

MS

YL6900 GC/MS

Gas Chromatograph Mass Spectrometer

More Than You Expect





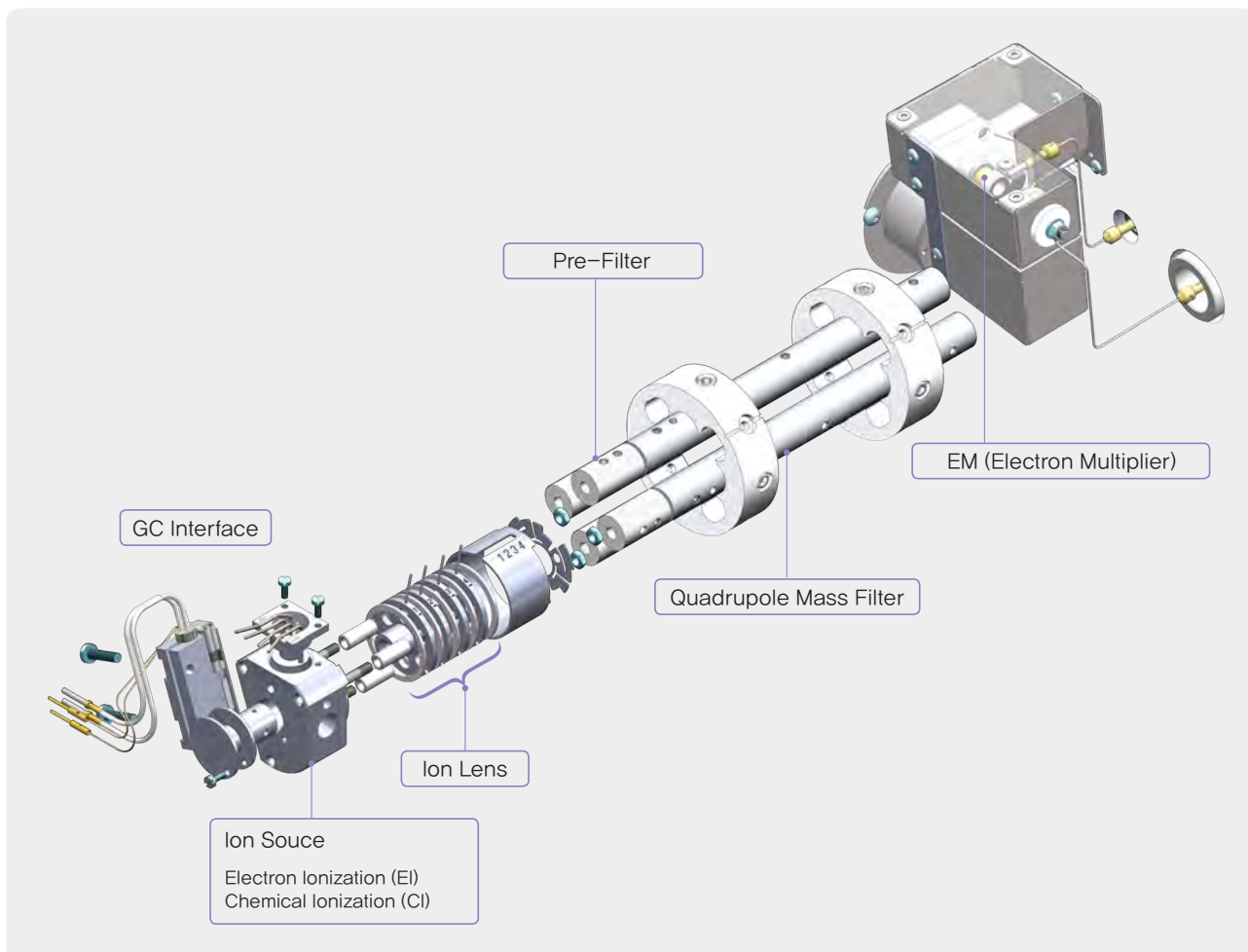
Stable, Powerful and Reliable

YL6900 GC/MS is a powerful mass spectrometer developed by dedication of technologists with twenty five years of experience in gas chromatography and mass spectrometry.

The innovative GC/MS supports the highest scanning speed (20,000 amu/sec) across every GC peak which ensures high performance of analysis with narrow-bore capillary columns for faster analysis. It also provides the widest mass range (1~1,200 amu) as well as very low instrument detection limit (less than 10 fg of OFN).

Its operational simplicity, powerful tuning protocols and the highest productivity with automation for users are to spend less time from sample injection to results.

The super inert ion source provides extended operation and lifetime of the dual filament as well as the improved performance. The powerful vacuum system provides a highly stable vacuum zone and enables analysis for running large numbers of environmental samples. The standard vacuum system offers 240L/s and optionally 300L/s is also available.



Stable

- Dual filament: Uninterruptible and stable analysis
- High capacity of turbo pump: 240L/s of standard vacuum system for fast stabilization

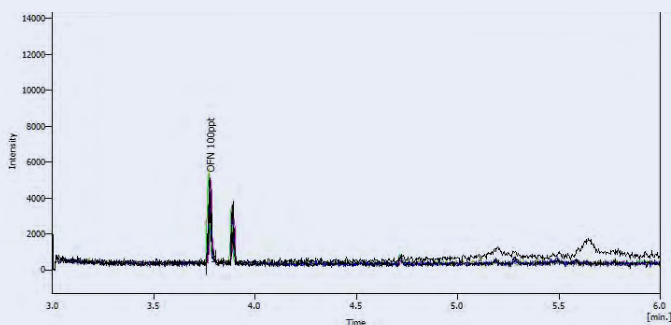
Powerful

- Quadrupole mass filter
 - Wide mass range: 1~1,200 amu
 - Fast scan speed: ~20,000 amu/sec
- GC interface: High temperature support up to 400°C

Reliable

- Super inert ion source for EI & CI
- Pre-filter: For improved transfer of ion beam to the mass filter and contamination prevention
- Ion lens: To provide high focusing of ion beam
- EM (Electron Multiplier): Six spiral multiplier to increase linear output current for high sensitivity

YL6900 GC/MS offers very low instrument detection limit (IDL) less than 10 fg in the SIM mode by 100 fg OFN injection. A deflecting electrode eliminates neutral particles reaching the detection system, so it allows you to improve the MS sensitivity for the trace level analysis and enhance S/N ratio.



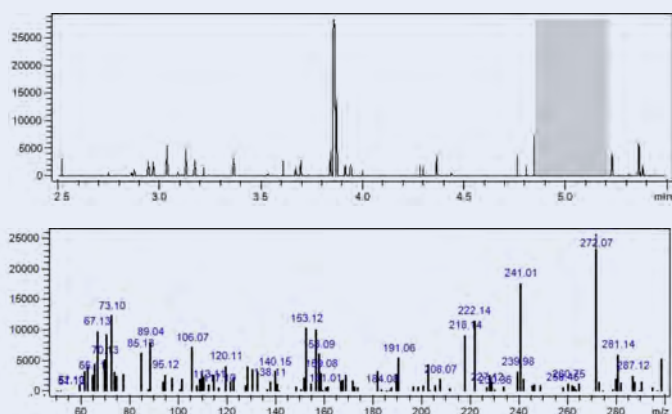
X	SST	Chromatogram	Retention Time [min.]	Area [mV.s]	Height [mV]
		Lower Limit			
		Upper Limit			
		%RSD Limit	1.00	3.30	10.00
		Mean	3.774	4228.125	5010.210
		RSD [%]	0.09	1.94	6.24
Parameter Result					
<input checked="" type="checkbox"/>		00000001 - SIM	3.777	4233.250	4720.125
<input checked="" type="checkbox"/>		00000002 - SIM	3.780	4130.750	4623.483
<input checked="" type="checkbox"/>		00000003 - SIM	3.773	4202.500	5467.981
<input checked="" type="checkbox"/>		00000004 - SIM	3.770	4233.250	4766.250
<input checked="" type="checkbox"/>		00000005 - SIM	3.773	4120.500	5194.553
<input checked="" type="checkbox"/>		00000006 - SIM	3.770	4376.750	4909.017
<input checked="" type="checkbox"/>		00000007 - SIM	3.773	4246.063	5379.279
<input checked="" type="checkbox"/>		00000008 - SIM	3.773	4281.937	5020.993

8 times injection of 100 fg OFN
Area RSD(%) = 1.94, IDL < 10 fg (240 L/s)

$$IDL^m = t_{u,n-1} \cdot \%RSD \cdot \frac{m}{100\%} = 2.998 \cdot 1.94\% \cdot \frac{100 \text{ fg}}{100\%} = 7 \text{ fg}$$

Also, ensuring the superior sensitivity of the YL6900 GC/MS, its S/N ratio is higher than 1500:1 by 1 pg injection of OFN in scan mode.

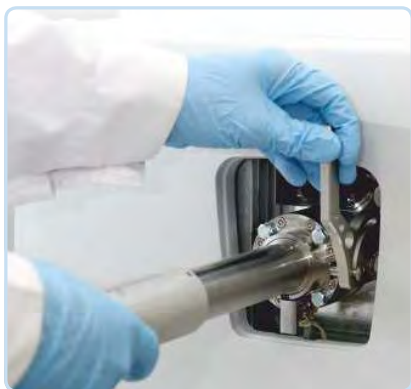
Chromatogram and spectrum



Calculation result

SignalNoise:	5 543.23	Base line:	100 scans
Mass:	272.08	Noise range:	4.85-5.21
Retention time:	3.858	Average value:	0.51
Height:	28 410	RSD:	5.13
Chromatogram			
	Ret.Time	Peak height, abs.unit	SignalNoise
2017-09-21 14-04-50 0004	3.858	28 410	5 543
2017-09-21 14-19-37 0005	3.876	22 362	8 727
2017-09-21 14-35-03 0006	3.872	27 197	6 368
2017-09-21 14-50-51 0007	3.872	16 511	3 222
2017-09-21 15-05-27 0008	3.861	23 455	3 051
Analyst:			
Report create: 10/2/2018			

Direct Inlet Probe (DIP)



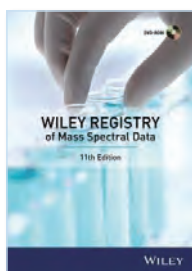
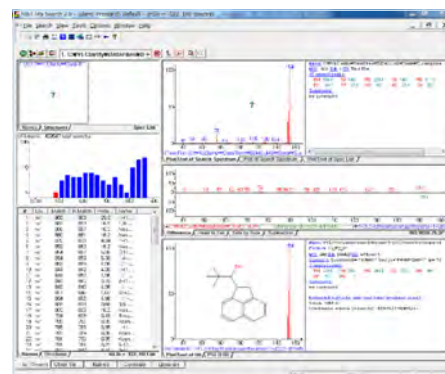
With DIP option, you can utilize the MS as stand-alone by injecting liquid or solid samples directly into the MS. Switching from GC/MS injection to DIP/MS injection takes only a couple of minutes.

Injection Mode	Direct Injection Probe	Direct Exposure Probe
Sample State	Solid or liquid samples	Labile liquid and solid samples
Temperature Range	50 ~ 450 °C (Cuvette heating nozzle)	~ 1000 °C or above (Filament heating nozzle)
Maximum Heating Speed	250 °C/min (Cuvette heating nozzle)	250 mA/s (250 °C/s) (Filament heating nozzle)

Powerful GC/MS Software & Library

YL Clarity

YL-Clarity is powerful and intuitive software which offers easy control of the mass spectrometers and supports the full compatibility with Wiley and NIST mass spectral library automatically to identify and name compounds. The software allows the MS to be run on scan mode and SIM mode simultaneously in one chromatographic analysis.



GC/MS Library: Wiley

The Wiley Registry of Mass Spectral Data, now in its 11th edition, is the most comprehensive spectral library available. Identification of unknowns begins with untargeted analysis and this library provides researchers with the most assurance that their untargeted spectral search is the broadest available. Wiley's broad and field-tested spectral libraries save time, increase instrument efficiency and boosts staff productivity.



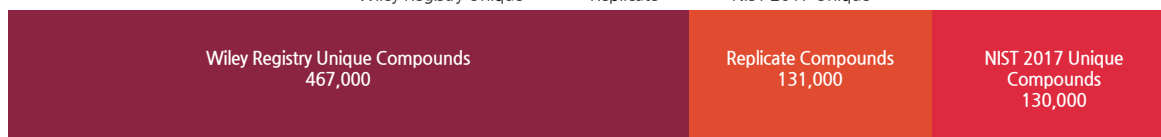
GC/MS Library: NIST

NIST 2017 is the most compatible available, containing multiple instrument formats. Including NIST MS search, it's made up of three libraries, an Electron Ionization (EI) mass spectral library, a MS/MS library, and a GC Retention Index library.

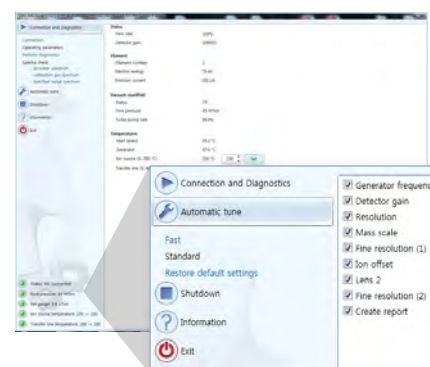
GC - MS Data

Library	Wiley Registry 11 th Edition	NIST 2017
Spectra	775,550	306,622
Chemical Structures	741,000	262,157
Compounds	599,700	262,157

■ Wiley Registry Unique ■ Replicate ■ NIST 2017 Unique



The easy-to-use automatic tune enhances sensitivity, stability and reproducibility of MS results, which means it makes sure of achieving lower detection limits for trace-level compounds. A manual tune for customization supports to change tune setting values to achieve higher levels of sensitivity required by certain specific analysis.



GC/MS Dedicated Analyzer

Phthalate Analyzer with GC/MS

Phthalates are used in a wide range of common products and mainly used as plasticizers added to plastics to increase their flexibility, transparency, durability, and longevity. However, they have been revealed which effecting to change hormone levels and cause birth defects in studies of rodents exposed to certain phthalates, they became concern and into force in restrictions on the use of certain substances in all products intended for children under specific ages in worldwide.

YL Phthalate Analyzer with GC/MS excels at detection and quantitation of regulated phthalates in children's toys, medical devices and food packaging that are related directly to the human health.

VOC Analyzer with GC/MS

Volatile organic compounds, organic chemicals and also known as VOCs, which have a low boiling point, can be present everywhere in our lives such as in the surrounding air and in the environmental water and land.

There are about 300 VOCs known and 70 VOCs are easily dissolved in aqueous sample like drinking water and they can have a bad long-term influence on human health. Hence there are many methods applied to analyzing of VOCs according to the regulations.

YL VOC analyzer is optimized to analyze VOCs in aqueous samples and it accurately analyze trace level of VOCs (ppt level by P&T or SPME Arrow) by YL6500 GC coupled with mass spectrometer (GC/MS).

Residual Pesticide Analyzer with GC/MS

As the need of food growing worldwide, agricultural demand for pesticide gets increased highly and also the related government departments strongly restrict the use of pesticides. It led the need to test commercially available pesticides with fast and accurate method assuring the safety of agricultural food.

YL Residual Pesticide Analyzer with GC/MS is the optimized system to separate complex mixture of compounds containing organophosphorus and organochlorine pesticides and to run EPA methods. This can eliminate the interferences from overlapping compounds creating simultaneous data at once.

Residual Solvent Analyzer with GC/MS

For pharmacopeial purposes, residual solvents in pharmaceuticals are defined as organic volatile chemicals that are used or produced in the manufacture of drug substances or excipients, or in the preparation of drug products.

Also, organic residual solvents found in the inks used for the printing of packaging materials for food and drug products are known to be hazardous to human health if ingested.

With accurate sample preparation method support, YL Residual Solvent Analyzer satisfies with quantitation of hazard residual solvents at trace levels.

YL6900 GC/MS Specification

Technical Specifications	
Ion Source	EI, CI (Option)
Mass Range	1 - 1,200 amu
Resolution	0.7 amu
Electron Energy	0 - 240 eV
Max Scan Rate	20,000 amu/s
Mode	SIM Mode, Scan Mode Scan / SIM Simultaneous within Sample Injection
Mass Stability	± 0.1 amu/48 h
Ion Source Temperature	up to 350 °C
Transfer Line Temperature	up to 400 °C
Turbo Pump	240 L/sec, 300 L/sec (Option)
Sample Inlet	GC, Direct Inlet Probe (Option)
Signal to Noise Ratio (1 µL of 1 pg/µL OFN for m/z 272 When Scanning 50–300 amu)	1,500 : 1 and more (240 L/sec), EI Mode
Instrument Detection Limit (IDL) (Eight Sequential Splitless Injections, 100 fg OFN, m/z 272)	<10 fg (240 L/sec)
Library	Wiley: 775,500 Spectra NIST: 306,622 Spectra
Power Supply	220V ± 10 %
Dimensions	350 x 650 x 500 mm (W x D x H)
Software	YL-Clarity for GC/MS





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These Products are manufactured by YL Instruments
ISO 9001-certified facility that is periodically audited by
the registering body to ensure compliance