



Agilent 6400 Series Triple Quadrupole LC/MS

# Breakthrough sensitivity— now routine for your lab

The Measure of Confidence



**Agilent Technologies**

## Agilent 6400 Series Triple Quadrupole LC/MS

# Unprecedented sensitivity to improve your results—every day

Whether you choose the robust, workhorse 6410, or the breakthrough 6460, you can expect unmatched sensitivity, productivity, and value from Agilent's 6400 Series Triple Quadrupole LC/MS systems.

A proven performer, the 6410 delivers femtogram-level limits of detection, Agilent reliability, and lab-friendly ease of use—all at a surprisingly attractive price.

The 6460, with Agilent Jet Stream thermal gradient focusing, improves detection limits by more than six-fold, breaking the femtogram sensitivity barrier for many compounds. The clear choice for today's most demanding applications, the 6460 provides maximum sensitivity for the analysis of pharmaceutical compounds, trace-level environmental or food contaminants, metabolites, and biomarkers.

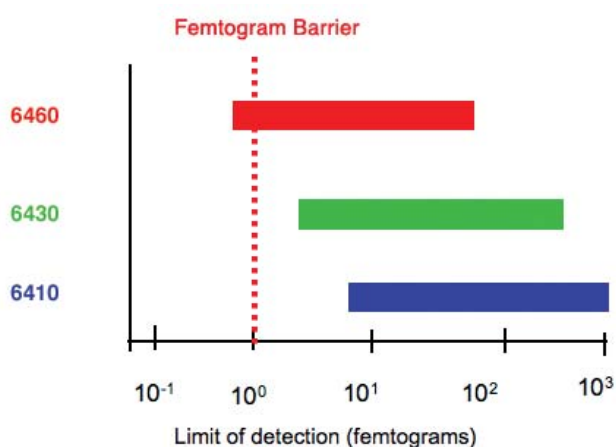


## Lower your limits of detection and quantitation

There are many ways to measure sensitivity, but only one that really counts: in your lab, with your samples. That's why every Agilent triple quadrupole system meets rigorous installation specifications—your assurance that you're getting real sensitivity you can use to improve every analysis, every day.

- **Femtogram sensitivity—regardless of application.** Maximized ion generation and transmission across a broad mass range ensure the lowest limits of detection and quantitation for the widest range of sample types.
- **Fast, multi-analyte quantitation.** Fast MRMs (multiple reaction monitoring) enable hundreds of compounds to be analyzed per-injection using MRM rates of 150 per second or faster.
- **Highest sensitivity in class.** With Agilent Jet Stream thermal gradient focusing technology for conventional flow separations or HPLC-Chip/MS for nanoflow separations, the 6460 provides best-in-class sensitivity for a wider range of applications.

- **Optimal quantitation.** Agilent's MassHunter Optimizer software automatically determines analyte transitions and optimal instrument settings for highest sensitivity. Innovative dynamic multiple reaction monitoring (MRM) software automatically creates and updates a table of ion transitions based on compound retention times. This further simplifies method development and ensures consistent ion statistics for the best possible quantitative data.
- **Upgraded performance for the 6410.** To meet changing analytical requirements, the 6430 is enhanced with a high-sensitivity upgrade that doubles overall sensitivity.



**Improved limits of detection.** The Agilent 6460 offers outstanding performance for most assays. The new 6460 system has dramatically improved femtogram sensitivity for your most demanding quantitative applications. Detection limits are shown here as a range, representing the natural spread in ionization/fragmentation efficiency for polar and non-polar compounds.

## Boost your lab's productivity

Agilent 6400 Series systems give you the acquisition and data analysis speed you need to take full advantage of the fast separations provided by Agilent's 1200 Series LC systems. With a proven track record for precision, performance and reliability, the 1200 Series LC Systems are seamlessly integrated with the Agilent 6400 Series Triple Quads to deliver exceptional results—routinely.

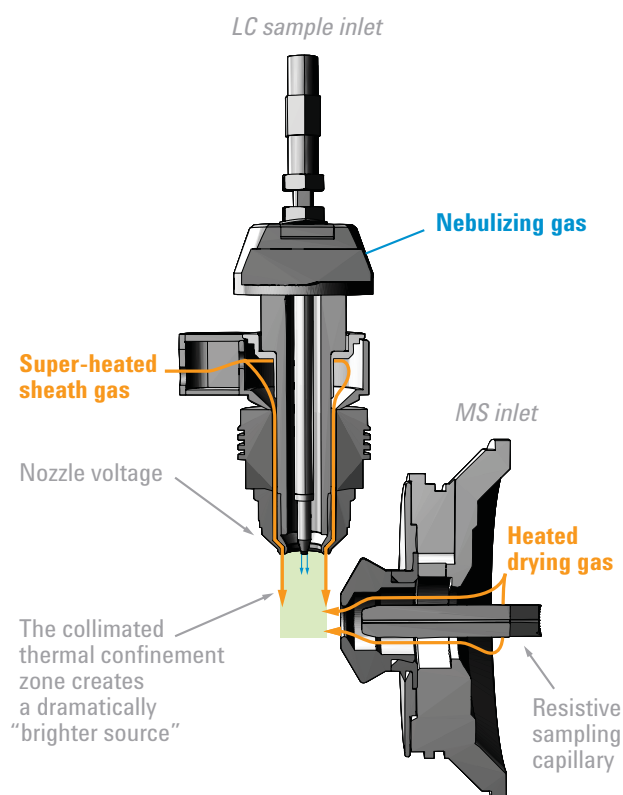
- Robust, reliable hardware platform and advanced automation allow 24/7 unattended operation.
- New, patented Poroshell separation technology delivers sub-two micron column performance with lower pressures, enabling confident 24/7 operation even when analyzing troublesome plasma samples.
- True high-throughput analysis with as little as six seconds between injections lets you analyze one 96-well plate in ten minutes—more than one hundred plates per day.



To learn more about the Agilent 6400 Series Triple Quadrupole LC/MS systems, visit [www.agilent.com/chem/qqq](http://www.agilent.com/chem/qqq)

# Relentless triple quadrupole innovation

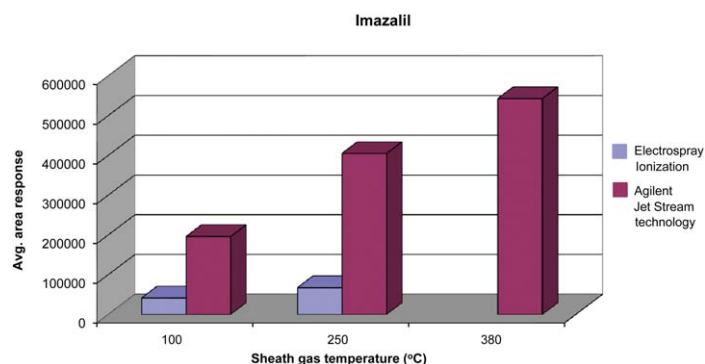
In just two years, the 6400 Series has provided analytical chemists and researchers with many enhancements which have provided huge performance gains—dramatic sensitivity improvements, much faster polarity switching, faster and more MRMs in a method using either time segments or scheduling, and automated method optimization. We will continue to improve our triple quad instruments to keep you at the forefront of analytical science.



**Agilent Jet Stream thermal gradient focusing technology is an excellent example of Agilent innovation.** Available on the 6460 Triple Quad, this technology enhances nebulization and desolvation and reduces ion dispersion at conventional LC flow rates, delivering many more ions to the mass spectrometer, while simultaneously reducing the number of neutral solvent clusters. The result is stronger signals with lower RSDs at the limit of detection.

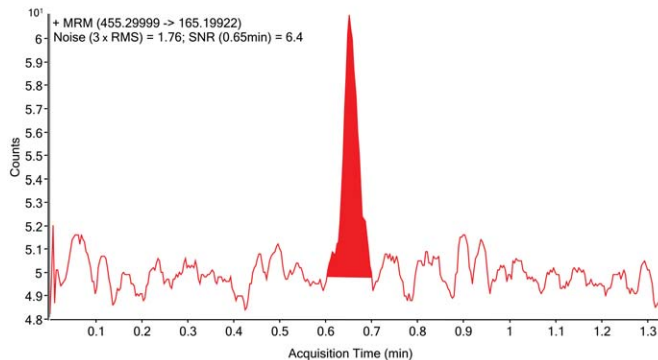
The 6460 combines Agilent Jet Stream technology with improved ion optics and vacuum system innovations to achieve breakthrough sub-femtogram sensitivity. These innovations include:

- **Agilent Jet Stream thermal gradient focusing technology** dramatically enhances sensitivity.
- **High-mass quadrupoles and precise RF control** improve performance across the mass range.
- **A resistively coated sampling capillary** enhances ion transmission and enables rapid ion polarity switching with minimal ion losses.
- **A high-capacity vacuum system**, with a second turbomolecular pump, increases conductance throughout the mass analyzer, maximizing ion transmission and improving sensitivity.
- **Agilent's advanced hexapole collision cell**, eliminates background noise and cross-talk, enabling the high sensitivity required for accurate quantification at low levels.



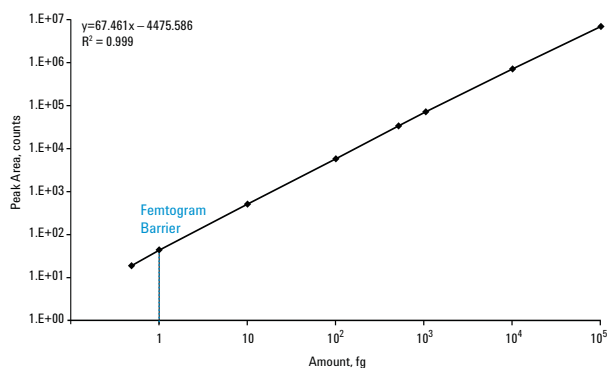
**Eleven pesticides were evaluated using the 6460 triple quadrupole with Agilent Jet Stream technology versus typical electrospray ionization.** For imazalil, a signal enhancement of 8.1x was observed at sheath gas temperature 380°C. For the 11 pesticides, an average mean enhancement of 5.8x was observed. Electrospray ionization experiments were performed at varying drying gas temperatures.

# Real-world sensitivity



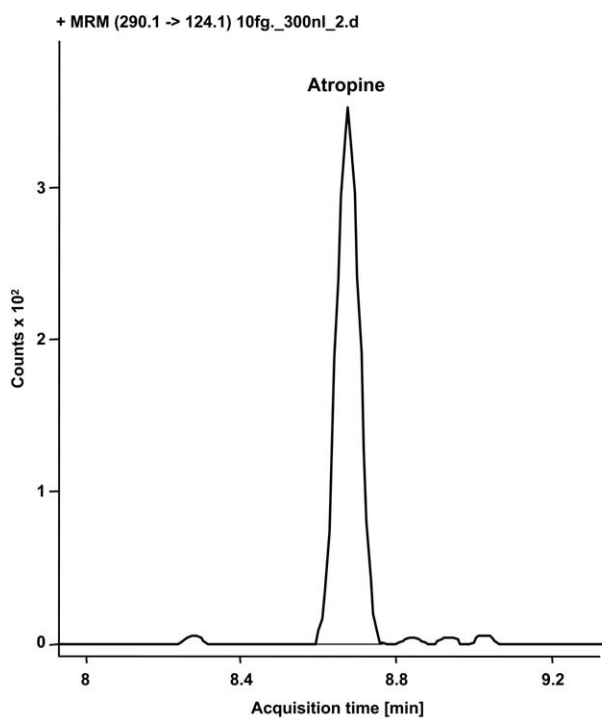
## Breakthrough sensitivity.

6460 triple quadrupole with Agilent Jet Stream technology breaks the femtogram barrier, shown here with 500 attograms of verapamil injected on-column, using unit resolution for both Q1 and Q3.



## Five orders of linearity.

6460 triple quadrupole with Agilent Jet Stream technology exhibits outstanding performance with 5 orders of linearity from sub-femtogram to 100 picograms of verapamil injected on-column.



Agilent 6410 equipped with HPLC-Chip/MS demonstrates excellent signal-to-noise for 10 femtograms of atropine injected on-column. The limit of detection is below the 1-femtogram barrier.

## HPLC-Chip/MS technology offers the highest sensitivity for low-level samples

Innovative HPLC-Chip technology. The Agilent 6400 Series is also fully compatible with our innovative HPLC-Chip/MS technology—a plug-and-play alternative to complicated nanoflow LC separations. The HPLC-Chip/MS with 6400 Series Triple Quad delivers robust, ultra-sensitive results from small sample volumes for peptide and small molecule quantitation.



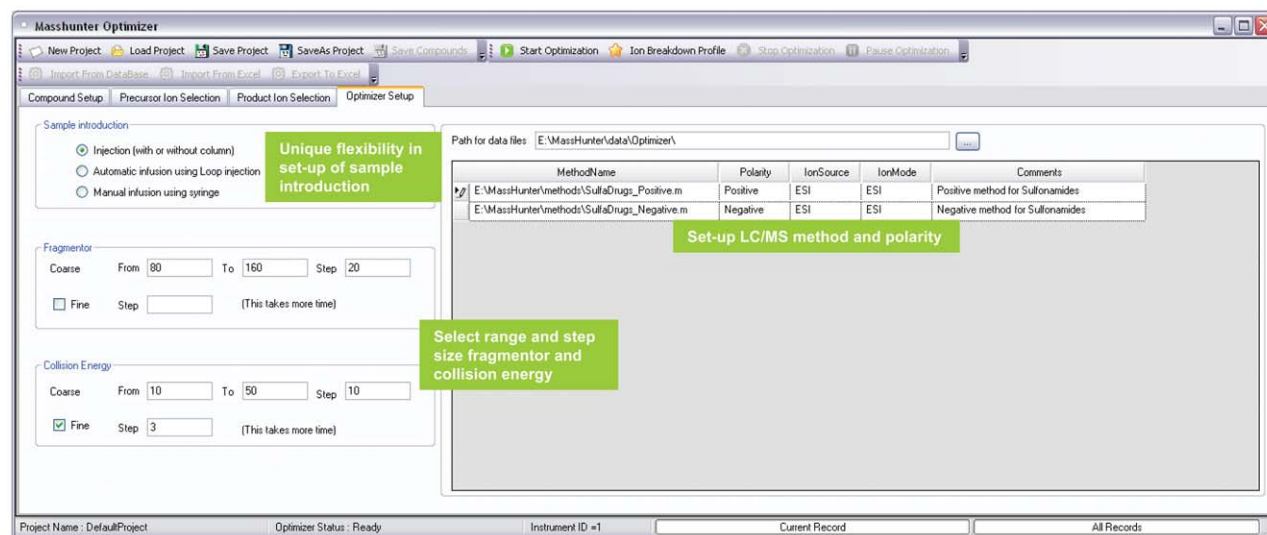
# Compound-centric software simplifies and speeds up every analysis

Agilent MassHunter Workstation software provides simplified instrument control, compound-centric data processing, and intuitive, workflow-driven navigation to shorten the path between raw analytical results and your final report.

## Simplified method development and improved sensitivity

Agilent MassHunter Optimizer software optimizes ion transitions and fragmentor and collision energies for both singly charged small molecules and multiply charged peptides, automatically determining the optimum conditions for each target analyte. With unique flexibility for infusion or for injection onto a column to achieve the maximum success for auto-optimization, MassHunter Optimizer software supports the following workflows:

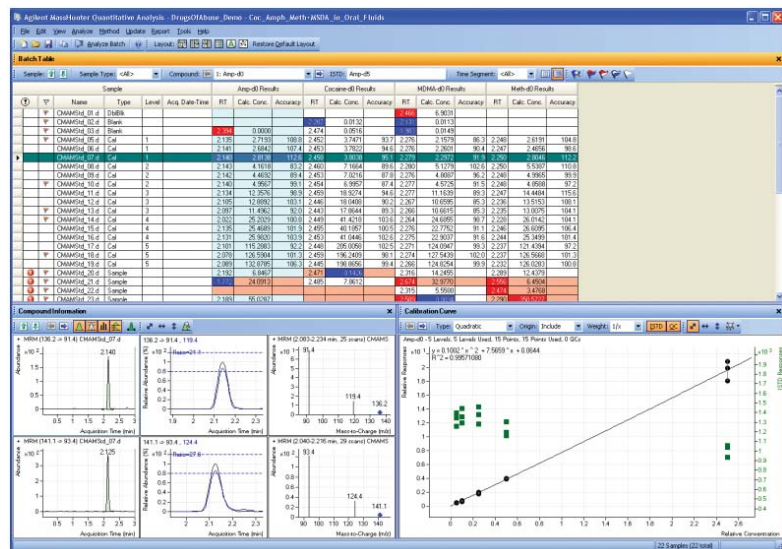
- DMPK and ADME/Tox applications.
- Food, environmental and forensic analyses.
- Biomarker validation with multiple MRMs for hundreds of peptides.



**MassHunter Optimizer software** automatically determines optimum ion transitions and fragmentor and collision energies for each target analyte to simplify method set-up and maximize method performance.

## Faster, easier quantitation

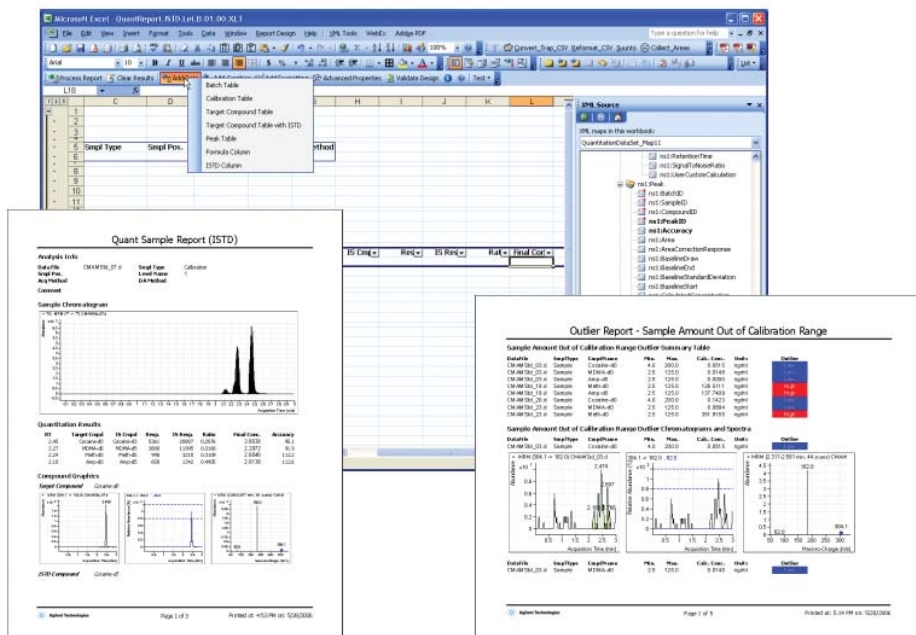
Agilent MassHunter Workstation software simplifies the processing and reporting of quantitative analyses. With an impressive suite of tools to facilitate accurate integration and reporting—including a unique parameter-less integrator—you can reduce MS data to meaningful quantitative results with a minimum of manual intervention.



**MassHunter Quantitative Analysis software.** Easy to learn and use, the software offers unprecedented productivity for large multi-compound batches. It includes helpful features such as batch-at-a-glance data review, a curve-fit assistant, dynamically linked results, outlier flagging, and customizable views.

## Fully customizable reports enable collaborative, better-informed decision making

Presenting critical information from your MS experiments helps your organization make important scientific or business decisions. MassHunter software stores all results in XML files and uses Microsoft® Excel and a custom macro add-in for reporting. A wide range of application-specific report templates or customized reports are available in this familiar Excel environment, including custom calculations to meet your needs.



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## Software and services that support the regulated lab

MassHunter software provides comprehensive tools to help you address all the requirements of GLP/GMP and 21 CFR Part 11 compliance. With built-in audit trails, multi-user login security, user permissions, and electronic signatures, the software makes it easier for your laboratory to operate in a regulated environment. Agilent also offers a complete suite of Installation and Operation Qualification services to shorten the time between installation and running critical samples.

## Lower your LODs and LOQs and boost your lab's productivity too

If your lab needs to analyze trace organic compounds or peptides in complex matrices—quantitating drug metabolites, measuring pesticide levels in foods, or monitoring contaminant levels in ground water—take advantage of the unsurpassed sensitivity and robust performance of Agilent's 6400 Series Triple Quadrupole LC/MS family.

### For more information

#### Learn more:

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