

LCMS-8030

Triple Quadrupole Mass Spectrometer

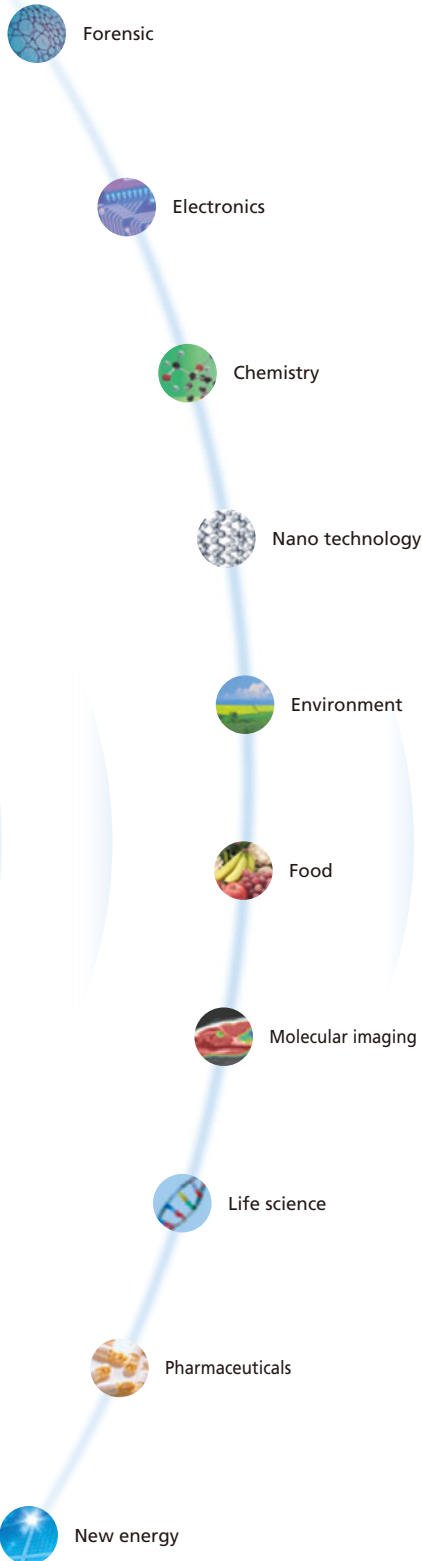


The Next Generation of Triple Quadrupole Mass Spectrometer
Ideal for both UHPLC and HPLC systems



TOC
Ultra Fast Mass Spectromet

Ultra Fast Speed



- Fusion of *Ultra Fast* MRM and *Ultra Fast* Polarity Switching
- UFSweeper® Technology Efficiently Accelerates Ions
- 500 MRM per Second, the Most Ever Possible



Triple Quadrupole Mass Spectrometry is the method of choice for the detection and quantification of trace level analytes in complex matrices. From the detection of environmental contaminants and pesticides in food, to the detection of an increasing number of target analytes with greater sensitivity, Shimadzu understands these requirements. That is why we have developed new fields to build a mass spectrometer that can keep pace with the world-leading UHPLC systems without any speed limitations.

The LCMS-8030 Triple Quadrupole Mass Spectrometer with unparalleled speed to provide the ideal solution. With *Ultra Fast* MRM transitions and *Ultra Fast* polarity switching, LCMS-8030

Point 2

High Reliability

Page 6 to 7

- Robust System Provides Long-term Data Stability •
- UFsweeper® Technology Dramatically Minimizes Cross Talk •
- Excellent Linearity with Wide Dynamic Range •

Point 3

User-Friendly

Page 8 to 9

- Easy Maintenance for Minimized Instrument Downtime •
- Single-vendor Solution Provides Seamless Operation •
- Quantitation Browser for Effective Multianalyte Quantitation •

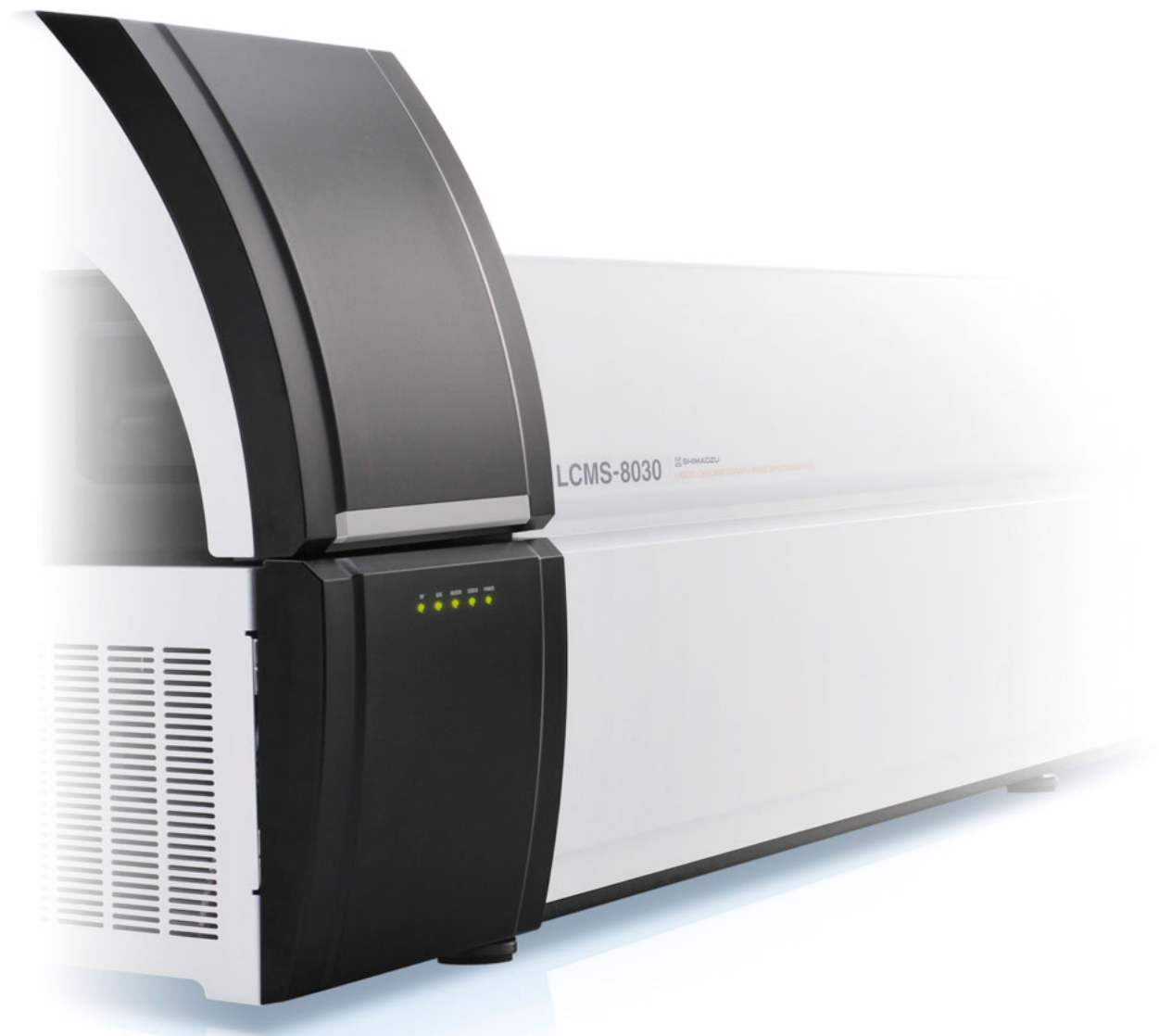


choice for accurate quantification and confirmation of
tion of drugs and metabolites in biological specimens
analysts the world over are challenged with detecting
sensitivity and in more samples than ever before.
we have combined our experience from different
with the chromatographic resolving power of our
ion. The LCMS-8030 couples the power of a Triple
complement to both UHPLC and HPLC systems.
is truly a universal detector for UHPLC or HPLC.

LCMS-8030

Triple Quadrupole Mass Spectrometer

Triple Quadrupole LC/MS/MS System



Speed Beyond Comparison

Point

1

Introducing the Next Generation of Triple Quadrupole Technology

UFSweeper® technology efficiently accelerates ions out of the collision cell, dramatically minimizing cross talk and shortening MRM analysis to the shortest time possible.

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

Shimadzu's Nexera UHPLC realizes extreme chromatographic resolution. When coupled with the Nexera, the LCMS-8030 can provide reliable and accurate detection of peaks only one second wide, maximizing UHPLC performance. Combined with a polarity switching time of just 15 msec, the next-generation *Ultra Fast* triple quadrupole is realized.

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 time deliver reliable and accurate quantitation.

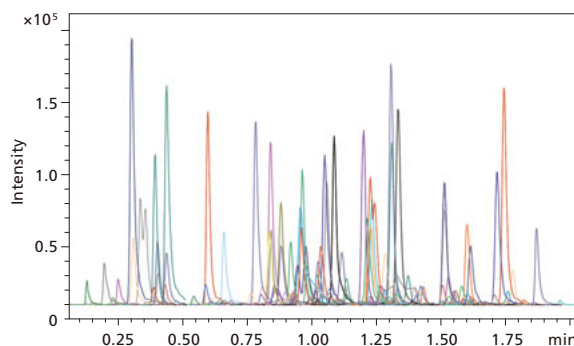


Figure 1. Standard Chromatogram of 226 Pesticides in Two Minutes

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

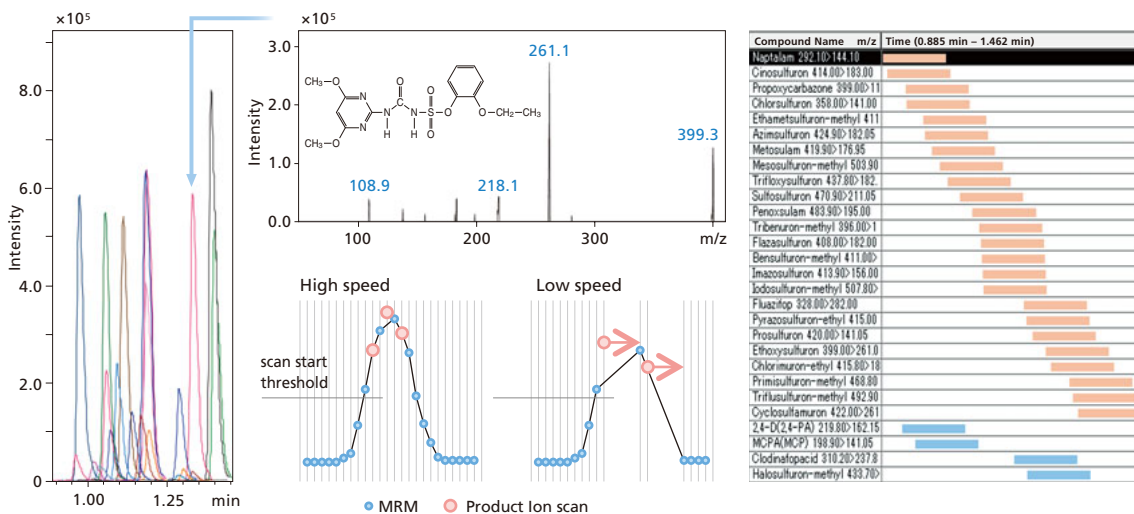


Figure 2.

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.

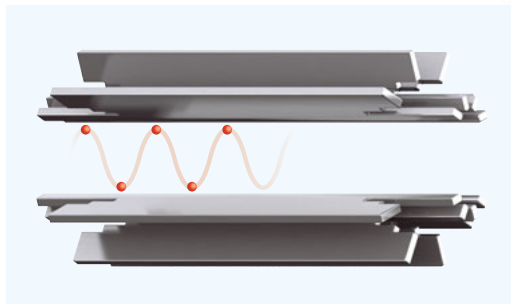
ULTRA FAST
UFSweeper[®] patent pending

UFSweeper[®] Technology Effectively Accelerates Ions Out of the Collision Cell

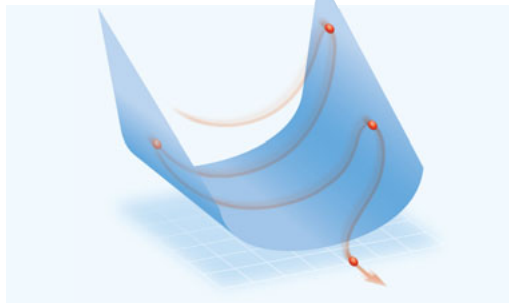
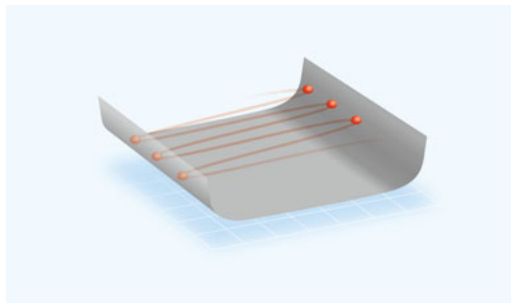
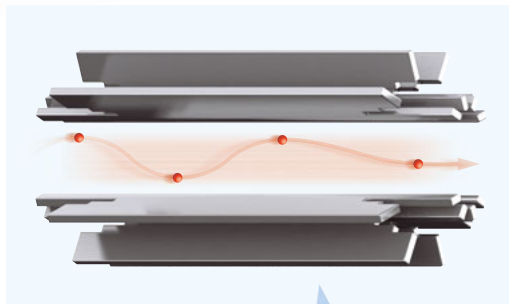
UFSweeper[®] is a unique technology created by Shimadzu that delivers unparalleled efficiency and speed. UFSweeper[®] accelerates ions out of the collision cell by forming a pseudo-potential surface. The result is higher CID efficiency and *Ultra Fast* ion transport to reduce the sensitivity losses and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



Conventional design Ions lose momentum due to collision with gas.



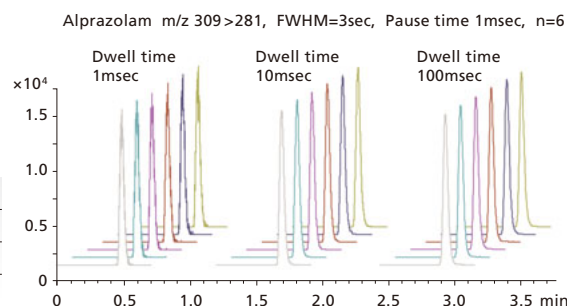
UFSweeper[®] UFSweeper[®] efficiently accelerates ions out of the collision cell without losing momentum.



500 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
100msec	0.48
10msec	0.79
1msec	1.92



Point
2

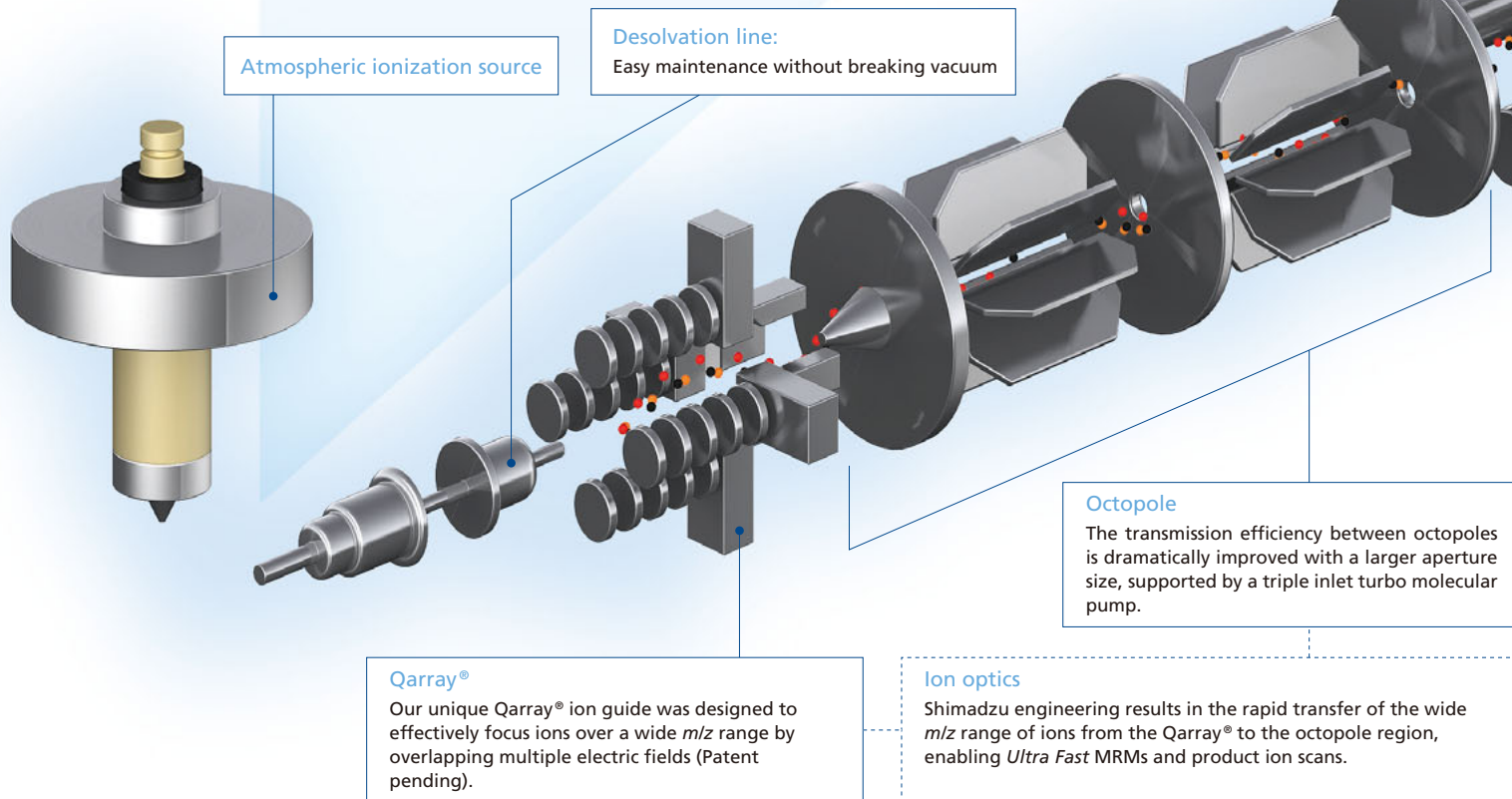
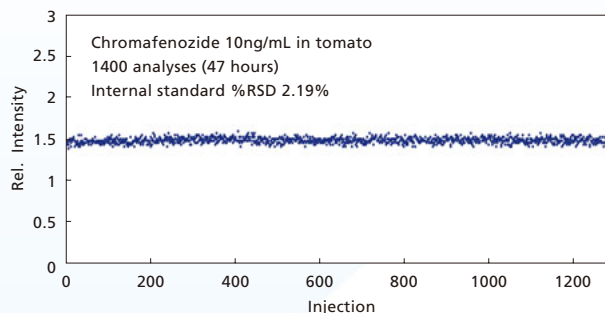
Even during *Ultra Fast* Measurements, the LCMS-8030 Provides Reliable and Reproducible Data

Shimadzu's innovative technology overcomes common issues such as loss of sensitivity, poor reproducibility, and cross talk. The LCMS-8030 delivers reliability even while performing *Ultra Fast* MRM transitions and polarity switching.

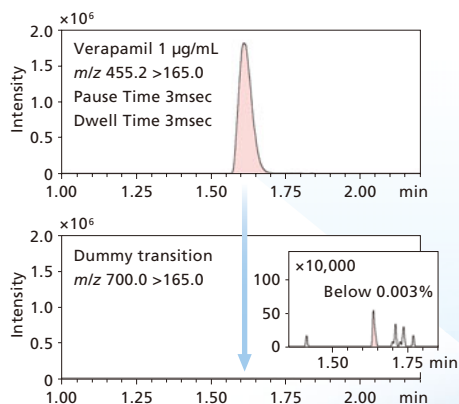
Robustness

The LCMS-8030 is a workhorse system designed to deliver long-term stability and reliable data. The proven ionization source originally developed on Shimadzu's single quadrupole mass spectrometer instrument minimizes instrument downtime. Chemically resistant ion optics provide consistent performance between maintenance intervals.

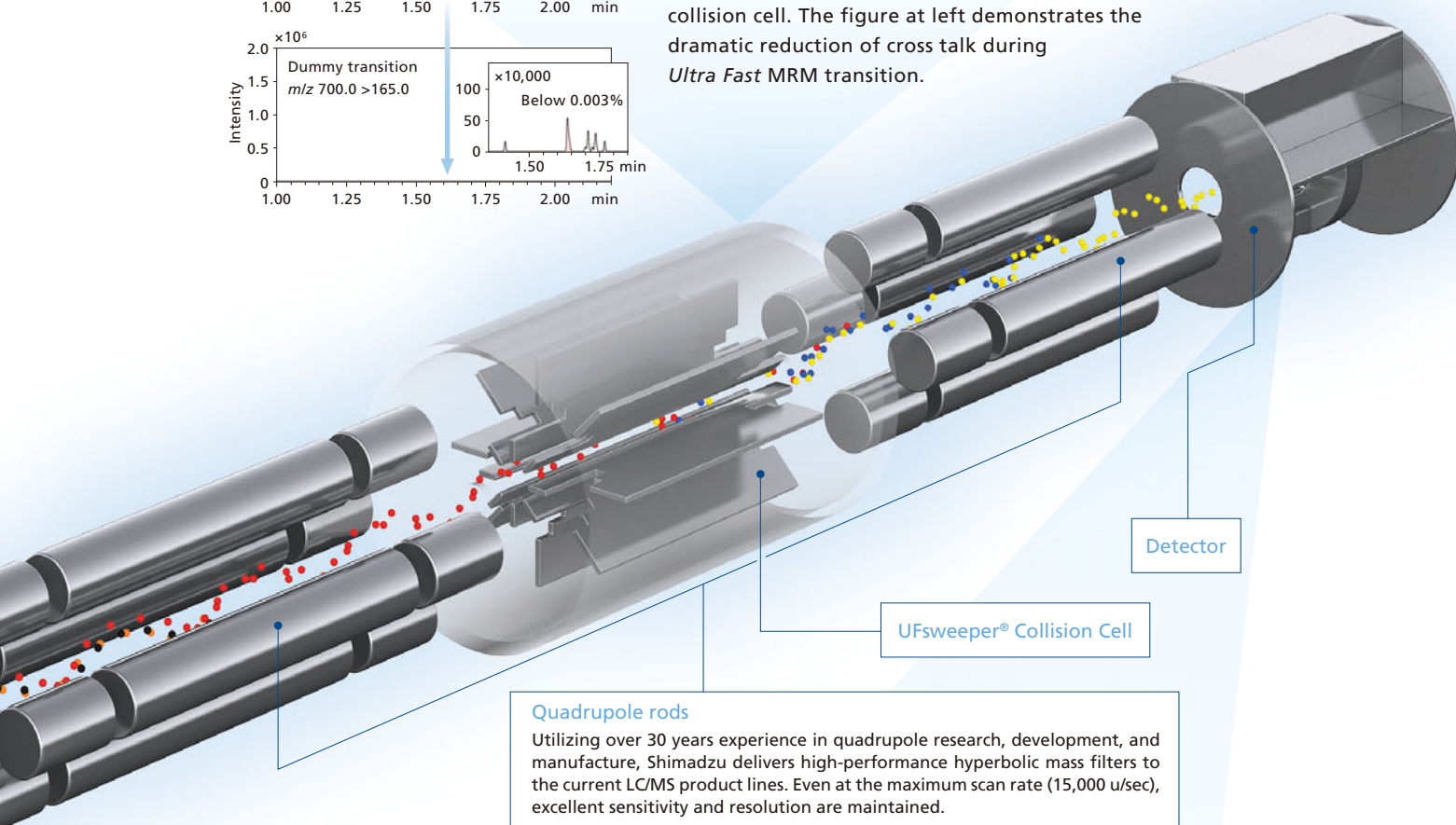
The graph at right proves the robustness of the LCMS-8030. A 10 ppb pesticides mixture was spiked into tomato extract. 1400 individual 1 μ l aliquots were injected over a period of 2 days. The result is an outstanding 2.19% reproducibility.



UFSweeper® Technology



UFSweeper® technology dramatically reduces cross talk, a common problem associated with shorter dwell times. In multiple reaction monitoring (MRM), cross talk leads to poor quantitative results. In the LCMS-8030, UFSweeper® technology efficiently accelerates residual ions out of the collision cell. The figure at left demonstrates the dramatic reduction of cross talk during *Ultra Fast* MRM transition.



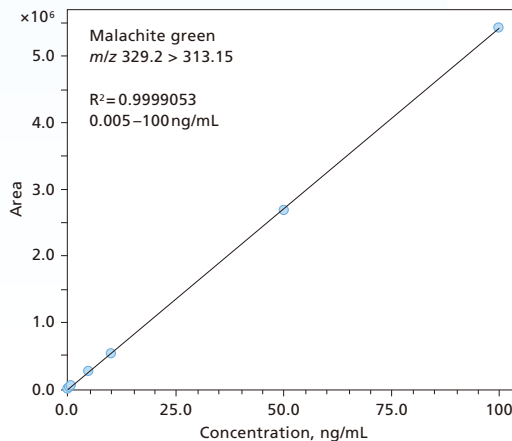
Quadrupole rods

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

Excellent Linearity with Wide Dynamic Range

Ultra Fast analysis coupled with a wider dynamic range has been achieved with an *Ultra Fast* pulse-counting detector and conversion dynode system. 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



LCMS-8030
Triple Quadrupole Mass Spectrometer

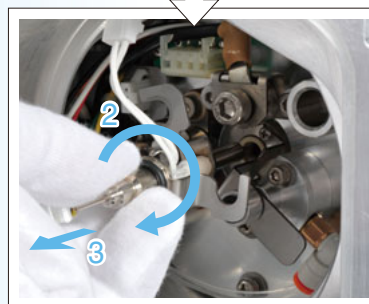
Point
3

The Strength of a Single-vendor Solution Results in Seamless Operation

Obtain Confident, High-Quality Data

Minimize Instrument Downtime with Easy Maintenance

With the LCMS-8030, maintenance has never been simpler or more accessible. The robust design of the LCMS-8030 allows maximum uptime and results in a system that can handle the most complex matrices. Easy maintenance of the desolvation line without breaking vacuum minimizes instrument downtime.



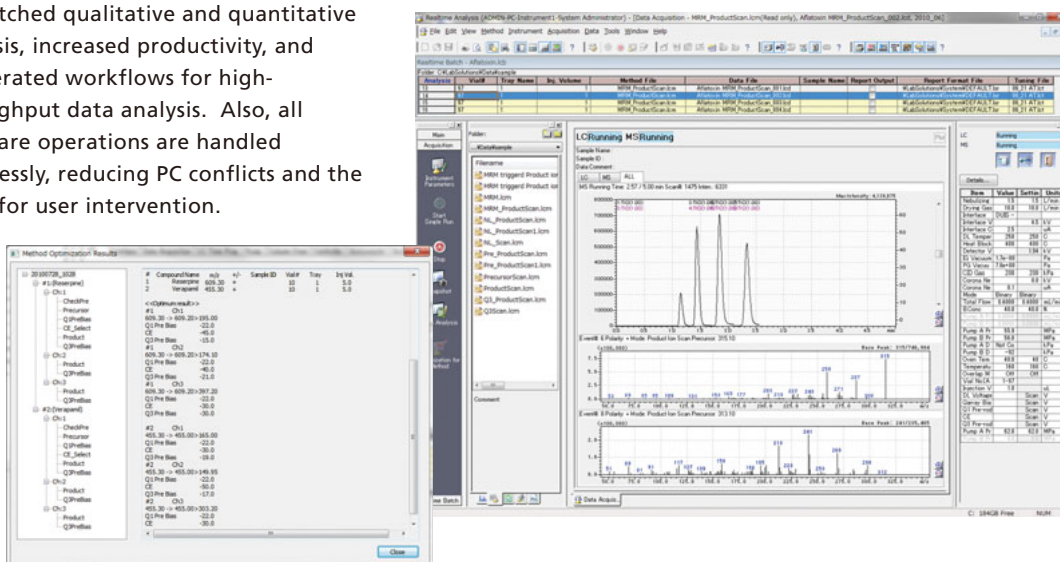
DL (Desolvation Line)

Easy Maintenance Identical to the LCMS-2020

Strength of a Single-vendor Solution

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.

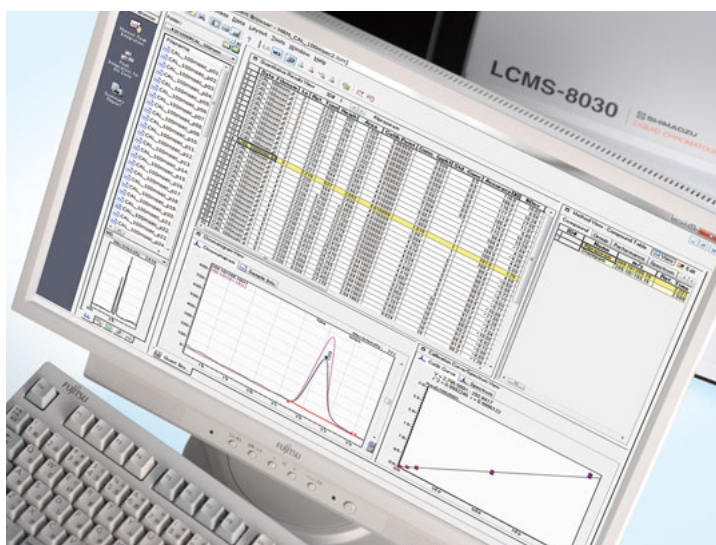
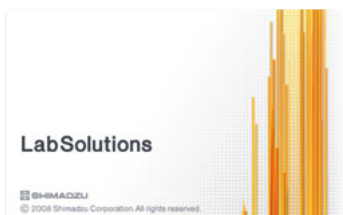


Facilitating MRM Optimization

With the LCMS-8030's high-speed capability, MRM optimization can be performed on a very narrow chromatographic peak delivering reproducible product ion spectra and an optimum MRM transition for every compound.

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.



Combined Excellence An Invincible Combination with the Shimadzu Nexera UHPLC

The high-speed capabilities of both Nexera and LCMS-8030 reduce your analysis time.



The Combined Performance of Nexera and LCMS-8030 Reduces Analytical Cycle Time

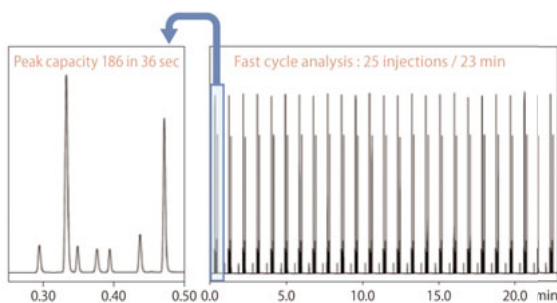
Nexera

- 130MPa enables *Ultra Fast* chromatography and ultra high resolution.
- Ultra high-speed injection cycle times
- Near-zero carryover without rinsing

LCMS-8030

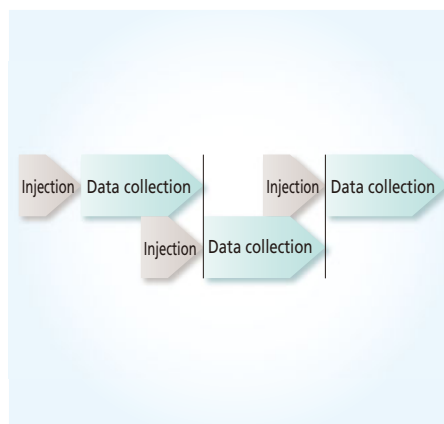
- 1 msec dwell time and pause time
- 15 msec polarity switching speed
- No ion intensity loss even at high-speed measurement due to UFsweeper® technology

Combining *Ultra Fast* analysis and Ultra high resolution

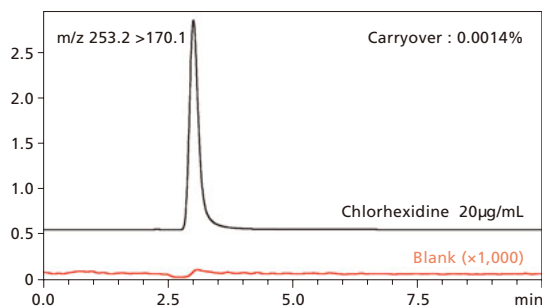


Both higher pressure tolerance across a wide flow rate range and *Ultra Fast* sample injection capability provided by the Nexera UHPLC yield better chromatographic resolution in a shorter timeframe.

Overlapping Injection



Near-zero Carryover



The Nexera SIL-30C autosampler design yields exceptionally low carryover. The overlaid chromatogram demonstrates the lowest carryover even in the absence of optional rinsing steps.



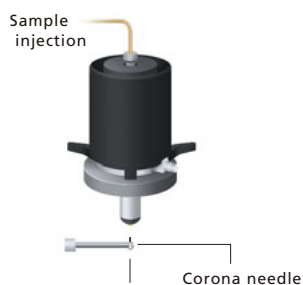
LCMS-8030

Main unit	Model	LCMS-8030
	Mass range	<i>m/z</i> 10 to 2000
	Sensitivity	ESI positive: 1 pg Reserpine, S/N>200 (RMS)
	Resolution	R < 0.7 FWHM
	Applicable flow rate	ESI: 1 uL/min to 2 mL/min
	Scan speed	Max 15,000 u/sec
	Polarity switching time	15 msec
	MRM transition speed	Max 500 channels / sec
Software	Workstation	LabSolutions LCMS Version 5.4 for LCMS-8030
	Operation system	Windows 7
	Instrument control	HPLC (Prominence and Nexera series) LCMS-8030 and interface
	MS acquisition mode	Scan (Max 512 events), SIM (Max 512 events x 32 channels)
	MS/MS acquisition mode	MRM (Max. 512 events x 32 channels) Product ion scan (Max 512 events) Precursor ion scan (Max 512 events) Neutral loss scan (Max 512 events)
	Auto-tuning	Possible to optimize sensitivity and resolution in both positive and negative ionization modes as well as mass calibration
Site requirements	Temperature	18 to 28 degrees C
	Humidity	40 to 70% (No condensation)
	Dimensions	W1180 mm x D530 mm x H560 mm
	Weight	130 kg
	Power supply	MS main unit: Single phase AC 230V 15A (50/60Hz)
	Gas	Nitrogen gas: Purity greater than 97%, Maximum consumption 25L/min Argon: Purity greater than 99.99% as CID gas

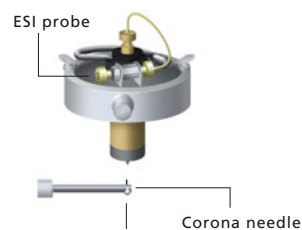
Optional Ion Source

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

APCI-8030



DUIS-8030





JQA-0376

Founded in 1875, Shimadzu Corporation, a leader in the development of advanced technologies, has a distinguished history of innovation built on the foundation of contributing to society through science and technology. We maintain a global network of sales, service, technical support and applications centers on six continents, and have established long-term relationships with a host of highly trained distributors located in over 100 countries. For information about Shimadzu, and to contact your local office, please visit our Web site at www.shimadzu.com



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