Welch Materials

WelView®
Photo Chemical Reactor



Product Overview

The WelView Photo Chemical Reactor developed by Welch Materials features a color display for instrument status monitoring, along with UV lamp fault detection and leak alarm functions, significantly improving derivatization performance and extending the service life of the UV lamps.

During use, the instrument is installed between the column and the detector to carry out continuous post-column photochemical derivatization, thereby enhancing the sensitivity and selectivity of fluorescence, UV, electrochemical, and chemiluminescence detectors.

When aflatoxins are analyzed by HPLC-FLD under this post-column derivatization system, no chemical reagents are required and fluorescence intensity of aflatoxins B1 and G1 is effectively enhanced.

In addition to aflatoxin, the system can also be used for numerous barbiturates, amino acids, peptides, vitamins, sulfonamide drugs, and traditional Chinese medicinal materials. When sulfonamide drugs are analyzed, the fluorescence intensity of sulfonamides is also enhanced.

Key Advantages

Advantage \ Derivatization type	Post-column derivatization		Pre-column derivatization
	Photo chemical reactor	Electrochemical reactor	
No chemical reagents required; safe to operate	√	×	×
Extends the service life of HPLC instruments (no corrosive liquids)	√	×	×
No flushing step required	√	×	×
No derivatization temperature control required	√	×	×
Effectively minimizes interference from compounds with similar retention times	√	×	√
High sensitivity	√	√	√

Note: Aflatoxins are derivatives of dihydrofuranocoumarin. Some components in traditional Chinese medicines belong to the same class of compounds and may cause interference. This interference can be eliminated by comparing the chromatograms with and without derivatization.

Parameters

Maximum tubing pressure resistance	3000 psi (207 bar)
Maximum flow rate	3 mL/min
Derivatization tubing I.D.	0.25 mm
Derivatization tubing length	24 m
Tubing material	High-purity FEP, with excellent solvent resistance and virtually no cross-contamination (currently one of the polymers with the lowest contamination level)
UV lamp	Dual-lamp design for improved derivatization performance
UV lamp lifetime	Approximately 7,000 hours; a prompt will appear when the lamp is nearing the end of its service life
Interference resistance	Screen display, audible alarm, and warning light
Display language	Chinese or English

Anti-interference	Equipped with anti-electromagnetic interference capability
Temperature control	Air cooling
Fittings	PEEK
Lamp holder	With power switch
Power supply	220 V / 50 Hz
Power consumption	30 W
Dimensions	88 × 404 × 80 mm (W × D × H)
Weight	Approx. 3.0 kg
Operating temperature	0–45 °C
Relative humidity	≤85%

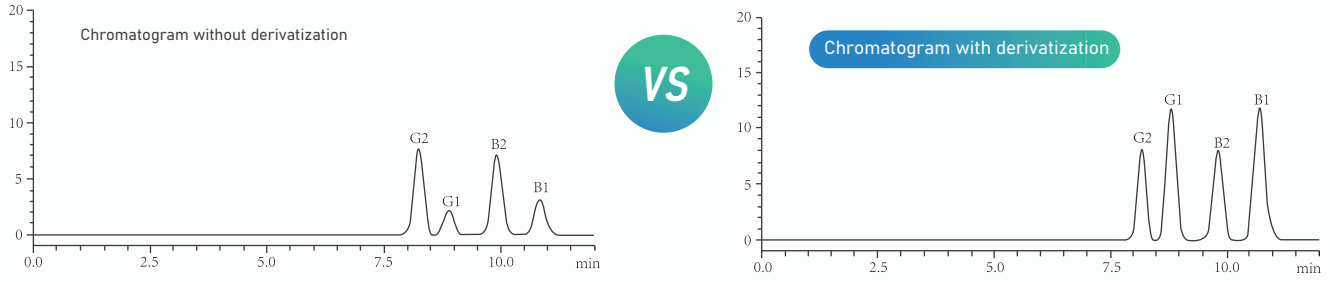
This product complies with AOAC 2005.08, AOAC 2008.02, AOCS Aa 11-05, Food Regulation Notice No. 0981800370 (Taiwan, China), the European Pharmacopoeia 2.8.18 standard analytical method, and the Chinese Pharmacopoeia 2020 Edition, Vol. IV Methods for Determination of Mycotoxins.

Applications

1. Determination of Aflatoxins:

Aflatoxins B1 and G1 are inherently highly fluorescent, but when they come into contact with water, fluorescence quenching occurs and their fluorescence is essentially lost, making them difficult to detect by HPLC. Photochemical derivatization can be used to enhance the fluorescence of aflatoxins B1 and G1.

Column:	Ultisil XB-C18, 5 μm, 4.6×150 mm	Detector:	FLD, excitation: 360 nm, emission: 440 nm
Mobile Phase:	Methanol : water = 45:55	Injection Volume:	20-100 μL
Flow Rate:	0.8 mL/min	Photochemical Derivatization System:	Photo chemical reactor connected after the column and before the FLD



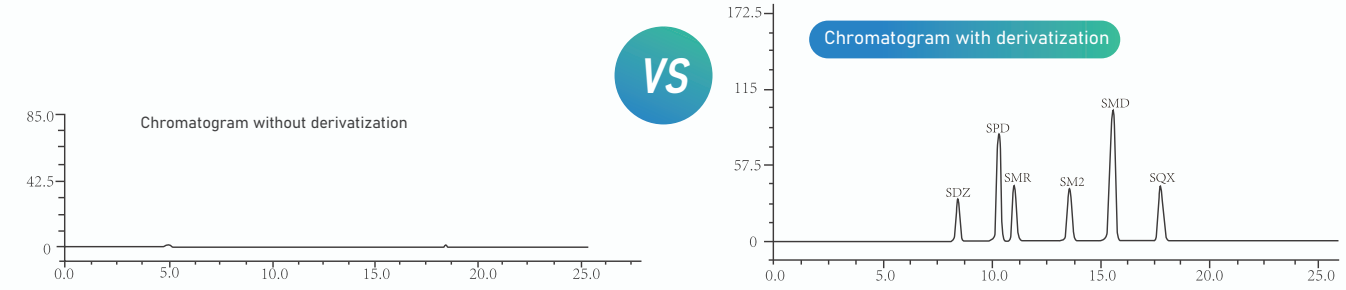
2. Determination of Sulfonamide Drugs:

Sulfadiazine (SDZ), sulfapyridine (SPD), sulfamerazine (SMR), sulfadimidine (SM2), sulfamethoxydiazine (SMD), and sulfaquinoxaline (SQX) are not inherently fluorescent, but after derivatization by the photo chemical reactor, these six sulfonamides become fluorescent.

Column:	Ultisil XB-C18, 5 μm, 4.6×250 mm
Flow Rate:	1.0 mL/min
Detector:	FLD, excitation: 232 nm, emission: 400 nm
Injection Volume:	20-100 μL

Gradient program:

Time (min)	Acetonitrile (%)	Water (%)
0~15	18	82
15~25	40	60
25~30	18	82



Installation and Maintenance

1. Remove all components from the package and connect the power cord to the instrument.
2. Unscrew the two PEEK fittings from the stainless-steel union.
3. The tubing has no directional restriction. Connect one end of the tubing to the chromatographic column and leave the other end disconnected from the detector for the time being. Flush the system with mobile phase for 5 minutes, and then connect it to the fluorescence detector.
4. Turn on the power switch and start the UV lamp. After the baseline becomes stable, begin sample injection and analysis.
5. After the experiment, flush the system together with the column and store it with a high proportion of organic solvent (>70% methanol or acetonitrile).
6. If the instrument will not be used for a long period, flush it once every 3 to 4 months and store it with a high proportion of organic solvent.

Packing List

Please confirm that all parts and components have come with the device. If there are any issues, please contact our company or the local supplier as soon as possible.

1. Photo Chemical Reactor
2. Power cord
3. Two 1/16" PEEK fittings and one 1/16" stainless-steel union
4. Packaging box

P/N	Product
00836-00003	WelView Photo Chemical Reactor