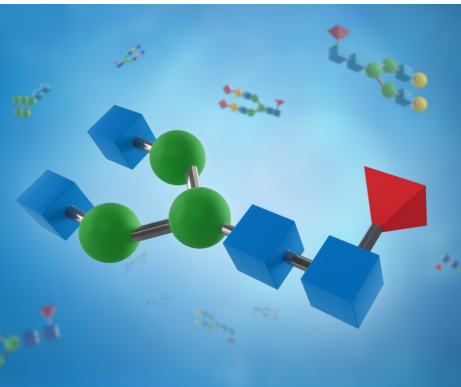
Benzo(a)pyrene:
5.5 decades, $R^2 = 0.99987$
LOQ = 19 ng/L

More selectivity in complex PAH mixtures. Reliable quantitation across broad concentration ranges.

Figure 3. The Agilent 1290 Infinity III Fluorescence Detector enables selective PAH analysis at UHPLC speed, combining fast wavelength switching, broad linear dynamic range, and low-ng/L sensitivity to support confident quantitation of complex PAH mixtures.

Glycans

High-confidence fluorescence detection for complex biopharma workflows



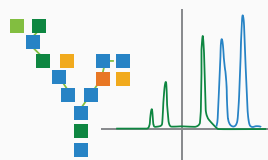
Glycan analysis demands more than sensitivity alone. The Agilent 1290 Infinity III FLD combines fluorescence sensitivity, UHPLC-ready performance, and strong repeatability to help biopharma laboratories characterize both major and minor glycoforms with greater confidence. In the InstantPC-labeled human IgG application note, predominant glycan structures were effectively separated within 30 minutes, while calibration curves for five glycans showed correlation coefficients above 0.999 across at least 0.8 fmol/ μ L to 10 pmol/ μ L.

The benefit for biopharma labs is immediate: More reliable glycan quantitation, lower troubleshooting effort, and fewer reruns when low-level species matter. This enables laboratories to generate more robust data in a single method, improve confidence in product characterization, and support faster decision-making across routine and advanced glycan workflows.

High-confidence glycan profiling across abundant and low-level species

See major and minor glycoforms with confidence

UHPLC peak fidelity plus fluorescence sensitivity supports reliable glycan quantitation without rework



Linearity > 0.999

At least 0.8 fmol/ μ L to 10 pmol/ μ L for five glycans



30-minute separation



Low LOD/LOQ



Supports abundant and low-level glycoforms in one method

Fewer reruns. Lower troubleshooting burden. More defensible glycan decisions.

Figure 4. Glycan application highlight showing how the Agilent 1290 Infinity III Fluorescence Detector supports confident profiling of major and minor glycoforms through high sensitivity, strong linearity, and UHPLC-ready performance.

Table 1. Performance specifications of the Agilent 1290 Infinity III Fluorescence Detector (G7123B)

Key Feature	Specification	Why It Matters
Detection Technology	Fluorescence detector	Highly selective and sensitive detection for trace-level analysis
Sensitivity	Raman SNR > 2500; Raman SNR vs. dark > 30000	Cleaner baselines, stronger peaks, and greater confidence at low levels
Maximum Data Rate	Up to 160 Hz	Reliable capture of narrow UHPLC peaks
Wavelength Range	200–1200 nm, plus zero-order	Broad flexibility for diverse fluorescence methods
Spectrum Acquisition	Excitation and emission spectra, scan range 200–800 nm	More spectral information for confident peak characterization
Multichannel Acquisition	Up to 5 channels	More evidence per injection and fewer repeat runs
Flow Cell Options	2 µL and 13 µL	Choose between maximum UHPLC peak fidelity or higher sensitivity
Maximum Pressure	60 bar (6 MPa)	Robust flow-cell pressure tolerance for UHPLC detector flow paths
pH Range	1.0–12.5	Broad method flexibility across applications
Light Source	150 W Hg-Xe arc lamp	High excitation energy and stable signal performance
Wetted Materials	MP35N, fused silica, FEP	Biocompatible flow path for sensitive applications
Maintenance	Tool-free lamp, flow cell, and lamp-house window exchange	Faster service and reduced downtime
Smart Operation	Agilent InfinityLab Assist support, leak detection, EMF diagnostics	Easier operation, predictive maintenance, and improved uptime

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