

# Gas Chromatograph Mass Spectrometer

# chrozen GC/MS

## More Than You Expect



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Chromass

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# chroZen GC/MS

## Gas Chromatograph Mass Spectrometer

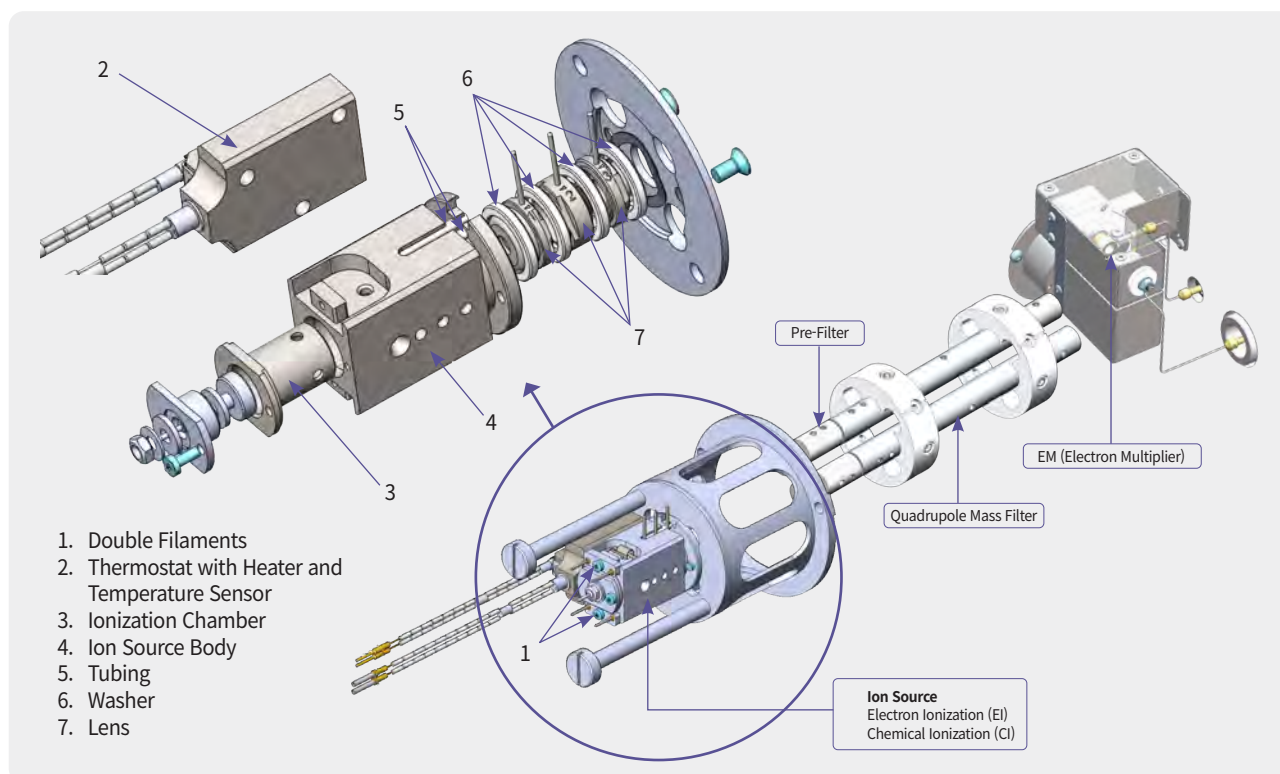


### What Would Be More Needed Than This?

ChroZen GC/MS is an innovative single quadrupole mass spectrometer to carry out qualitative and quantitative analysis for unknown or complex samples in trace level. With its extraordinary ultra-inert ion source, UEIS (Ultra Efficiency Ion Source), it optimizes the ionization and ion beam focusing to ensure both ideal repeatability and sensitivity, and efficiently works for toxicology, food safety and geochemical applications, where samples can be polluted higher. The large capacity of standard vacuum pump (240L/s) stabilizes the system faster and 300L/s of vacuum pump is also available optionally. It also provides the widest mass range (1.4~1,200 amu) as well as very low instrument detection limit (less than 10 fg of OFN).

# Innovation Creates Greater Efficiency

The newly designed innovative ion source, UEIS (Ultra Efficiency Ion Source), effectively prevents ion source contamination, thus, there are more ionized molecules transferred to the detector to give superior sensitivity and the detector lifetime gets extended. The individually connected double filaments and structural modification of ion source make the maintenance cost less expensive and more efficient.



## More Than Sensitivity

- UEIS (Ultra Efficiency Ion Source) with each enhanced part such as lens and pre-filters to maximize efficiency of ionization for superior sensitivity
- EM (Electron Multiplier): Six spiral multiplier channels to increase linear output current for excellent sensitivity (SNR 2,500:1, IDL < 10 fg)

## More Than Performance

- Wide mass range: 1 ~ 1,200 amu
- Rapid scan speed: Up to 20,000 amu/s

## More Than Reliability

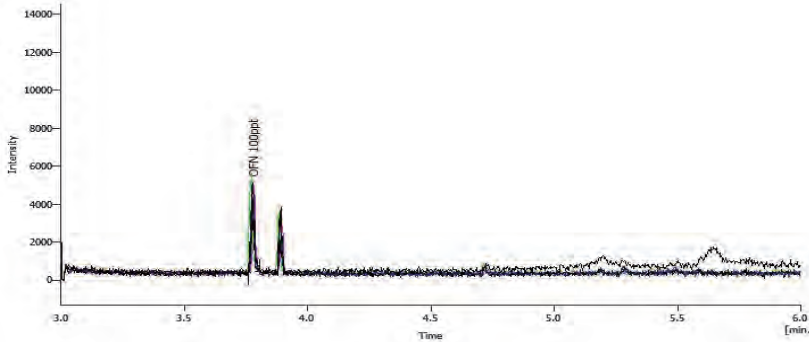
- High capacity of turbo pump: 240L/s of standard vacuum system for fast stabilization
- Double filaments: Uninterruptible and stable analysis to minimize instrument downtime
- Ultra-inert ion source, pre-filter and quadrupole to reduce contaminations

## More Than Variety

- EI as standard and CI (PCI & NCI) as option
- Scan, SIM, Simultaneous Scan/SIM mode
- Various library support depending on application

# High Performance of ChroZen GC/MS

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



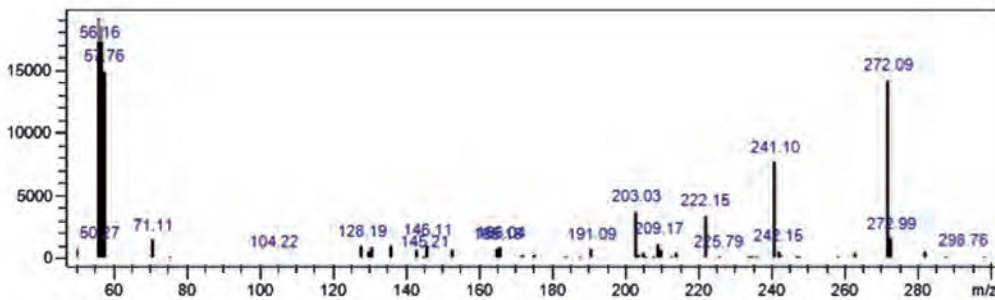
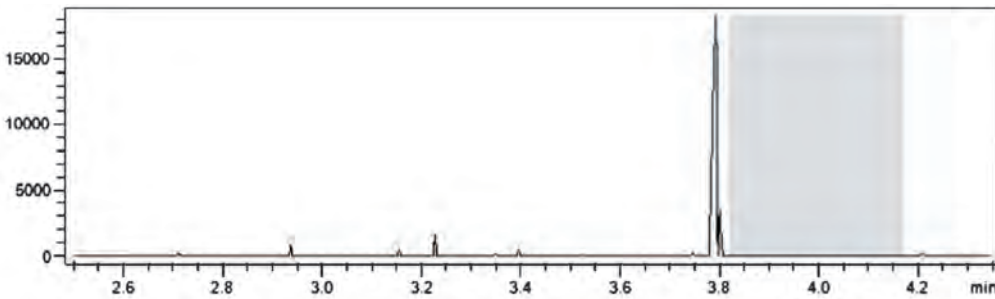
X	SST	Chromatogram	Retention Time [min.]	Area [mV.s]	Height [mV]
		Lower Limit			
		Upper Limit			
		%RSD Limit	1.00	3.30	10.00
		Mean	3.774	4228.125	5010.210
		RSD [%]	0.09	1.94	6.24
Parameter Result					
✓		00000001 - SIM	3.777	4233.250	4720.125
✓		00000002 - SIM	3.780	4130.750	4623.483
✓		00000003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

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

ChroZen GC/MS ensures signal to noise ratio higher than 2,500:1 by 1 pg injection of OFN in scan mode.

## Chromatogram and spectrum



## Calculation result

Signal/Noise : 10,679.90  
Mass : 272.10  
Retention Time : 3.793  
Height : 18,245

Base Line : 100 scans  
Noise Range : 3.82-4.17  
Average Value : 1.17  
RSD : 1.71

Chromatogram	Retention Time (min)	Peak Height (Abs.)	Signal/Noise	Noise Range (min)
13-19-47 0004	3.775	14,863	8,700	3.05-3.39
13-33-16 0005	3.797	14,538	4,032	2.64-2.99
13-44-41 0006	3.793	17,681	6,037	3.98-4.33
13-54-25 0007	3.793	18,245	10,680	3.82-4.17
14-03-10 0008	3.790	20,039	8,336	3.12-3.48

# Dedicated Analyzer by GC/MS

Our accumulated experience in gas chromatography and devotion for customers' satisfactions led to supply one stop solution for various dedicated applications. You only need to let us know what to analyze, and then every single component that is required to analyze your sample will be configured right away.

## VOC Analyzer

VOC analyzer optimized to analyze VOCs in aqueous samples that can have a bad long-term influence on human health accurately analyzes trace level of VOCs (ppt level by P&T or SPME Arrow). It equips all necessary configuration for the analysis including detailed procedures and protocols, which are in full compliance with approved U.S. EPA methods.

### GC Condition

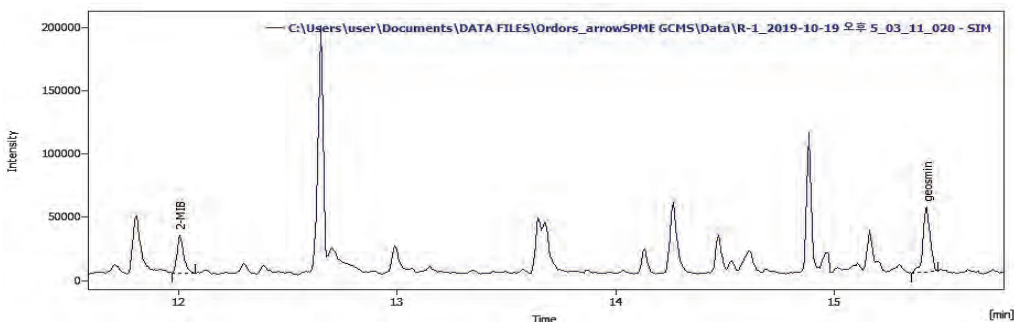
Oven	Rate [°C/min]	10
Program	Final Temp. [°C]	270
	Final Time [min]	2
	Init Temp. [°C]	60
	Init Time [min]	5
Split Mode	Splitless	
Purge on Time [min]	0.1	
Column	YL-5ms	
Capillary Temp. [°C]	250	

### SPME Condition

Preconditioning Time [min]	10
Incubation Time [min]	2
Sample Extraction Time [min]	30
Extraction Temp. [°C]	60
Sample Desorb Time [min]	5

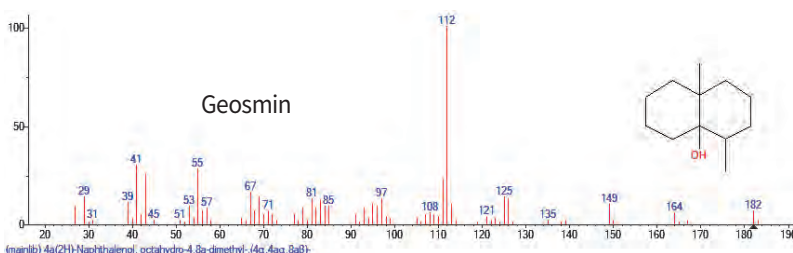
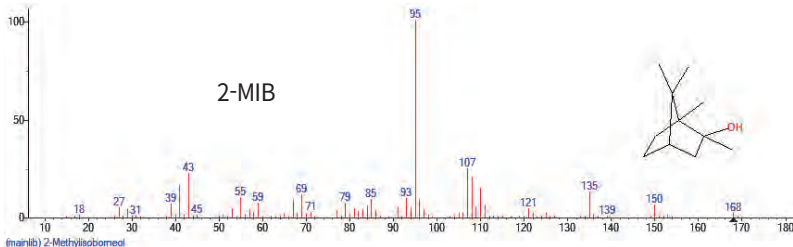
### MS Condition

Ion Source [°C]	250
Transfer Line [°C]	280



<10 ppt of 2-MIB & Geosmin>

### <Spectra>



# Technical Specifications

Ion Source	EI, CI (Option)
Mass Range	1 – 1,200 amu
Resolution	0.5 to 2.0 amu (FWHM)
Electron Energy	Adjustable from 0 eV to 170 eV (241.5 eV – optional)
Max Scan Rate	20,000 amu/s
Mode	Scan, SIM (Selected Ion Mode), Simultaneous (Scan/SIM)
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/s, 300 L/s (Option)
Sample Inlet	GC, Direct Inlet Probe (Option)
Signal to Noise Ratio 1uL of 1pg/uL OFN, Scan Mode	2,500 : 1 and more (@240 L/s), EI Mode
Instrument Detection Limit (IDL) Eight sequential splitless injections, 100 fg OFN, m/z 272, SIM Mode	<10 fg
Library	Wiley: 775,550 Spectra NIST: 306,622 Spectra
Power Supply	220/230 VAC ±10 %, 50/60 Hz
Dimensions	340 x 560 x 465 mm ( W x D x H ) (MS only)
Software	YL-Clarity for GC/MS

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