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Technologies Limited

LCMSMS - 3500i

Liquid Chromatography triple quadrupole mass spectrometer



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

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▶▶ **Product Overview**

LCMSMS 3500i is the new-generation liquid chromatograph - triple quadrupole tandem mass spectrometer of ATL Technology. It has the stronger ion source, more excellent ion transmission system, higher scanning speed, and lower detection capability. LCMSMS 3500i is applicable for wide application fields, including the environment detection, medical detection, and food safety. The workstation software, which was independently developed based on users' demand, includes the software for professional mass spectrometry control and quantitative analysis. In combination with the functions of standard method library, automatic tuning, intelligent MRM, intelligent batch processing and customized report output, the software greatly reduces the operation difficulty of the mass spectrometry system. Additionally, Mass Expert has thousands of compound standard libraries and rich application method libraries. It can meet the application demands of more mass spectrometry users.

▶▶ **LCMSMS 3500i triple quadrupole tandem mass spectrometer**

- Excellent performance and easy operation make it possible for LC-MS/MS testing laboratories.

▶▶ **Unique biorthogonal ESI and APCI dual ion sources**

- LCMSMS 3500i adopts the E-Spray biorthogonal electrospray (ESI) ion source and APCI ion source, and has an excellent ionic yield and organism resistance.

▶▶ **Excellent sensitivity**

- The product adopts the Step Scan, a kind of newly designed ion transmission technology, which effectively improves the ion transmission efficiency.
- Brand-new 3rd-generation axial accelerating collision cell technology greatly improves collision efficiency.
- The patented technology of pulse counting detection can detect ion signals without loss and filter noise interference effectively

▶▶ **Mass Expert Mass Spectrometry Work Station**

- The control software and analysis software of completely new Mass Expert mass spectrometry are simple to operate. The function of one-click automatic tuning and mass calibration reduces the complexity of instrument control and the threshold of instrument use. Mass spectrometry analysis software and report template can be customized according to different application fields and different users to meet the use needs of various application fields.

▶▶ **Ion interface**

- High-purity nitrogen blow-back for improving desolvation effects and matrix tolerance
- The temperature of the heating gas circuit can be controlled precisely.

▶▶ **ESI/APCI dual ion sources**

- Biorthogonal electrospray (ESI) ion source and APCI ion source, supporting seamless switch
- Orthogonal ion path with 90 degree deflection to reduce neutral particles entering the mass spectrum and reduce noise
- Orthogonal symmetrical two-way desolvation gas based on flow field simulation to maximize solvent removal.

▶▶ **Reliable multi-level vacuum system**

- Multi-level vacuum system based on the molecular pump + backing pump
- Step transition of vacuum to reduce sudden change of air pressure and ion loss

▶▶ **Complete instrument control system**

- All gas circuits, voltages and heating have interlocking control to ensure equipment safety.
- The vacuum system is independently controlled and has perfect self-protection. It can ensure the normal operation of the system without software.
- All gas circuits are controlled by MFC to control all parameters accurately.

▶▶ **New-generation step scan ion transmission**

- Three Q quadrupole transmission system design is adopted to maximize the transmission efficiency
- Axially accelerated Q-funnel ion acquisition to improve ion transmission efficiency
- Unique Q-lens, connected with ion interface perfectly Q-guide, improved quadrupole transmission channel to ensure all ions efficient transmission.

▶▶ **TQ mass analyzer**

- Pure molybdenum quadrupole mass analyzer with gold plating for best thermal stability
- Ultrastable frequency-modulation quadrupole RF power supply, optimal resistance to the changes in temperature and humidity, ensuring excellent stability even under common laboratory conditions

▶▶ **High-speed dynamic collision reaction cell**

- The patented 2nd-generation hexapole collision reaction tank
- The design of axial acceleration enables the ions to pass through the collision cell quickly, ensuring both collision efficiency and transmission efficiency and reducing cross contamination
- The patented distributed diffusion mode of collision gases significantly improves collision efficiency and enhances sensitivity

▶▶ **Pulse-counting detector**

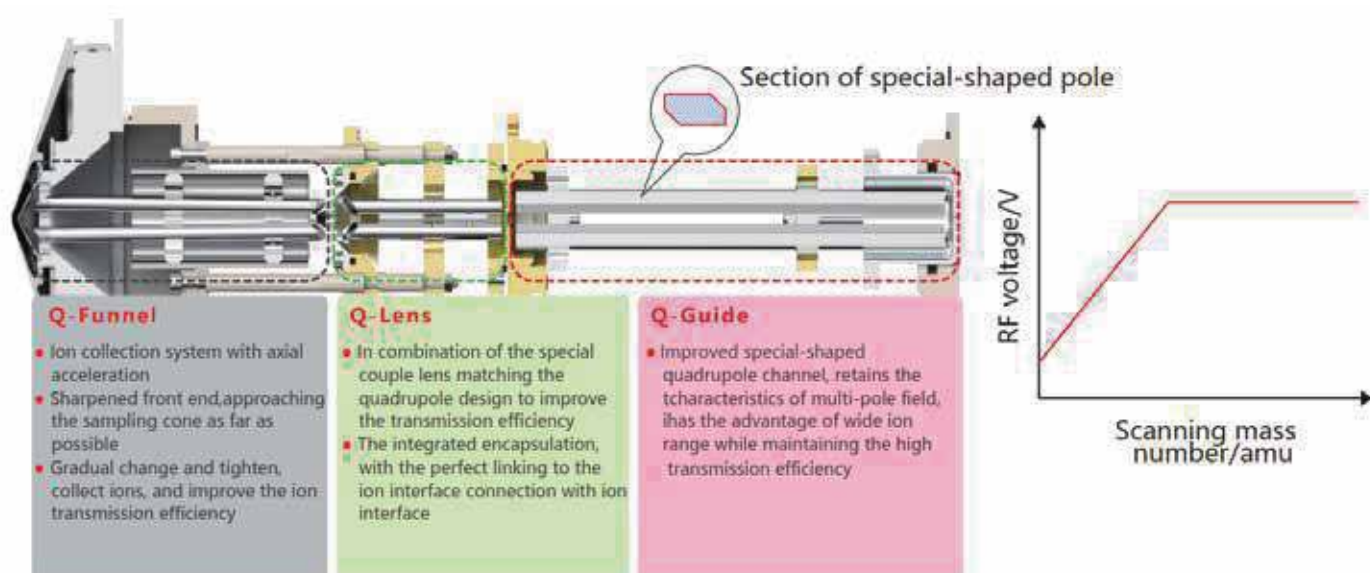
- Special deflecting-channel electron multiplier
- The patented pulse-counting detection provides higher signal response, and generates lower noise



The new-generation dual-3Q ion optical system provides high ion transmission efficiency, excellent matrix tolerance, good balancing sensitivity and stability, and thus superb application effects.

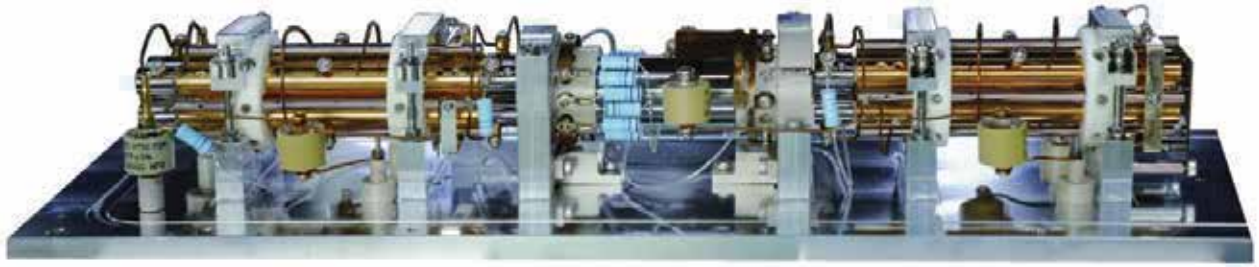
▶▶ Step Scan 3Q ion transmission system

- Integrated packaging, easy to disassemble and cleaning
- Three groups of quadrupoles form a unique TQ ion transmission channel with large ion path and high ion transmission efficiency
- Quadrupole design and step scanning can reduce the interference of low mass ions
- Scanning voltage can be loaded, and special scanning can be realized for specific ions to improve ion selectivity



▶▶ Tandem QQQ mass analyzer

- The design of tandem quadrupole mass analyzer and hexapole collision cell is adopted
- The stable dual-mass analyzer can be used to carry out various mass analysis, and is applicable for the study on different types of mass spectrometry
- Efficient collision cell can transmit various ions to the highest extent
- Including the full scan, selected ion monitor (SIM), single reaction monitoring (SRM), product ion scan, precursor ion scan, neutral loss scan, multiple reaction monitoring (MRM).



►► Self-developed pure molybdenum quadrupole mass analyzer

- Pure molybdenum quadrupole with the best material stability to ensure the stability of the mass axis
- The surface of quadrupole is plated with gold and completely inert to eliminate organic deposits
- The patented closed-loop adaptive adjustment technology of dual RF power supply to improve the stability of quadrupole RF
- The patented temperature and humidity alternating resistance technology can adapt to the working environment of (15 ~ 30) °C, (20 ~ 80)% R.H



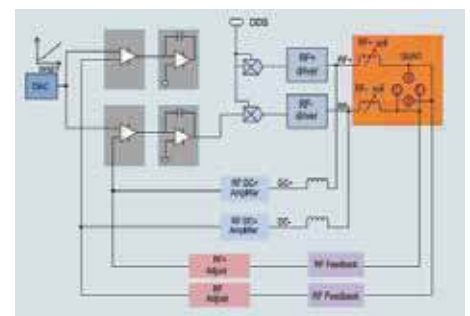
►► Brand-new 3rd-generation axial acceleration collision cell

- Eliminate crosstalk between ion pairs and no memory effect
- Matching ultra-fast liquid chromatography for high-throughput analysis of nearly 100 compounds at the same time



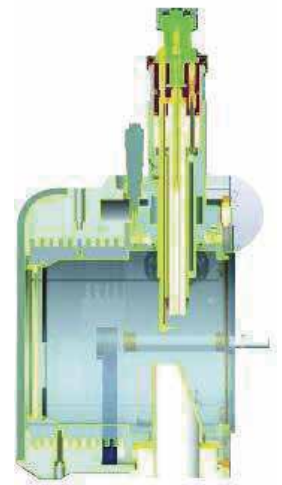
►► Advanced quadrupole RF power technology

- The patented dual-channel RF power closed-loop adaptive adjustment technology is adopted to enhance the stability of quadrupole RF power, ensure the RF power symmetry, and significantly improve the ion screening and the accuracy of ion transmission.
- Completely new temperature and humidity resistance technology is adopted to improve the environmental adaptability of quadrupole driving power supply, and the mass spectrum peaks are very stable in the full temperature and humidity range



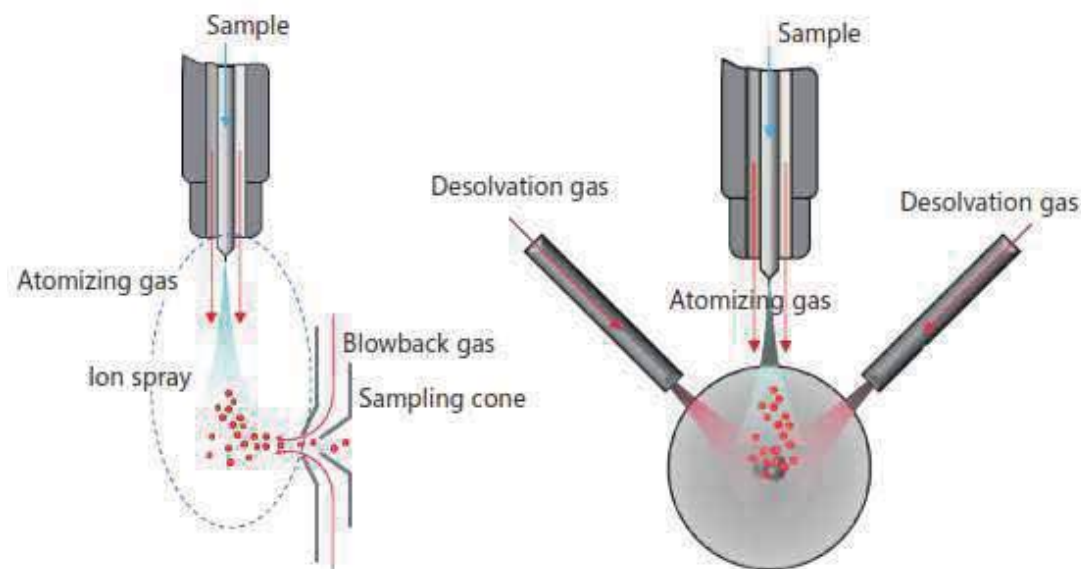
▶▶ ESI/APCI dual ion source

- The orthogonal vertical spray ESI ion source and APCI ion source, with 90° deflection for reducing directly sprayed neutral particle pollution, reducing noise while significantly extending the maintenance cycle
- The coaxial atomizing gas forms powerful, stable ion sources, which is applicable for the stable sampling under different flow rates, i.e. 5ul/min - 2ml/min.
- The ion source can be adjusted in a two-dimensional mode, and is suitable for users to optimize the ion collection position based on actual conditions.



▶▶ Orthogonal desolvation gas, aerodynamic and efficient desolvation

- Based on the distribution of aerodynamics and thermodynamics, the spatial position of desolvation gas is optimized, and the orthogonal and symmetrical arrangement has the best desolvation effect.
- Independent temperature control of two-way desolvation gas, and the maximum desolvation gas temperature can reach 800 °C.
- The temperature and flow of desolvation gas can be automatically optimized and switched, and can be flexibly adjusted according to the application to achieve the best effect of desolvation.



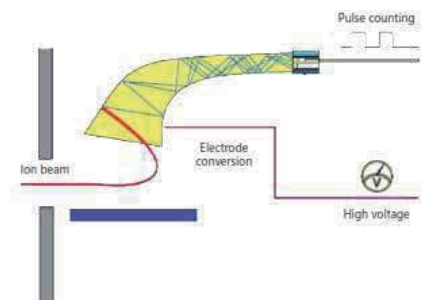
▶▶ **Anti-contamination vacuum interface**

- The air curtain is formed by the high-temperature nitrogen flow back-blow
- Effectively remove neutral particle
- Prevent large droplet entering the vacuum area
- Negative pressure in atomization chamber to discharge solvent droplets



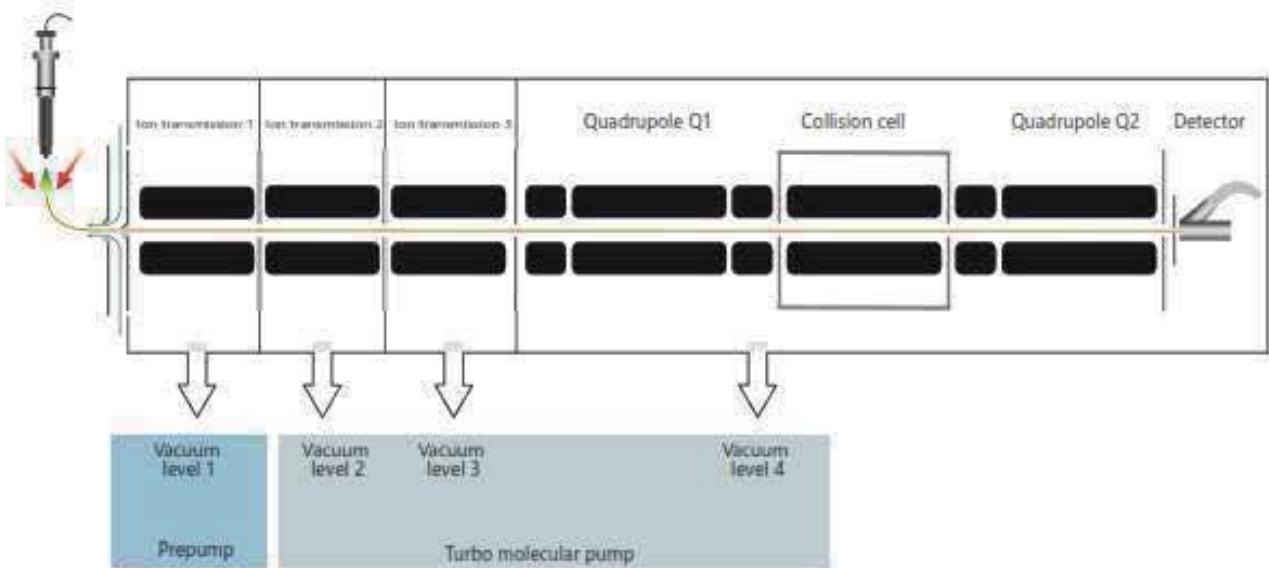
▶▶ **Ultra trace single detection**

- Channel-type electron multiplier
- Off-axis design, filtering the noise of neutral particles
- Innovative pulse-detection technology can effectively improve the signal-noise ratio and obtain better analysis results



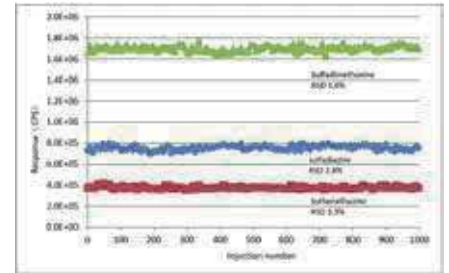
▶▶ **Vacuum system**

- Differentiation vacuum design is adopted to reduce the ion transmission loss
- Additionally, it reduces the load of the molecular pump, and enhanced the service life of the turbo molecular pump



▶▶ Excellent stability

- 1000 needles of continuous injection over 168 hours, peak area of 3 sulfonamides CV < 4%



▶▶ Powerful and friendly Mass Expert analysis workstation

- Mass Expert work station, providing brand-new user experience and no-barrier learning
- With rich intelligent kits to meet the application needs of different levels from experts to experimenters
- Powerful high-throughput data batch analysis software makes analysts no longer stay at the side of the instrument
- The built-in standard spectrum library contains thousands of compounds, and supports self-built spectrum library, which is convenient for users to build their own methods.
- Provide special solutions for industrial applications, and provide customized method packages for environmental monitoring, online analysis, etc.

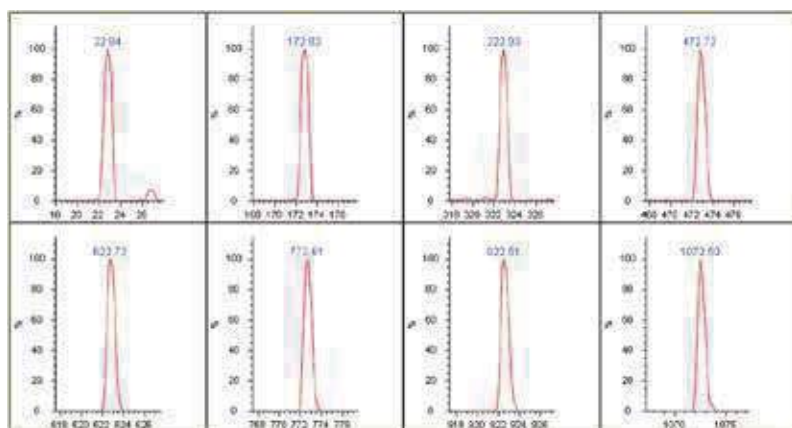
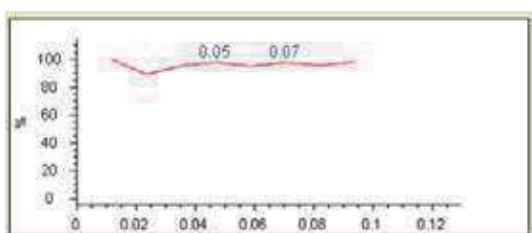
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▶▶ Simple, easy-to-use control software

- The automatic optimization of methods, accelerating the method development procedures
- Monitor instrument status in a real-time manner, reducing the diagnosis and maintenance difficulties

▶▶ Intelligent parameter optimization

- The "one-click" automatic tuning and mass calibration reduce the application difficulty encountered by the user.
- Parameter adjustment tool tailored for advanced users to meet personalized experimental needs



▶▶ Customizable application analysis software

- Customize special software for the applications of environmental protection, medical diagnosis, food safety, on-line analysis, etc.
- With the built-in compound library and analysis method library, it provides analysis method supporting for compounds
- Mark outliers automatically to speed up analysis
- The setting of no parameter automatic integrator to reduce the tedious operation of manual integration
- Analysis data statistics and trend displayed by chart are convenient and intuitive

►► Application scope

The 3500i liquid chromatography - triple quadrupole mass spectrometer, integrating the high separation efficiency of liquid chromatography and the strong identification capability of mass spectrometry, has sufficient sensitivity and selectivity, good stability, and strong anti-interference. Therefore, it is applicable to the high-sensitivity qualitative and quantitative analysis of trace pesticides and veterinary drugs in a complex matrix.

►► Work environment

- 1) Work environment temperature: 18-25°C
- 2) Humidity in the work environment: (20 - 60)% RH
- 3) Power supply: five sets of single-phase (220 ± 20) V AC, 10A, 50 Hz power supply

► System technical specifications

Configuration and performance indicators of liquid chromatography

- Ultra-high pressure gradient pump
- Two solutions in A and B, or C and D, can be selected as the flowing phase of the system by switching the solvent selection valve.
- A vacuum degasser is equipped, with each pump degassing separately (A/B).
- Flow range: 1-4,000 µL/min
- Maximum pressure: ≥ 18,850psi
- Accuracy of flow rate: ≤1% , Flow precision <0.075% RSD
- Precision of flow rate: ≤ 0.075% RSD; Gradient delay volume: 50 µL
- Automatic sample injector- Vial capacity : 108*2ml, volume: 0.1 to 100 µL, precision <0.3%,
- Three injection modes: full loop injection, partial loop injection and microliter pickup.
- Injection repeatability: full loop injection <0.3%RSD; partial loop injection <0.3%RSD; microliter pickup<1.0%RSD
- Cross contamination: < 0.05%, Gradient composition accuracy + 0.5%, Gradient composition precision < 0.15% RSD
 - Maximum sample capacity: 384 bits, and 96 bits for standard liquid injection.
 - Column oven
- Temperature control range: Room temperature +5°C - 90°C
- Temperature control mode: preheating of flowing phase + forced air circulation
- Maximum column capacity: Six 250mm-long chromatographic columns can be installed at the same time.

►► Requirements for configuration and performance indicators of mass spectrometry system

- Ion source (dual-source, i.e. ESI electrospray ion source and APCI ion source, for standard configuration), Electrospray with Co axial flow based design to cover flow rates upto 3ml/min
- Orthogonal vertical spray design is adopted, so that the system has strong anti-pollution capacity and low background noise.
- Ion source gas supply: 1 loop of nitrogen for atomizing and 2 loops of nitrogen for desolvation. Specifically, the flow rate of nitrogen for atomizing is 0-2 L/min, and that for desolvation is 0-15 L/min. The maximum spray voltage is 6 kV. The flow rate, voltage and temperature can be set up and run under the software interface, to ensure the maximum ionization efficiency and resistance to matrix interference. (Switching time: <20 ms)
- A special exhaust device is set in the ion source to prevent the backflow of gas in the closed ion source cavity, further reduce the memory effect and pollution of the ion source, decrease the load of the mechanical pump, prolong the service time of the mechanical pump oil, maintain the test environment and ensure the health of the staff.
- Vacuum interface and ion transmission system
- High-temperature blowback gas design: Nitrogen is used as the blowback gas, with a flow rate of 0 to 5 L/min to further remove the solvent and reduce the introduction of neutral molecules.
- Heating design of vacuum interface: the cone hole is used for sampling to prevent capillary clogging; it can be heated to 110°C at most to improve the anti-pollution
- Vacuum interface maintenance: simple cleaning and maintenance, without vacuum unloading. The whole process of daily maintenance and installation can be easily completed in a few minutes.
- Ion transmission system: 5-stage differential vacuum design is adopted, and multiple quadrupole transmission is used for accurate focusing of ions.
- Mass analysis system
- Mass analyzer: Gold-plated quadrupole made of high precision pure Mo material is used, and the material can realize the best stability through deactivation; cleanable pre- and post- quadrupoles are set to eliminate the organic deposits; and the best mass axis stability can be ensured without heating.
- Quadrupole: Made of high-precision pure Mo material, capable of ensuring the best mass axis stability.

- Collision cell: Hexapole axial acceleration design is adopted, capable of effectively eliminating the interference of ion-pair and ensuring the high-throughput analysis capability. High-purity nitrogen is adopted as the collision gas (with the purity $\geq 99.999\%$), supplied in cylinders.
- Resolution: unit resolution (full width at half maxima: 0.5 amu)
- Mass stability: 0.1 Da over 24 hours; Quadrupole mass range: 5 — 1000 m/z
- Scanning speed: $\geq 25,000$ amu/s
- Number of MRM channels: 100 channels/s
- Mass number m/z scope: 5 - 2,000 amu.
- Dynamic range: 6 orders of magnitude.
- Sensitivity: ESI+, MRM mode: 1pg reserpine, injected on the column, with $S/N \geq 500,000:1$; ESI-, MRM mode: 1pg chloramphenicol, injected on the column, with $S/N \geq 500,000:1$;
- Scanning functions: Full scan, selected ion monitoring (SIM), selected ion recording (SIR), production scan, precursor ion scan, neutral loss scan, multiple reaction monitoring (MRM), positive/negative ion switching scan, etc.
- MRM dwell time : 1ms
- Multiplier technology, without any positive and negative ion discrimination effect, which has a long service life, capable of ensuring the long-term data stability.
- Pulse-counting detector, to ensure the data reproducibility of low limit of detection.
- Positive/negative polarity switching time: ≤ 10 ms
- Vacuum system: composed of a mechanical pump and a turbo molecular pump, with a differential pumping system formed between the ion transmission area and mass analysis area, functioning for automatic power-off protection.
- Workstation software:
 - Basic features of software system: Windows XP or later operation platforms. The software can control the liquid chromatography and mass spectrometry, with built-in data processing and report editing functions; besides, the software can realize the function configuration and condition optimization of the instrument automatically, the automatic quantification, the mass spectrometry data analysis, and the establishment and retrieval of the spectral database.
 - The system has the functions of automatic correction and instrument condition monitoring.
 - The LC-MS operation software can be installed on the personal computer, and used for the offline processing of sample analysis data and report generation.
 - In later stages, LCMSMS can be upgraded to be the gas phase-liquid phase-triple quadrupole mass spectrometer.

Accessory system

- Computer system

Brand computer with mainstream configuration, 4GB memory, 1TB hard disk.

- AC stabilized power supply

15 KVA, input voltage of 140 V-300 V, output voltage of 220 V ± 1%.

- Laser printer

6018L, black and white laser printer.

- Nitrogen generator

The maximum flow is 24 L/min and the maximum pressure is 116 psi.

- Mechanical pump

Pumping speed: 65 m³/h, 220 V power supply, 800 W.

- One cylinder of High-purity nitrogen (including the gas pressure reducing valve).

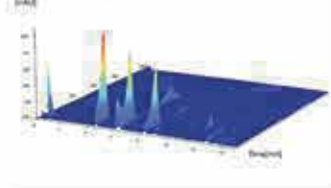
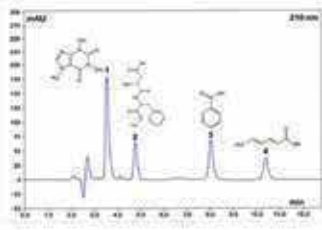
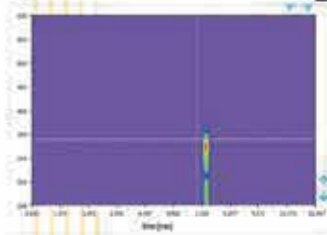
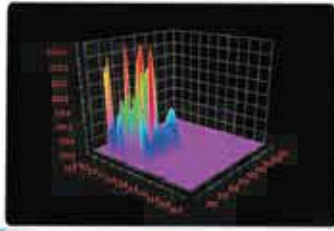
		S/N	Scan Range/Mass Range(amu)	Scan Speed (amu/s)
3500i	ESI	200000:1	5-2000	12000
	APCI	50000:1		



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iUHPLC 3000 PLUS

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Multi-channel pumps

Alternative injection modes

Various detectors

Custom combination

Flexible configuration

9000PSI working pressure

2.5AU Linearity range

100Hz Sampling rate

Rapid analysis achievable

More efficient, less consume

iUHPLC



Excellent Performance

Instrument installation & various training courses

Application & regulatory compliance service

Remote diagnose & prompt response

Preventive maintenance & service plans

Proactive and comprehensive service

ELSD



RI Detector



Typical Configuration



Isocratic System with Manual Injector

This isocratic system could deliver one type of mobile phase. By combining the best performance cost ratio, system stability and maintenance simplicity, this system is an ideal solution for routine QA/QC analysis and GPC/SEC application. It can also be simply upgraded into gradient system with autosampler to boost your productivity.

Quaternary System with Autosampler 3000 Plus

Quaternary system possesses the advantage of great flexibility, and it can further be automatized by combining our autosampler. This combination could fulfil the complex requirements from pharmacy, agricultural & farming fields. With the control from ALT Chromatography workstation, it realized full automatic analysis, report, system flush, shut down and then raised up the efficiency. environmental, food safety, petrochemical engineering,



Binary System with Autosampler

With excellent gradient precision & optimized delay volume, this binary system plus autosampler is ideal for complex gradient application or be used in combination with mass spectrometry. With the convenience of autosampler and various detector, the user could easily get more data.





3000 Plus High Pressure Pump

Performance Highlights

High Precision

3000 plus serial high pressure pump could reach 9000psi (62Mpa) working pressure with the flow rate up to 10mL/min. This high performance extend the application field from normal HPLC to Fast HPLC. With the help of 100Hz detecting and high precision sampling, you can take advantage of small piratical size column and reduce solvent consumption.

Precise Flow Rate & Gradient

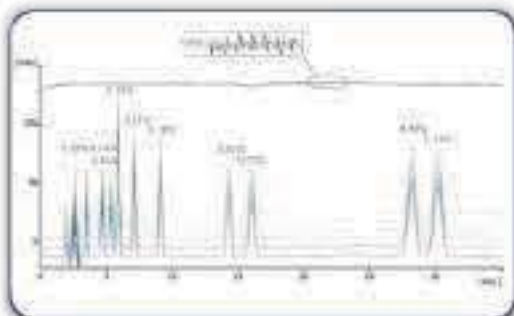
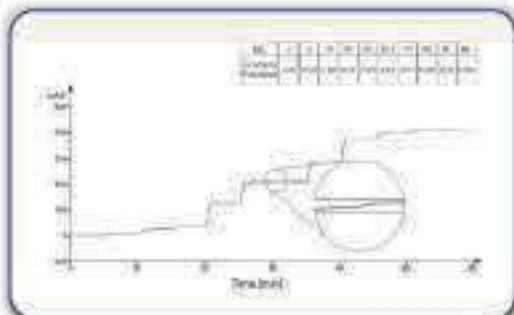
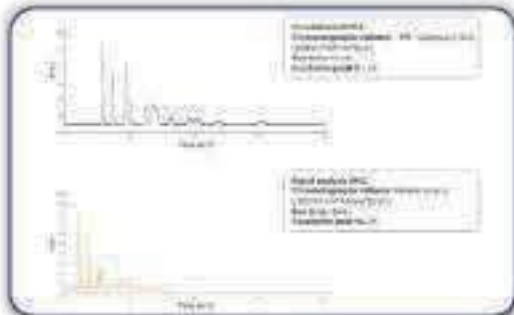
3000 plus serial high pressure injection pump could monitor the pressure status by its digital signal processor and adjust the motor operation status based on working parameters and solvent type. This real time feedback mechanism plus the high performance proportional valve realized the steady flow output as well as precise Quaternary low pressure gradient pump with dual reciprocating pistons in series/parallel double plunger.

Stable Pressure

3000 plus serial high pressure pump's pressure pulsation could be controlled under 10psi with best qualitative repeatability based on it state of art patent design, precise engineering and strict quality control..

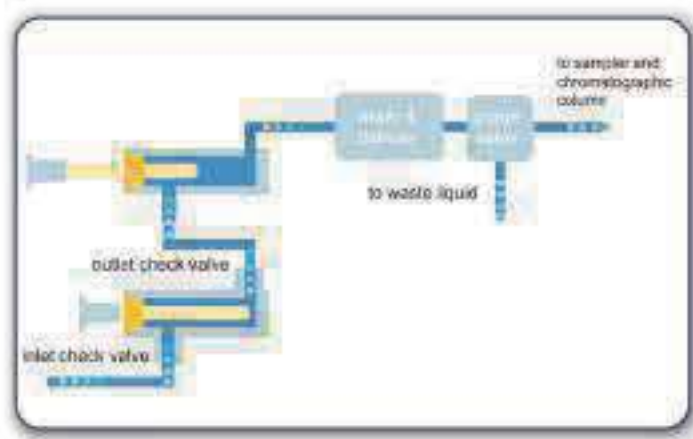
Column: back pressure tube (1000PSI)
Mobile Phase A: 1% isopropanol aqueous solution
Mobile Phase B: 0.2% acetone/1% isopropanol aqueous solution
Flow rate: 1.0ml/min
Temperature: room temperature

Chromatographic column: Manufacturer A C18(250 mm*4.6mm* 5µm)
Mobile Phase: 0.05mol/L phosphate buffer(pH = 3.5)/MeOH/acetonitrile (50/35/15)
Flow rate: 1.0ml/min
Temperature: 40°C
Detection wavelength: 254nm
Injection volume: 20µL

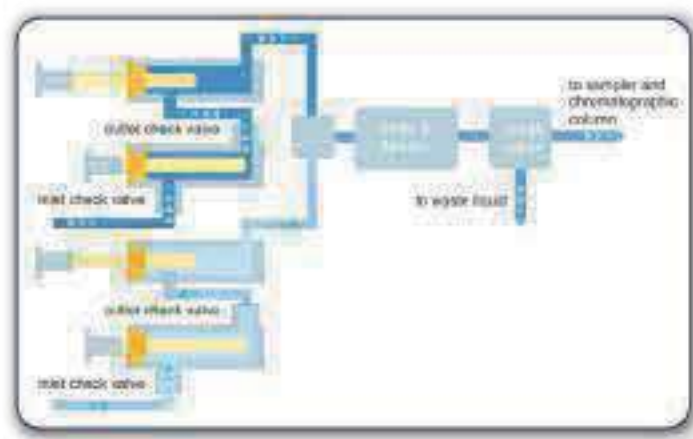


Working Principle

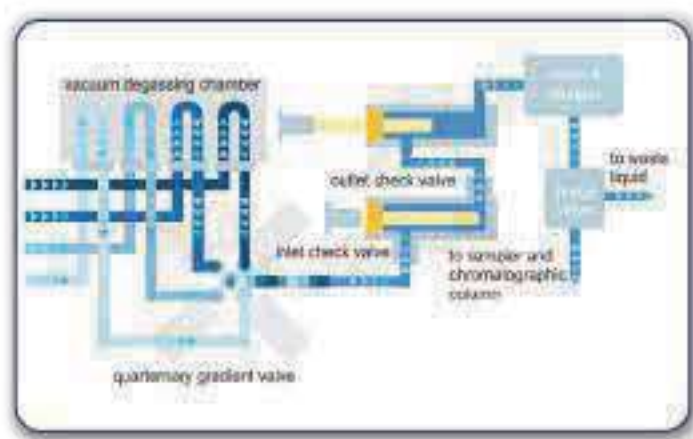
3000 plus serial high pressure pump provides isocratic, binary and quaternary model base on request.



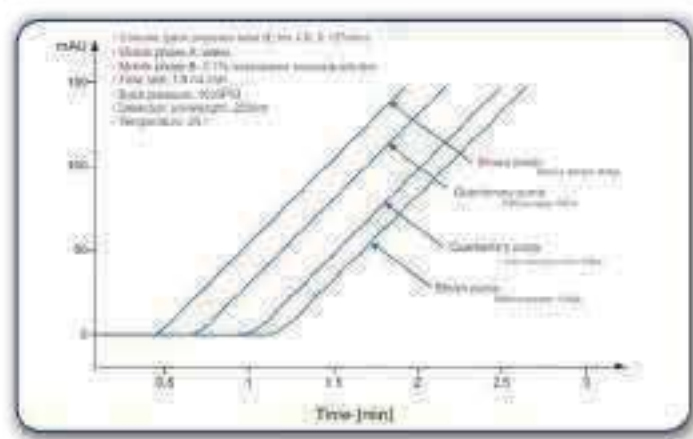
Isocratic pump for regular QA/QC usage



Binary pump for high-throughput & fast analysis



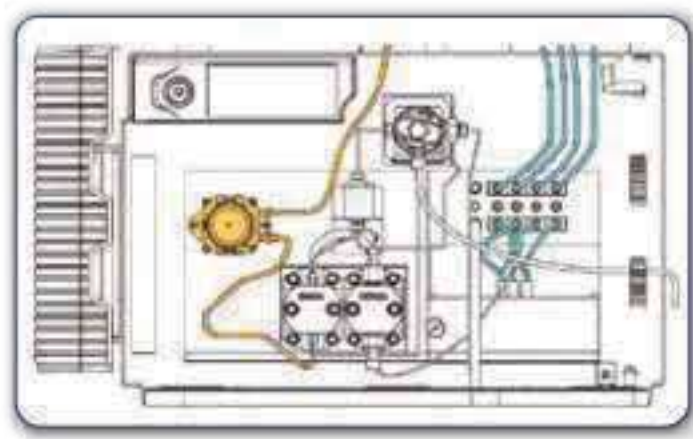
Quaternary pump for pharmaceutical, food and environmental test.



Lower delay volume enables a cleaner & faster response to the gradient changes.

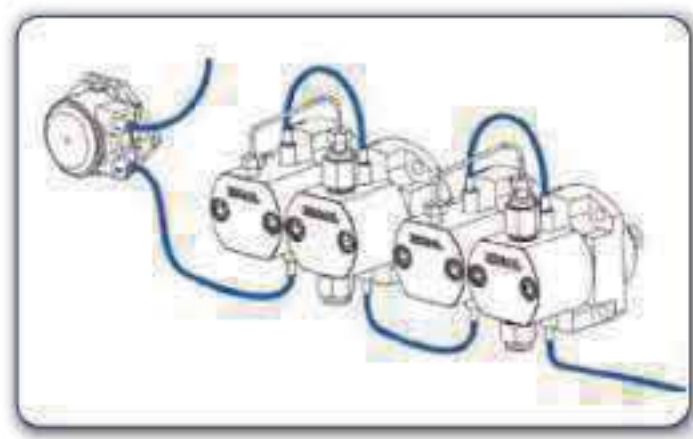
Special Design

Integrated Design



3000 plus Quaternary gradient pump combine online degasser and seal wash function. This integrated design reduce delay volume, save bench space and simplify maintenance procedure.

Built-in Seal Wash Function



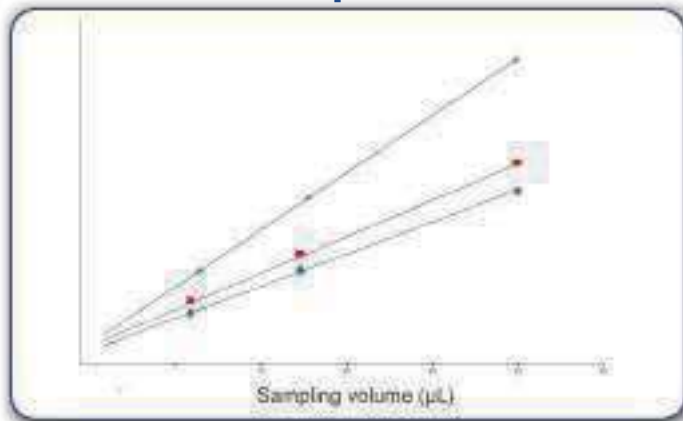
Seal wash is a standard parts in 3000 plus serial HPLC system. The part could flush the salt crystallization on the piston and extend the service life of sealing rings.

Performance Highlights

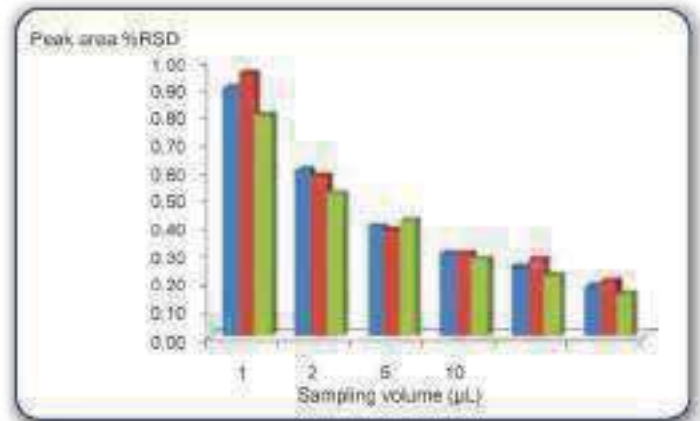
3000 Plus Autosampler

High Precision

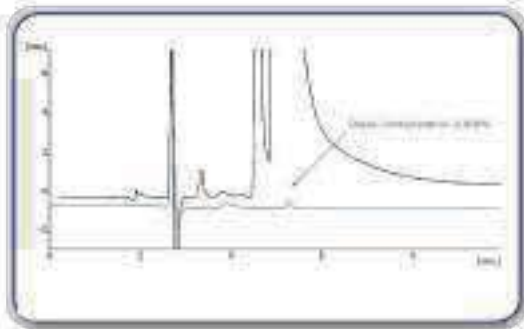
3000plus autosampler delivers high injection accuracy of 0.3% RSD, thanks to its high precision machining parts and advanced control algorithm. It also employ a design of changeable sampling loop, which extend linearity range and meet the need of more applications.



sampling volume from 2.5 to 50µL, correlation coefficients of the 3 compounds are all 0.9999



Peak-area repeatability of 3 compounds with different sampling volume (RSD%)(n=6)



Low Cross Contamination

The special design of needle washing assembly could clean interior and outside of the sampling needle separately, combing the patented sampling needle design and extra precision inner and outer polishing technology, it could reduce the carryover of sample and avoid cross contamination.

Chromatographic column: (250 mm x4.6mm x 5µm) MeOH/Water(90/10) 10µL
Cross-contamination: 0.005%(based on naphthalene-methanol solution)



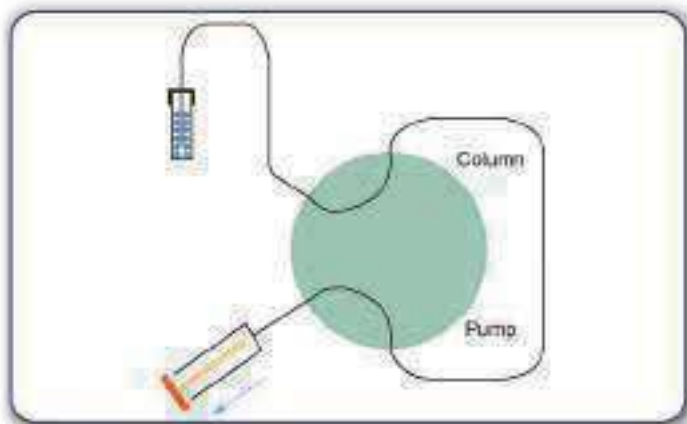
Multi Injection Mode

3000plus support three sampling mode including full loop, partial loop and micro pick-up injection for different requires. It could be easily choice in the method editor without hardware replacement.

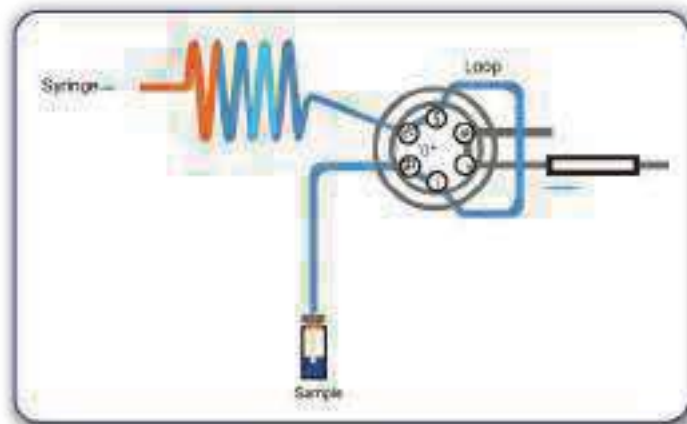
In the Method Setup interface you can simply choose to click a different injection mode, then the replacement is completed.

Working Principle

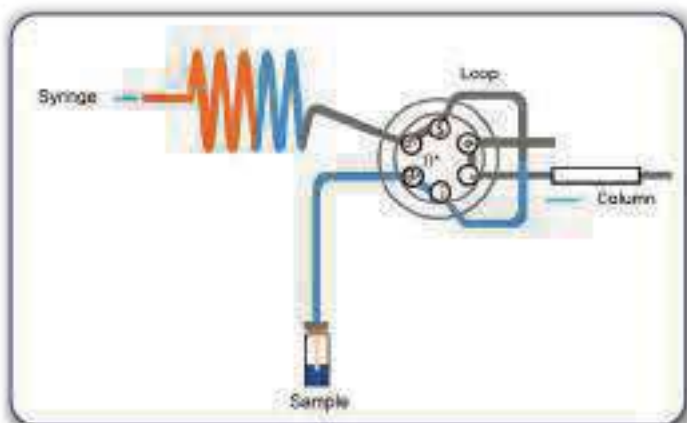
Three Sampling Mode



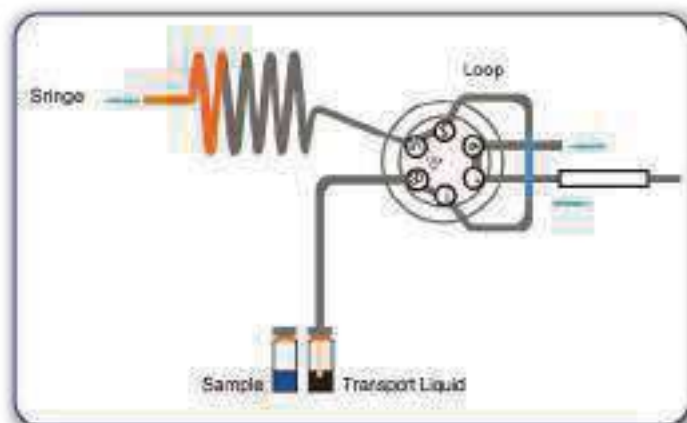
3000 plus AutoSampler adopt suction sampling principle with simple & reliable structure to reduce delay volume, it divided into triple specific sampling modes.



Full loop injection possess best sampling precision, with the support of changeable sampling loop, this mode fulfill most requirements.



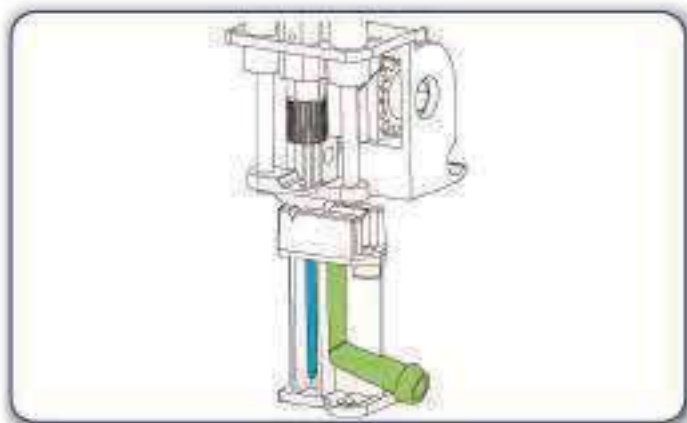
Partial injection has the best and most flexible performance, you can set the injection volume to match the application.



Micro Pick-up mode was suitable for small quantity and precious sample, the injector will only pick up the setting volume sample and use the suitable

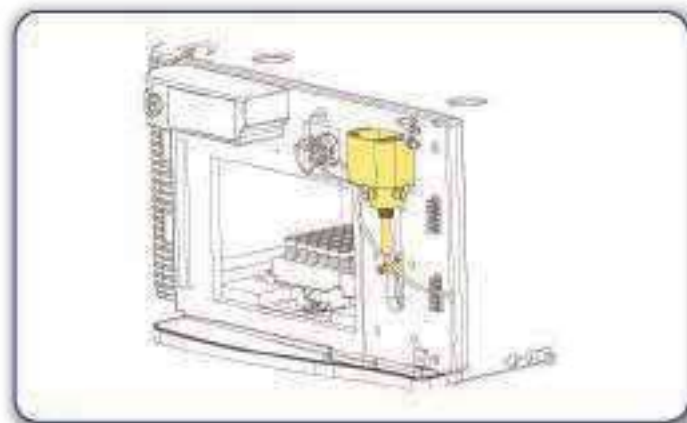
Special Design

Build-in Needle Wash Assembly



The build-in needle wash assembly has two washing positions for inter and outer needle wash separately, this double wash mechanism reduced the carryover significantly.

Front Access to Maintenance Parts



All maintenance parts could be reached on the front side, which simplify the service procedure and lower maintenance cost.



Performance Highlights

High Sampling Rate

As support by unique high speed signal processing technology, 3000plus UV - VIS detector realized 100 Hz sampling rate, which make the detection of narrow peak with width lower than 5s possible. This high sampling rate also helps to record the chromatography peak accurately and get the best resolution.

3000 Plus UV-VIS Detector

Proprietary optical design for improved signal to noise ratio.

100Hz data sampling rate means that detection of peaks sharper than 5s wide is possible with excellent separation resolution.

Wider Linearity Range

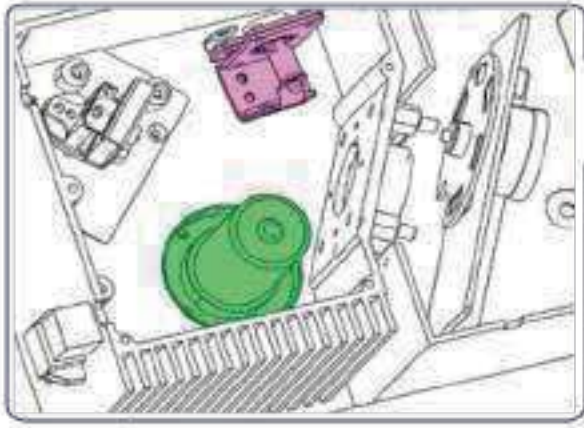
Adopt unique light path design, multi color optical filter and high quality grating, the detector realized more lower stray light, and extend the linearity range to 2.5AU.

Low Noise

3000 plus have a high performance SNR by the patent electric and structure design.



Working Principle

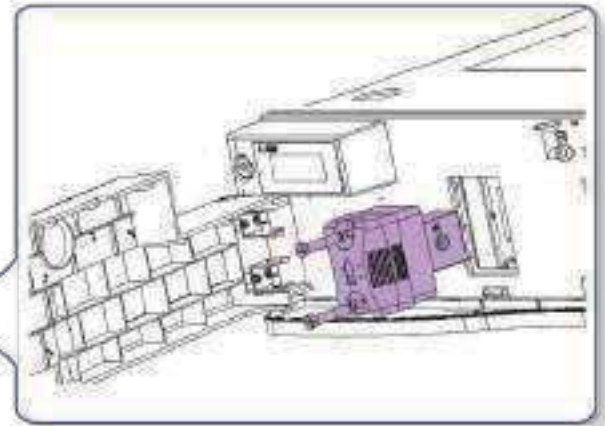


Dual Lamp Design

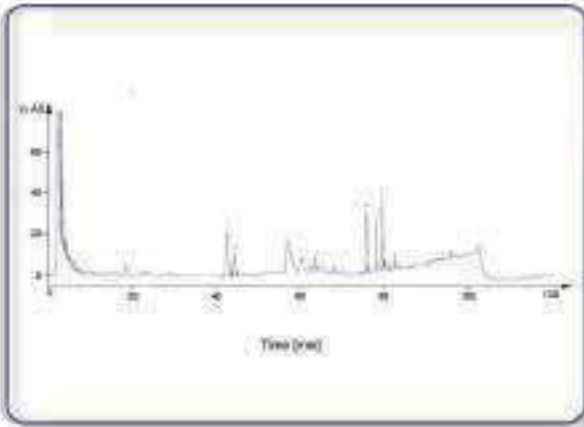
3000 plus UV-VIS detector employ a dual lamp design, the deuterium & tungsten lamp enable the detector to cover both UV and visible range and fulfill the visible section detection and cover more application scope.

Easy Maintenance Flow Cell

The flow cell adopt modular design, it could be taken off by only 2 screws removing, very easy to maintenance.



Application Notes



3000 plus shows great stability, especially in those applications with long run time and low detecting wavelength, this advantage can be perfectly shown by the 120min run.

Chromatographic column: ATL Compass C18(250mm*4.6mm*5 μ m)

Mobile phase: water/acetonitrile; gradient elution Column temperature: 40°C

Flow rate: 1.0mL / min Detection wavelength: 203nm Injection volume: 10 μ L

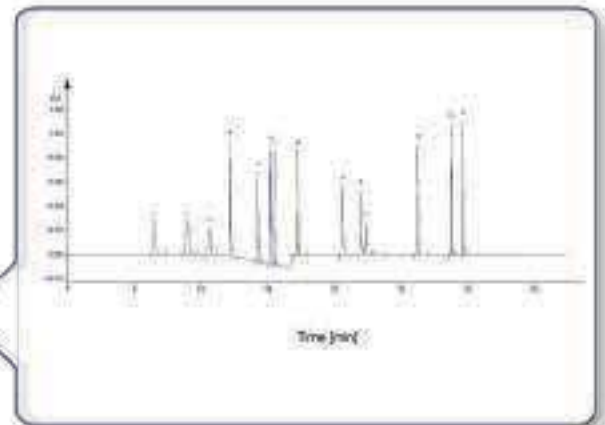
3000 plus can run wavelength program, which means switching detection wavelength during acquisition. This feature realized the programmable detection of several analytes with different chromophore.

Chromatographic column: Manufacturer AC18(100 mm*4.6mm*2.7 μ m)

Mobile phase: 20mM aqueous ammonium acetate/acetonitrile; gradient elution

Flow rate: 1.0mL / min Column temperature: 40°C

Detection wavelength: wavelength time program Injection volume: 20 μ L



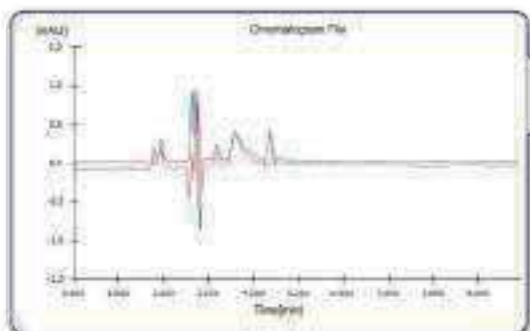
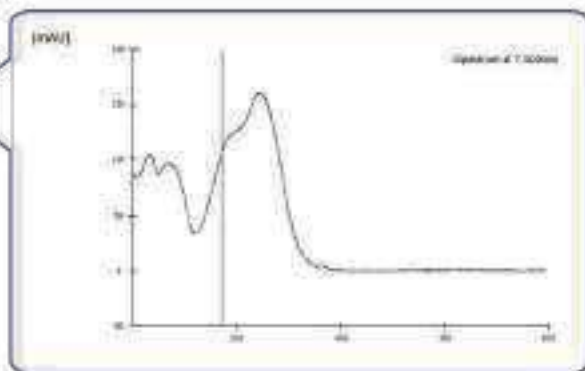
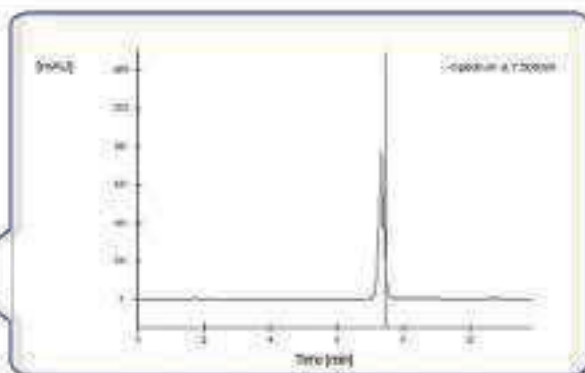
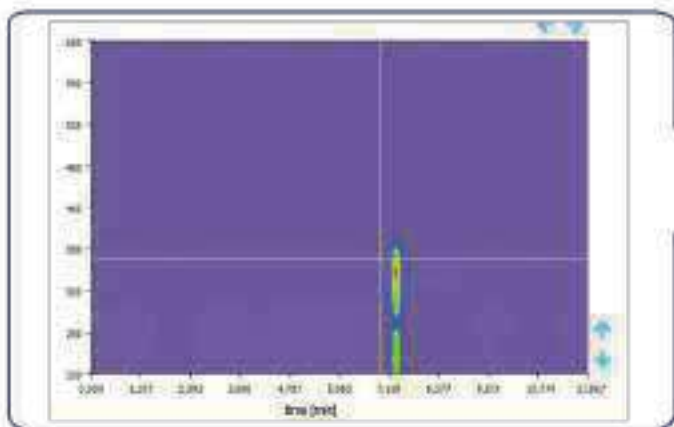


3000 Plus Diode Array Detector

Performance Highlights

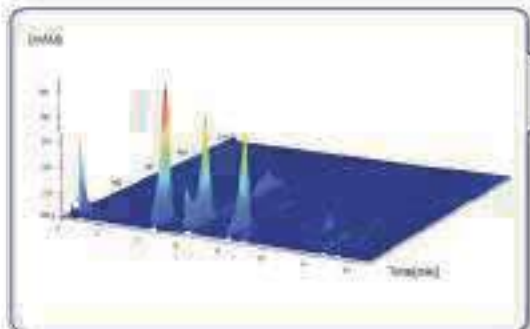
High Resolution Full Spectrum Scanning

3000plus has a 1024 diode array sensor with pixel resolution of 0.6nm. Combine with high quality optical grating, it could record full high resolution spectrum while chromatogram recording.



High Sensitivity

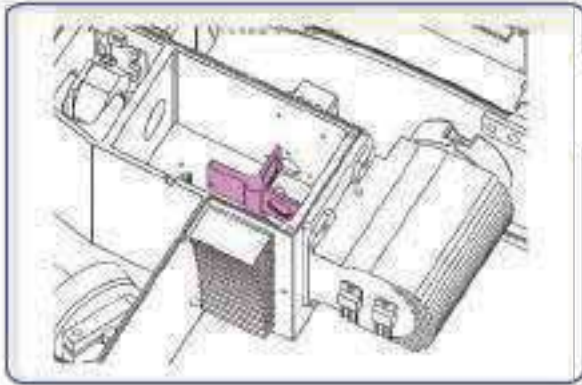
3000 plus realized $\pm 0.6 \times 10^{-5}$ AU noise level by its advanced optical and electric design, and gain more lower detection limit.



High Sampling Rate

ATL remains and advances the high sampling rate character of UV detector, and keep 100 Hz sampling rate with full spectrum scanning. Users can acquire high resolution spectrum, and also could extract chromatogram for quantitative analysis.

Working Principle

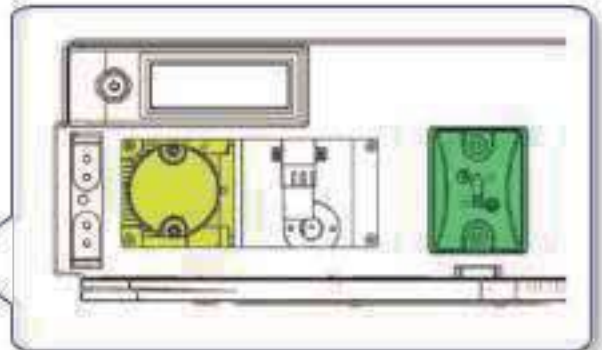


Easy Calibration Function

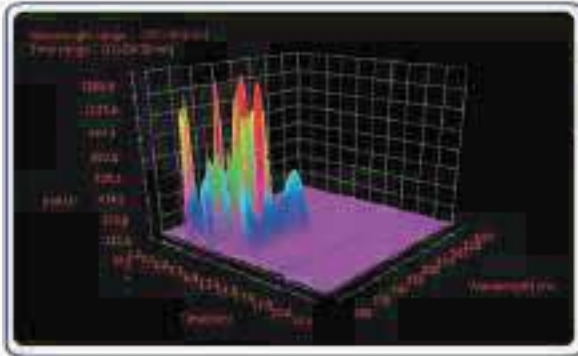
deuterium lamp characteristic peak and build-in holmium oxide filter. 3000 plus could realize full spectrum calibration by mercury lamp standard emission lines, and ensure the instrument stable and reliable by double inspecting the wave length accuracy

Easy Accessed Lamp

3000 plus DAD adopt light prepositioning design, and equipped with easy disassembling flow cell. Client could do the lamp replacing independently and then reduce the future maintenance cost.

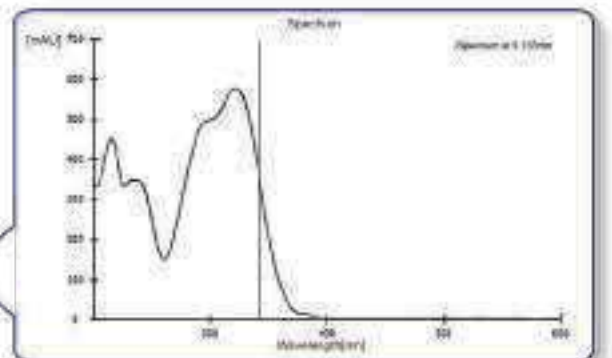
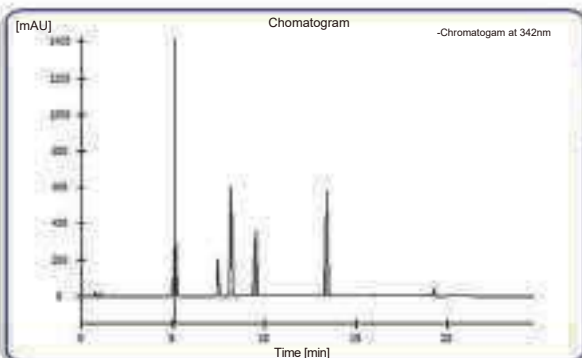
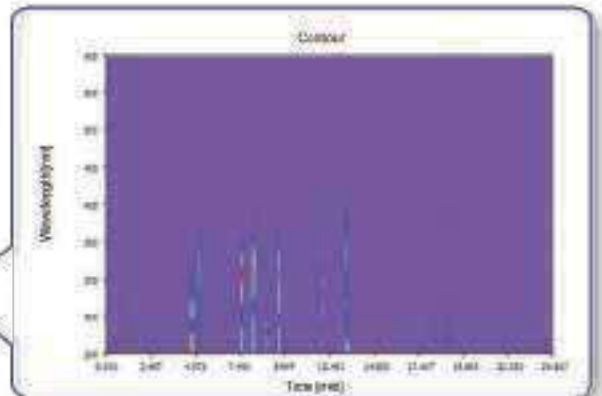


Application



The chromophore of the eight phenols in olive oil varies a lot, those analytes must be monitored at different wavelength and the retention time is similar, those realities makes it impossible to analyse it by UV-VIS detector. DAD possess the ability of multi-wavelength detection and full spectrum acquisition, perfect for qualitative and quantitative analysis.

Chromatographic conditions
 Chromatographic column: Manufacturer AC18(100mm*4.6mm*2.6µm)
 Mobile phase: 0.2% aqueous phosphoric acid/acetonitrile; gradient elution
 Flow rate: 1.0mL / min
 Column temperature: 28°C
 Injection volume: 5µL





Evaporative Light Scattering Detector

Performance Highlights

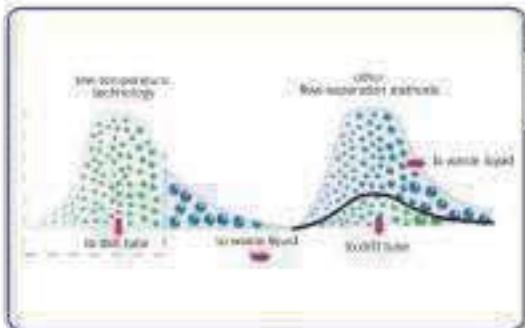
Low-Temperature Evaporation

Automated Gain Adjustment (AGA)

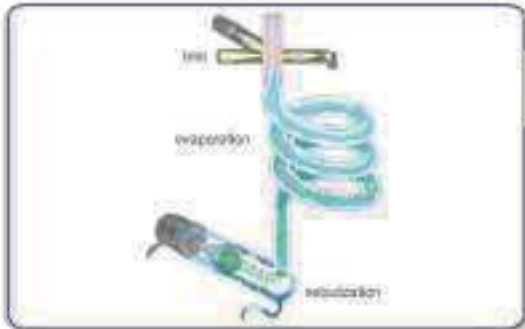
AGA is an innovative gain control available when it is driver-controlled by software, automatically adapts the gain setting to avoid any off-scale saturation of the detector.

Easy Maintenance

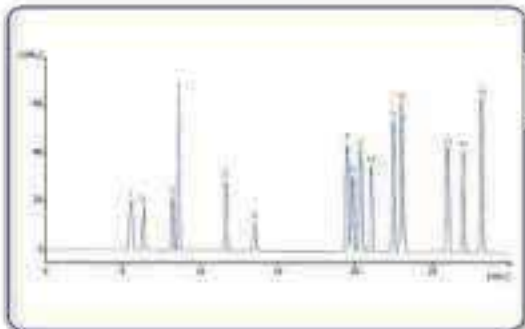
A single and dedicated HPLC nebulizer and an innovative cell design minimize band broadening. This nebulizer covers the flow rate range from 100 μ L/min to 2.5mL/min and can be readily and quickly mounted and dismantled.



low-temperature operation (user defined from ambient 80°C) optimizes sensitivity for those analytes that are easily missed at higher evaporation temperatures typical of competing detectors.

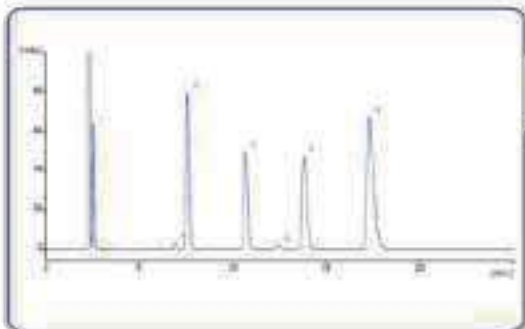


100Hz data sampling rate means that detection of peaks sharper than 5s wide is possible with excellent separation resolution.



Determination of 15 underivatized amino-acids via HPLC-ELSD

Chromatographic column: ATL (250 mm x4.6mm x 5 μ m)
Mobile phase: 0.2% Heptafluorobutyric Acid /MeOH; gradient elution
Temperature of drift-tube: 40°C
Increment: 7



Determination of gentamycin sulfate injection via HPLC-ELSD

Chromatographic column: ATL (250 mm x4.6mm x 5 μ m)
Mobile phase: 0.2mol/L trifluoroacetic acid solution/MeOH (92/8)
Temperature of drift-tube: 50°C
Increment: 6



Refractive Index Detector

Performance Highlights

Broad Application

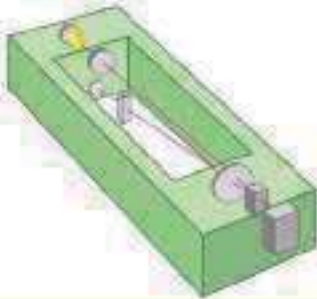
Detection is based on a universal property of all analytes and does not require the presence of a chromophoric group, electroactive group, etc.

Stable Performance

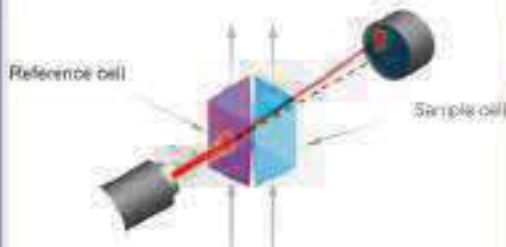
Base line will be rapidly balanced by the inner temperature control system. And prevent the influence.

Easy Operation

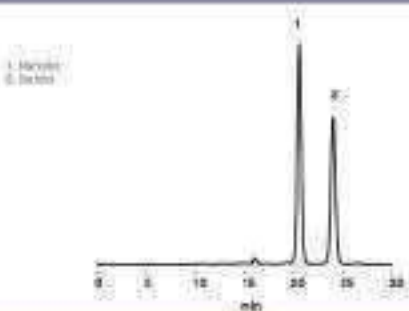
Preposition operation panel will help you set the instrument in several steps, and no need to revise the parameter during the operation. This will reduce the learning cost and enhance the efficiency. temperature floatation.



3000 Plus achieve better stability and repeatability by inner temperature control system.

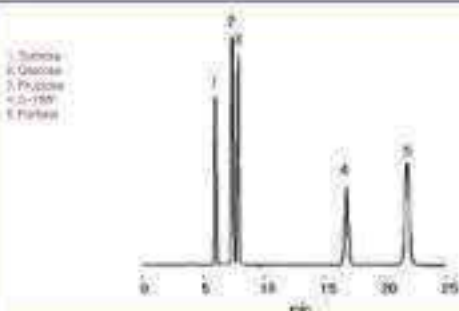


3000 Plus can detect all analytes that have different refractive coefficient in the mobile phase.



Analysis of Mannitol according to EP method

Chromatographic column: EP SC1011-7F (7.8mmI.D. x 300mm)
Mobile phase: Water
Flow rate: 0.5mL/min
Column temperature: 85°C



Analysis of Sugar and Furfural

Chromatographic column: SUGAR KS-801 (8.0mmI.D. x 300mm)
Mobile phase: Water
Flow rate: 1.0mL/min
Column temperature: 80°C

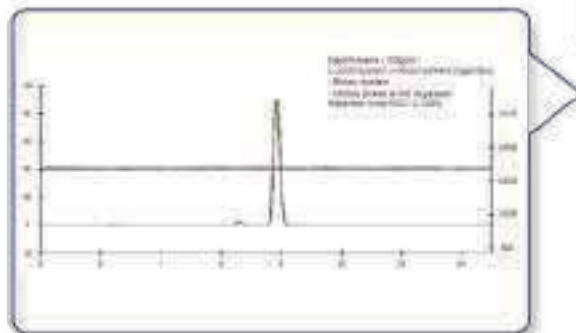
Performance Highlights



3000 Plus Solvent Organizer

Ultra Experience Operating

3000 Plus UHPLC system equipped with L-3100 serial solvent organizer, which could remove the bubble influence effectively, and reduce the pressure fluctuation & base line noise.

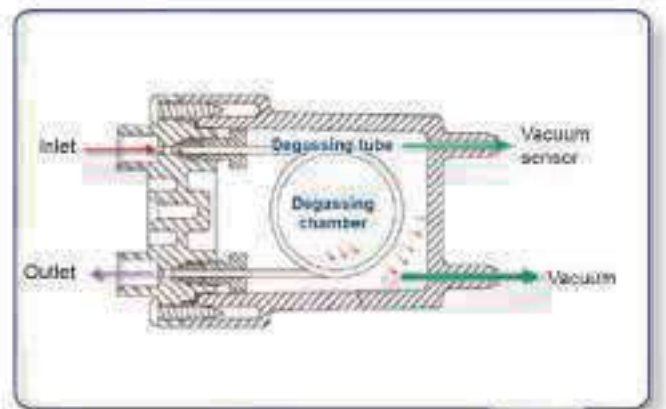
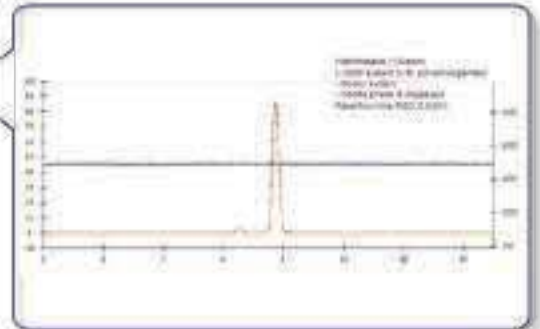


Pole Washing System

The washing system composed with solvent organizer and pump coordination, it could wash the pole and sealing ring salt crystallization and prolong the service life.

High Efficiency Degasser

3000 Plus solvent organizer equipped with 2/4-Channel degasser which will remove the remaining gas dissolution in the mobile phase, and make the pump operation more stabilized and reduce the base line noise.



Bubbles Damages

- (1) It will lead to the big base line noise, and influence the base line till it could not be regularly works.
- (2) It might raise the problem with single direction valve, especially will cause big pressure floatation once you choice the pressure floatation control option.
- (3) Gradient mixing will generate the bubbles due to different characters of solvents. None degassing solvent provide the condition of bubbles generation.
- (4) Influence the detector operation, likes fluorescence quenching, reduce the sensitivity of FLD.

Performance Highlights



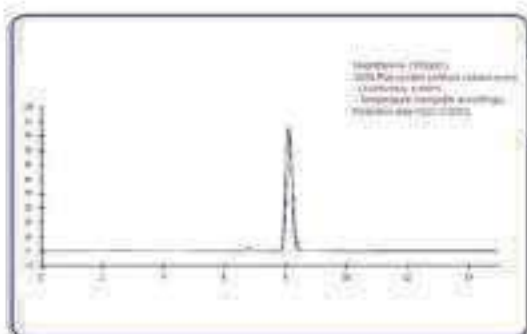
3000 Plus Column Oven

Excellent Testing Results

3000 Plus HPLC system work with 3000 Plus column oven, which could minimize the impact of environmental factors and then guarantee the superior results.

Column Advisor

The Column Advisor recommend the most appropriate column depending on the application requirements you need to consider and the column characteristic you are looking for.

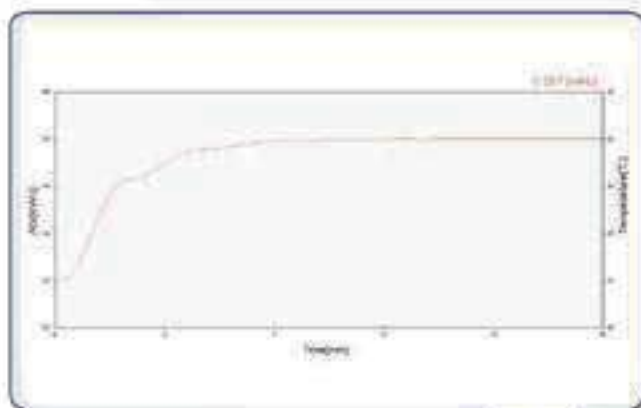
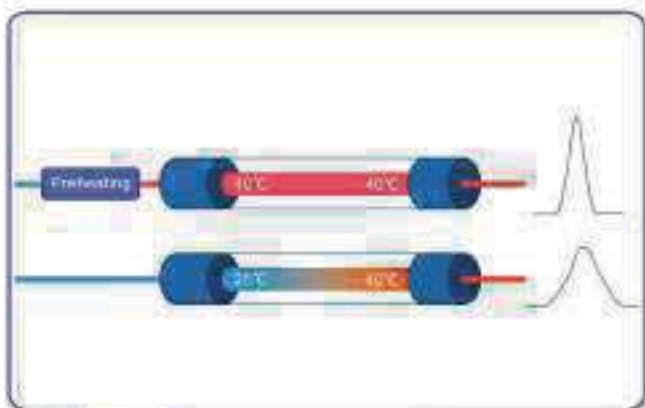
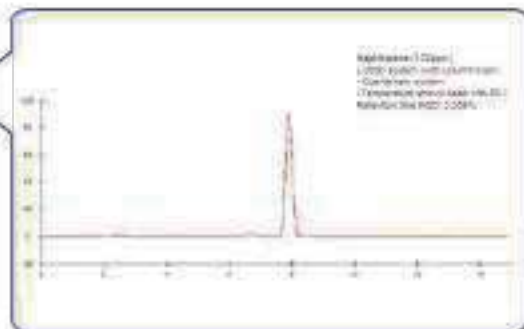


Preheating Function

Via preheating treatment, mobile phase will be reach rated temperature before coming into the column, so avoid the unbalance temperature status in the column, then avoid the influence of temperature floatation also.

Precision Temperature Control

3000 Plus utilized the semiconductor heating technology, and avoid the over shoot of temperature raising, then ensure the stable temperature raising and precision control.



What is the semiconductor temperature control?

Utilized the Peltier reaction of semiconductor material, once the DC go through two different semiconductor material assembly couple, the couple will absorb and release the heat, so it could realized the cooling or heating target. The feature is, there is no any mobile parts and more reliable also.

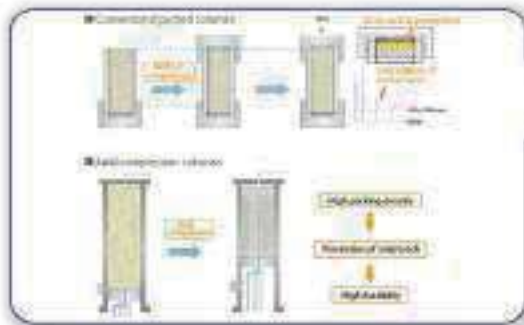




**ID 50mm
DAC Column**

Performance Highlights

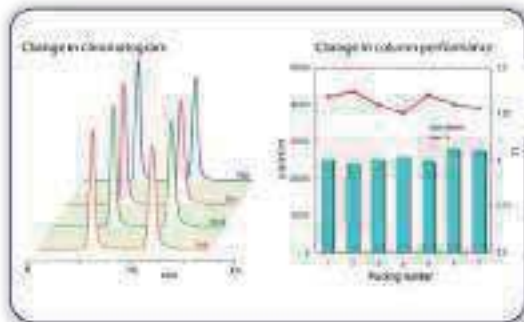
The DAC (dynamic axial compression) column adopts latest design by ATL. The piston of column always produces a stable pressure on packing bed which can effectively prevent the collapse and loose of the column bed.



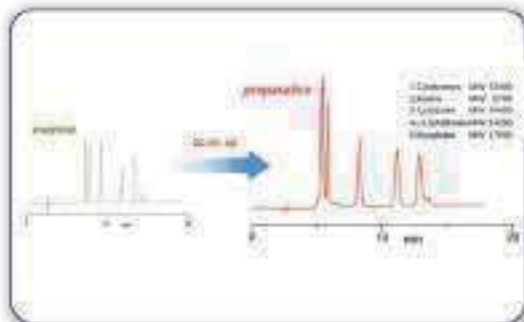
In packing operation of axially compression columns, pressurizing by cylinder followed by loading slurry into columns can create homogenous packed bed. Packed bed pressurized by cylinder realizes high performance columns which are high densely and homogenously packed. Prevention of voids by constant pressurization also realizes long column life as a result of improvement of durability. (Axial Compression Technology)



The slurry container provides excellent distribution of packing material and allows for a "homogenous" slurry that can be automatically loaded into the DAC column by simply switching a valve. Throughout the operation from slurry preparation to filling slurry, safety and hygiene can be achieved.



The data on the right hand side shows repacking data obtained by using a 50 mmI.D. DAC column (DAC-50). After 7 times repacking, plates/m and Tf are still as good as the initial state.



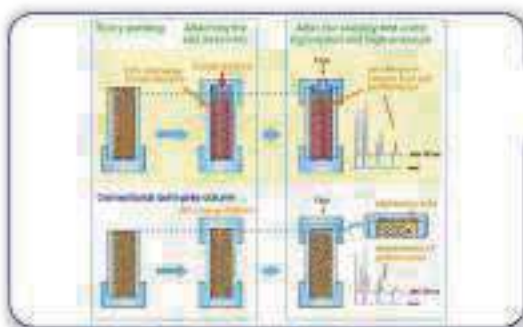
The chromatography on the right hand side are a scale-up example from an analytical 4.6 mmI.D. column to a 50 mmI.D. DAC column. This indicates that the very similar separation pattern of analytical scale is also reproducible at the preparative scale.



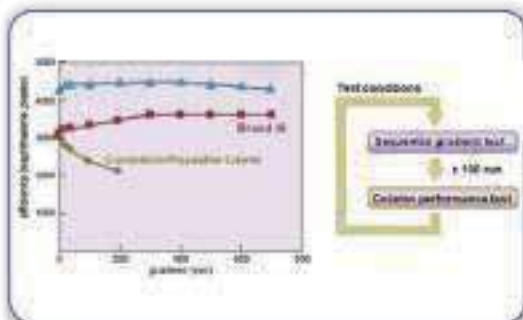
ID 800mm DAC Column

Performance Highlights

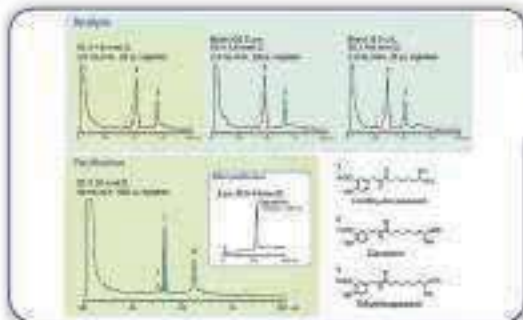
DAC stands for dynamic axial compression. It combines the preparative column and packing system together, it is very simple to operate. The column can be used online when it is packed well, don't need to take the column down. It prevents mechanical degradation of the particles. Bed compression is maintained constant, independent of swelling and shrinking of the bed, if the solvent conditions are such that particle swelling takes place, then the piston automatically let the bed expand to maintain constant compression.



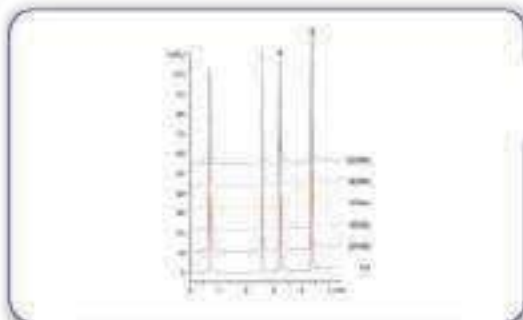
ATL DAC Column have been developed by applying the Axial Compression Technology to semi-prep column. The column bed is compressed adequately by attaching the end assembly newly designed for YMC-Actus. It provides proper bed density (10% higher than conventional columns) and bed uniformity. The combination of technology acquired by long our experience with DAC column, the advanced technique of slurry packing, and new hardware design offers an outstanding durability and efficiency for us.



In case of wrong packing conditions, rapid pressure change under the high-speed gradient condition degrades column performance. To examine bed stability, the column performance was evaluated after every 100 runs of the sequential high-speed gradient. ATL offers superior initial column efficiency compared to competitors. Furthermore, its excellent performance is maintained after a long series of gradient test.



ATL has as high performance as the analytical column, and it is possible to scale up directly from analytical to preparative separation without loss in resolution. ATL Column has superior selectivity for hydrophobic compounds that differ slightly in structure and hydrophobicity. It achieved better resolution between nordihydrocapsaicin (peak 1) and capsaicin (peak 2) than competitors. Target compound was purified with high purity on ATL ID 800 in direct scaling-up.



ATL provides outstanding stability and reproducibility in the separation of pharmaceuticals dissolved in 100% DMSO, even after 1000 injections under the fast gradient condition. It is ideal for high-throughput purification in drug discovery.



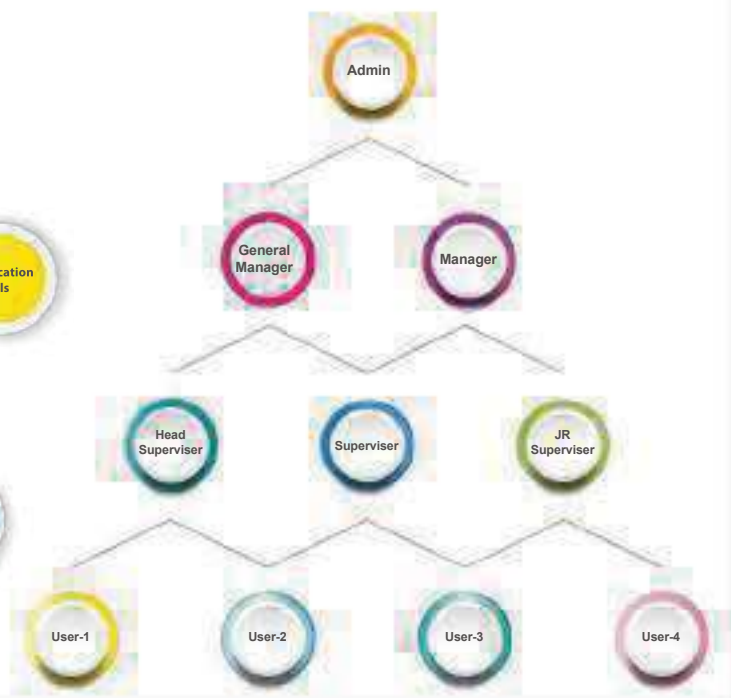
AnaICHROM Clarity Software (P/N: 103010000994)

Clarity workstation furthers the capability of 3000plus series HPLC system with Analysis solution research and development, instrument control, data acquisition and processing, report generation, and traceable record management with versatile extensibilities.

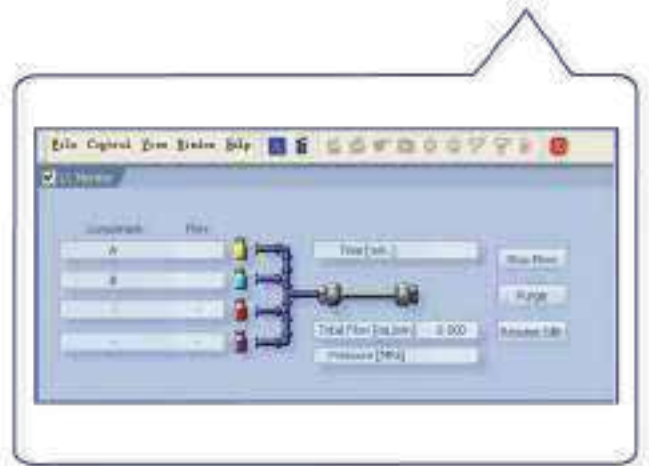


© Compliance with FDA 21 CFR Part 11/GMP/GLP

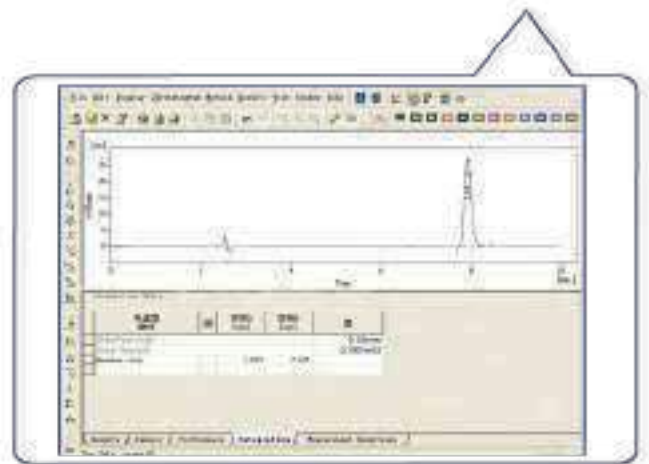
AnalCHROM[®] Audit Trail Electronic Signatures



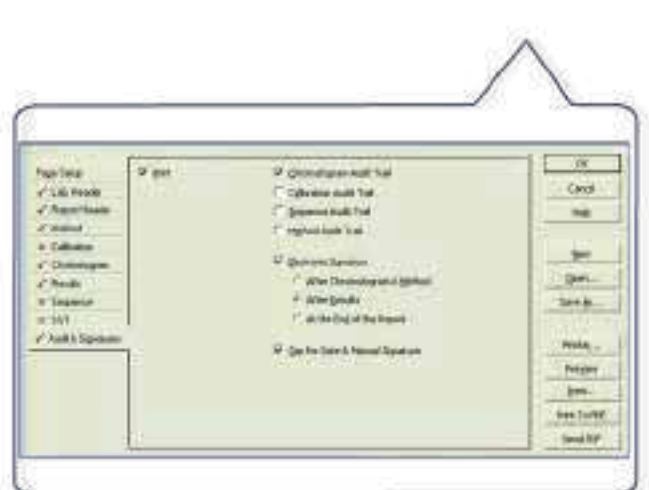
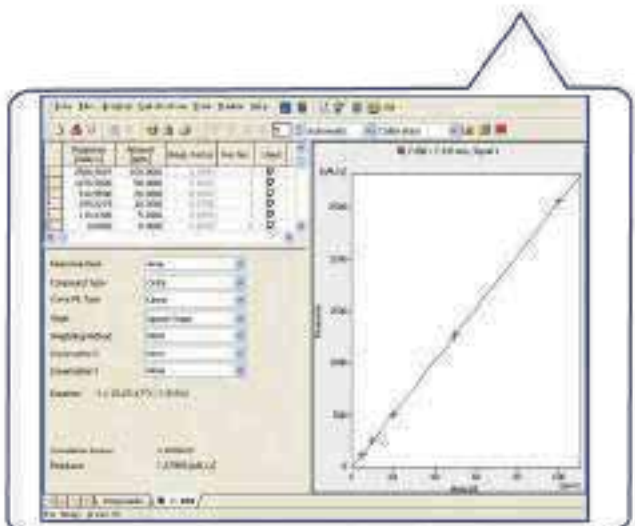
Direct instrument control plus intuitive user interface give user the simplicity of operating the instrument from software.



Simple method editing interface and powerful data processing with more than twenty integral functions.



Various calibration procedures and customizable report editor.



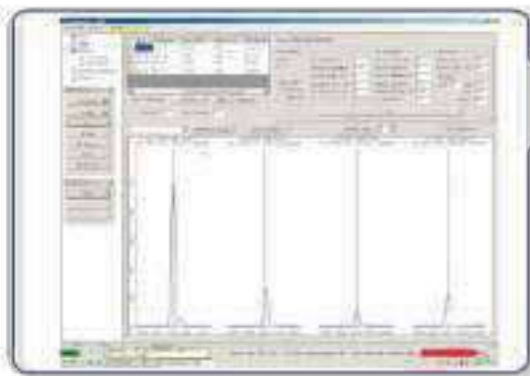


3100 Plus Mass Spectrometer

Performance Highlights

Cost-effective LC-MS solution

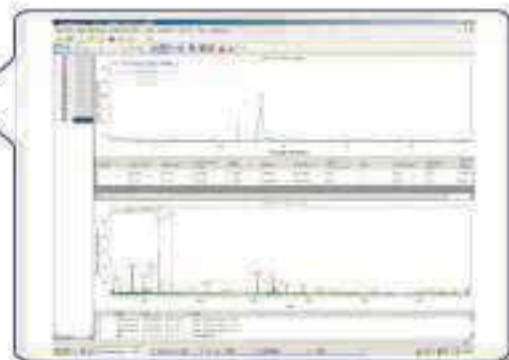
LC-MS 3100 Liquid Chromatograph Mass Spectrometer is a commercial LC-MS system which meets the national standards for LC-MS and for determination of chemicals in food and environment. Our Patented heating technology and nebulizer gas technology help increase vaporization efficiency and background noise while increasing sensitivity. Powerful ChemAnalyst LC-MS chemical workstation software simplifies all operation procedures and advanced networking function enables remote control instrument and view test result.



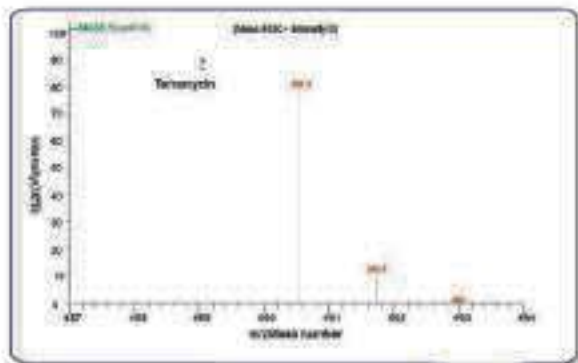
Qualitative analysis- Full scan mode for qualitative analysis of target molecules in the sample
Quantitative analysis- Selected ion monitoring mode (SIM mode) for quantitative analysis of target molecule
With higher detection ability-SIM mode is used to analyze low concentration or low ionization efficiency samples while Full scan mode is able to analyze higher concentration or high ion efficiency unknown sample
The multi-channel acquisition function of LC-MS 3100 enables to analyze more compounds in a single sample scan.

Advanced Software

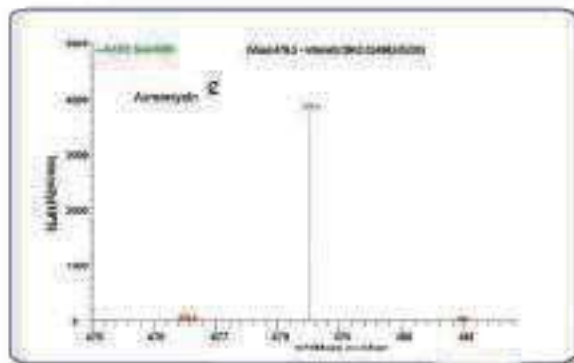
Power LC-MS chemical workstation software (chemAnalyst) simplifies all operation procedures from tuning to method set, sampling to qualitative and quantitative data analysis. Advanced networking function enables you to remote control instrument and view test results.



1. Medicine production monitoring



A. Antibiotics



Features

- Quick scan speed (maximum 10,000 amu/s, bar chart)
- Wide scan range (10-1100 amu)
- High detection sensitivity
- Auto calibration and tuning function
- LC high pressure pump, auto sampler, thermostat, UV detector, mass spectrum
- Control and data process are integrated in the software
- Wireless vacuum chamber.

Performance Highlights



Electrochemical Detector

- Quantify femtogram levels of oxidizable or reducible compound
- Automatic detection parameters configuration
- Four independent controlled channels
- Advanced multi-level digital filtering
- Detection control via USB 2.0/optical/RS-232
- Fluid leakage detection
- Multiple Detection modes: direct current, pulsed amperometric and scanning
- Flow cell convenient position for simple cleaning and assembly
- Stabilized temperature for better accuracy with integral flow cell
- Cell assembly/detection unit enclosed in a faraday cage.

Technical Specification

Working Potential	± 2.00 V
Measurement Range	± (10pA-20uA)
Auto Zero Range	max ±50uA
Manual offset Range	max ±50uA
LCD - Display	display of setting and measurement data
Filter	5Hz - 0.02 Hz 1,2,5 steps
Detector noise level	<750fA with 500 M ohms, 0.47 uF
Cleaing Potential	± 2.00 V
Detay time cleaning	10 - 1500sec
Cleaning Cycle	every 1st to 10th cycle
DC Current	10pA - 1mA in 1-2-5 sequence
Storage capacity for measurement program	0 - 99
Storage capacity for cell-cleaning program	0 - 99
Pulse mode range	10pA - 200 uA in 1,2,5 steps
Filter (cut off) advanced digital filter	0.4 - 0.001 Hz, 1,2,5 steps
Scan mode range	10pA - 200uA (in 1,2,5 steps)
Scan rate	1-50mV/s (in 1,2,5 steps)
Analogram Output	+ 1V per measurement
Signal range	10pA to 500µA
Auto-Zero interface	active low
Input	115-320v, 50-60Hz
Output	+ 10 and -10V (20 bit D/A converter)
Dimensions	260 x 251 x 160 mm
Weight	7.6 kg
Guard cell potential	±200mV



Solvent Organizer	3000plus Binary Solvent Organizer	3000plus Quarternary Solvent Organizer
Online	standard Configuration	
Online Degassing	2-channel	4-channel (480µL/channel)

Delivery Pump	3000plus Isocratic pump (P/N:10201000661)	3000plus Binary pump (P/N:10201000662)	3000plus Quarternary pump (P/N:102010002581)
Online Degassing	None	2-channel	4-channel (480µL/channel) 5-channel (optional)
Delivery Method	Double piston plunger, series/ parallel.		
Flow Rate Range	0.0001mL/min -10.000mL/min (increment 0.001mL/min)		
Flow Rate Accuracy	±0.5% (@1mL/min, water)		
Flow Rate Precision	≤0.025 % RSD (@1ml/min, water)(ASTM)		
Max. Pressure	9,000 psi (Standard) 12,000 psi (Optional) 18,000 psi (Optional)		
Pressure Pulsation	≤0.1%@mL/min, water, back pressure 60Mpa		
Gradient Accuracy	None	+0.5%	
		≤0.2% SD	≤0.2% SD
Gradient precision	≤0.15%		
Composition accuracy	±0.5%		
Pump Seal Wash	Automatic, integral, active, recirculating		
Mixing volume	500 ul		
Compressibility compensation	automatic and continuous		
Gradient mixing	Active		
Power Requirments:	230 ± 10 V AC, 50 Hz		
Solvent setting range	4 solvents setting range: 0-100% with 0.1% step		
pH Range	1 to 12		
Delay volume	≤200µL and independent of back pressure		
Plunger rinsing	Automatic and programmable		
Safety features	Leak sensor error detection & display & safe leak handling		
Wet prime	Automatic		
Operation	11 gradient curves		
Function	Automatic purge		
Pumping system	Software controlled		
Mode of Operation	Isocratic and Gradient		
Purge Function	Software initiated		



Column Oven	3000plus Column Oven (P/N: 102010000709)
Temperature Range	4°C to 100 ° C (in 0.1°C increments)
Temperature Accuracy	±0.1°C
Temperature Stability	±0.1°C of set temperature
Temperature Precision	±0.05°C
Column Length	300mm, upto three columns,50mm guard column
Display	4 digits
Power Consumption	100-120V, 60Hz; 200-240 V,50 Hz
Safety measures	built in solvent leak sensor and high temperature cut off control etc.
Solvent Condition	pre heating
Column tracking	information management tracks and archives column usage history
Switching valve	Two nine port, eight position
Method	Peltier heating and cooling



Evaporative Light Scattering Detector- (P/N: 101020003558)	
Light Source	Tungsten / Halogen/LED 470mm
Temperature Range	+5°C to 100°C,0.1°C Increment, feedback accuracy to 0.1°C
Flow Rate	0.1mL/min - 2.5mL/min (standard)
Air Consumption	<3.0L/min
Air Required	>5L/min nitrogen gas or air, 65 Psi
Nebulizer(high flow rate)	100-3000 µl/min
Nebulizer chamber	Thermally controlled, Heater 0-100%, Cooler(on/off)
Gain Setting	0-1000
Sample Rate	80 Hz
Optics	Heated Optics Bench
Filter time constant	upto 5 sec
Detector	PMT
Scattering angle	60 Degree
Measurement range	0.1-2000light scattering units full scale
Angle Output	2, LS units nebulizer,drift tube, CHM Gas pressure





UV-VIS Detector	3000plus UV-VIS Detector (P/N: 102010000674)
Measurement range	0.0001-4.0AU
Mode	Dual wavelength mode
Wavelength	190-800 nm
Light Source	Deuterium lamp, Tungsten lamp
Slit width	≤8 nm
Spectral Width	8 nm
Wavelength Accuracy	±1 nm
Wavelength Precision	±0.1 nm
Baseline noise,	<±0.25x10 ⁻⁵ AU
Detection	Simultaneous Multi wavelength Two Point
Drift	≤1×10 ⁻⁴ AU/h at 254 nm
Linear Range	≤5% at 2.5AU (ASTM)
Max. Sampling Rate	100 Hz
Flowcell Pressure	1200 PSI
Flowcell light Path	≤10 mm
Flowcell Volume	12μL
Flowcell design	suitable flow cell
Detection limit	5x10 ⁻⁸ g/mL
Lamp Hour	D2 lamp > 2000hr Lifetime
Wavelength Repeatability	± 0.1 nm.
Wetted material	SS, PEEK, Fused silica
Cell Temperature	Up to 40 °C
Other	Automatic zero before analysis
Time programmable	Wavelength, peak width, auto balance, polarity, wavelength range, threshold, lamp bandwidth and spectra storage mode
GLP features	RFID for electronics records of flow cell and UV lamp conditions & early maintenance feedback for continuous tracking of instrument usage in terms of lamp burn time with user settable limits and feedback messages, and data recovery card
Safety Features	Leak Detection, safe leak handling and excess pressure monitoring etc.

Refractive Index Detector	3000plus Refractive Index Detector (P/N: 101020002866)
Flow cell type	3 chamber-type
Measuring method	Deflection type
Refractive Index range	1.00 to 1.75 RIU
Measuring range	0.125 to 600μ RIU
Drift	1x 10 ⁻⁷ RIU/h (pure Water, Response : 1.5 sec)
Response	0.1,0.25,0.5,1,1.5,2,3,6 sec
Flow rate(Typical)	0.1~3.0mL/min
(Max.)	0.1~10.0mL/min (Solvent: pure water)
Auto Zero	Full Auto Zero
Auto Zero Range	All Range
Noise	< ± 1.5x10 ⁻⁹ RIU
Integrator output	DC 0 TO 1 V (Sensitivity) 4m V/ μRIU,16m V/ μRIU)
Cell Volume	10μL
Cell pressure	70 psi
Max .back Pressure	50kpa
IN to Cell	ca .80μL
Internal Volume	cell to Out :ca 600 μL ALL (Cell to Out :ca 690 μL
Recorder output	0 to 10m V/FS
Temperature operating range	5° below ambient to 77°C
External Output	(1) READY (temperature control) (2) LEAK (3) ERROR (ROM, RAM, PARAMETER,HOME POSITION,OVER-HEAT,OPTI.-BALANCE,INTENSITY)
Temperature Accuracy	+ 0.5°C OFF, 30 to 500°C (1°C Step)
Temperature Control	Temp controlled flow cell unit
Communication Port	USB
Operational support functions	None
Wetted materials	Stainless steel 316, Teflon, Quartz glass
Valves	purge & recycle



Power Source, Power consumption	AC 100 to 240V +10%, 50/60 Hz, 150VA max.
Dimensions, Weight	W260xD400xH150(mm),ca.12Kg
Linearity Range	≤ 1 n RIU



Diode Array Detector	3000plus Diode Array Detector (P/N: 102010002799)
Diode Array	1024 diodes
Diode width	≤1nm
Wavelength	190 - 900 nm
Light Source	Deuterium lamp & Tungsten lamp
Spectral Resolution	0.6 nm/pixel
Slit width	Programmable 1.2 nm,8 nm
Bandwidth	1.2 nm
Wavelength Accuracy	± 1 nm
Wavelength Repeatability	± 0.1 nm
Wavelength Precision	± 0.1 nm
Detector	Multichannel Detector
Noise Level	≤0.7x10 ⁻⁵ AU
Drift	0.6 x10 ⁻³ AU/h
Linear Range	≤5% at 2 AU
Max. Sampling Rate	12 channels, 100 Hz Full spectrum, 100Hz
Data Acquisition	125 Hz
Flowcell Pressure	1800 PSI
Flowcell Light Path	10 mm
Flowcell Volume	9µL (semi-micro) with minimum RI effect
Detection Limit	2x10 ⁻⁸ g/mL (naphthalene)
Wavelength Calibration	Mercury peaks and built-in homium oxide filter
Temperature Operating Range	5°C below ambient temp to 50°C (temperature control facility)
Lamp Hour	D2 lamp > 2000hr Lifetime
Rise Time	0.0s - 9.9s
Power	AC 10V / 220V, 50Hz / 60Hz
Consumption	110W
Dimensions	420mm x 280mm x 175mm
Detection	Double Wavelength
GLP function	Date of lamp replacement, number of ignitions, Ignition time, peak purity energy and automatic wavelength check etc.
Flow cell design	Taperslit for reduced RI effect.
Resolution	1.2 nm per photodiode
Digital and Optical mode	3D
Safety features	Leak sensor

Fluorescence Detector	Fluorescence Detector 3000plus Optical System (P/N: 106829102020)
Monochromators	Holographic concave diffraction grating monochromators for both excitation and emission
Light Source	150W Xe lamp
Mode	Multi-channel/Multi wavelength mode, both Ex and Em
Settable wavelength	Zero order, 200 - 1200 nm Both Ex And Em
Measuring wavelength Range	Zero order, 200 - 1200 nm for both Ex and Em Optional PM tube extends the range up to 900 nm.
Spectral bandwidths	Ex: 18 nm Fixed Ex: 18, 40 nm selectable
Wavelength Accuracy	+2.0 nm
Wavelength Repeatability	±0.2 nm
Wavelength Reproducibility	±0.2 nm
Wavelength scanning	scanning of excitation and emission wavelengths
Detectors	Ex: Photodiode Ex: photomultiplier
Facilitate accurate and reproducible integration	Low volume(<12uL), axially illuminated flow cell design



Cell volume	12uL
Temperature Operating Range	5 °C, Ambient temp to 50 °C
Temperature Accuracy	+0.5 °C
Pulse Frequency	(20 Hz,) Standard (100 Hz) and HP (300 Hz) High Power
Spectrum Scanning	Permanr Scan Stop / Stop Flow
Data Collection rate	100 Hz
Pressure	2Mpa
Sensitivity	>1000 for Raman peak of water
Sensitivity range	1, 2, 4, 8, 16, 32, 64, 128, 256,and S.
Gain	x1. x10, x100, x1000
No. of single channels:	4
Power	FAST, STD, SLOW (0.5, 1.5, 5 Sec.)
Digital filter	3, 5, 10, 20, 40 sec
Signal processing	Digital processing by A/D and D/A converters
Output	10mV/FS for recorder (Polarity change is possible.) 1 V/FS for integrator marker, leak out
Input	marker, autozero, program reset/ran
Self-diagnostics	memories, DC power supply, Ex. energy, leak in cell, lamp operation time
Measurement range	0.001 to 100000.00 emission units
Filter time constant	single mode: 0.1 to 5.0s Hamming, Dual mode: 0.1 to 50.0s Hamming
Data channels	upto to four 2D channels
Sampling rate	upto 20 points in single mode
Time programming	64 steps, 10 files, 0.1 to 999.9 minutes in 0.1 min increments for Ex and EM wavelength,range,gain,autozero,spectral bandwidth,and spectral measurement
Spectral scanning	Ex and Em spectra
Spectral subtraction	Ex and Em spectra
Lamp timer	shows accumulated lamp operation time
Lamp pff timer	settable from 0-99.9 hours (0.1 hour increments)
Temperature compensation	compensates PM tube response for temperature variation



Autosampler	AS-3000plus (P/N: 102010001239)		
Injection modes	Full-loop	Partial loop-fill	µL-pick-up
Cross Contamination	<0.02% with & without automated needle wash		
Injection volume	Programmable from 0.1 µl-100 µl (increase upto 250µl) 0.1 µl increments		
Injections Volume Accuracy	±1%		
Injection Accuracy	±1 %		
Injection precision	0.25% RSD		
Injection	1-99 injections per vials		
Sample viscosity	0.1 - 5 cP		
Needle wash Inside and outside needlewash with drying.wash can be programmed between injections and between vials/wells.	1 solvent 5 additional wash solvents		
Injection cycle time	<20 seconds		
Valve switching time	20 msec		
Wetted parts	SS316, PTFE, TEFZEL, VESPEL,glass, For Bio-kit option: PEEK and Coalet-steel (needle) instead of SS316		
wash Carry-over	≤0.0025% RSD with standard wash Typically <0.01% with extra Vials:2x 100 (2mL)		
Sample capacity	2x100 2 ml vials (Standard) (optional:192 for 2 x 96 well plate,768 for 2 x 384 well plate)		
Safety features	Leak sensor, Automatic rack and Vial recognition		

Minimum sample required	10µl residual
Needle rinsing	Automatic needle rinsing before and after every injection
Injection linearity	≥0.999
Injection needle wash	integral, active and programmable
Pressure limit	9000 psi (15000 psi sampling valve is optional)
Dimensions	300 x 510 x 360 mm (WxDxH) TM cool 300 x 575 x 360 mm for ALIAS
Standard features	Auto dilution, derivatization and auto addition
Weight	19 kg,21 kg for ALIAS TM cool
Max load on top cover	65 kg
pH Range	1 to 12
Power requirements	95 - 240 Volt AC ± 10%; 50-60 Hz,200 VA
Sound pressure level	LeAq < 70 dB
Compartment temperature	4° - 80°C (0.1°C increments)
Temperature Accuracy	±0.2°C
Storage temperature	-25°C to -60°C
Humidity	20 - 80% RH
GLP features	System have Early maintenance feedback to track instrument usage, electronic records of maintenance and errors

Mass Range	10-1500 amu
Mass accuracy	±0.20 amu (mass calibration range of scan mode)
Mass axis stability	±0.2amu/12h (under constant temp. of ± 2°C)
Scan rate : standard mode	1000 amu/s, fast scan mode: 10000 amu/s
Resolution	unit resolution (FWHM<-0.7amu)
SIM signal to noise ratio	ESI, 200 ul/min, SIM
Peak area Repeatability	RSD 4.6%/0
Retention time repeatability	RSD
LCMS MS Mass Spectrometer	Optional



**LCMS-MS
MASS SPECTROMETER**

Dynamic Axial Compression Columns

DAC Column	ID50mm DAC column
Dimensions	500mm×500mm×1900mm
Weight	100kg
Inner diameter	50mm
Total column length	500mm
Max. bed height	300mm"NP 0.3kg packing material; RP 0.39kg packing material)!
Filter	Material: 316L Pore size: 3~5µm
Distributor	Two, in piston and column bottom,Material:316L Distribution mode:Divergent
High pressure seal	Material: PTFE+316L
Design pressure	10Mpa
Operating Temperature	5~60°C
Control Panel	air pressure gauge,oil gauge,regulating valve, Emergency stop switch, Change direction valve,shut"off valve.
Air source	≥6bar, output≥0.5m³/min
Column tube material	316L
Column bracket material	304
Roughness	Inner surface Ra≤0.4µm, outer surface Ra<1.6µm
Inlet diameter	1/16"
Outlet diameter	1/16"
Air inlet diameter	Ø8

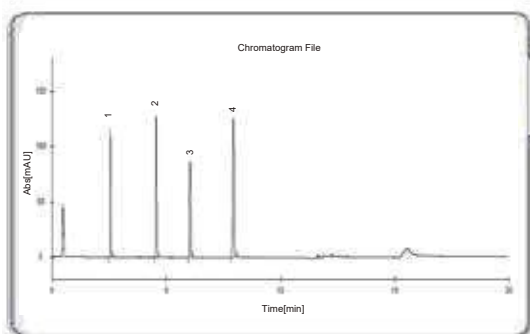


DAC Column	ID800mm DAC column
Dimensions	550mm×600mm×2200mm
Weight	200kg
Inner diameter	80mm
Total column length	650mm
Max. bed height	300mm" NP 0.75kg packing material; RP 0.98kg packing material)!
Filter	Material: 316L Pore size: 3~5μm
Distributor	Two, in piston and column bottom, Material: 316L Distribution mode: Divergent
High pressure seal	Material: PTFE+316L
Design pressure	10Mpa
Operating Temperature	5~60℃
Control Panel	air pressure gauge, oil gauge, regulating valve, Emergency stop switch, Change direction valve, shut"off valve.
Air source	≥6bar, output≥0.8m ³ /min
Column tube material	316L
Column bracket material	304
Roughness	Inner surface Ra≤0.4μm, outer surface Ra<1.6μm
Inlet diameter	1/8"
Outlet diameter	1/8"
Air inlet diameter	Φ8

Dynamic Axial Compression Columns



Application and Solutions



Pharmaceutical Analysis

Determine the content of soybean isoflavones in Soybean Isoflavone Soft Capsule by ATL 3000 HPLC system with core-shell column

Soybean isoflavones are a class of secondary metabolites formed in the growth of soybean. They are extracted from plant, similar structure with female hormone, so soybean isoflavones also called phytoestrogen. Soybean isoflavones can improve skin condition and osteoporosis, relieve the symptoms of menopause syndrome.

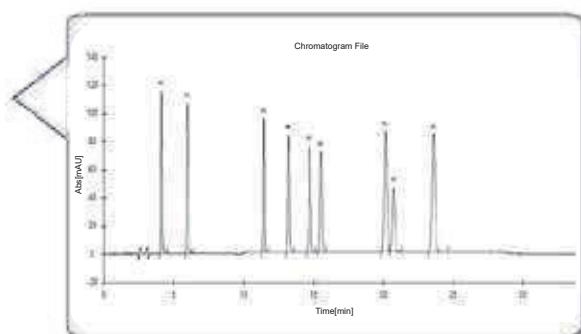
Chromatographic column: Manufacturer A C18(50mm*4.6mm*2.6um)
 Mobile phase: Phosphoric acid solution (pH=3.0) / Acetonitrile; gradient elution
 Flow rate: 1.0mL/min
 Column temperature: room temperature
 Detection wavelength: 260nm
 Injection volume: 5μL

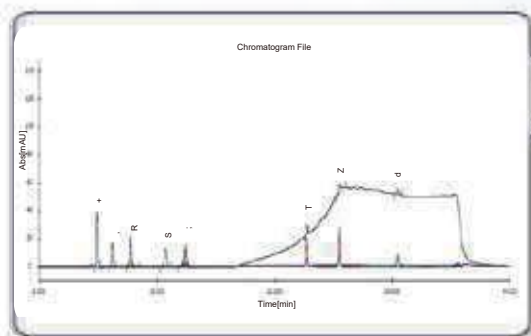
Environment Protection

Content determination of phenols compounds by HPLC

Phenols pollution in environment field means that phenols compounds pollute water. Waste water with phenols is one of the greatest dangerous, and most widely polluted industry waste water. phenols compounds were determined by using ATL 3000 HPLC system. The results show that the method is accurate and sensitive.

Chromatographic column: ATL compass C18(250mm*4.6mm*5μm)
 Mobile phase: Water/Acetonitrile; gradient elution
 Flow rate: 1.0mL/min
 Column temperature: 40C
 Detection wavelength: 223nm
 Injection volume: 5μL





Simultaneously determining the content of 8 kinds of organic acids and Vitamins in fruit by using HPLC-DAD

Organic acids and vitamins are very important dry matter in fruits. They usually decide the special taste of fruits and play an important role in food science and nutriology field. The new method can simultaneously determine organic acids and vitamins in fruits by using HPLC-DAD.

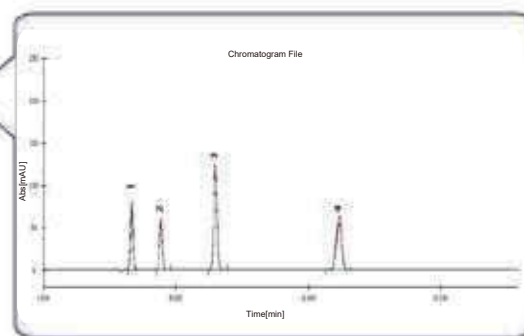
Chromatographic column: ATL Compass C18(2) (250mm*4.6mm*5μm)
Mobile phase: Water/Acetonitrile; gradient elution
Flow rate: 0.6mL/min
Column temperature: 30C
Injection volume: 10μL

Agriculture

Simultaneously determining the content of 4 kinds of sulfa-drugs in fodder by using HPLC-DAD

Sulfa-drugs are a class of chemical medicine for disease prevention and treatment of bacterial infections. If take sulfa-drugs standard exceeding livestock products as food for a long time, it might lead to the damage of hematopoietic system, agranulocytosis and so on problems. So that the application limit of sulfonamides in livestock and poultry raise up and play an important role in food safety field. In this paper, an accurate and sensitive method was established to determine the content of 4 kinds of sulfa-drugs in feed by using HPLC-DAD.

Chromatographic column: ATL Compass C18(250mm*4.6mm*5μm)
Mobile phase: Water/Acetonitrile (75/25)
Flow rate: 1.0mL/min
Column temperature: 40C
Injection volume: 5μL

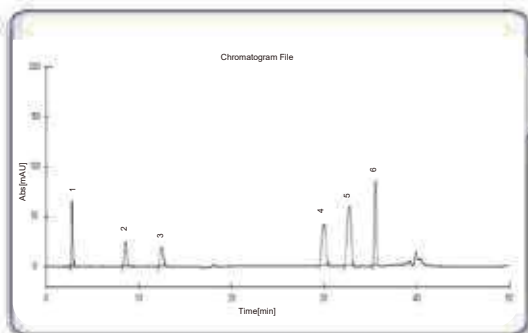


Chemical

Simultaneously determining the content of 6 kinds of UV absorbers in cosmetics

UV absorbers in cosmetics can reduce or absorb the ultraviolet rays, protect skin. Excess ultraviolet radiation will irritate skin and cause skin sensibility. The application of UV absorbers is managed and controlled strictly. In this paper, a new method is developed to determining the content of 6 kinds of UV absorbers in cosmetics.

Chromatographic column: Manufacturer A C18(250mm*4.6mm*5μm)
Mobile phase: A: MeOH/Tetramethylene oxide (250/450);
B: Water/Perchloric acid (300/0.1); gradient elution
Flow rate: 1.0mL/min
Column temperature: 30C
Detection wavelength: 311nm
Injection volume: 10μL

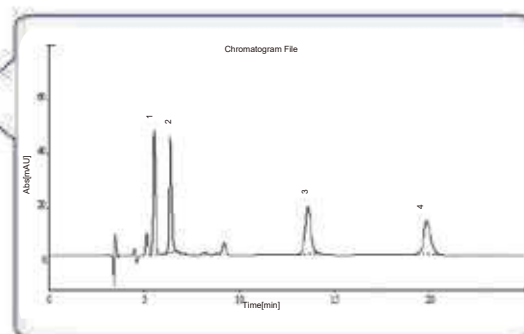


Antibiotics

Determining the content of terramycin, doxycycline, tetracycline and auromycin by HPLC

In the livestock farming field, all kinds of antibiotics are used for treatment of livestock disease. Tetracycline antibiotics are widely adopt based on its antibacterial effect and cheap price. Tetracycline antibiotics mainly include terramycin, doxycycline, tetracycline and auromycin.

Chromatographic column: Manufacturer A C18(250mm*4.6mm*5μm)
Mobile phase: MeOH/Acetonitrile/0.01mol/L Citric acid solution (12/18/70)
Flow rate: 0.8mL/min
Column temperature: 30C
Detection wavelength: 360nm
Injection volume: 50μL





Customer Service

01

Installation

ATL provide installation service with instrument working principle introduction, standard operation procedures, daily maintenance and application developing.

ATL has a professional service team, and build up the maintenance record via the clients information system, we also arrange periodicity visiting service and preventive suggestion.

After Sale Service

02

03

Regulation Compliance

ATL provide the compliance service for HPLC system, including the IQ, OQ, PQ and so on. We can also provide the related training course to match up with the inspection request.

A cross-field application team covering pharmaceutical analysis, food safety, Bioscience and environment field is ready to support. They are focus on solving the application problem raised from client, and will provide the integrated solutions.

Application Support

04

05

Multiple Training

ATL provide abundant online and offline standard training course. And could provide pertinence training course with client application and will enhance the skill of client.

ATL provide 360 degree, proactive service support. Our technical team would like to provide you the technical and maintenance support with fast reaction and reasonable suggestion. Field service engineer team is ready at any time for emergency issues.

Comprehensive Service

06

Spares & Consumables / Columns / Source Lamps / Pre-Installation Requirements



We offer all the Consumables / Reagents Quality / Control Standards / Calibration Standards / Validation Standards required for running the analyzers like HPLC, SPECTROPHOTOMETER, FTIR, HEMATOLOGY ANALYZER, BIO-CHEMISTRY ANALYZERS (Clinical Chemistry Analyzers). We also manufacture reagents for Hematology and Bio Chemistry, Urine Analysis.



UHPLC Consumables like Check Valves Plunger, plunger Seals Columns (Analytical And Prep), pulse Damper, Mixer PEEK Nuts, SS Male, Nuts, Solvent Reservoir Filter, Septas, Vials, Rotor Seal, Stator Face Assy, Loops, Syringes, Bearings, O-Rings, Line Filters for any make of HPLC system. Flow Splitters, Pulse dampers, Multi Purpose HPLC Pumps (Isocratic & Gradient) & Manual Injectors CHIRAL, Preparative, Analytical Capillary HPLC Columns and guard columns, GPC Columns, CombiChem and Amino Acid, Microbore HPLC Columns, BULK Materials for Columns, frits and Hardware for Columns. Source Lamps for all Analytical Instruments such as D2, Halogen, Xenon, Tungsten, mercury vapors hollow cathode lamps etc.

HPLC Servicing, Validation, Trainings and Preventive Maintenance :

HPLC Servicing :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

Trainings :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

AMC's/CMC :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

Validations :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

Instruments :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



About Analytical Technologies

Analytical Technologies is synonymous for offering technologies for doing analysis and is the Fastest Growing Global Brand having presence in at least 96 countries across the global. Analytical Technologies Limited is an ISO:9001 Certified Company engaged in Designing, Manufacturing, Marketing & providing Services for the Analytical, Chromatography, Spectroscopy, Bio Technology, Bio Medical, Clinical Diagnostics, Material Science & General Laboratory Instrumentation. Analytical Technologies, India has across the Country operations with at least 4 Regional Offices, 6 Branch Offices & Service Centers. Distributors & Channel partners worldwide.

Our Products & Technologies



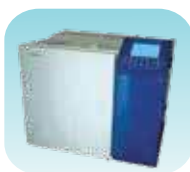
UV/VIS
Spectro 2080+
Double Beam



Infra FTIR



Optima Gas
Chromatograph
3007



Optima Gas
Chromatograph
2979 Plus



Flash
Chromatograph



Atomic Absorption
Spectrophotometer



Liquid Particle
Counter



Optical Emission
Spectrophotometer



DSC/TGA



Semi Auto Bio
Chemistry Analyzer



HEMA 2062
Hematology
Analyzer



Micro Plate
Reader/Washer



URINOVA 2800
Urine Analyzer



Total Organic
Carbon 3800



Fully Automated
CLIA



NOVA-2100
Chemistry Analyzer



PCR/Gradient PCR/
RTPCR



TOC
Analyzer



Laser Particle
Size Analyzer



Ion Chromatograph



Water purification
system

Regulatory compliances



Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:



Analytical Foundation

1. Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at Info@analyticalfoundation.org

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.



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