



Agilent 6000 Series LC/MS

Clearly better LC/MS solutions

Our measure is your success.

products | applications | software | services



Agilent Technologies

Agilent: the clearly better choice for qualitative and quantitative LC/MS.

If you're looking for more sensitive target compound analysis and the confident identification of unknowns, take a close look at Agilent's comprehensive LC/MS portfolio. With over 40 years of innovation and groundbreaking contributions to MS technology, we deliver everything you expect from a mass spectrometry leader:

- **A broad portfolio of industry-leading LC/MS platforms**—single-quad, triple-quad, TOF, and Q-TOF
- **Leading HPLC and UHPLC instruments and columns** for an exact match with your lab's analysis needs and your budget
- **Outstanding data quality** for confident results
- **Easy to use, high-productivity MassHunter software** to help users achieve expert results faster
- **24/7 Agilent reliability** to maximize your lab's uptime and productivity
- **The industry's widest range of ionization sources**—all of them easily interchangeable—so you can match ionization mode and instrument to your compounds of interest

To ensure superior results—and maximum value—Agilent offers a unique combination of best-in-class HPLC and UHPLC technology, exceptional MS spectral quality, comprehensive data analysis tools, and optimized, single-source workflow solutions that address a full range of qualitative and quantitative applications. You'll find us right at the center of key applications such as:

- **Environmental analysis**
- **Food safety analysis**
- **Biomolecule analysis**
- **Metabolite identification**
- **Proteomics**
- **Metabolomics**
- **Pharmaceutical and biopharmaceutical QA/QC**
- **Drug discovery and development**

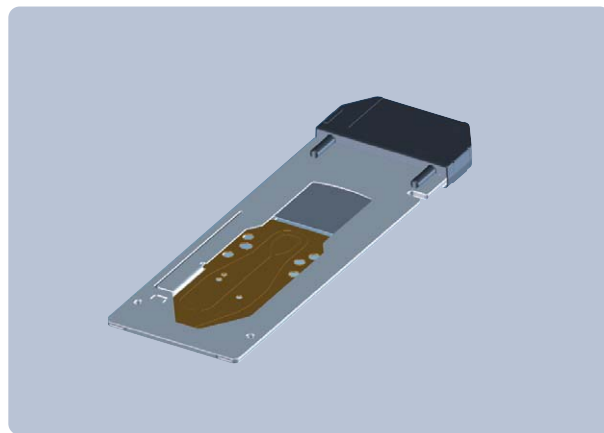


Clearly better together. Agilent MS platforms unlock the full power of Agilent's advanced separation technologies. Faster, more sensitive, higher resolution separations give you less ion suppression—and more identified features in complex samples, more confident identification of unknowns, and more accurate quantitation.

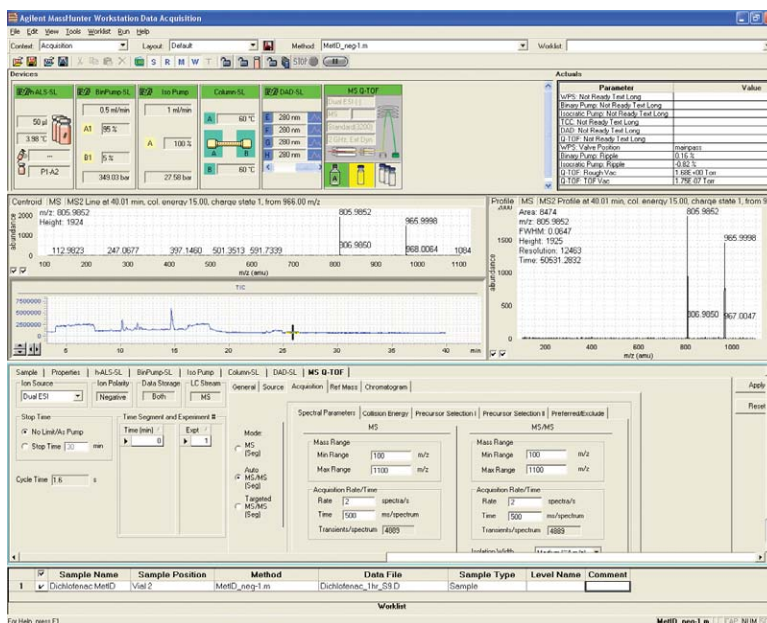
Ultra-high performance LC/MS: faster separations, better data, higher productivity.



Industry-leading HPLC and UHPLC separations enhance results and boost your productivity. Agilent 6000 Series LC/MS systems integrate seamlessly with our 1290 Infinity LC to deliver exceptional results—routinely. In fact, Agilent MS instruments are the only systems that can accurately capture the unmatched throughput of Agilent’s ultra-fast UHPLC separations. (Page 6)



Novel HPLC-Chip technology. The Agilent 6000 Series LC/MS systems are also fully compatible with our innovative HPLC-Chip technology—a plug-and-play alternative to complicated nanoflow LC separations. HPLC-Chip/MS systems deliver robust, ultra-sensitive results from small sample volumes. (Page 6)



Comprehensive MassHunter software provides a single acquisition platform for Agilent TOF, Q-TOF, and triple-quad LC/MS instruments. It also provides identical control for all Agilent HPLC and UHPLC modules, differing only in analyzer-specific MS parameters. (Page 7)

Unprecedented performance and proven reliability, day-after-day



Agilent 6100 Series Single Quadrupole LC/MS systems put the sensitivity, selectivity, and information content of mass spectrometry for large and small molecule analysis into an amazingly compact package.

From routine QC to research-level applications, Agilent 6100 Series Single Quadrupole LC/MS systems deliver superior MS data quality in an easy-to-use, space-saving package. With configurations to fit all budgets, the industry's most popular single-quad LC/MS complements your existing LC detectors and integrates seamlessly with Agilent's ChemStation LC control. The 6100 Series Single Quadrupole LC/MS provides complementary information to ultraviolet diode array detection (UV-DAD).

- **Faster acquisition speeds** let you take full advantage of the higher throughput of today's faster UHPLC chromatography along with 10,000 amu/second scanning.
- **Ultra-fast ion polarity switching** lets you obtain both positive and negative spectra (up to 20 spectra/second), providing maximum information from a single injection—essential for second-wide UHPLC peaks.
- **Faster injection-to-injection cycle time**—less than 10 seconds—lets you run more samples per hour.
- **Single-quad data can be converted into MassHunter data file format** for automatic compound confirmation and quantitation with the MassHunter software.

Clearly better sensitivity gives better results



The new standard for triple-quad sensitivity. Agilent 6460 with Agilent Jet Stream Thermal Gradient Focusing technology delivers unmatched sub-femtogram sensitivity.

Whether you choose the workhorse 6410B system, the new 6430, or the breakthrough 6460, you can expect industry-leading sensitivity, productivity, and value from Agilent's 6400 Series Triple Quadrupole LC/MS family.

The clearly better choice for today's most demanding quantitative applications, the 6400 Series Triple Quadrupole LC/MS offers unmatched sensitivity and reliability for trace analysis in food safety, environmental samples, biomarker validation, and ADME/DMPK studies for drug candidates.

- **Femtogram sensitivity.** Maximized ion generation and transmission across a broad mass range ensure low limits of detection and quantitation for the widest range of sample types.
- **Fast, sensitive MS/MS.** An innovative collision cell eliminates cross-talk and enables very fast MRMs with just 1 ms dwell times. This enables hundreds of compounds to be analyzed in a single run, essential for applications such as the analysis of pesticides in food.
- **Innovative dynamic MRM acquisition mode.** Up to 4,000 compounds can be quantified without the need to manually set up time segments.
- **Automated method development and optimization.** MassHunter Optimizer software automatically finds the best transitions for each compound and determines the optimal fragmentor voltage and collision energies.
- **Faster polarity switching (30 ms).** Ensure compatibility with even narrow UHPLC peaks. A list of MRM transitions of differing polarity can be monitored with sufficient speed to achieve reproducible peak areas for even a second-wide UHPLC peak.

The unmatched confidence of Ultra High Definition TOF technology



Ultra High Definition TOF technology brings together a number of proprietary engineering innovations to achieve TOF performance that measurably surpasses any other TOF system—and even rivals or exceeds more expensive FT-MS and Orbitrap mass analyzer technologies.

Whether you are confirming synthetic compounds, profiling biomarkers, identifying impurities, screening for pesticides, or characterizing intact proteins, the Agilent 6230 Accurate-Mass Time-of-Flight (TOF) LC/MS system delivers unmatched speed and performance in a compact benchtop instrument.

- **Sub ppm mass accuracy** improves confidence and reduces false positives.
- **Resolving power of 20,000** distinguishes desired compounds from interferences.
- **Data acquisition rates up to 20 spectra per second** ensure compatibility with fast chromatography and high-throughput workflows.
- **Up to five orders of in-spectrum dynamic range** reveals trace-level targets even in the presence of vastly more abundant compounds.
- **Low picogram on-column sensitivity** finds impurities or biomarkers at extremely low concentrations.
- **Accurate intact protein MW determinations**, in combination with MassHunter BioConfirm software, allow rapid QC of recombinant biotherapeutics.
- **Automatic tuning and automated use of an internal mass calibration sample** ensure consistent mass accuracy and reliable molecular weight confirmation.

Ultra High Definition MS/MS, uncompromised performance



The world's most sensitive Q-TOF. With the addition of Agilent Jet Stream Thermal Gradient Focusing and Ultra High Definition technology, the Agilent 6540 system delivers unsurpassed mass accuracy for unambiguous structural elucidation and target identification.

Through a number of technical advances, the Agilent 6538 and 6540 Ultra High Definition Q-TOFs achieve an unmatched combination of mass accuracy, mass resolution, sensitivity, dynamic range, and scan speed. Delivering best-in-class MS and MS/MS mass accuracy, the 6540 system gives you the capabilities needed to profile, identify, characterize, and quantitate drug targets, food contaminants, proteomics, or metabolomics samples.

- **Sub ppm mass accuracy** dramatically reduces uncertainty, improves database search scores, and molecular formula generation of unknowns, while minimizing false positives.
- **Enhanced resolving power of 40,000** gives you confidence that you are detecting all mass peaks of interest in complex samples.
- **Superior MS/MS sensitivity** helps you identify very low-abundance compounds at femtogram levels.
- **Dynamic range of up to five orders in-spectrum** improves detection of low-abundance compounds in the presence of higher-abundance components.
- **Scan rates up to 20 MS or 10 MS/MS spectra per second** provide excellent spectral quality for fast UHPLC and HPLC-Chip separations.

Clearly better together: your best LC/MS results start with faster, better separations.

The superior performance and productivity of your 6000 Series LC/MS starts with achieving fast, optimal separations. Agilent's 1290 Infinity LC System delivers on both counts. The system provides unprecedented, best-in-class UHPLC speed, resolution, and sensitivity—and better HPLC performance, too.

The breakthrough 1290 Infinity LC System is the ideal front end for any Agilent mass spectrometer and allows you to optimize your separations to the needs of your MS analysis. Take full advantage of UHPLC speed and use the 1290 Infinity LC System's unmatched peak capacity and resolution to eliminate co-elution and peak overlap.



ZORBAX RRHD 1.8 µm columns, available in popular ZORBAX bonded phases, deliver the resolution and peak definition required for critical LC/MS analyses, as well as robust, reliable performance over the extended operating range of the 1290 Infinity LC System.

An infinitely better LC platform for LC/MS. Because of its amazingly wide operating power range (from 1200 bar at 2 mL/minute to 800 bar at 5 mL/minute), Agilent's 1290 Infinity LC System is able to deliver faster separations without loss of resolution—plus unequalled flexibility, methods compatibility, and investment protection.



Easy-to-use Agilent HPLC-Chip: maximum sensitivity for low-level samples

Working seamlessly with the 1200 Series Nanoflow LC system, Agilent's revolutionary HPLC-Chip integrates the sample enrichment and separation columns of a nanoflow LC system with the intricate connections and nanospray tip used in electrospray mass spectrometry—all on a single, reusable microfluidic chip about the size of a microscope slide.

Solvent and sample delivery to the chip, high-pressure switching of flows, and automated chip loading and positioning in the MS source are accomplished by Agilent's HPLC-Chip Cube MS interface. An embedded RF tag tracks usage and operating parameters.

- High sensitivity ensures low-level sample fidelity
- Enhanced retention time reproducibility
- Narrower, better-defined chromatographic peaks help with confident MS identification
- Reusable chips are available with multiple functionalities to enable easy, interchangeable workflows with minimum downtime and maximum productivity

Agilent HPLC-Chip and Chip Cube interface.



MassHunter Workstation software: simplify and streamline your data analysis.

From instrument tuning to final report, Agilent's MassHunter Workstation software was designed to make all your MS analyses faster, easier, and more productive. A familiar, intuitive user interface—consistent across all Agilent MS platforms—enables comprehensive compound-centric data mining for qualitative applications and fast, reliable quantitation.

Software and services that support the regulated lab

MassHunter software provides comprehensive tools to help you address the requirements of GLP/GMP and 21 CFR Part 11 compliance for quantitative analysis. Agilent also offers a complete suite of installation and operation qualification services to shorten the time between installation and productive operation.

Complete integration with your applications and your workflows

Compound-centric data processing and intuitive, workflow-driven navigation shorten the path between acquiring raw analytical data and getting the answers you're looking for. MassHunter's Qualitative Analysis and Quantitative Analysis software modules have an easy-to-learn user interface, provide an unprecedented level of automation, and integrate seamlessly with other application-specific MassHunter software.

Mass Profiler Professional is a dynamic chemometrics software package designed specifically for mass spectrometry data. Using a combination of advanced processing capabilities and powerful statistical and mathematical models to analyze multiple MS data types, the software lets you easily find and identify significant differences between sample groups in metabolomics, proteomics, and other analytical projects.

Agilent Personal Compound Database and Library (PCDL) software lets you edit locally stored accurate mass with optional retention time (AMRT) databases and MS/MS spectral libraries, which can be used for targeted compound confirmation and unknown identification. Agilent provides content databases for endogenous metabolites (METLIN), pesticides, and forensics/toxicology. Users can also create and search custom databases and libraries.

ADME/DMPK analysis support is provided by the MassHunter Study Manager and Optimizer software modules, which provide for turnkey bioanalytical quantitation. MassHunter software can optionally be integrated with WATSON or other LIMS systems.

MassHunter BioConfirm software couples powerful feature finding and deconvolution algorithms with sophisticated sequence matching tools to enable fast, accurate characterization of proteins, synthetic peptides, nucleotides, and their variants.

MassHunter Metabolite ID software uses a wide range of sophisticated algorithms to exploit accurate mass MS and MS/MS data to both confirm expected metabolites *and* assist in identifying unknown metabolites.

Spectrum Mill for MassHunter Workstation quickly identifies proteins and peptides through fast database searches and provides automatic and manual match validation. The software supports label-free *and* stable-isotope-based quantitation strategies and has superior visualization and reporting capabilities.

Agilent Jet Stream Thermal Gradient Focusing technology shatters the femtogram barrier

This revolutionary technology—available on the 6460 Triple Quadrupole and new 6530 and 6540 Ultra High Definition Q-TOF systems—uses thermal gradient focusing to enhance nebulization and desolvation, delivering more ions to the mass analyzer while simultaneously reducing the number of neutral solvent clusters. This yields more precise and accurate quantitation at the lowest levels of detection.



Cross-platform technology adds to your productivity

All of Agilent's LC/MS platforms have a lot in common. They all share a consistent interface, so the learning curve is shorter and training cost is reduced. Other shared technology—such as the collision cell in the Q-TOF and triple-quad instruments—lets you set up MRM experiments on one instrument and simply transfer them to another. And interchangeable ion sources assure repeatable, consistent ion formation, no matter which platform you're working on.

New Application Kits for pesticides and toxicology help labs get on the productivity fast track.



Agilent's pesticide and toxicology kits have been designed to help you spend less time on setup and configuration and more time generating the highest quality results from new technologies. Customers report that they can save days or even weeks of typical start-up time and effort in the lab.

Choose Agilent LC/MS with confidence

Whatever your LC/MS needs, our integrated portfolio of instruments, applications, software, and industry-leading services can help your lab generate better results, faster than ever. From our rugged single-quad systems to our most advanced triple-quad and Q-TOF instruments, we're committed to giving you the performance you're looking for and the legendary reliability you expect from Agilent.

For more information

Learn more:

www.agilent.com/chem/lcms

Buy online:

www.agilent.com/chem/store

Find an Agilent customer center in your country:

www.agilent.com/chem/contactus

U.S. and Canada

1-800-227-9770

agilent_inquiries@agilent.com

Europe

info_agilent@agilent.com

Asia Pacific

inquiry_lsca@agilent.com

Research use only. Information, descriptions, and specifications in this publication are subject to change without notice. Agilent Technologies shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

© Agilent Technologies, Inc. 2010
Printed in USA January 15, 2010
5989-8625EN



Agilent Technologies