Gel Permeation Chromatography (GPC)

The GPC (Gel Permeation Chromatography) purification system offers numerous advantages, including high purification efficiency, user-friendly operation, convenient maintenance, safety, and reliability. This system is primarily designed for the pre-treatment and purification of samples used in detecting pesticide and veterinary drug residues, polycyclic aromatic hydrocarbons, and polychlorinated biphenyls (PCBs). Its applications extend across various fields such as agricultural products, food safety, environmental science, and life sciences.

IES-300 Gel Permeation Chromatography (GPC)

Overview

GPC/SEC (Gel Permeation Chromatography/Size Exclusion Chromatography) is a specialized type of Liquid Chromatography (LC) that employs a solid stationary phase and a liquid mobile phase. Unlike other chromatographic techniques that rely on chemical interactions between the analyte and the stationary phase, GPC/SEC achieves separation based purely on the size of polymer molecules in solution. This size-based separation makes it particularly effective for analyzing polymers and macromolecules.

Features

1. **High-Precision Pump**: Utilizes a high-pressure constant-flow pump for stable infusion and excellent repeatability.
2. **Safety Features**: Real-time pressure monitoring with high and low-pressure alarms ensures operational safety.
3. **Advanced Detection**: Equipped with a variable wavelength UV-Visible detector, offering a wide wavelength range and high sensitivity.
4. **User-Friendly Fraction Collector**: Touch screen-operated automatic fraction collector provides intuitive and seamless operation.
5. **Flexible Purification Columns**: Offers stainless steel and quartz glass columns for consistency, reduced operation time, and improved efficiency.
6. **Patented Technology**: Features floating self-calibration sealing ring technology and a pump head self-cleaning function, enhancing durability and efficiency.
7. **Precise Calibration**: Easy-to-use flow and pressure correction functions ensure high precision and operational stability.
8. **Gradient Program Options**: Supports linear and step gradient program designs for flexible operation.
9. **Programmable Solvent System**: Solvent type and compression factor can be programmed for automatic compensation and pre-cleaning, facilitating quick solvent replacement.
10. **Photodiode Design**: High-precision photodiode setup expands the linear range for better performance.
11. **Self-Correction of Light Intensity**: Includes a convenient gain coefficient self-correction function for enhanced reliability.
12. **Holmium Glass Cell Design**: Enables full-wavelength scanning with convenient and accurate wavelength correction.
13. **Universal Sample Cell**: Designed for easy switching between micro and constant sample cells for versatile

applications.

These features make the GPC/SEC system highly efficient, precise, and user-friendly, catering to a wide range of analytical needs.

Configuration:

№	Name	Specification	Unit	Quantity
1	GPC	High pressure infusion pump – **1 set** Variable wavelength ultraviolet detector – **1 set** Large volume manual injection valve – **1 piece** **Gel purification column (filled with imported gel filler to meet the pre-treatment of food or environmental samples) – 1 piece** Chromatography workstation – **1 set** Manual fraction collector – **1 piece**	set	1

Technical parameters

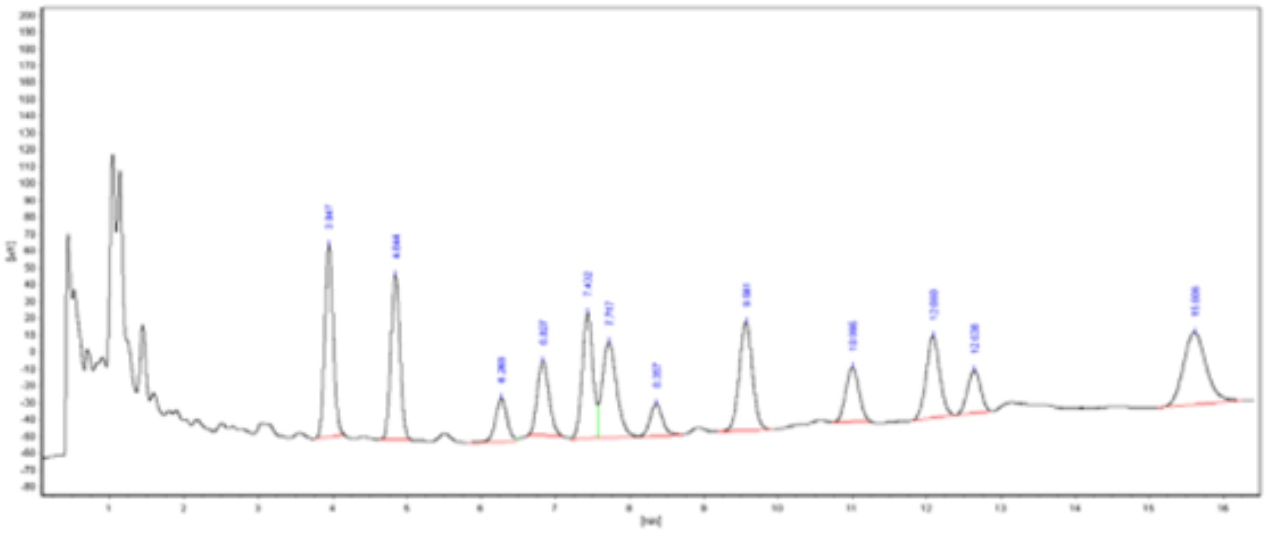
High pressure constant flow pump	
Measuring range	0.001-10ml/min (Step size setting: 0.001mL/min)
Max working pressure	42.0MPa Upper and lower limits can be set, automatic alarm
Flow accuracy	±1.0% or 2uL/min（0.001－10mL/min）
Flow precision	0.25%
Gradient	Double
Gradient method	Gradient elution internal software can be self-controlled, and can be controlled by PC and pump
Rated voltage	AC 110V/220V, 50Hz/60Hz
Dimension	400mm×300mm×180mm

Detector	
Lamp source	Deuterium Lamp / Tungsten Lamp
Wavelength range	190-700nm, increment: 1nm
Bandwidth	<6m
Wavelength accuracy	±1nm
Wavelength repeatability	0.5nm
	0.0005AU/mV-4AU/mV
Noise	±5x10-5AU
Drift	2x10-4A (P-P)
Sample cell	Analysis, Semi-prepared is optional

Application

Food:

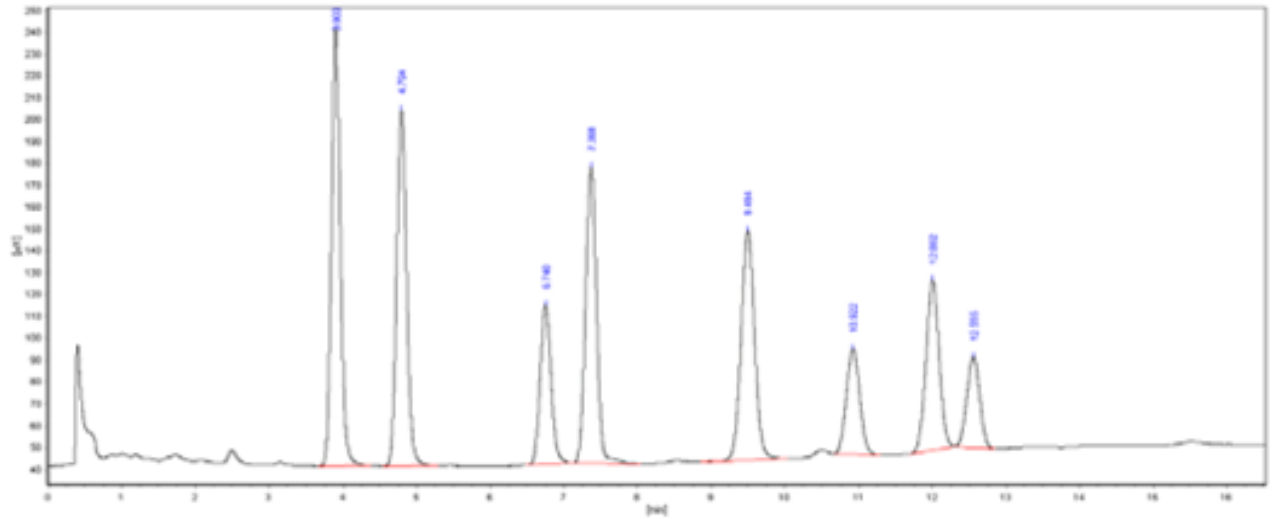
America: AOAC 984.21, FDA2905A
Europe: EN12393, EN1528, S-19, S35L00.00-34
China: GBT 5009.19-2008, GBT 5009.146-2008, GBT 5009.162-2008, GBT 5009.207-2008, GBT 5009.218-2008, GBT 19650-2006, SN/T2430-2010, SN/T 2457-2010, SN/T 2459-2010, SN/T 2431-2010, GB/T20772-2006



GC-ECD chromatogram of 8 organic chloride standard additive in egg sample after GPC

Medicine:

2015 Pharmacopoeia 2341: Determination of residues of some pesticides in medicinal materials, decoction pieces and preparations, determination methods of organochlorine and organophosphorus pesticide residues

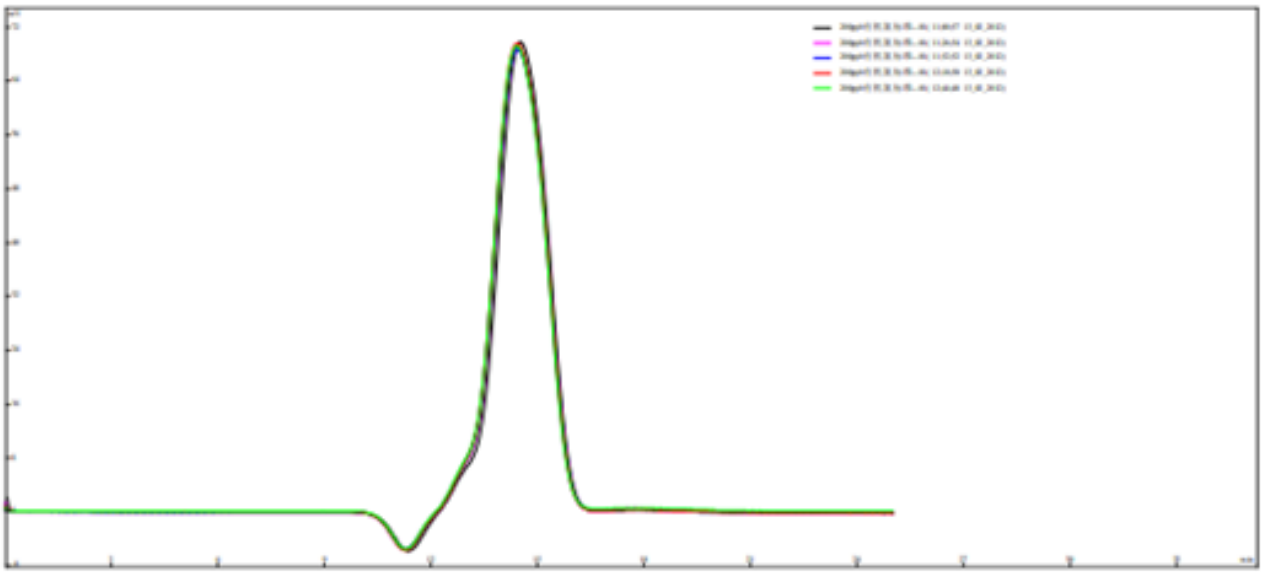


GC-ECD chromatogram for 8 organo-chlorine pesticides

（from left to right： α -666： β -666： γ -666： δ -666： P,P-DDT： O,P-DDT： P,P-DDE： P,P-DDD）

Environment:

Polycyclic aromatic hydrocarbons, polychlorinated biphenyls, mycotoxins, pigment separation



Repeatability

Take a mixed standard of eight kinds of organochlorine pesticides, dilute to 200ppb with ethyl acetate, cyclohexane (1+1), and inject the sample as a gel purification system. The UV detector is used for detection at 254nm, and the chromatogram is as shown above. As shown, 5 consecutive injections have good repeatability, and the collection time is determined to be 12min~16min