Advion

Over 25 Years of Mass Spec Experience

Mass Spectrometers Designed for Chemists

Compact. Fast. Easy. Versatile.

Advion.com

Compact Mass Spectrometry

With over 25 years of mass spectrometry and chemistry expertise, Advion has produced a family of compact mass spectrometers (CMS) designed for the chemist. The affordability, small size and ease-of-use makes them ideal for use directly at the chemist's bench, giving immediate answers and informed decisions instead of waiting in line at a central analytical service laboratory. Now every chemist can have a mass spec that works the same hours they do.

expression^{S} CMS

With electrospray (ESI) and atmospheric pressure chemical ionization (APCI) ion sources and a mass range of *m/z* 10 – 1,200 units, the expression^{S} is a versatile, compact mass detector designed with the chemist in mind.

Reaction monitoring

- For batch and flow chemistry
- Fast compound identification and purity determination
- Little or no sample preparation required with many novel sample introduction interfaces

Purification

For mass-directed fraction collection with all:

- Flash chromatography systems
- Prep-LC systems
- SFC systems

High-performance Mass Spectrometer for many other applications:

- Food safety and ingredients analysis
- Forensics
- Water purity
- Clinical Diagnostics

Size and Design Matter

- The first mass spec to fit in a fume hood; enabled by its patented atmospheric pressure ionization interface.
- All critical and commonly used components are located on the front of the instrument for easy access.
- Pump and source exhaust are bi-directional (left or right hand) to allow for optimal hood or bench location.
- Solvent-resistant exterior package.

expression^{L} CMS

With a mass range of *m/z* 10 - 2,000, the expression^{L} is the ideal mass detector for both chemical and biochemical applications.

- Natural products
- Peptides
- Proteins
- Oligonucleotides
- Polymers

Many biomolecules carry multiple charges with electrospray ionization so that even proteins of several tens of kDa can be measured with the *m/z* 2,000 range. Advion's proprietary deconvolution software algorithms provide fast and accurate determination of the molecular mass of multiply charged species.

Mass Spectrometry for Chemistry Students

Developed by Cornell Professor Emeritus, Jack Henion, Ph.D., along with leading chemistry departments, Advion offers a course curriculum focusing on key topics relevant to students interested in continuing down an academic path, as well as industry and government. The program of videos and lectures includes:

1. An Introduction to Mass Spectrometry
2. Direct syringe injection (Flow Injection Analysis)
3. Direct sampling probe (ASAP)
4. TLC Mass Analysis
5. LC/MS
6. Other liquid introduction mass spectrometry applications and techniques

Unrivalled Utility and Flexibility

The expression® family of compact mass spectrometers was developed with maximum versatility in mind. They allow users to switch rapidly between the many different sample introduction techniques required throughout the chemist's workflow; from simple direct probe analysis to ultra-high performance liquid chromatography and prep-scale purification.

ASAP®: Atmospheric Solids Analysis Probe

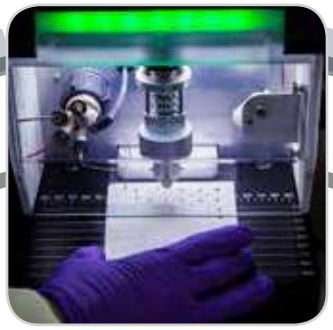


Plate Express™: TLC/CMS Mass Analysis of TLC spots

AVANT™ Chromatography Systems: (U)HPLC/CMS

iASAP: Direct Analysis of Air-Sensitive Compounds

High performance compact mass spec designed especially for chemists

Direct Injection (FIA)

vAPCI: Volatile APCI for Gas Analysis

Flow Chemistry Monitoring & Automated, Real-Time, Optimization

Purification by Flash, SFC, or Prep-LC/CMS

Touch Express™ Open Port Sampling Interface (OPSI)

The Industry's Broadest Range of Innovative Sampling Techniques

Advion provides an extensive range of innovative sample introduction systems that are fully integrated with the expression CMS to provide solutions for all the chemist's needs. From the simplest, fastest direct probe analysis requiring no sample preparation to ultra-high performance compound separation with state-of-the-art liquid chromatography systems.

Plate Express™ TLC Plate Reader

Plate Express provides a simple, automated means of obtaining mass spectra directly from TLC plates, combined with Advion's expression compact mass spectrometer creating a technique known as TLC/CMS. Using this technique chemists can quickly and confidently identify products even in complex mixtures without additional sample preparation.

- Mass analysis of spots in <1 minute, avoiding system bottlenecks
- Avoid the risk of overloading the mass spectrometer – TLC spots contain the ideal amount of sample for mass spectrometry
- Software controlled – spectra obtained within a few mouse clicks
- Simplify the process of obtaining spectra – ideal for multi-user labs

ASAP®: Atmospheric Solids Analysis Probe

The ASAP direct analysis probe provides fast, simple, reliable mass analysis of solid and liquid samples without the need for sample preparation. The chemist simply dips the probe in a liquid, or rubs it on a solid sample, and inserts it through a port directly into the ion source yielding results in seconds. Ideal for:

- Reaction monitoring
- Compound identification
- Food safety
- Forensics
- Natural products
- Tablets

AVANT™ HPLC & UHPLC Chromatography Systems

Advion's range of AVANT, high performance, liquid chromatography provides seamlessly integrated LC/CMS under the full control of Advion's simple, intuitive Mass Express software suite.

From the simplest manual injection HPLC to a fully automated, streamlined UHPLC system and everything in-between, the AVANT series can be configured to fit your analytical requirements and your budget.
The Advion AVANT series offers:

- HPLC and UHPLC
- UV and UV-Vis DAD
- Column oven
- Autosamplers with optional cooling
- Modular and stackable design
- High-pressure mixing with optional degassing

vAPCI: Volatile APCI Headspace & Gas-Phase Analysis

Volatile Atmospheric Pressure Chemical Ionization (vAPCI) combined with Advion's expression CMS is a fast and easy method to measure gases such as headspace and breath. The vAPCI provides a sample inlet linked by a heated transfer line to an APCI ion source, where the sample is ionized by corona discharge. vAPCI enables chemists to:

- Analyze Volatile Organic Compounds (VOCs) directly in the gas phase
- Solvent-free APCI allows a greater range of compounds to be ionized compared to traditional APCI ion sources

iASAP: Inert Atmospheric Solids Analysis Probe

The inert ASAP (iASAP) is a modification of the ASAP technique, allowing easy sampling of air-sensitive compounds, such as metal catalysts and organometallics, from reactions that are carried out in a glove box or Schlenk line to prevent oxidation. The iASAP probe is designed to provide:

- Safe transfer of air sensitive samples to CMS at the bench
- Mass analysis without sample oxidation
- Answers in <30s
- No sample preparation required

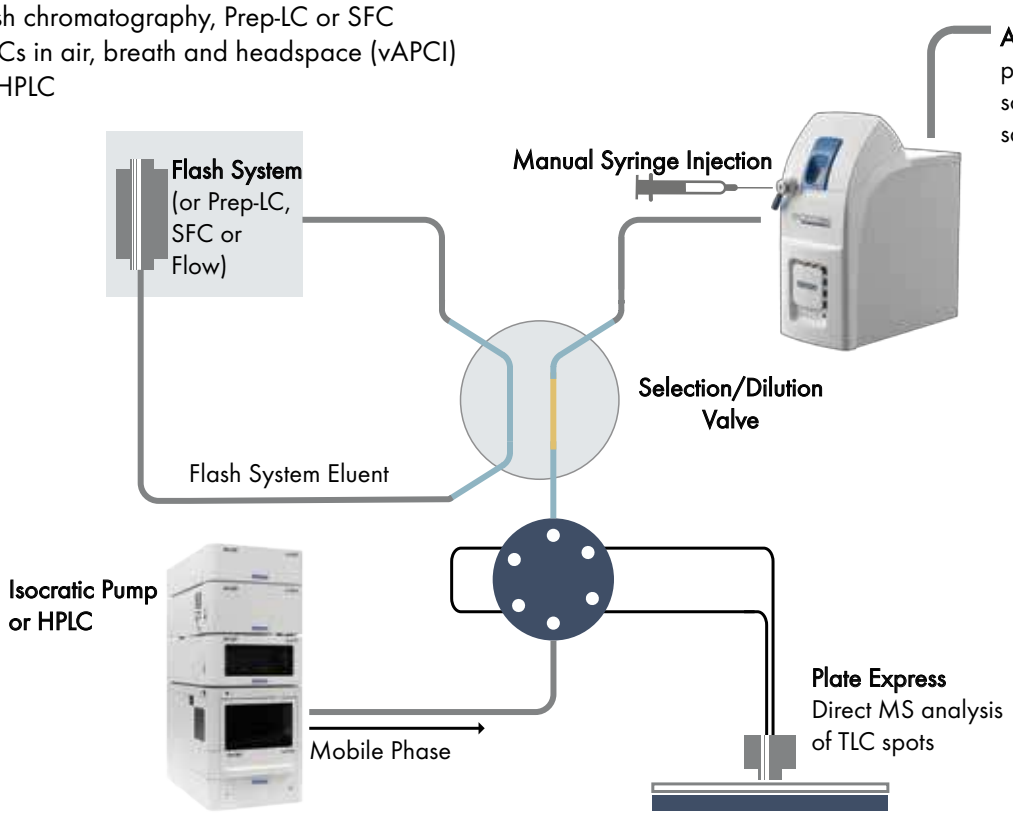
Maximize Your Results and Return on Investment

Simultaneous integration with several techniques

Placed at the center of the chemist's workflow, the expression CMS can provide critical information for many processes; reaction monitoring, separation, purification, and impurity determination.

It can be integrated with several techniques at once and the chemist can move effortlessly between these techniques in seconds without the need to re-plumb or re-configure the system e.g.:

- Manual syringe injection
- Direct analysis probe (ASAP and iASAP probes)
- TLC/CMS with the Plate Express
- Flash chromatography, Prep-LC or SFC
- VOCs in air, breath and headspace (vAPCI)
- (U)HPLC



Combined flash chromatography, TLC, (U)HPLC and manual injection interface. No re-plumbing necessary.

A Complete Benchtop Solution

The expression CMS, Plate Express, plus Direct Injection interface - all at the bench.

Full-Feature & Easy-to-Use Software for Simplified Operation and Compound Identification

Advion's Full Suite of software products for the expression CMS

Advion offers a full-range of software options for detection to quantitation and more, including:

Mass Express

A user-friendly, intuitive software platform for instrument control and data acquisition.

Quant Express

Quant Express is an add-on to the Mass Express software suite that provides a complete, detailed quantitation application.

Data Express

A full feature data processing package to interpret and present mass spectral and chromatographic information in the clearest form using the fewest possible steps.

LC Express

LC Express provides a seamless interface with all Agilent chromatography modules. This, along with Clarity® compatibility, provides integration with nearly all available LC systems.

CheMS

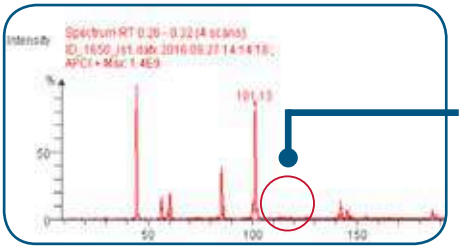
The CheMS user interface allows users to quickly select the workflow and type of compound they wish to analyze in just a few clicks of the mouse, automatically optimizing the ion source and data acquisition parameters.

- Single click an instrument icon to set-up, and switch between, a range of sample introduction techniques
- Simplified interpretation of mass spectra with automatic identification of peaks related to your compound of interest
- Works alongside Mass Express for fully capable and versatile instrument control and data processing

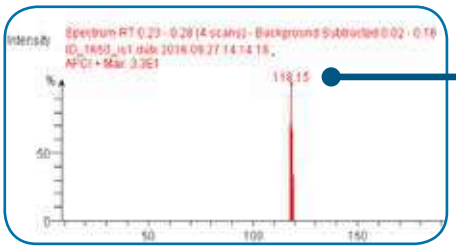
Peak Express™: See More

Introducing a revolutionary new way to view mass spectral data (US patent 9,779,922). Peak Express calculates the relative change of signals and will detect the elution of even the smallest peak against a much larger background of chemical noise, and tell you the *m/z*.

- Find your compound even in dirty matrices
- Find your compound without knowing its *m/z* in advance.
- Find minor components in complex mixtures
- Acquire XIC-quality data while collecting the entire mass range



Cannot see your compound because of chemical noise



Only your compound

Specifications and Installation Considerations

Specification

Ion Source	ESI, APCI or APCI/ASAP
Polarity	Positive & negative ion switching in a single analysis
Flow Rate Range	ESI: 10 µL/min to 1 mL/min APCI: 10 µL/min to 2 mL/min
m/z Range	expression^{S} *m/z* 10 to 1,200 expression^{L} *m/z* 10 to 2,000
Acquisition Speed	10,000 *m/z* units/sec
Sensitivity (ESI)	10 pg reserpine (FIA - 5 µL injection at 100 µL/min) 100:1 S/N (RMS) with SIM of *m/z* 609.3.
Accuracy	+/- 0.1 *m/z* units of the entire acquisition range
Stability	0.1 *m/z* units at *m/z* 1,200 over 12 hour period at operating temperature of 20°C +/- 1°C
Polarity Switching Speed	50 ms
Dynamic Range	4.5 orders of magnitude

System/Space Requirements

Gas Supply	60 psi, >98% pure Nitrogen
Gas Consumption	< 10 L/min
Solvents	LC/MS-grade solvents
Weight	70 lb (32 kg)
Dimensions (HxWxD)	26 x 11 x 22 in (66 x 28 x 56 cm)
Line Voltage	100 - 240 VAC
Line Frequency	47 - 63 HZ
Power Consumption	915 VA (including PC)
Temperature	21°C +/- 3°C +/- 1°C for optimal performance
Storage & Transport Temp	-20°C to +60°C

About Advion:

Founded in 1993, Advion became one of North America's largest bioanalytical Contract Research Organizations, operating over 60 high performance LC/MS/MS systems in 2 facilities across the USA. This unrivalled expertise in integrating the power of chromatography and mass spectrometry was further leveraged a decade ago when the company expanded into making the world's premier ion source (the TriVersa NanoMate®) for the most demanding applications in partnership with leading mass spec vendors across the globe. In 2007, Advion launched a microfluidic flow synthesis system for radiochemistry. For the last 10 years, Advion has invested heavily in the development of the expression® CMS in partnership with academic and industry collaborators. We will continue to expand our range of space-conscious, performance-oriented and affordable mass spec, ion source and synthesis solutions in a global and customer-focused manner.

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