

# YL9100 HPLC (High Performance Liquid Chromatograph)

YL's HPLC is built to provide an exceptional cost/performance ratio. Continued research and development provide high-end performance and features, whilst a state of the art manufacturing facility ensures that quality is not compromised. With more than 20 years experience and development, we are proud to present our new generation of HPLC, YL9100 HPLC.

## *Think Smart Work Better*

“ When the time came to replace the aging HPLC equipment in my laboratory, the YL9100 exceeded my expectations, but not my budget. We now have great looking, modern HPLCs, with the performance and functionality I required, yet at a fraction of the price I expected. The Windows based Chromatography Data System has proved to be a great success with my analysts. ”

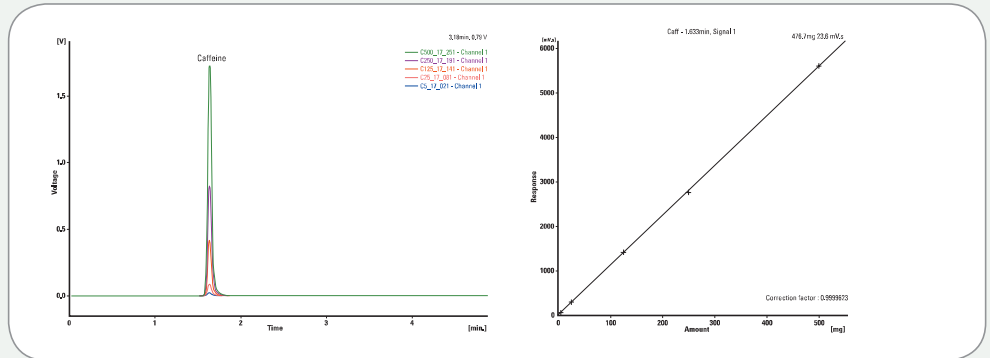
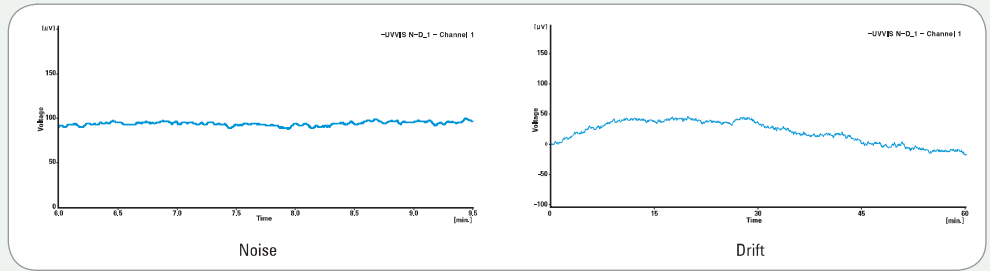


## Remarkable Stability

Analysts can waste their time waiting for excessive baseline noise and drift to stabilize.

The YL9100 HPLC delivers a very stable baseline to maximize analysis up-time.

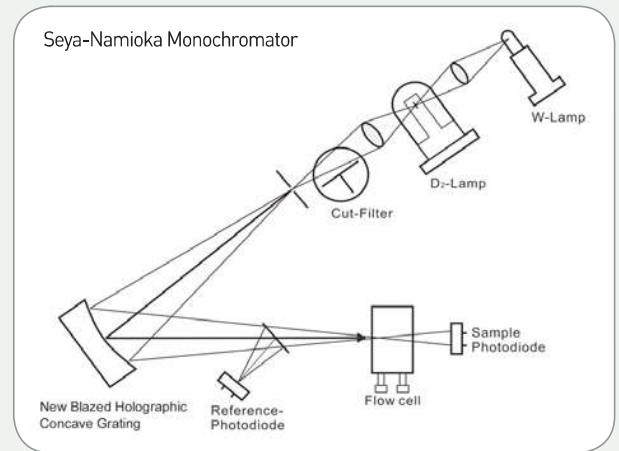
With automatic compressibility compensation minimising back-flow in the pump, the YL9100 HPLC provides accurate and precise flow rates.



## Superior Sensitivity

One of many innovative features of the YL9100 HPLC is shielded optic design, which protects the optical components from dangerous contaminants such as fine dust or harmful gases, providing high detection sensitivity.

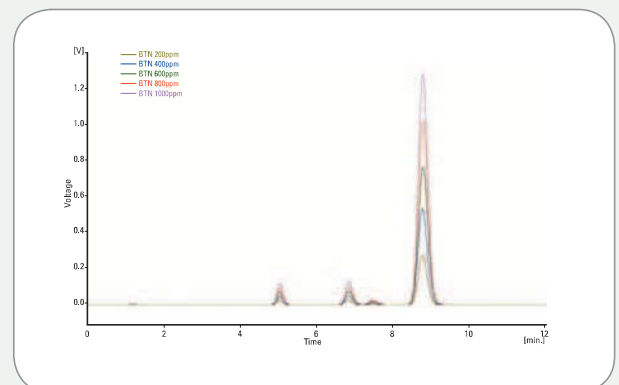
In addition, the Seya-Namioka Monochromator and a new Blazed Holographic Concave Grating enhance light intensity, ensuring high sensitivity over the entire wavelength range.



## Outstanding Reliability

Reliability is an essential feature of the modern HPLC and the YL9100 absolutely meets this demand.

- YL9101 vacuum degasser perfectly removes dissolved gases and air bubbles, with the added convenience of an integrated tray to safely house solvent bottles.
- Automatic rinsing extends the life of the pump seals.
- YL9131 Column Compartment with peltier cooling providing a wide range of temperature from 4°C up to 90°C. Effective temperature control ensures retention time reproducibility and reliable data.

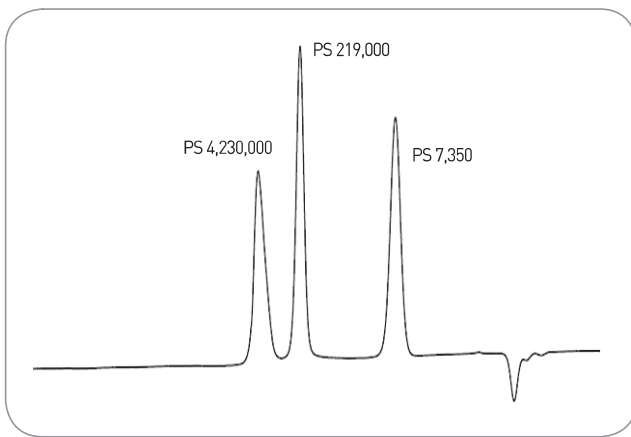


# GPC (Gel Permeation Chromatograph)

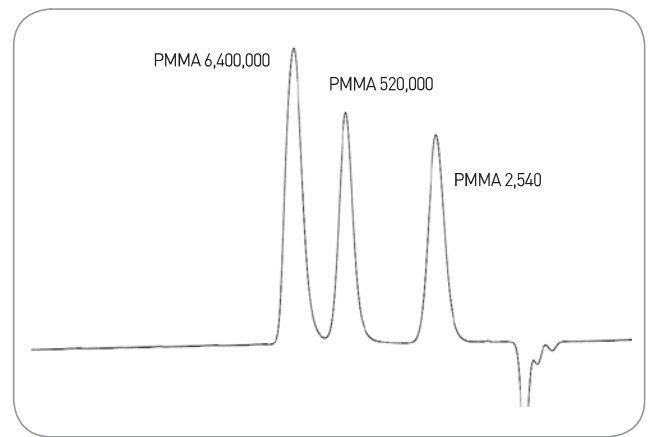
YL GPC system is to provide easy and convenient solution to analyze various natural compounds or synthetic compounds. The standard that is the most similar to the molecular structure of sample has to be chosen, and then dissolve the sample in soluble solvent such as THF, DMF or Alkaline solutions.

Depending on the solution in which the standard and sample were dissolved, choose the GPC columns and analyze the relative molecular weight and the distribution of molecular weight. YL increase the analysis efficiency with providing the mostly common standards and proper columns by the sample.

- **Fat-soluble standards (Polystyrene, Polymethylmethacrylate)**



[Fig. 1] PS analysis by molecular weight (THF)



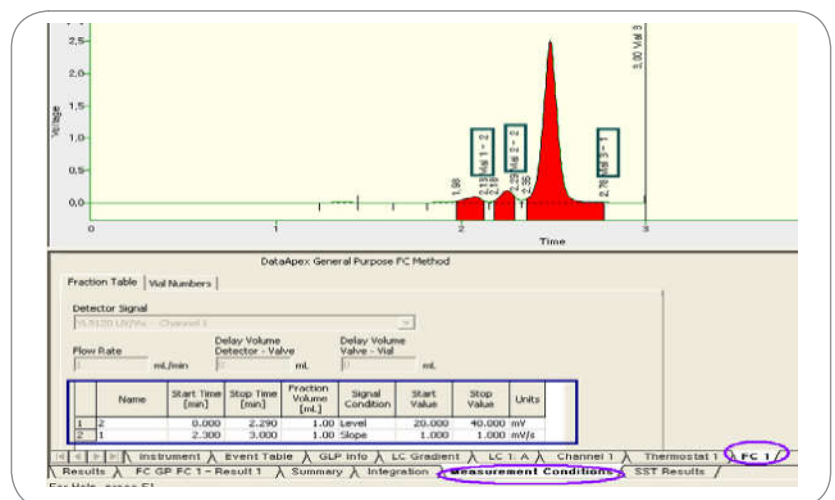
[Fig. 2] PMMA analysis by molecular weight (THF)

# Semi-Preparative HPLC

YL Semi-Preparative HPLC System is to be used for the isolation and purification of a valuable product in the pharmacology, materials research and analysis of natural compounds, etc, with the superior efficiency.

With a chromatography data system, it's easy to control the preparative volume through a fraction collector depending on compounds, ranges, etc from  $\mu$ L to mL scales upon the system configuration.

It's easy to collect the separated components by compounds, time, etc and monitor them through software. Users can control the amount of separated compounds depending on the analysis condition to get more accurate fraction collection.



[Fig. 3] Sample Preparative Analysis by a Fraction Collector

## Specifications

### • Solvent Delivery Pump



#### ■ YL9110 Quaternary Pump

- Operating principle : Parallel dual-plunger pump, Low-pressure gradient
- Number of Solvent : up to 4 solvents
- Gradient formation : 4-channel mixing valve
- Composition Precision : < 0.1 %
- Composition Accuracy : < 0.5 %



#### ■ YL9112 Isocratic Pump

- No mixing valve
- Operating principle : Parallel dual-plunger pump
- Easily upgraded to YL9110 Quaternary pump

#### ■ YL9111 Binary Pump

- Operating principle : Double Parallel dual-plunger pump, High-pressure gradient
- Number of Solvents : 2



### • Pump Specification in Common

- Compressibility compensation : Automatic
- Flow range: - Analytical : 0.001-10 mL/min  
- Semi-prep : 0.01-50 mL/min
- Flow rate accuracy :  $\leq \pm 1\%$  at 1 mL/min
- Flow rate precision : 0.1 % RSD at 1 mL/min
- Maximum pressure

#### - Analytical : 6000 psi

- > Operating range : 0-6000 psi up to 5 mL/min
- > Operating range : 0-3000 psi at 5-10 mL/min

#### - Semi-prep : 3500 psi

- > Operating range : 0-3500 psi up to 35 mL/min
- > Operating range : 0-2500 psi at 35-50 mL/min

- Semi-automatic prime/purge
- Safety & maintenance : Leak detection, Diagnostics, Error detection

### • TP Control Module for YL9100 Series Pump (Stand-alone type)

This pump key controller is for the use of process or the use of single unit itself. It can control all functions of pump and indicate each factor clearly.



#### • Function

- Method Programming
- Solvent Mixing Rate
- Prime / Purge
- Flow Calibration
- Maintenance Control
- Pressure Zero

#### • Features

- 4.2 inch wide, vivid and sensitive LCD touch screen
- Logical instrument monitoring
- Method programming and keeping
- For the use of process / For the use of single unit

## Specifications

### • Detector



#### ■ YL9120 UV/Vis Detector

- Wavelength Range : 190-900 nm
- Data collection rate : up to 50Hz
- Light Source : Deuterium lamp & tungsten lamp
- Noise level :  $< \pm 0.35 \times 10^{-5}$  AU , 254 nm, dry cell
- Drift :  $< 1 \times 10^{-4}$  AU/hr
- Bandwidth : 5 nm
- Wavelength Accuracy :  $\pm 1$  nm
- Wavelength Precision :  $\pm 0.1$  nm
- Linearity :  $> 99.5$  % for 2.5 AU (acetone, 254 nm)
- Path Length : 10 mm [ Analytical cell ] / 3 mm [ Semi-prep cell ]
- Cell Volume : 10  $\mu$ L [ Analytical cell ] / 5  $\mu$ L [ Semi-prep cell ]



#### ■ YL9160 PDA Detector

- Slit Bandwidth : 1.7 nm
- No. of PDA Channel : 1024
- Pixel Resolution : 0.9 nm
- Wavelength : 190-950 nm
- Analytical Cell
  - Path-length : 10 mm
  - Pressure :  $< 1500$  psi
  - Volume : 13  $\mu$ L
- Semi-prep cell
  - Path-length : 3 mm
  - Pressure :  $< 1500$  psi
  - Volume : 5  $\mu$ L
- Noise Level :  $< \pm 2 \times 10^{-5}$  AU (Empty Cell, 1 sec Rise Time, 254 nm)
- Drift :  $< 2 \times 10^{-4}$  AU/hr (Baseline Correction), 0.001AU/hr (Room Temp)
- Wavelength Accuracy :  $< 1$  nm (HY-1 Holmium Oxide Filter)
- GLP Compliance: - Photometric Accuracy, Linearity, Noise Level, Drift  
- System Check



#### ■ YL9170 Refractive Index Detector

- RI Range : 1.00 ~ 1.75 RIU
- Noise :  $\leq 5 \times 10^{-9}$  RIU (Analytical) /  $\leq 10 \times 10^{-8}$  RIU (Semi-prep)
- Flow Cell Volume : 9  $\mu$ L (Analytical) / 7  $\mu$ L (Semi-prep)
- Cell pressure : 6 kg/cm<sup>2</sup> (84 psi)
- RS232 Control



#### ■ YL9180 ELSD

- More Sensitive
- General Laboratory

#### ■ YL9181 ELSD (Evaporative Light Scattering Detector)

- Highly Sensitive
- Advanced Research
- Cooling Down to 10°C for Chamber

- Patented Thermo-Split : Vapor Phase Control for optimum sensitivity
- Very low detector volume resulting in the smallest peak within 3 sec.
- A single multi-flow, nebulizer for use with micro-bore to semi-preparative flow rates.

## Specifications

### ● Other Detectors

#### ■ Electrochemical Detector(ECD)

ECD is a detector for HPLC applied to variable analyses such as biogenic amines, phenols, vitamins, DNA adducts, inorganic ions and amino acids.

#### ■ Fluorescence Detector(FLD)

FLD is a highly sensitive, scanning fluorescence detector for liquid chromatography. It provides exceptional optical performance and operational flexibility for routine and trace analysis.



### ● Vacuum Degasser

#### ■ YL9101 Vacuum Degasser

- Number of channel : 4 Channels
- Maximum flow rate : 10 mL/min per channel  
> 0 ~ 2.0 mL/min per channel for 70 % Gas Removed from Methanol
- Internal volume per channel : 925  $\mu$ L per channel
- Materials in contact with solvent : TeflonAF and PEEK



### ● Column Compartment

#### ■ YL9131 Column Compartment

- Temperature range : 4 °C (Cooling) - 90 °C
- Temperature stability :  $\pm 0.05$  °C
- Temperature accuracy :  $\pm 0.5$  °C
- Temperature programs : 40 Steps
- Column capacity : - Analytical : Max. 3 ea of 30 cm column(Max. OD 18 mm)  
- Semi-prep : Max. 2 ea of 30 cm column
- Heat-up time : 16 minutes from 4 °C to 80 °C
- Cool-down time : 13 minutes from 80 °C to 4 °C
- Column switching : max. two automatic 6-port valve (optional)

