C146-E500A

SHIMADZU
Excellence in Science

Liquid Chromatograph Mass Spectrometer

LCMS-8065XE

UFMS
ULTRA FAST MASS SPECTROMETRY

LCMS-8065XE

LIQUID CHROMATOGRAPH MASS SPECTROMETER

Where Limits End, Forever Begins

EVOLVED

Embrace the power of StreamFocus ionization

EFFICIENT

Exceptional throughput, outstanding ROI

EXACT

Exceptional accuracy and enhanced sensitivity

To keep pace with evolving laboratory needs, Shimadzu continually enhances its high-performance analytical systems.

The new LCMS-8065XE is a triple-quadrupole mass spectrometer with EVOLVED, EFFICIENT, and EXACT capabilities. These exceptional capabilities ensure high reliability and enhanced productivity, empowering the laboratory for the future.

Reflecting our core philosophy of “Contributing to Society Through Science and Technology”, Shimadzu is committed to addressing current and future challenges by continually advancing the hardware and software of its analytical instruments—delivering meaningful value to society through innovation.

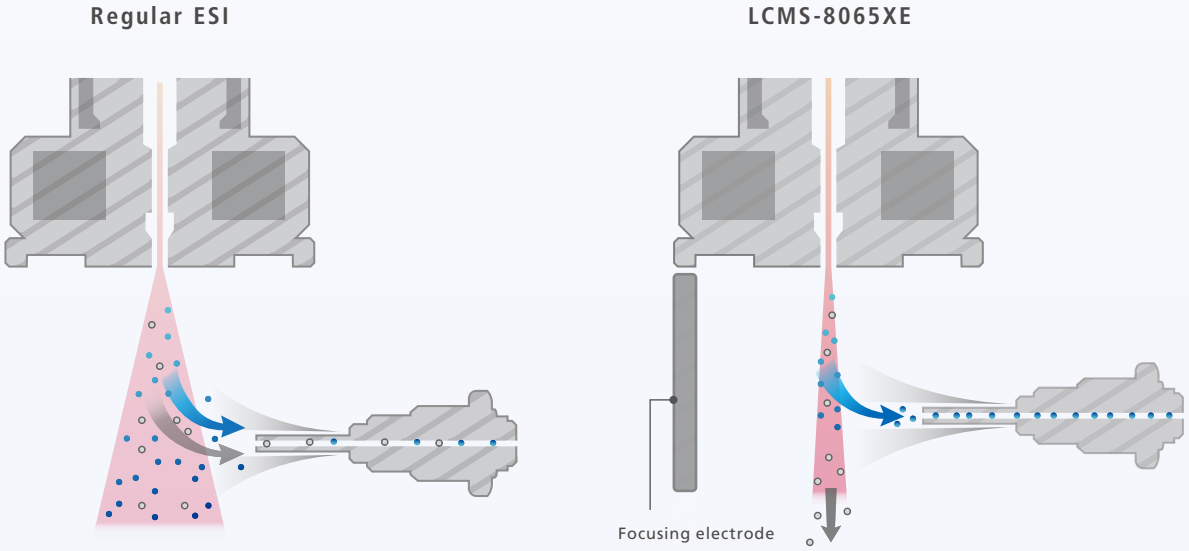
ANALYTICAL INTELLIGENCE

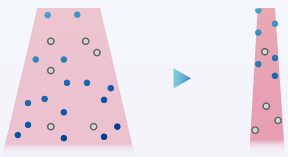
Analytical Intelligence represents Shimadzu’s innovative approach to automated analytical instrument optimization. This concept encompasses a suite of systems and software designed to emulate the decision-making process of expert operators. It autonomously assesses the instrument status, helps to give actionable feedback and where it can it fixes problems. By bridging the gap between varying levels of user expertise and instrument familiarity, Analytical Intelligence significantly enhances the reliability of your data.

Revolutionary New Technology Achieves Exceptional Performance

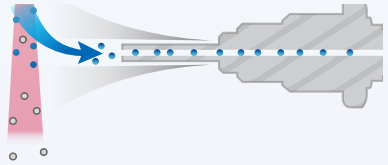
Our latest technologies included in the LCMS-8065XE bring sample analysis to a new level. Through evolution of our UF technologies, ESI probe, and collision cell, we are pushing the boundaries to achieve the highest level of performance.

Exploring the Core of High-Sensitivity Analysis

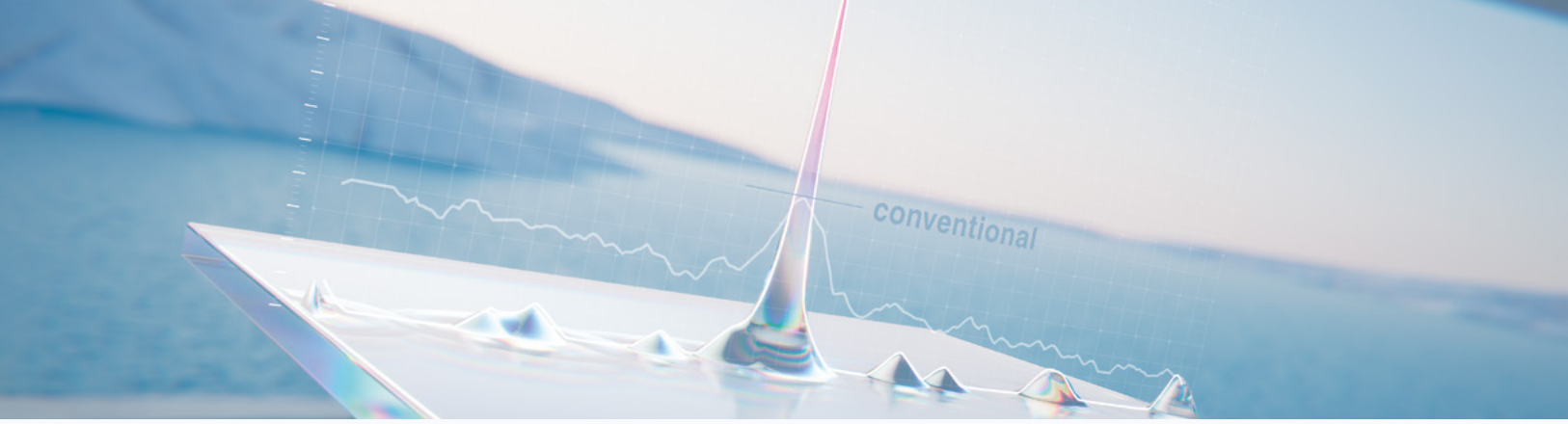




The newly designed StreamFocus ESI probe enhances UFsensitivity™ analysis by reducing droplet dispersion within the ESI spray. Equipped with a specially engineered low-diffusion nebulizer nozzle, it enables greater ion intake while reducing nebulizer gas consumption—making it particularly well-suited for reducing operational expenses.

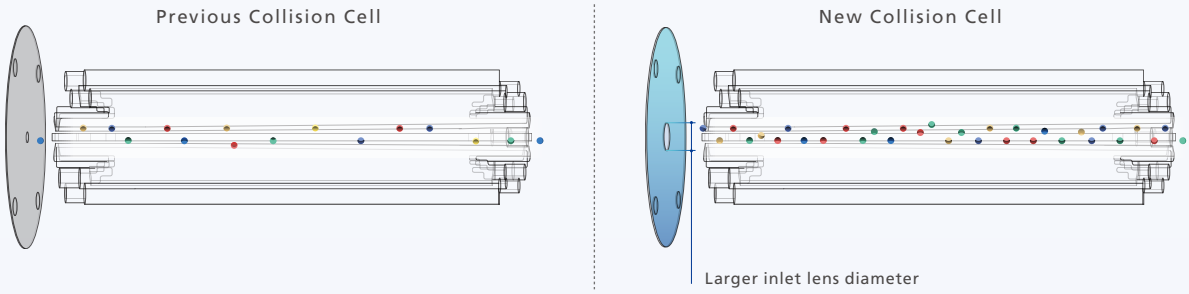


The IonFocus unit in the LCMS-8065XE optimizes ion transmission. It solves the common trade-off between contamination reduction and sensitivity loss by using an electrode to focus and direct only target ions into the mass spectrometer, excluding neutral contaminants. This results in high sensitivity, exceptional robustness, and enhanced instrument uptime for reliable, long-term analysis.

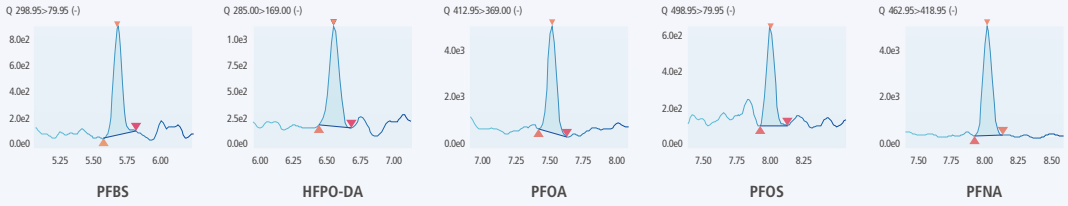


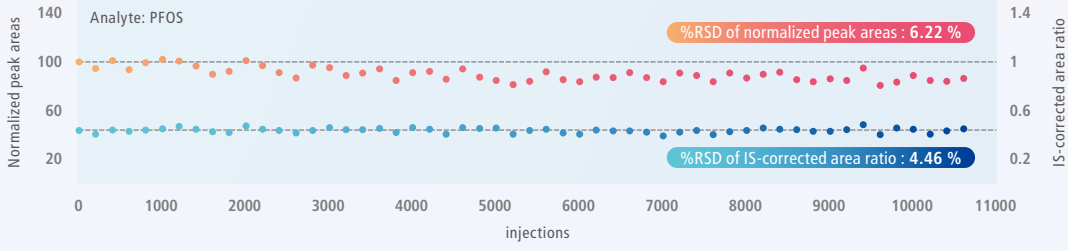
UFsweeper™ IV

Shimadzu's proprietary UFsweeper™ technology—designed to efficiently guide ions through the collision cell without energy loss—has been further refined. The updated collision cell features a larger entrance lens diameter and an increased number of lenses, significantly boosting ion throughput. These improvements result in enhanced ion transmission and greater sensitivity, enabling more precise and reliable quantitative analysis.



The chromatogram below illustrates the part-per-trillion analysis of a 1 ng/L mixed standard solution of PFAS (Per- and Polyfluoroalkyl Substances). Despite the extremely low concentration of 1 ng/L, the compounds are detected with good peak intensity. The LCMS-8065XE, equipped with the innovative StreamFocus and UFsweeper IV, delivers exceptional sensitivity for the analysis of trace-level components.

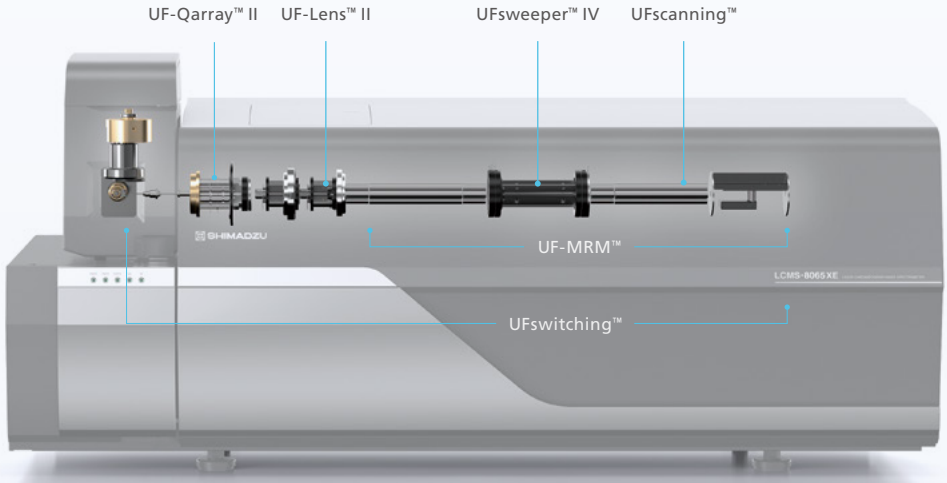




The LCMS-8065XE exhibits exceptional robustness during continuous analysis of complex matrices. The data above show both absolute peak areas relative to the initial response and peak area ratios normalized using internal standards, obtained from over 10,000 consecutive injections of treated wastewater samples. To create a more challenging analytical environment, matrix elimination using LC switching valves was deliberately omitted. Even under these challenging conditions, the system retained over 85 % of its initial response after 10,000 injections, highlighting its exceptional durability and stability in demanding high-throughput applications.

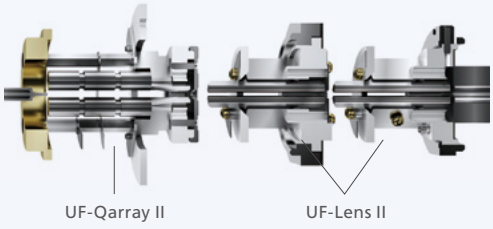
New UF Technologies Enable Ultra-Fast Mass Spectrometry Applications

Shimadzu's triple quadrupole mass spectrometers, powered by a suite of proprietary UF Technologies, have earned widespread acclaim from users across diverse applications. The new LCMS-8065XE incorporates the latest advancements in these technologies, delivering unmatched sensitivity and faster analysis speeds—redefining what's possible in quantitative mass spectrometry.



Ion Guides

The system features two proprietary ion guides—UF-Qarray and UF-Lens—engineered for maximum ion transmission efficiency. UF-Qarray utilizes high-frequency voltages applied to multiple electrodes to focus and transport ions across a broad mass range with minimal loss. These ions are then directed to the UF-Lens, a dual multipole ion guide system designed to maintain high ion transmittance. To further improve performance and stability, the QP Guard function actively removes unwanted ions, minimizing contamination of the quadrupole rods.



Collision Cell

The collision cell features Shimadzu's patented UFsweeper technology, which rapidly propels ions through the cell without deceleration—maintaining high collision-induced dissociation (CID) efficiency and excellent ion convergence. This advanced design minimizes signal loss and crosstalk during high-speed and multi-component analyses, enabling ultra-fast MRM acquisition (UF-MRM) with outstanding sensitivity and throughput.

Quadrupole Rods

Achieve ultra-fast scanning up to 30,000 u/sec with maximum ion transmittance for superior signal quality. Intelligent voltage control resolves overlapping mass signals and accurately quantifies narrow chromatographic peaks—delivering faster analysis without compromising data integrity.

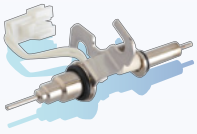
Detector

World-class 5 msec positive/negative ion switching is achieved with zero signal loss. Proprietary high-voltage technology maintains stable ion intensity while enabling high-speed MRM analysis up to 555 channels/sec—perfect for simultaneous multi-component analysis in complex samples.

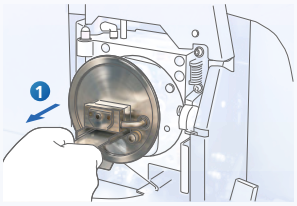
Easy Maintenance Shortens Instrument Downtime

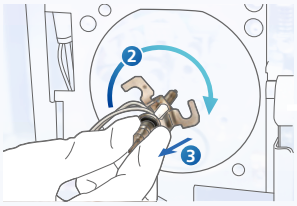
Both the desolvation line (DL), which delivers samples to the vacuum section, and the ESI capillary can be replaced quickly and easily. Even the DL can be replaced without breaking vacuum, helping to minimize downtime and maintain laboratory productivity.

DL Replacement

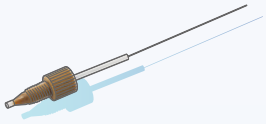


DL (Desolvation Line)

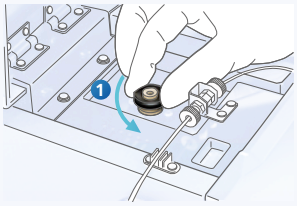


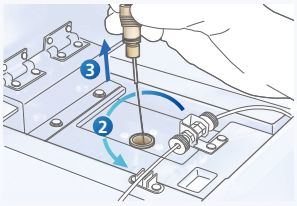


ESI Capillary Replacement



ESI Capillary





UFMS Family

In addition to the LCMS-8065XE, Shimadzu offers a full lineup of triple-quadrupole mass spectrometers, all equipped with cutting-edge UF Technologies. The LCMS-TQ RX series, which is part of the UFMS family, includes a state-of-the-art CoreSpray ion source that offers the three "Rs" (reliable, resilient, and responsible) of performance to provide exceptional reliability and consistency.

LCMS-8060RX

Leading the LCMS-TQRX series, the LCMS-8060RX combines world-class sensitivity and measurement speed—matching the performance of the LCMS-8060NX—while adding numerous advanced capabilities. It is ideal for cutting-edge research applications, from ultra-trace component analysis to omics studies.

LCMS-8050RX

An upgraded successor to the LCMS-8050, the LCMS-8050RX reaches the highest levels of sensitivity and speed in its class. It is ideally suited to meet the diverse needs of LC-MS analysis, from advanced research to routine testing.

LCMS-8045RX

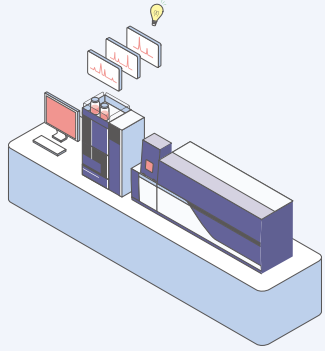
Combining exceptional sensitivity with cost-effectiveness, this model features a durable design that delivers reliable, high-quality performance for routine quantitative analysis of food and water samples.

Improves Workflow Efficiency and Maximizes Productivity

Equipped with state-of-the-art Analytical Intelligence user-assistance technology, the hardware and software work together to maximize workflow efficiency—from data acquisition through analysis—maximizing laboratory productivity.

Preparation

Automatically ensures instrument readiness



ANALYTICAL INTELLIGENCE

PERFORMANCE CONCIERGE

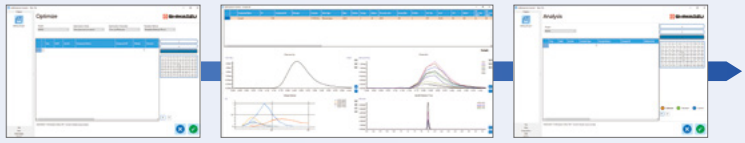
Instrument status check

PERFORMANCE CONCIERGE

Automated tuning solution injection verifies mass accuracy, resolution, and signal strength. Self-optimizing technology automatically tunes your system for peak performance or alerts you to specific issues—ensuring every analysis starts under optimal conditions.

Optimization of analysis conditions

LabSolutions Connect™ MRM



LabSolutions Connect MRM performs automatic optimization of MS parameters. Optimized results can be viewed graphically using the Data Browser feature to quickly determine the validity of the results. By registering optimized results in a database, analysis methods can be quickly and easily developed using the stored information.

In addition to optimizing MS parameter settings, LabSolutions Connect MRM can test LC conditions by automatically varying LC settings, such as gradient parameters. From user entry of a few simple parameter ranges, it can create methods automatically.

Measurement

UF data acquisition

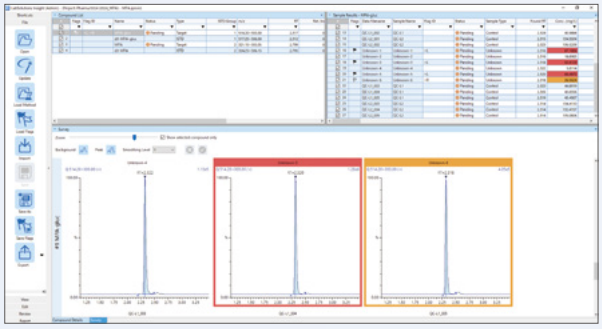
Data analysis

Efficiently analyzes complex, high-volume data

Checking Results and Creating Reports

LabSolutions Insight™

Product

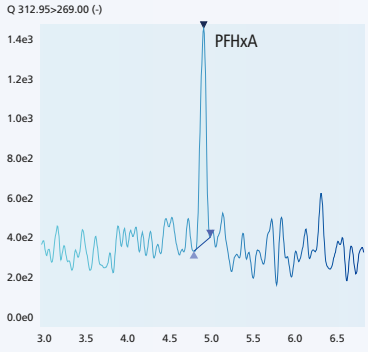


Users can select the display method that is best suited for their workflow. For example, data can be displayed for a specific target compound, as a set of measurement data, or as a list of quantitation or area values. Multiple chromatograms can be displayed side-by-side for checking peak intensity and correcting peak integration more intuitively. That can significantly reduce the time required for data analysis. Also, flagging functionality can be used to color-code values that exceed prespecified criteria. It can also be used to display only flagged results to make quantitative analysis and accuracy control results visually easier to understand.

ANALYTICAL INTELLIGENCE

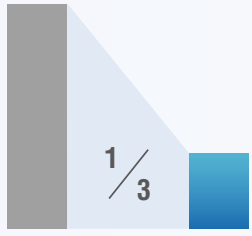
AI Technology for More Efficient Peak Integration

Peakintelligence™ for LCMS

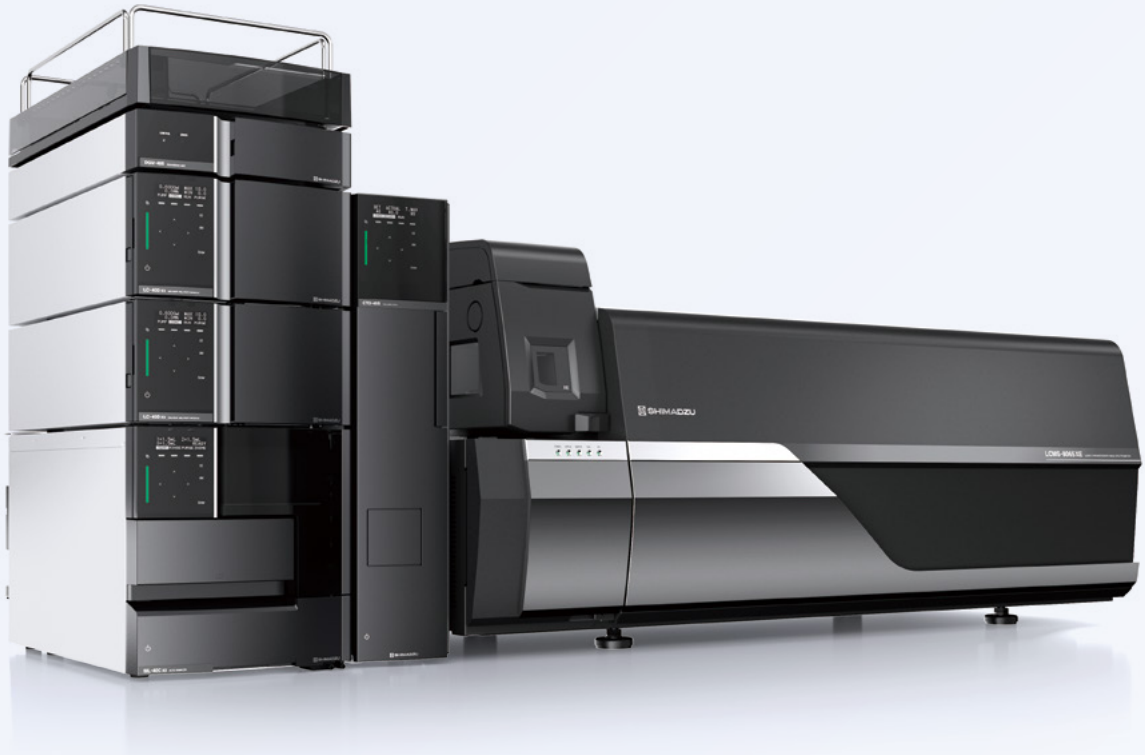


This example demonstrates the use of Peakintelligence for integration of LC/MS peaks of per- and polyfluoroalkyl substances (PFAS). It confirms accurate peak integration even for signals with low signal-to-noise (S/N) ratios. Peakintelligence for LCMS also reduces detection errors caused by baseline noise or undulations to achieve more consistent quantitative analysis results.

Revolutionary AI-driven peak detection and integration technology delivers consistent, accurate results even for challenging low signal-to-noise peaks. The intelligent algorithm automatically identifies components and integrates peaks without requiring manual parameter adjustment, while effectively suppressing false positives caused by baseline noise and drift.



PeakIntelligence dramatically reduces time-consuming manual review processes (up to 67%) and delivers superior reproducibility across complex analyses like PFAS quantification. Experience higher confidence in your results with automated processing that maintains accuracy while accelerating your analytical workflow.

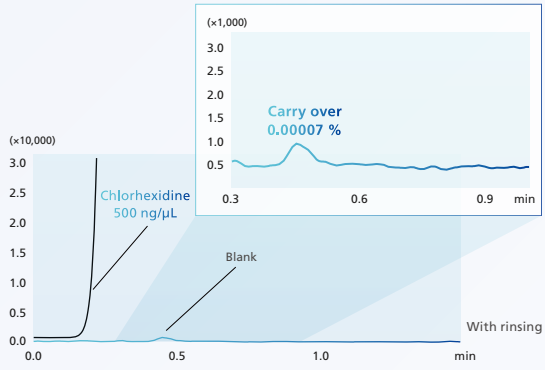


Powerful and Seamless Integration with Shimadzu's Nexera™ Series LC Systems

The ultimate high-speed performance offered by both Shimadzu UHPLC and LCMS-8065XE systems will help maximize laboratory productivity.

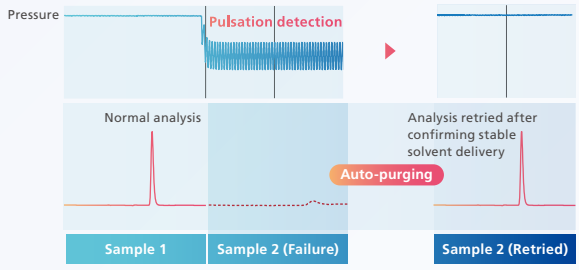
Ultra-Low Carryover Enables High-Sensitivity Analysis

Low carryover performance of autosamplers is essential for detecting ultra-trace quantities. The SIL-40 series successfully inhibits carryover even further toward achieving zero dead volume. That shortens the rinsing time before injection and contributes to faster analysis and shorter serial analysis times.



Continuous Self-Monitoring to be Prepared for the Unexpected

Intelligent monitoring detects air bubbles and pressure anomalies that can compromise analysis. When abnormalities are detected, the system automatically pauses analysis, purges the flow path, and restarts once normal pressure is restored—eliminating costly sample loss and unattended run failures.



Auto-Diagnostics for Bubble Entrapment

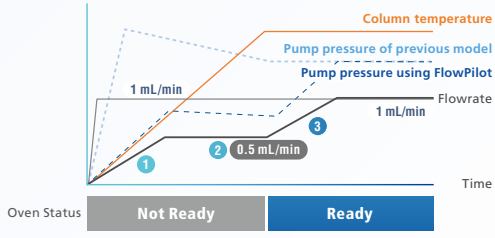
Bubbles entrapped in the pump head can cause an abrupt pressure drop followed by periodic pressure fluctuations (pulsations). A proprietary bubble detection algorithm detects the characteristic pressure fluctuations caused by bubble entrapment.

FlowPilot Automates the Manual Operations of Expert Users

HPLC columns can be damaged by sudden pressure fluctuations. Rapid pump starts and stops or extreme gradient changes are automatically mitigated with FlowPilot (Smart Flow Control), exclusive to Shimadzu HPLC systems. FlowPilot adjusts flow rates gradually, increasing column lifetime. There is no need to create extra startup protocols for each analysis.

FlowPilot ANALYTICAL INTELLIGENCE

FlowPilot operates by gradually increasing the flow rate up to half of the set value. (①) The flow rate is kept constant until the oven is ready. (②) The flow rate is gradually increased up to the set value. (③)



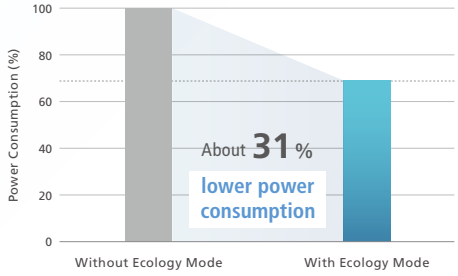
Optional Kit for PFAS Analysis

An optional PFAS analysis kit (sold separately) is available for minimizing the leaching of PFAS from liquid contact surfaces in the LC system. Using this kit can enable PFAS analysis with even higher reliability and robustness.

Championing Sustainability for a Better Tomorrow

High Energy Efficiency

The LCMS-8065XE includes ecology mode functionality that checks the system usage status and automatically shuts down the system if it has not been used for a certain period of time. Using the ecology mode can reduce electricity consumption by about 31 %. It also contributes significantly to reducing power consumption by not using LC-MS/MS peripheral equipment except during analysis. Moreover, reducing CO_2 emissions contributes to achieving a carbon-neutral society.



Power Consumption Comparison:
With and Without Ecology Mode

Fast-Tracking Sustainability with Nexera UHPLC and LCMS-8065XE

Combining the LCMS-8065XE with a Nexera series UHPLC system enables ultra-fast analysis and significantly enhances analytical throughput. This increased efficiency also leads to substantial reductions in solvent, gas, and electricity consumption, resulting in lower operational costs.

Power consumption calculations assume making all of this one sentence. 8 hours of analysis on weekdays and no hours on weekends (with ESI interface switched OFF)

Without Ecology Mode
ESI interface remains ON after analysis.

With Ecology Mode
Ecology mode is activated after analysis (with ESI interface switched OFF).

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