

Chromatography

GAMSTEK – LC-MS/MS/MS - China

Ion Source

- Brand new appearance, exclusive design
- Dual ceramic heating rod design provides higher ionization efficiency
- Higher ion response, lower detection limit
- Flexible switching between ESI/APCI, easy operation



Ion source



Quadrupole

Quadrupole

- Precision assembly, with comprehensive error better than 2 μm
- Ceramic gold-plated surface, anti-pollution and anti-oxidation
- Ceramic base, insulation, anti-interference
- Tooling accuracy better than 1 μm

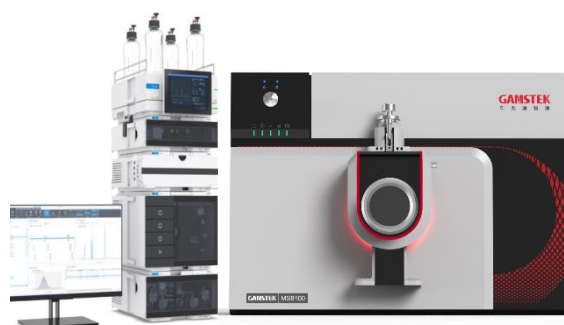
Detection limit and linear range

Inject reserpine of different concentrations, and calculate the linear correlation coefficient R between the response area and the concentration. Our instrument meets a 10-fold signal-to-noise ratio:

- Minimum detection limit: < 1.4 fg
- Detection linearity better than 0.999
- Linear range better than 6 orders of magnitude

MassNova Software

- Supports high/low molecular weight configuration
- Supports device network IP address
- Supports all system configuration
- Supports log/Account management and other functions
- Spectrum results can be quantitatively analyzed in real time



MS 8100

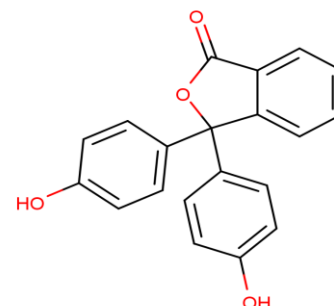
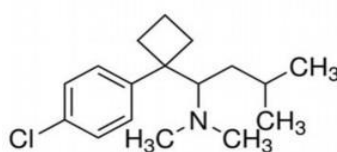
Noise and sensitivity/accuracy and stability:

Inject reserpine solution of appropriate concentration, use MRM acquisition mode, collect ions 609 >195, obtain mass chromatogram, calculate $S/N = H_{m/z} \div H_{\text{Noise}}$:

- Signal-to-noise ratio >1,000,000 : 1
- Mass accuracy: < 0.01% amu
- Mass stability: ± 0.1 amu/24h

Analytical Applications:

- Environmental
- Food Safety
- Pharmaceutical
- Preservatives in skin care products
- Life Science
- Forensic Science

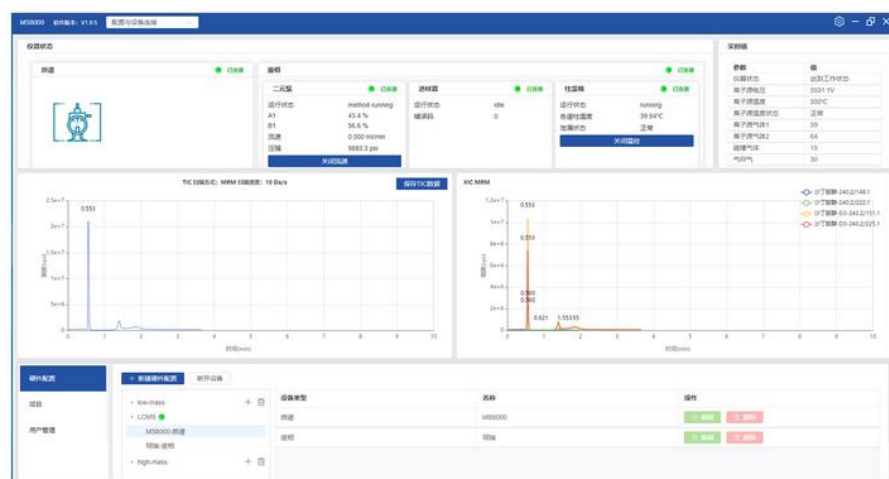


Chromatography

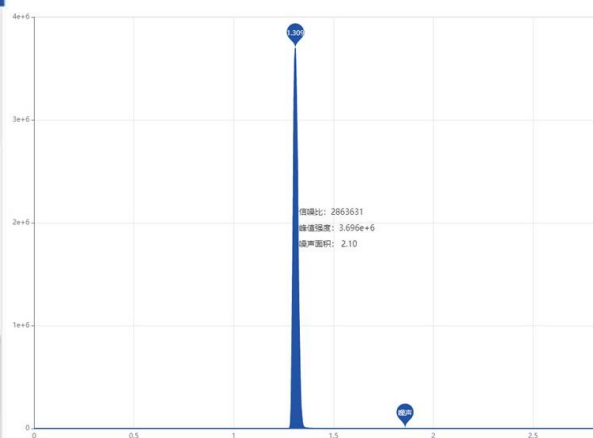
GAMSTEK – LC-MS/MS/MS – China

Unbelievably Results, Remarkably Powerful

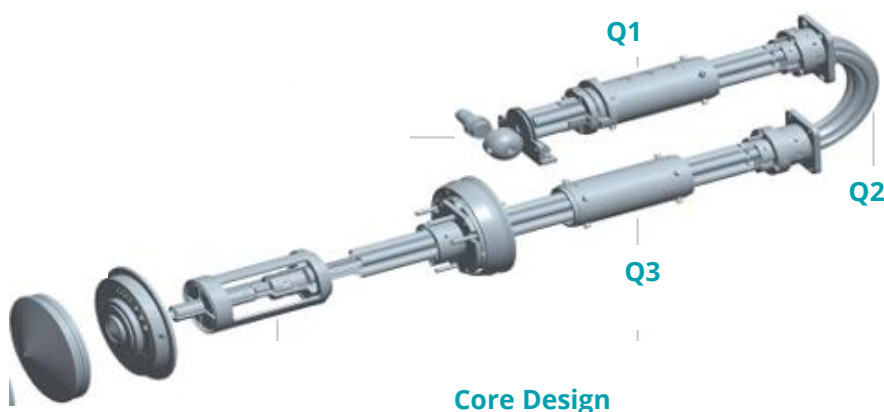
- **Exceed productivity goals:** High Sensitivity and Selectivity in analysing target compounds quantitatively in confidence. Results achieved are not at the expense of linear dynamic range.
- **Excellent performance:** Increased ion sampling efficiency and ruggedness with our special design of ion guide. Results are obtained without any second guess.
- **Minimize downtime to increase throughput:** Detect system status in real time to reduce maintenance job.
- **Robust and versatile:** It analyses a wide range of analytes and ions with minimum carryovers.
- **Improve signal to noise ratio:** Excellent S/N ratios are obtained with exceptional linear range and sensitivity even in complex sample matrices.
- **Excellent ionization efficiency and heat transfer:** Offered by our optimized designs.
- **Switchable Mass range:** Choose between m/z 5-1250 or 5-2,000 provides versatility for quantitation of small and large molecules.



MassNova Operating System



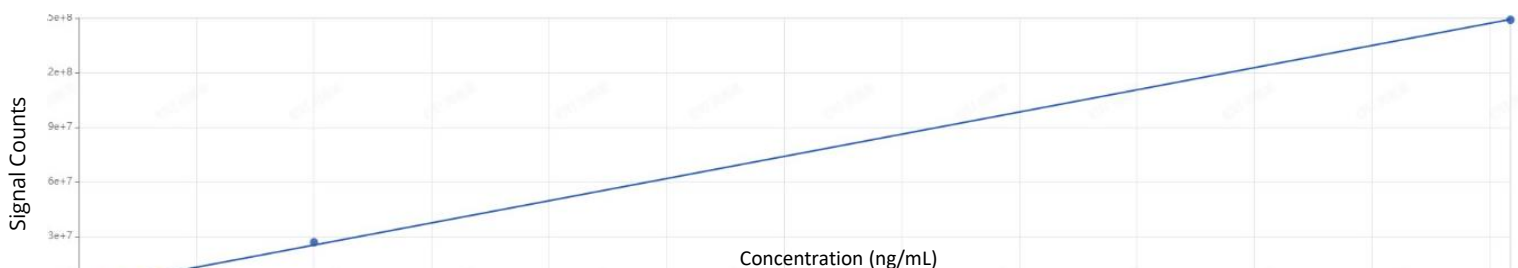
Calculated S/N ratio: >2,750,000



Core Design

Special Features:

- Ionization: ESI and APCI
- Mass Range: m/z 5-1250/2000 (switchable)
- Scan Speed: >12,000 Da/sec
- Scans Mode: Q1, Q3, MRM, Q1 multi-ions, neutral discard, parent ion, daughter ions
- Mass Accuracy: <0.01% @whole range of mass



Detection Limit and Linearity

Chromatography

ECOM – LC (Preparative, Semi-prep, Analytical, and Flash) Systems - Czech

HPLC is a very mature technology. That is to say, the difference among every manufacturers is unnoticeable. All the components shown below is about 33% of our product line.

By telling us the sample size you want to separate/purify per injection or per day, we could configure the perfect system for you. Free of charge.

- **Configurations:** Analytical, Semi-prep, Prep, and flash LC systems with isocratic to quaternary gradient capability are available
- **Solvent delivery:** Flow rates of 10, 50, 100, 250, 300, 1000 and 3000 ml/min with Pressure of 15, 30, 40, 60 MPa are available.
- **Sample injection:** Manual or automatic, with sample loops from 1 – 50 mL
- **Detection:** UV and UV-Vis PDA (190/200nm up to 400, 600 and 800 nm); RI, Fluorescence, ELSD, Conductivity/pH, and others are available
- **System Operating Software:** ECOMAC for Prep LC, and Clarity with 21 CFR Part 11 compliance.
- **Optional accessories:** Eluent degasser, gradient mixer, column oven, fraction collectors (3 models), pump head thermostat (ambient to 110°C), ATEX rating pump, pulse-less pump.



GRADIENT BOX

- With a gradient valve
- Optionally with a built-in PC

PREPARATIVE PUMP

You can choose a preparative pump with the following flow rates: 50, 100, 250, 300, 1000 or 3000 ml/min

DETECTOR TOY20DAD H

Available wavelength range versions: Up to 400, 600, and 800 nm

FRACTION COLLECTOR

Wide assortment of different sizes of tubes, vials, and funnels

BOTTLE RESERVOIR

PC DISPLAY

EMBEDDED PC

FRACTION COLLECTOR

VARIOUS RACKS

- For tubes—of 8 ml, 21 ml, 40 ml, or vials of 60 ml, or funnels of 30 mm

GRADIENT VALVE

- 6 solvent inlets

DETECTOR UV-VIS DAD

- 200–800 nm
- Scanning
- 4 channels

CHROMATOGRAPHY SOFTWARE

AUTOMATIC INJECTION VALVE

PREPARATIVE PUMPS

- 10, 50, or 250 ml/min

Compact Prep System (10, 50, or 250 mL/min)

...choose your ideal system components...



GRADIENT BOX

- With a degasser and a gradient valve
- Optionally with a built-in PC

SAMPLE INJECTION VALVE

- Stainless-steel sample loop

Amino Acid Analyzer

Column Washing System

HPLC PUMP

- With maximum flow rate of 10 ml/min
- Max. back pressure rating up to 60 MPa (8703 psi)

AUTOSAMPLER AS96

- Features excellent accuracy and linearity.
- Versions:
 - With/without sample heating and cooling module
 - Maximum backpressure: 60 or 40 MPa

GRADIENT ANALYTICAL SYSTEM

COLUMN OVEN

- Features heating and cooling 0–80 °C
- Or with heating only, up to 99 °C

PDA/UV-VIS DETECTOR

- A multichannel PDA or a variable UV-VIS detector with ranges from 200 nm up to 800 nm

Build your dream system with our components

Gradient Analytical System

Chromatography

Pre-configured System and Components



PrepTower (300, 900 or 2,000 mL/min)



Isocratic Prep System



Quaternary Gradient Prep System w/ UV-Vis PDA detector



PrepBox (300 or 1,000 mL/min)



Pumps (10, 50, 100, 250, 300, 1000, 3000 mL/min)



UV LED Detector (255 & 280 nm)



Gradient Mixer & Degasser



Industrial Scale columns - construct w/ SS316 & UHMWPE



UV-Vis (190 - 600/800 nm)



Column Oven (0-80°C)



Column: 3, 5, 10 μm of various dimensions and chemistry



Thermostat Pump Head (50-300 mL/min)



PDA (190/200-800nm)



ECD (L) and pH Flow Cell (R)



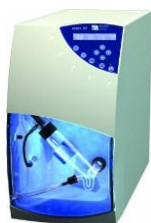
Thermostat Unit for 1L/min Pump



RI Detector



Autosampler (96 Position)



Fluorescence Detector



Fluorescence Detector



Fraction Collector



Operating System

Chromatography

Misc - Simulated Moving Bed Chromatography (SMBC) - China

Simulated Moving Bed Chromatography (SMBC) is a continuous purification and separation technique with better performance (less solvent/sorbent consumption and higher throughput) than traditional batch liquid chromatography.

Other Major Advantages of SMBC

- Continuous regeneration of adsorbent reduces the excess use of adsorbents considerably.
- Reduced consumption of desorbent and adsorbent makes this a greener process.
- Savings in capital investment by offering a smaller footprint equipment, and manpower.
- SMBC is particularly useful in biorefineries because of the low concentration of product stream from biorefineries (e.g. fermenters). The low concentration is favorable for adsorption, making it the preferred technology to achieve economic purification of the bio-products.

Biorefineries particularly face a huge challenge in isolating the desired products from the fermenter. The cost of separation and purification account for a large portion of costs in biorefineries. SMBC provides the much-required cost effective solution which makes biorefinery production feasible and competitive to traditional synthetic production techniques.



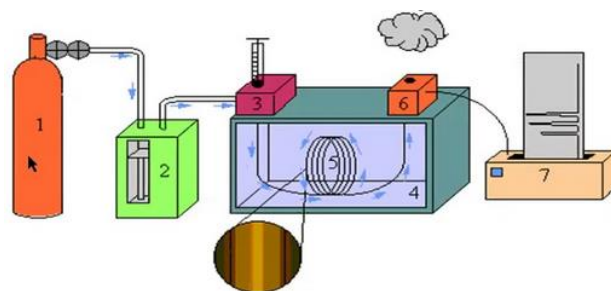
Misc - Supercritical Fluid Chromatography (SFC) - China

Properties of supercritical fluids lie between liquids and gases. This allows SFC to use the advantages of both HPLC and GC. SF CO₂ behaves similar to GC's carrier gas (of lower viscosity and higher diffusivity). Therefore, SFC allows quicker and more efficient separations as it penetrates easier to the porous solid phase than liquid mobile phase. The separation time can be cut down from hours or days to minutes.

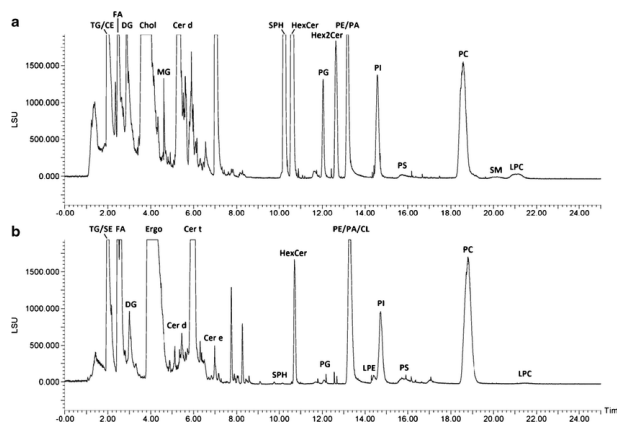
Supercritical fluids have greater solvating power to allow SFC handle larger molecules which GC could not. Also, Lower operating conditions (low critical temperature of 31°C and faster) makes SFC the best tool for heat-labile samples. Another advantage of supercritical CO₂ is that its solvating strength could be tuned (by altering the temperature and/or pressure of the fluid) and allows for selective extractions. Hence, higher selective separation could be achieved.

Wider range of detectors is also possible because in SFC the mobile phase behaves like both liquid and gas, so GC and HPLC detectors can be used. For example SFC with flame ionization detection (FID) can provide quantification of resolved materials with a sensitivity of 0.1 ng. Due to the range of detectors available for SFC and the low critical temperature of the CO₂ mobile phase, the detection and analysis of heat-labile compounds has been successful.

Another advantage SFC has over HPLC is separation of chiral compounds, in HPLC the process is very time consuming, in SFC however, due to the lower viscosity of the supercritical fluids, the chiral separation can be run at a flow rate of up to 5 times faster than that of the HPLC all while avoiding pressure build up. The higher flow rate of SFC consequently means that the productivity is higher than HPLC.



1. Mobile phase (CO₂)
2. Pump
3. Injection System
4. Oven
5. Column
6. Detector
7. Chromatogram



SFC Separation of complex sample in minutes

Chromatography Accessories & Consumables

Restek - Chromatography Consumables & Accessories - USA

Products include:

- GC & GC-MS Columns
- HPLC & LC-MS Columns
- SPE Cartridge
- SLE
- SPME
- Sampling Canister
- Certified Reference Materials (Gas & Liquid)
- **Many others**



GC Column & Guard Column



GC Liner



SLE



SPE Cartridge



SPME Arrow



Sampling Canisters



LC-MS Arrow Column



Super Clean Gas Filter



Certified Standard Ref. Material (Liquid & Gas)

Misc - Standard Gas & Liquid Generator - Misc

Gas Standards: Getting a gaseous reference standard is always a big headache before running daily analytical experiments. But there is a solution with this **Calibration Gas Generator**.

Liquid Standards: As always, setting up calibration curves for your daily GC or HPLC work is a **BIG** headache. With the FlexStation P4, you set up calibration curves easily because of its automation.



Reference Material (Gas & Liquid) Generation

Guyline (Asia) Ltd.

Rm 1611, Eastern Harbour Centre, 28 Hoi Chak Street, Quarry Bay, Hong Kong

Tel: (852) 2856 0605

Fax: (852) 2811 3379

E-mail: admin@guyline-asia.com

Website: www.guyline-asia.com

香港 . 北京 . 上海 . 广州 . 深圳 . 成都 . 武汉 . 长沙 . 长春