# ExionLC 2.0 and 2.0+ systems

## Precision, analytical, high-flow LC technology

The ExionLC 2.0 and 2.0+ systems deliver the reproducibility, reliability and carryover performance your workflow demands– injection to injection, batch after batch.

The ExionLC 2.0 system has full integration, control and compatibility with the SCIEX mass spectrometer portfolio. Bringing the speed and precision you expect from SCIEX, the ExionLC 2.0 system provides a complete solution to meet the challenges and opportunities your laboratory faces.


SCIEX

The Power of Precision

# SCIEX innovation with extraordinary world leading precision

The ExionLC 2.0 and ExionLC 2.0+ systems are built on the same legacy of innovation as all SCIEX products, delivering precision and robustness with the assurance of quality and support you would expect from the leader in the quantification of molecules.

**Integrated software**
- Fully integrated with SCIEX OS software
- Direct control and enhanced layout
- Analyst software compatibility

**UHPLC pumps**
- Automatic purging capability
- Integrated 4-channel degasser, standard
- Integrated solvent selection valve, standard

**Environmentally friendly**
- Phenomenex SecurityCap system
- Lab air quality/safety
- No solvent vapors

**Switching valve**
- Optional switching valves
- Enables easy switching between multiple columns

**Optical detector options**
- Fully integrated with the MS solution
- Full range of detector options from multi-wave to diode-array detection (DAD)

**Optional wash system module**
- Enhanced carryover management
- Ultimate flexibility for challenging applications

**Autosampler**
- Excellent injection linearity and reproducibility
- Multiple injection options
- Scalable Injection volumes 0.5 - 1,000µL
- Precise temperature control
- Simple to use and maintain

**Column oven**
- Column oven included, standard
- Temperature control down to 5°C
- Store up to 8 columns

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# Optimal performance, ultimate flexibility

### The ExionLC 2.0+ system delivers advanced precision for challenging applications

For liquid chromatography separations, this fully-configured UHPLC system is designed to deliver up to 5 mL/min at 18,000 psi with ease. From method development to routine projects, the ExionLC 2.0+ system will meet your needs.

### The ExionLC 2.0 system is an ideal solution for a wide range of workflows

Configured with a high-pressure binary pump capable of 12,500 psi, integrated four-channel degasser and solvent selection valve as standard, the ExionLC 2.0 system is an affordable solution for most applications.

## Optional wash system

The wash system provides reassurance that when those overloaded, contaminated and really tricky samples are presented for analysis, the system purges and aggressively washes the key components within the system to reduce the potential for carryover into the next sample. With the flexibility to wash inside the autosampler tubing and perform an aggressive wash of the outside of the sample needle, the system uses up to 8 different solvents at different flow rates, with the added capability to perform an autosampler valve rinse, if required.

| KEY SYSTEM FEATURES | EXIONLC 2.0+ system | EXIONLC 2.0 system |
|---|---|---|
| HPLC/UHPLC performance | 18,000 psi (1240 bar) | 12,500 psi (860 bar) |
| Flow rate range | 0.001 to 5 mL/min (0-1240 bar) | 0.001 to 2 mL/min (5-860 bar), linear reduction to 400 bar from 2.01 to 5 mL/min, 5.01 to 10 mL/min (5-400 bar) |
| Max flow rate | 5 mL/min (0-1240 bar) | 10 mL/min (5-400 bar) |
| LC flow delivery | Constant flow delivery | Constant flow and constant pressure delivery |
| Integrated degasser | 4 channel | 4 channel |
| Integrated solvent selection | 2x2 | 2x2 |
| Column oven | Up to 8 x 12.5 cm columns | Up to 8 x 12.5 cm columns |
| Carryover performance | < 0.0015% (partial loop >5 µL) | <0.0015% (partial loop >5 µL) |
| Detector options | PDA, high sensitivity PDA and MWD | PDA, high sensitivity PDA and MWD |
| Pump options | N/A | Quaternary pump (860 bar max) |

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# Seamless integration with SCIEX OS software

The ExionLC 2.0 and ExionLC 2.0+ systems are fully integrated into SCIEX OS software. With simple-to-use, direct control access and real-time readbacks for each module, you know what the system is doing at all times. New solvent level monitoring helps ensure that you never run out of solvent and avoid wasting precious samples. Easy batch setup, method processing and customizable flagging rules in SCIEX OS software enable a fully automated workflow from acquisition to processing.

### Straightforward LC method setup

SCIEX OS software allows you to choose your flow program: isocratic, simple gradient, or a custom program. Streamline your method changeover and avoid over-pressurizing the pumps by selecting the auto-purge function.

### Reduce carryover

Advanced rinsing setup becomes easy, minimizing carryover with multiple wash solutions and extended needle wash capabilities, all clearly laid out for customization.

### Flexibility for each application

Several rack options and multiple injection modes for the autosampler provide the flexibility to identify the best mode for a particular application.

### High performance with large-volume injections

Easily select the use of headspace pressure to compensate for negative pressure in the vial. Get reproducible retention times by programming column oven temperatures, tolerances, and equilibration times.

### UV-Vis detector support

Fully integrated support for a comprehensive range of UV-Vis detectors with simple and intuitive setup in SCIEX OS software.

### Increase productivity

Increase efficiency with a single software solution that is user friendly from acquisition to reporting and straightforward to learn and implement in a laboratory environment.

### Quickly drill down to the critical information

With an intuitive user interface, powerful integration algorithms and automated processing, you can easily drill down to critical information to make informed decisions quickly.


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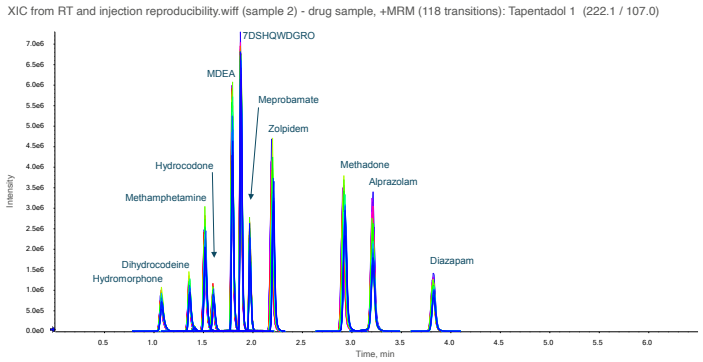
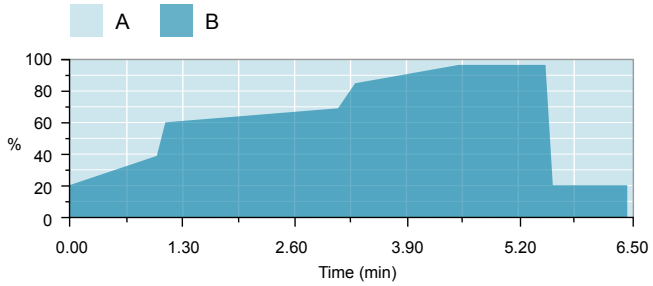
# Reproducibility you can rely on, injection to injection

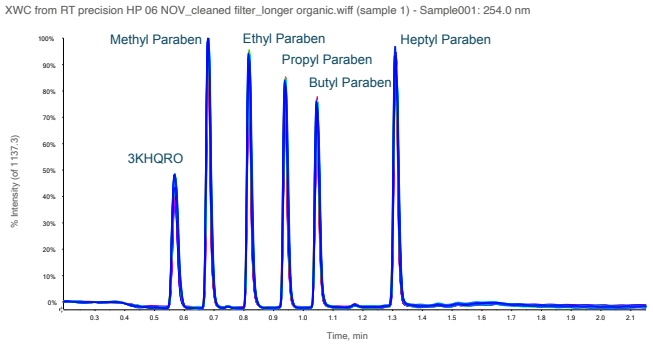
Designed to provide enhanced stability, the innovative design of the high-pressure pumps helps ensure the same reproducible and accurate results, day after day. The ExionLC 2.0 and 2.0+ systems deliver retention time precision, with stable solvent flow delivering less than 0.3% RSD retention time variation. The high-pressure, dual serial piston pump is rated to 860 bar at flow rates of 0.001 to 2 mL/min for maximum flexibility.

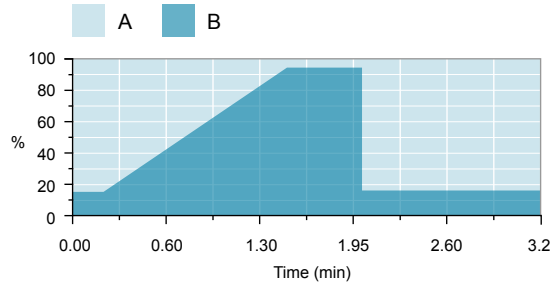



- Phenomenex Kinetex Phenyl-Hexyl column (4.6 x 50 mm)
- 5 µL injection (µL pick-up mode; 100 µL loop)
- Flow rate: 1 mL/min
- Mobile phase A: ammonium formate in water.
- Mobile phase B: formic acid in methanol.

Figure 1. Overlaid extracted ion chromatograms of select compounds from 100 repeat injections of the same standard solution of forensic drug compounds using the ExionLC 2.0 system. Retention time variability (%RSD) for select analytes over 100 injections is less than 0.3% RSD. Maximum retention time differences for select analytes over 100 injections is less than 1 second.




- 1.8 µm 2.1 x 50 mm 5 µL injection
- Partial loop injection mode; 10 µL sample loop
- Mobile phase A: water.
- Mobile phase B: acetonitrile.
- Flow rate: 1.2 mL/min (50µL mixer)
- Detection: UV 254 nm
- High aqueous 15,000 psi

Figure2. 100 repeat injections of the same standard solution of Supelco HPLC gradient system diagnostic mix, product # 4-8271 using the ExionLC 2.0+ system. Retention time variability (%RSD) over 100 injections for all analytes is less than 0.15% RSD. Maximum retention time differences over 100 injections for all analytes is less than 0.3 seconds.

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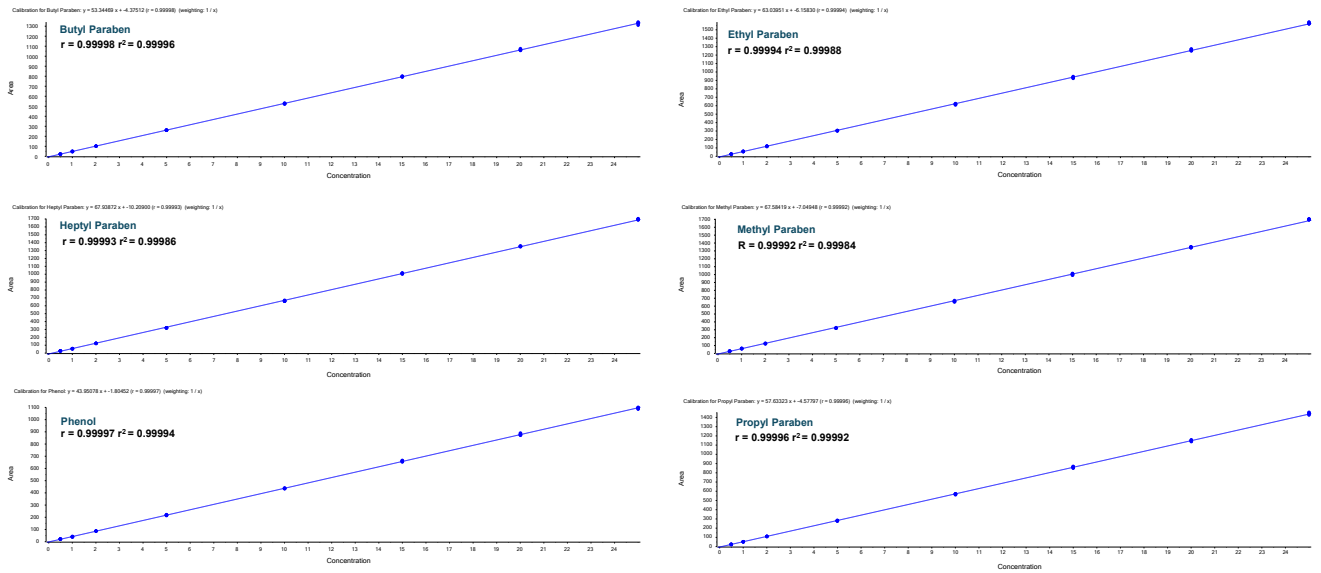
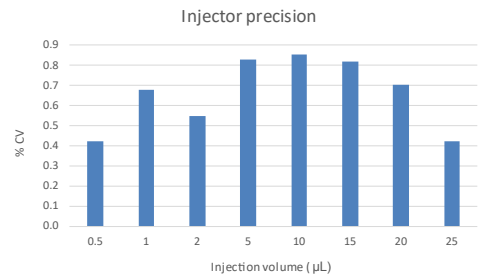
# Injection precision and linearity

Simplicity and flexibility of design provide the ability to easily switch between injection modes to optimize precision and accuracy performance for your assay. Achieve quantification results with injection linear coefficient of determination performance ($r^2$) > 0.999 and precision <1% coefficient of variation for injection volumes from 0.5 to 50 µL for most compounds (0.5 to 25 µL for all compounds).




## ExionLC 2.0 autosampler injection volume linearity (0.5 to 25 µL)

Injection linearity: 5 replicate injections of a diagnostic mixture at different injection volumes. Sulpelco HPLC Gradient System Diagnostic Mixture was analyzed with the ExionLC 2.0 system with DAD detector. All injections were performed using µL pick-up plus injection mode in order to optimize sample consumption with 100 µL sample loop.




## ExionLC 2.0 injector precision

5 replicate injections of a diagnostic mixture at different injection volumes (0.5 to 25 µL). Calculated reproducibility %CVs was <1% for all injection volumes. All injections were performed using µL pick-up plus injection mode in order to optimize sample consumption with 100 µL sample loop.

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# Large panel MRM assays for pesticides testing

With hundreds of samples to screen within tight deadlines and strict regulations, accurate pesticide residue analysis is critical in today's landscape. The ExionLC 2.0 system provides a solid solution to detect and identify pesticide compounds across multiple classes. Utilizing excellent flow rate precision and retention time stability, the system enables simultaneous identification and quantification of a large panel of pesticides using the Scheduled MRM algorithm without compromising in data quality.

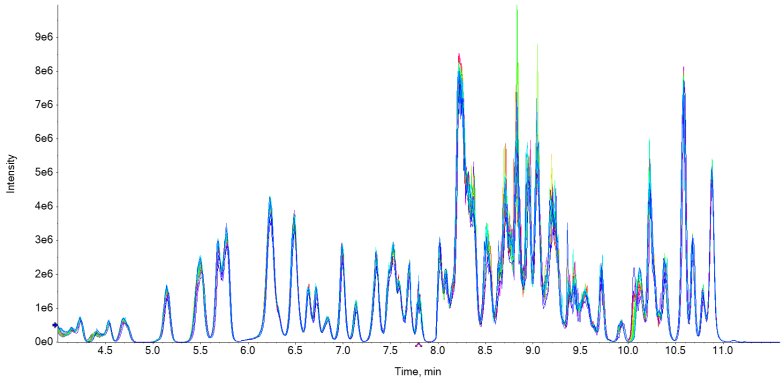


Figure 1. LC flow and gradient stability. Overlaid total ion chromatograms (TICs) from 25 repeat injections of 10 µL of the same 100 ppb pesticide standard mixture.

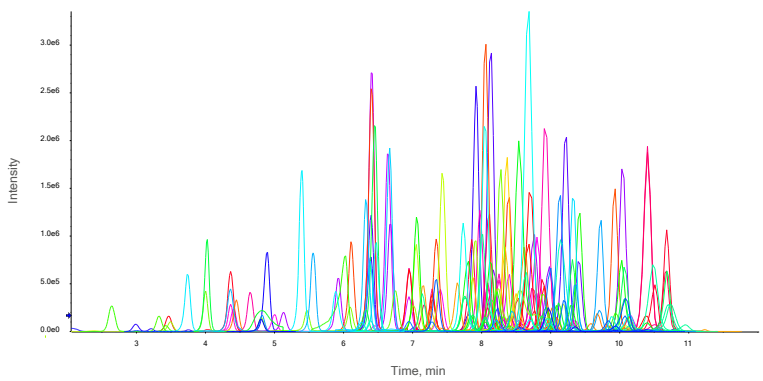


Figure 2. Extracted ion chromatogram showing the pesticide elution profile. Approximately 200 pesticides detected using 400 MRM transitions with Scheduled MRM Pro algorithm.

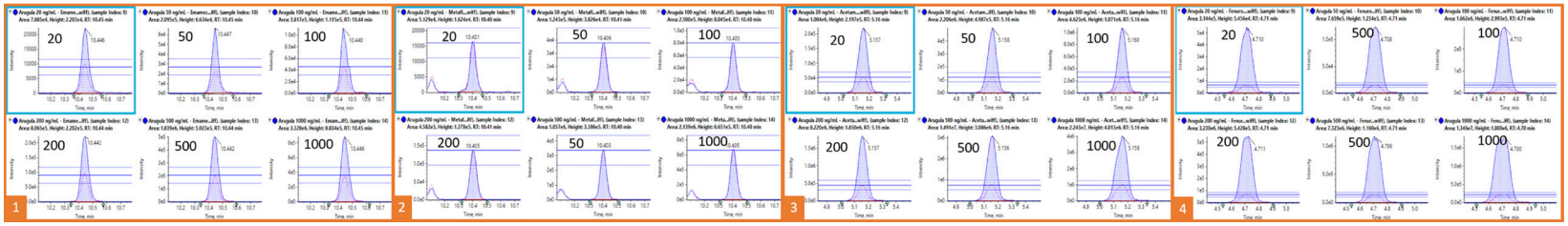


Figure 3. Quantifier and qualifier MRM transitions of selected pesticides. Four pesticides are shown here: (1) emamectin, (2) metaflumizone, (3) acetamiprid, (4) fenuron. The concentration range was from 20 to 1000 ng/mL. The MRM ratio of 30% is automatically displayed in the SCIEX OS software during peak review in Analytics to help confirm compound identification.

# High-quality bioanalysis of small molecule pharmaceuticals

Small molecule therapeutics demand accurate quantitative bioanalysis at every stage of the drug pipeline. From lead discovery to market authorization, confident decisions need reliable bioanalytical results. Because of the potency of modern drugs, high sensitivity is crucial. The ExionLC 2.0 system is engineered to provide robust, sensitive performance for high-throughput bioanalysis workflows. With precise and stable solvent flow delivering less than 1% retention time variation, and the accuracy and precision to achieve excellent quantification results (linear coefficient of determination performance $r^2$ >0.99 and precision <15% coefficient of variation for concentrations), the system delivers data you can rely on.

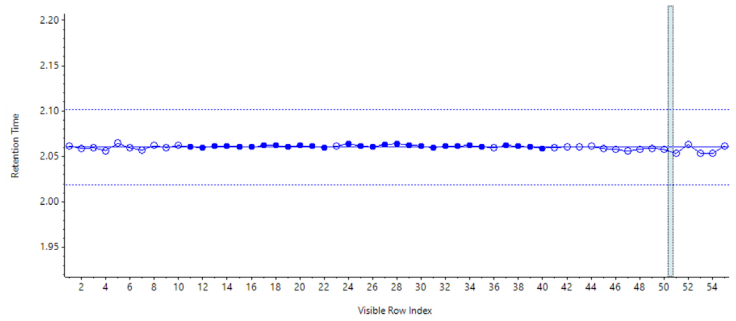


Figure 1. Retention time precision. Retention time variability of the ExionLC 2.0 system for fluoxetine for over 50 injections is shown. The compound exhibited good retention time stability, well within a 2% RSD (dashed lines).

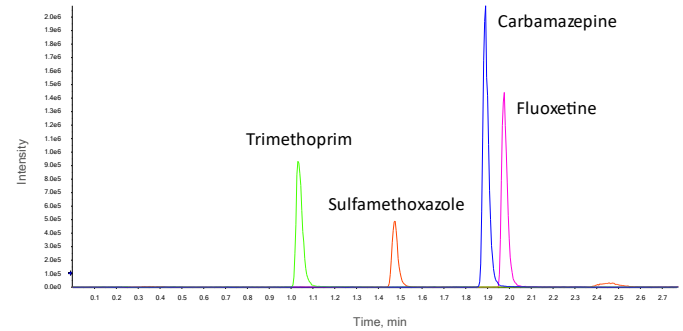


Figure 2. High quality separation of the pharmaceuticals mix. Extracted ion chromatograms of select compounds at a concentration level of 20 ng/mL with elution order of peaks from earliest to latest: trimethoprim, sulfamethoxazole, carbamazepine and fluoxetine.

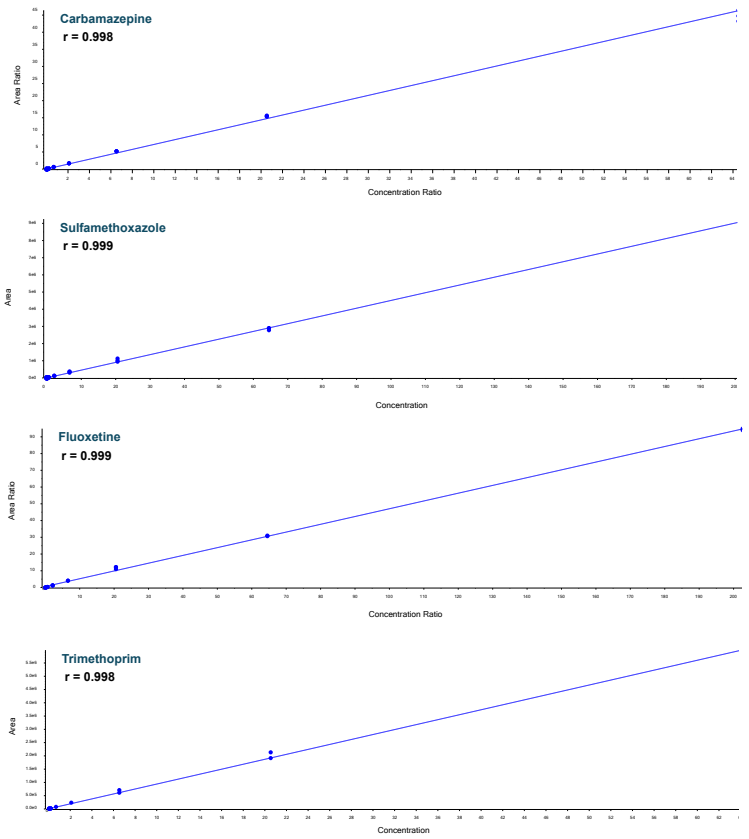


Figure 3. Example calibration curves. Good linearity was observed for the compounds analyzed in matrix, across the concentration range of 0.07 ng/mL to 200 ng/mL.

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# Significantly reducing the challenges of PFAS carryover

PFAS chemicals which are highly persistent, lingering and accumulating over time in humans, animals and the environment, are sometimes referred to as “forever chemicals”. The demand to test these compounds is significantly growing. One of the main challenges laboratories face is the impact of carryover on analysis. The optional wash system provides flexibility in wash solvent selection and flow rate options for extended needle wash capabilities to minimize carryover, which reduces false positive rates and the need for repeat extractions and re-injections. The ability to customize the system and optimize the cleanup of all autosampler solvents reduces system contamination to a minimum, allowing accurate determination of PFAS even at low levels.

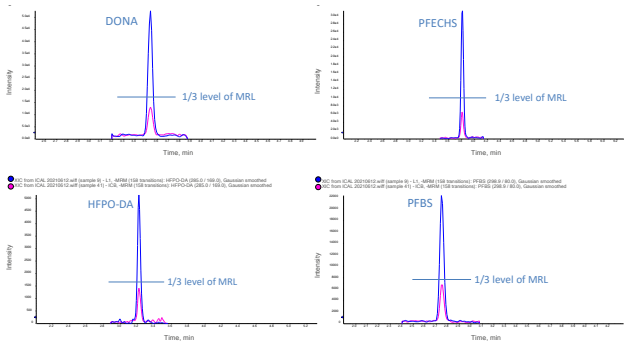


Figure 1. Blank extracted ion chromatograms for select PFAS compounds showing extremely low contamination in blank samples (pink trace). These were analyzed immediately following the injection of the highest calibration standard of 10,000 ppt, and are overlaid with the LLOQ standard 2.5 ppt (blue trace). Requirements specify the blank must be less than 1/3 of the level of the MRL.

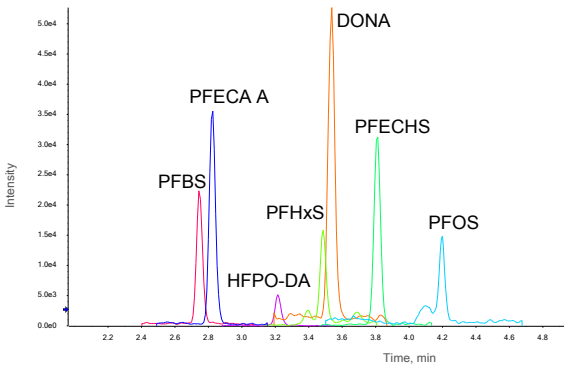


Figure 2. Signal at LLOQ. Extracted ion chromatogram of select PFAS from the 2.5 ppt standard. Very good peak symmetry was observed.

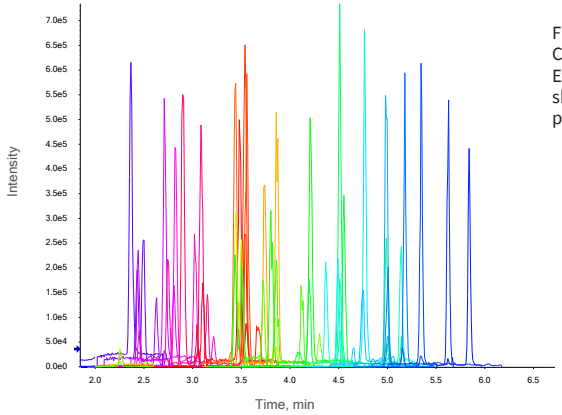


Figure 3. Chromatographic separation. Extracted ion chromatogram showing the PFAS elution profile of the 25 ppt standard.

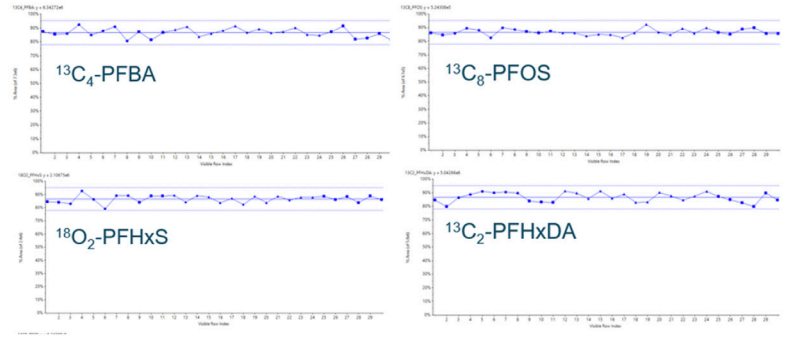


Figure 4. Reproducibility of data. Metric plot of internal standard area reproducibility over 30 injections. Mean regression with ±10% mean regression deviation (dashed lines).

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# Reproducible results for large scale peptide quantification

Accurate quantification is needed to confirm or refute protein biomarker utility for large scale validation studies. Higher throughout can mean reduced sample preparation and accelerated chromatography, both of which can increase the chance of interference. Peptides also present a unique challenge as analytes with varying stability, adsorption, solubility, and carryover performance. The ExionLC 2.0 system delivers precise and stable solvent flow delivering less than 2% RSD retention time variation. Run large cohort studies confidently with the accuracy and precision to get reproducible data sets.

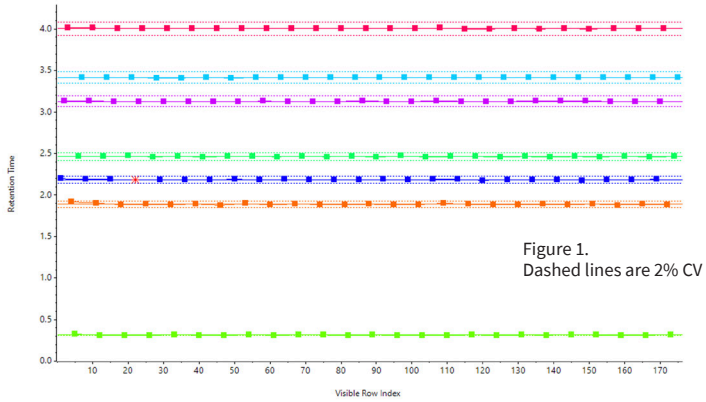


Figure 1.
Dashed lines are 2% CV

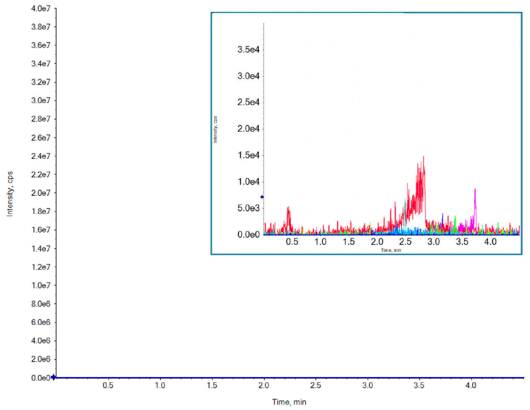


Figure2.
Blank. Inset is 1000x lower intensity

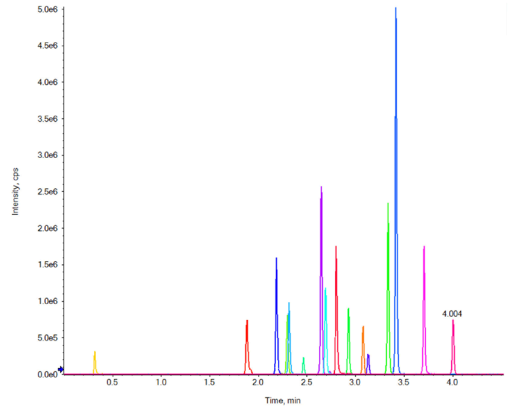


Figure 3.
Example chromatogram

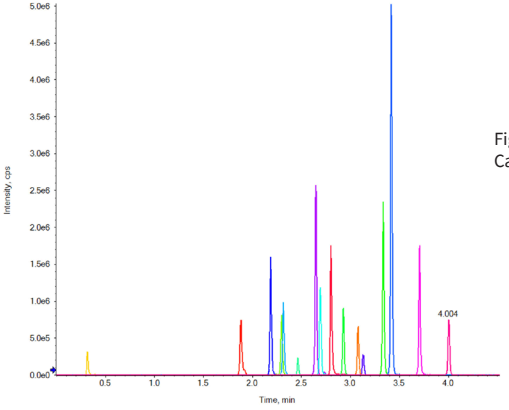


Figure 4.
Carryover - High standard

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# Why choose an ExionLC 2.0 system?

SCIEX ZenoTOF 7600 system with the ExionLC 2.0 system

SCIEX 7500 system with the ExionLC 2.0 system

**Advanced performance**
- Linearity
- Injection precision
- Retention time stability
- Carryover

**Single vendor**
- Whole solution support
- Eliminates cross-vendor troubleshooting
- Service and support excellence
- Software version upgrades

**Standard features**
- Solvent selection valve
- Fully integrated degasser
- Column oven included as part of the system

**Ease of use**
- Real-time pump pressure trace
- Autosampler is simple to use and maintain
- Phenomenex SecurityLink finger-tight high-pressure fittings

**Mass spectrometer compatibility**

Triple Quad 3500, 4500, 5500+, 6500+ and 7500 systems, QTRAP 4500, 5500+, 6500+ and 7500 systems, QTOF X500R, X500B and ZenoTOF 7600 system.

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# SCIEX Now support network

## LC expertise

With over 50 years experience supporting multi-vendor LCs our SCIEX customer support network has a wealth of expertise and troubleshooting experience. Our network of specialists have a depth of knowledge across our whole portfolio, and our end-to-end solutions.

ExionLC 2.0 systems offer many benefits to your lab:

- Simple to use and maintain
- Straight forward LC operation
- Seamless software integration
- Supported by Danaher supply chain
- Product lifecycle support
- Upgrade options as your lab expands
- Maximize return on your investment

## SCIEX Now

- Manage your instruments.
- Submit and manage support cases, track status and history
- Access online training courses and articles
- Manage software licenses linked to your registered instruments
- View and report critical instrument statistics when connected to StatusScope remote monitoring service
- Be a part of the SCIEX community by submitting questions and comments
- Receive notifications from SCIEX with content based on your preferences
- Built on a legacy of high performance
- SCIEX Now Learning Hub Success programs provide LC-MS and CE training customized to meet your exact needs

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