

Liquid Chromatograph Mass Spectrometer

LCMS-8030

UFMS
ULTRA FAST MASS SPECTROMETRY



Next-Generation Ultra Fast LC/MS/MS

Fully Compatible with HPLC and UHPLC



Triple quadrupole mass spectrometer plays very important role in trace analysis of complex matrices such as residual pesticide in foods, contaminants in environment, drug concentration in blood and screening of abused drugs. In recent years, UHPLC system has been developed realizing high speed and high resolution, however, analysis speed of mass spectrometer has bottlenecked in combination of UHPLC and triple quadrupole mass spectrometer. Our LCMS-8030 meets your requirement by combining Ultra Fast MRM Acquisition and Ultra Fast Polarity Switching. LCMS-8030 enjoys maximum benefit of UHPLC performance and offers analytical speed beyond comparison.

LCMS-8030

—*Speed Beyond Comparison*

Ultra Fast LC performance

With a pressure range up to 130 MPa, high-speed injection, overlapping injection and highly efficient gradient mixing, Nexera UHPLC enables ultra-high speed and ultra-high resolution analysis.

Ultra Fast MS Speed

- Fastest multiple reaction monitoring (MRM) transition times available today (dwell times of 0.8 msec and pause times of 1 msec)
- High speed multi-analyte detection with 555 MRM transitions in one second
- Unsurpassed polarity switching speed (polarity switching time of 15 msec)

System Integration

By bringing together the world's highest performance LC system and the fastest triple quadrupole mass spectrometer available today, Shimadzu delivers a new approach to *ultra fast* mass spectrometry detection. Robust, simple and *Ultra Fast*.

Speed Beyond Comparison

UFMS

ULTRA FAST MASS SPECTROMETRY



GCMS-QP2010 Ultra
GCMS-QP2010 SE



GCMS-TQ8040



LCMS-8030



LCMS-8040



LCMS-8050



LCMS-8060



LCMS-2020



LCMS-IT-TOF

Introducing the Next Generation of Triple Quadrupole Technology

To provide best-in-class performance for *Ultra Fast* data acquisition rates in MS/MS detection, we have developed UFsweeper technology. This technology efficiently accelerates ions out of the collision cell, dramatically minimizing cross talk and shortening MRM analysis time to the lowest possible level. Simply put, the LCMS-8030 delivers higher data quality at higher data acquisition speeds.

Fusion of *Ultra Fast* MRM Acquisition and *Ultra Fast* Polarity Switching

With high-resolution, high peak capacity separations, mass spectrometry detection needs to be *Ultra Fast* to acquire sufficient data points across a peak to deliver accurate and reliable quantitation. Coupled with Nexera, the LCMS-8030 not only delivers the fastest MRM acquisition times available today, with dwell times of 1 msec, it also acquires data with a polarity switching time of just 15 msec. Figure 1 illustrates a 2-minute elution of 226 pesticides using the LCMS-8030 with the Nexera UHPLC system. *Ultra Fast* polarity switching and *Ultra Fast* MRM analysis times deliver reliable and accurate quantitation.

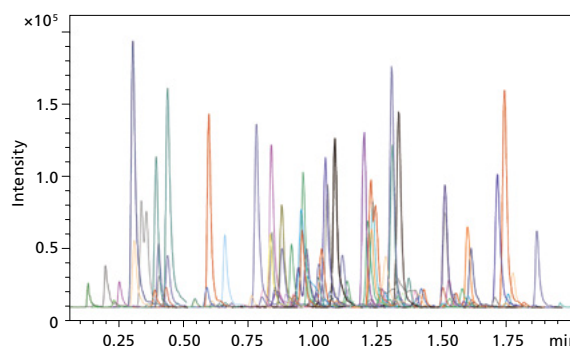


Figure1. Standard Chromatogram of 226 Pesticides in Two Minutes

An *Ultra Fast* Scan Speed of 15,000 u/sec Results in a Wealth of Information

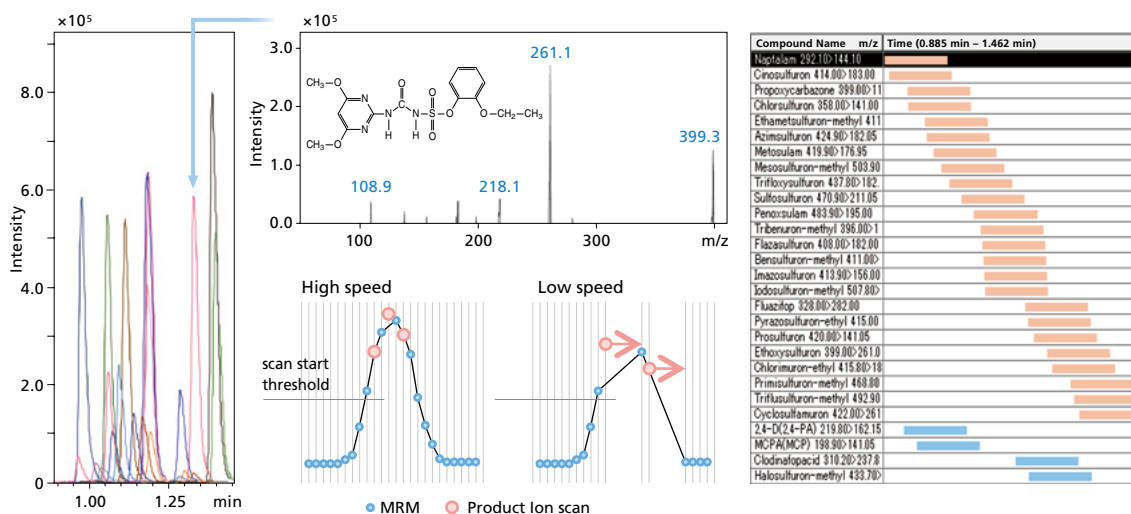


Figure 2

Figure 2 illustrates a 1.5-minute elution of 29 pesticides using the LCMS-8030 with the Nexera UHPLC system. *Ultra Fast* polarity switching and *Ultra Fast* MRM transitions deliver reliable and accurate quantitative results. Furthermore, Synchronized Survey Scan technology, utilizing a high-speed scanning rate of 15,000 u/sec, allows full spectrum scans within a series of MRM measurements, providing confirmation of target compounds with information-rich product ion spectra.

ULTRA FAST UFSweeper™

USP 7985951

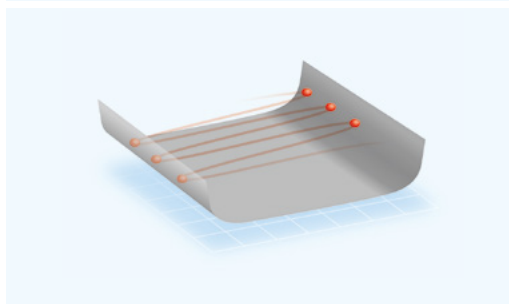
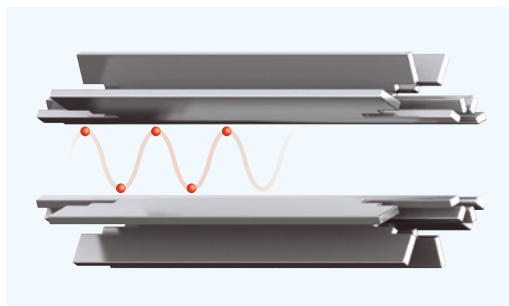
UFSweeper Technology Effectively Accelerates Ions Out of the Collision Cell

UFSweeper is a unique technology created by Shimadzu that delivers unparalleled efficiency and speed. UFSweeper accelerates ions out of the collision cell by forming a pseudo-potential surface. The result is higher CID efficiency and *Ultra Fast* ion transport to reduce the sensitivity losses and cross-talk that are observed on other systems.



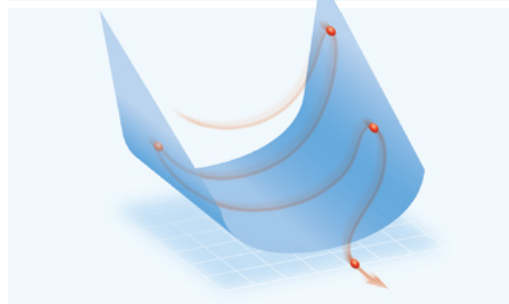
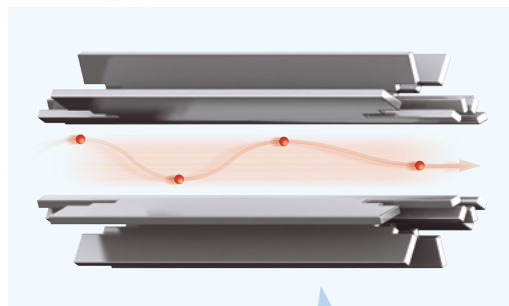
Conventional design

Ions lose momentum due to collision with gas.



UFSweeper™

UFSweeper efficiently accelerates ions out of the collision cell without losing momentum.

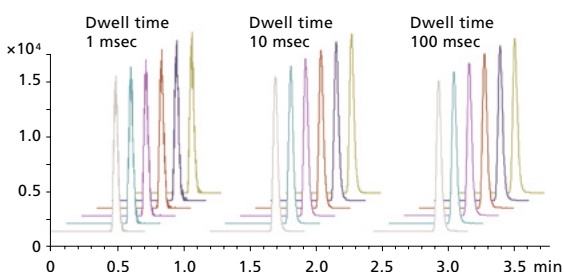


555 MRM Transitions in One Second is Now Possible!

In the UFSweeper collision cell, there is no ion loss even at 1 msec dwell times as ions are accelerated from the pressurized collision cell without losing momentum. In addition, higher RF power capability exceptionally minimizes the pause time between each MRM transition. For the first time, true high-throughput analysis without sacrificing ion intensity is a reality.

Dwell time	%RSD
100 msec	0.48
10 msec	0.79
1 msec	1.92

Alprazolam m/z 309>281, FWHM = 3 sec, Pause time 1 msec, $n = 6$

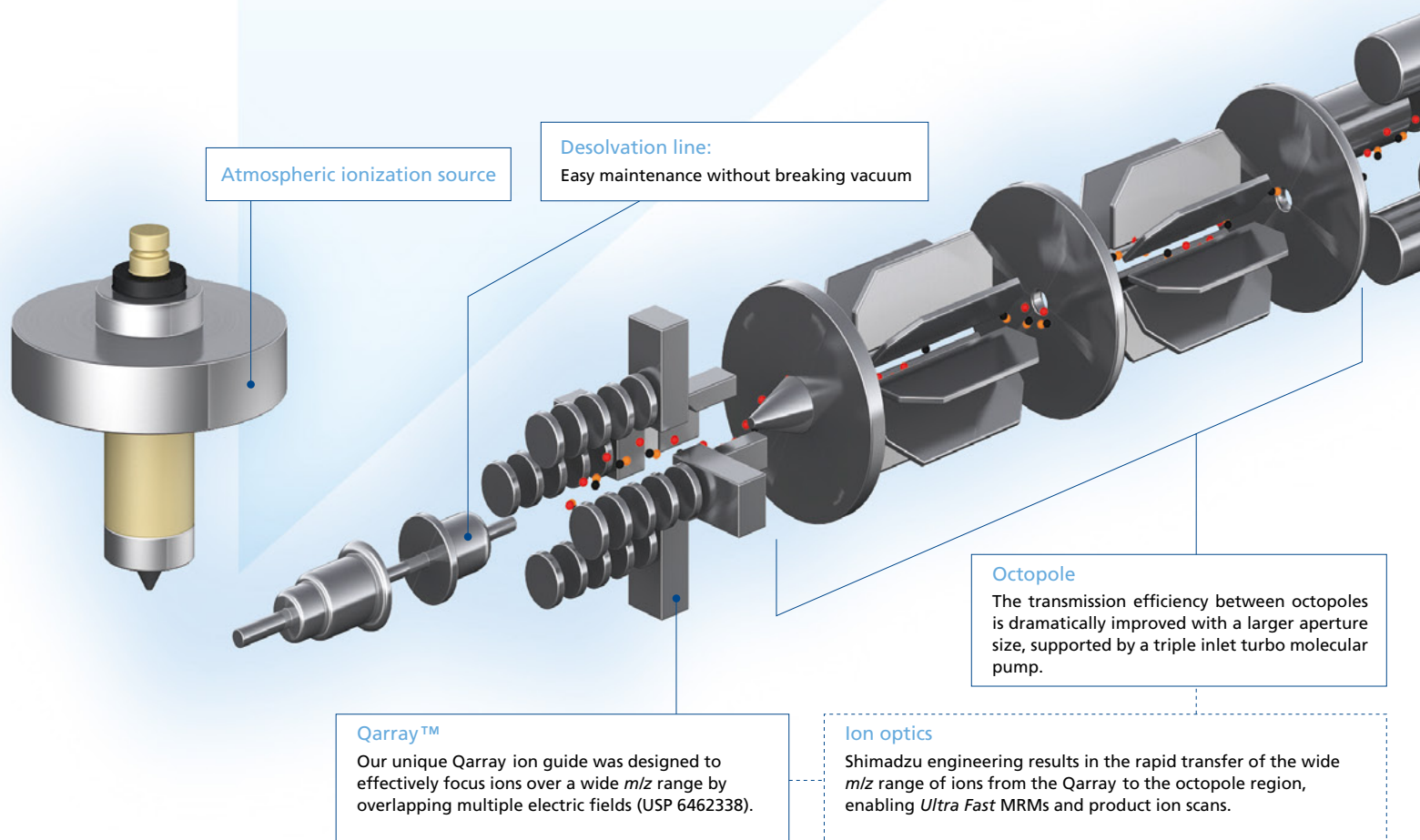
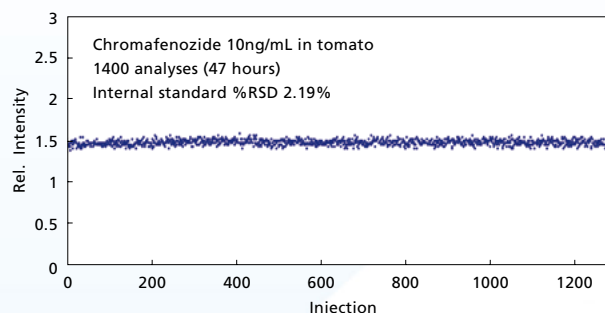


Ultra Fast Speed Combined with Femtogram Detection

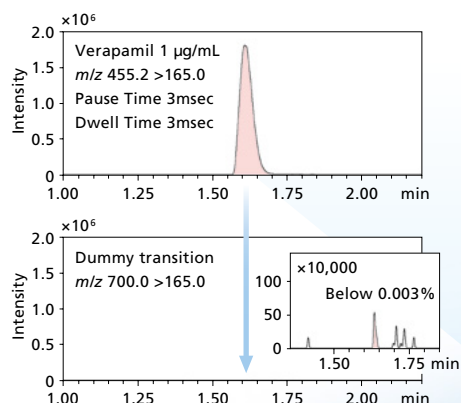
Drawing on our groundbreaking research and hands-on experience, the LCMS-8030 has been designed to achieve outstanding performance quicker than ever before. Bringing together advanced ion acceleration technology and high-sensitivity detection systems, we have created one of the most advanced triple quadrupole mass spectrometry systems currently available.

Delivering Results – Quickly and Accurately

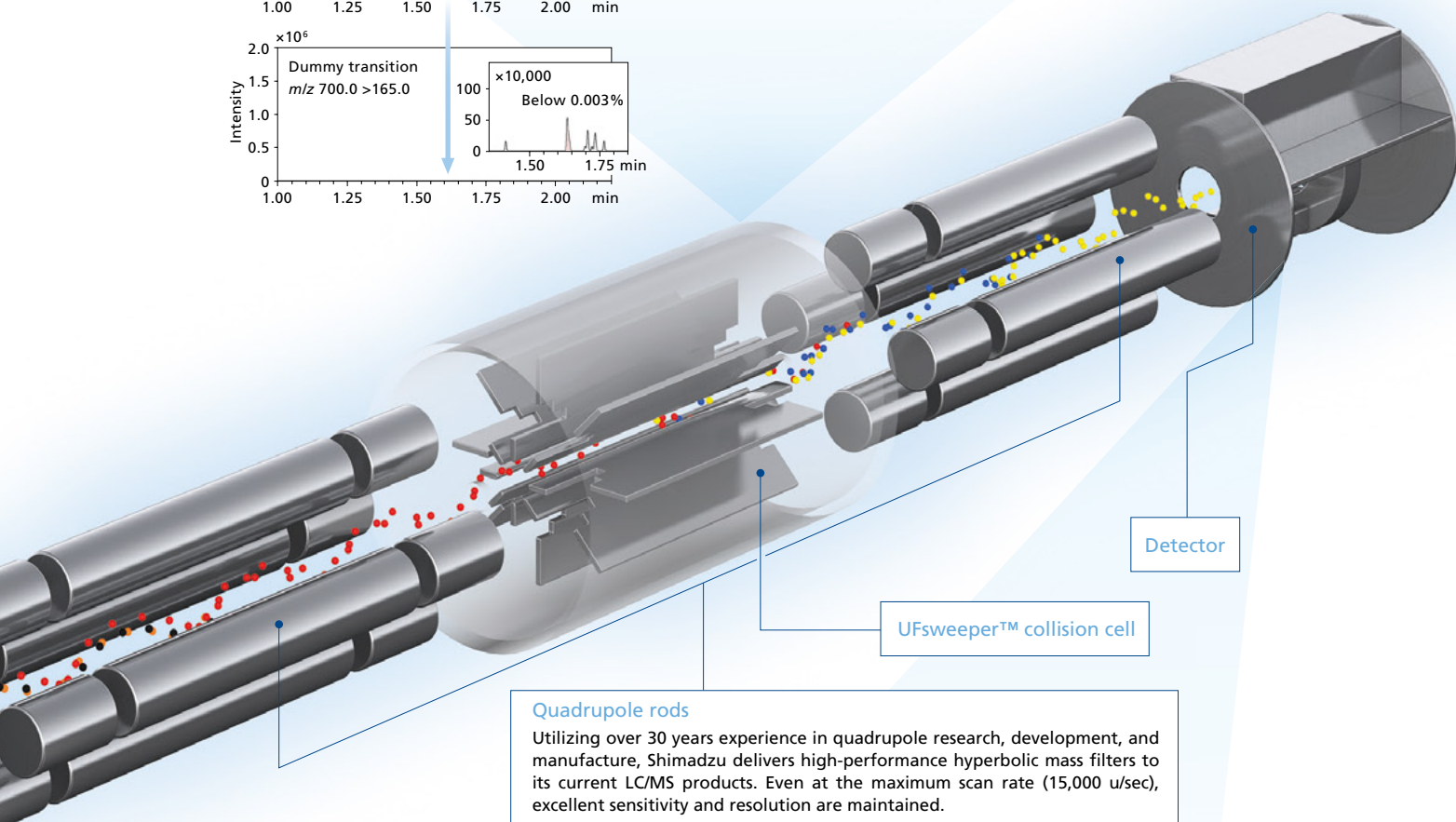
The ion optics on the LCMS-8030 have been fully optimized for ion transport to the detector using a series of RF and DC ion guides before Q1. This design has a significant impact on challenging matrices. For example, in the case of a 10 ppb pesticides mixture spiked into tomato extract, 1400 individual 1 μ l aliquots were injected over a period of 2 days. The result is an outstanding 2.19% reproducibility.



UFsweeper Technology



UFsweeper technology is a unique approach to accelerating MRM and ion fragmentation. Even at high-speed data acquisition rates, cross talk and background noise are eliminated.



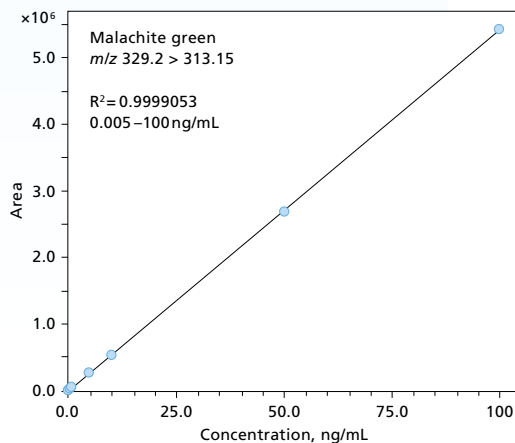
Quadrupole rods

Utilizing over 30 years experience in quadrupole research, development, and manufacture, Shimadzu delivers high-performance hyperbolic mass filters to its current LC/MS products. Even at the maximum scan rate (15,000 u/sec), excellent sensitivity and resolution are maintained.

Linearity - Dynamic Range with *Ultra Fast* Mass Spectrometry

Equipping a true high-speed pulse-counting detector and conversion dynode system has resulted in astonishing data acquisition rates even with polarity switching. The development of a unique semi-floating high-voltage power supply realizes ultra-high speed polarity switching (15 msec).

Std. Conc. ng/mL	Conc. ng/mL	Accuracy %	Area%RSD (n=6)
0.005	0.0058	116.35	7.75
0.01	0.0108	109.37	3.36
0.05	0.0477	95.38	3.11
0.1	0.0907	90.55	1.43
0.5	0.4708	94.15	0.79
1	0.9702	97.02	1.29
5	4.9995	99.98	0.31
10	9.6907	96.92	0.70
50	49.9108	99.83	0.58
100	100.4682	100.48	0.40



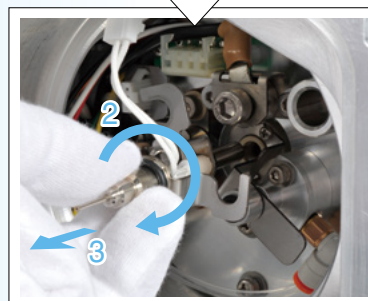
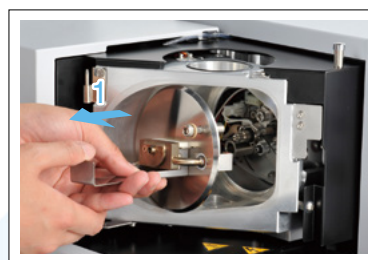
Simplicity

The LCMS-8030 achieves best-in-class performance for *ultra fast* mass spectrometry detection and opens new opportunities for all application areas.

Using LabSolutions software to optimize the power of the Nexera UHPLC and LCMS-8030 accelerates results, simply.

Optimizing System Performance

The LCMS-8030 heated ion source works with the most challenging samples, delivering robust, high-sensitivity detection using ESI, APCI or our dual probe ionization interface. System maintenance for the ion source is simplicity itself. Cleaning the heated desolvation capillary is quick and maintains system vacuum to provide greater uptime and usability.

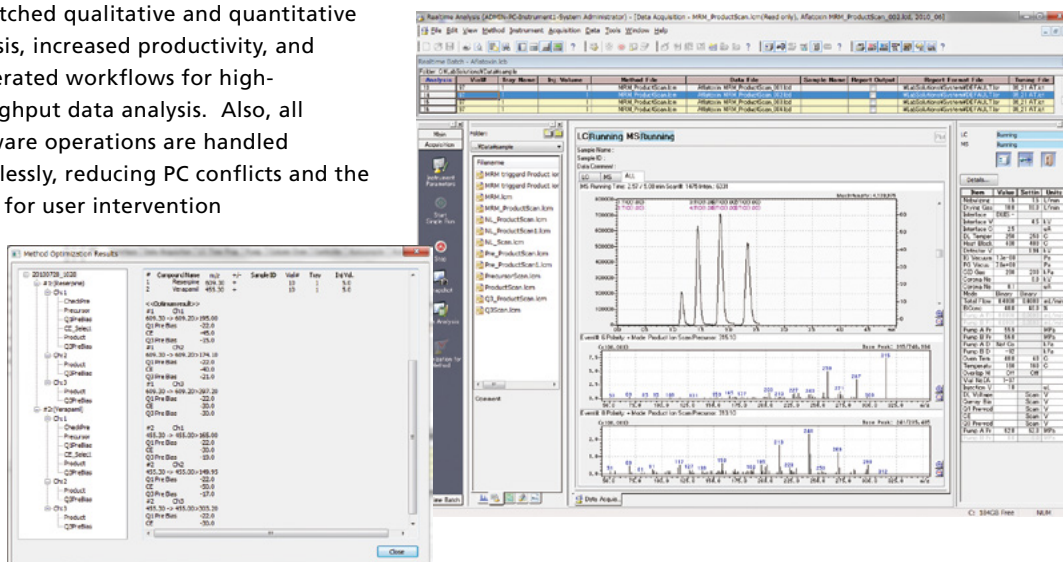


Easy Maintenance Identical to
the LCMS-2020

Single-vendor Solution Provides Seamless Operation

The combination of Shimadzu's LCMS-8030 and Nexera UHPLC brings together the latest hardware on a single platform for the next generation of *Ultra Fast* technology.

The unified platform provides unmatched qualitative and quantitative analysis, increased productivity, and accelerated workflows for high-throughput data analysis. Also, all software operations are handled seamlessly, reducing PC conflicts and the need for user intervention

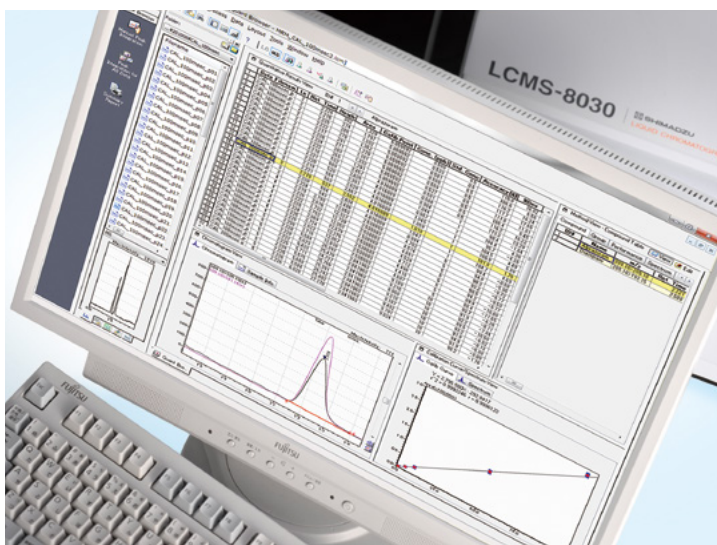


MRM Synchronization

MRM Synchronization optimizes MRM cycle times for overlapping retention time windows and helps to simplify method development and routine analysis with multiple MRM experiments. MRM retention time windows can partially or completely overlap; however, the cycle time for each analyte is constant, ensuring high-speed data sampling across a peak. MRM Synchronization delivers optimized peak sampling and quantitative data for each retention time window even with high-resolution chromatography.

Quantitation Browser for Effective Multianalyte Quantitation

The Quantitation Browser in LabSolutions LCMS software provides intuitive functionality that contributes to more efficient data processing. With the Quantitation Browser, peak information, quantitative results, and statistical calculations of a series of data can be rapidly viewed in a single window.



When performing quantitation, system parameters must first be optimized. Shimadzu offers various method packages and MRM library to eliminate the need for MRM determination and chromatographic method development.

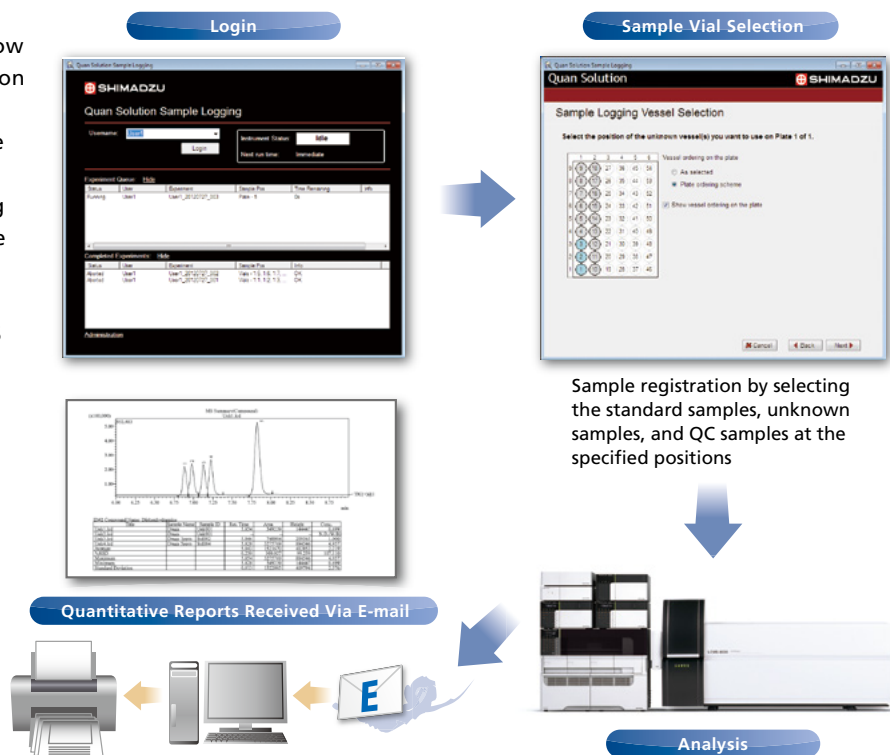


	Description	Flyer code
Method package	Residual Pesticides	C146-E160
	Veterinary Drugs	C146-E161
	Water Quality Analysis	C146-E180
	Drugs of Abuse	C146-E181
	Rapid Toxicology Screening	C146-E224
	Primary Metabolites	C146-E227
MRM Library	Lipid Mediators	C146-E225
	Metabolic Enzymes in Yeast	C146-E275

Optional Open Solution Series Software Quan Solution Software

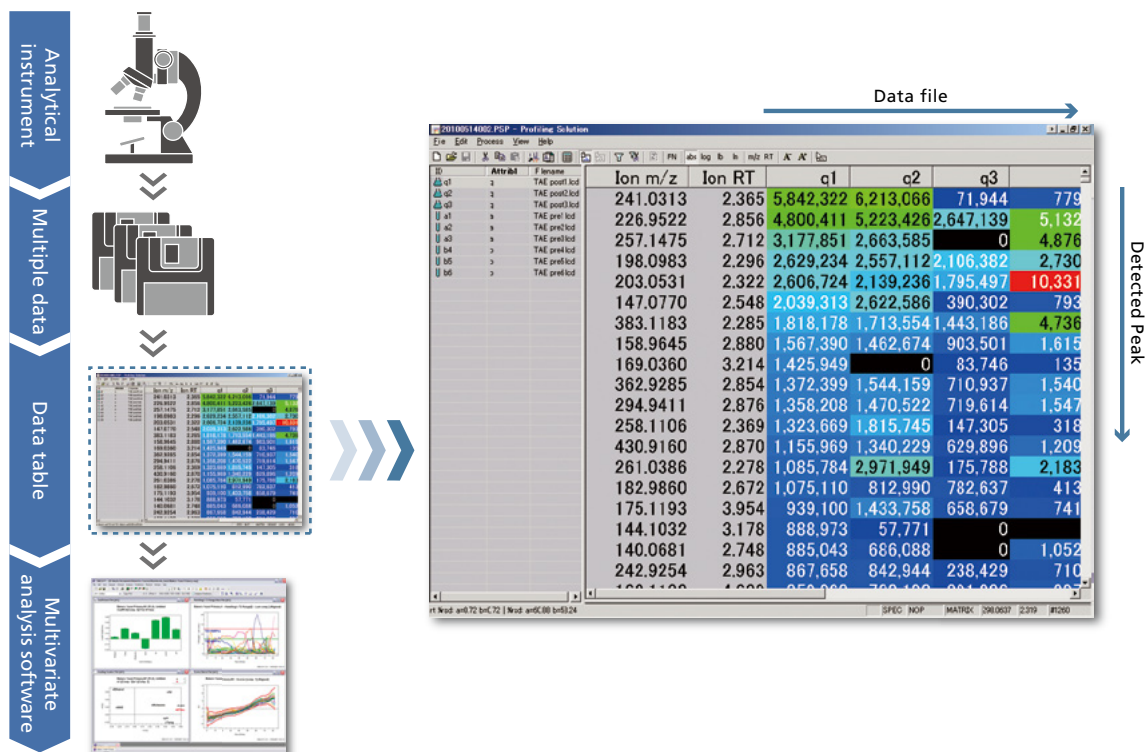
Open Access Sample Logging for Triple Quadrupole LCMS

With sample logging now made easy, Quan Solution allows users unfamiliar with LCMS software the capability to perform LC/MS/MS analysis using pre-set methods. Simple screens allow users to access the power of a triple quadrupole LCMS without extensive training.



Data Processing Software for Profiling Profiling Solution Ver. 1.1

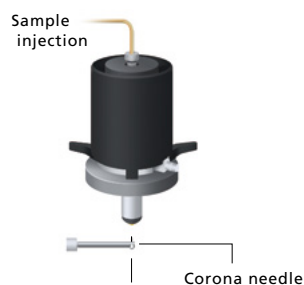
Profiling Solution software analyzes a huge amount of data from chromatograms, extracting every peak from multiple data files and creating a data table, which is required for multivariate analysis. Profiling Solution supports both LC/MS and GC/MS instruments and allows multivariate analysis with various analytical methods.



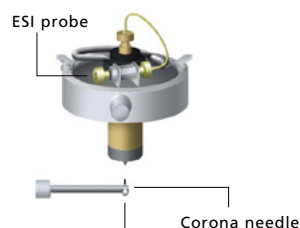
Optional Ion Source

Changing between ESI, APCI and DUIS interface is a completely tool-free operation.

APCI-8030



DUIS-8030





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