

Extend Your Application Reach with Maximum Sustainability

Agilent InfinityLab SFC Solutions



Agilent

Trusted Answers



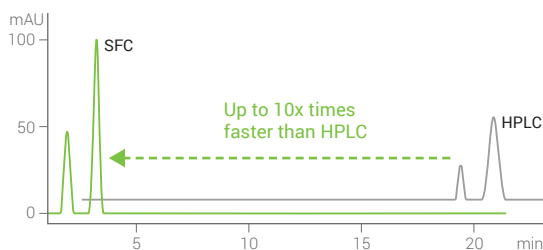
Extend Your Application Reach with Maximum Sustainability

Unleash the most powerful supercritical fluid chromatography (SFC) solutions available. Agilent InfinityLab SFC Solutions combine variable injection volumes with fast separations, and eliminate toxic solvents—to make your lab lean and green. What's more, InfinityLab SFC Solutions support a large range of applications by providing an orthogonal separation mechanism that can be combined with a wide variety of different detection techniques.

Benefits of the Agilent InfinityLab SFC Solution at a glance

Powerful

Unleash the power of SFC. Separate at high flow rates up to 600 bar. Achieve analysis speeds up to 10 times faster than HPLC.



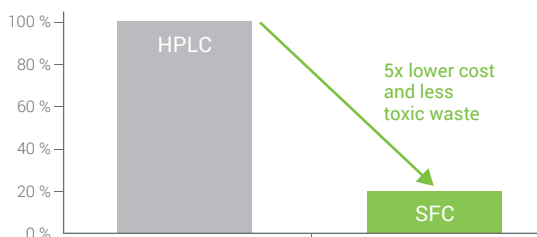
Flexible

Exploit the full orthogonality of SFC. Compare SFC and UHPLC results on one system and get the most out of your instrumentation.



Green

Reduce costs of solvent purchase and waste disposal by a factor of five. Eliminate toxic solvents. Make your lab leaner and greener.



Perfectly Matched Supplies

Smaller footprint, easy-to-grip solvent bottles with Stay Safe caps to make solvent handling more convenient—just two of the many InfinityLab LC supplies that help deliver reliable, robust performance.

Excellent Solvent Delivery

High flow accuracy and precision up to 5 mL/min at 600 bar. Improved usability and extended lifetime through integrated degasser, solvent-selection valve, and active seal wash.

Extended Application Reach

Check out our broad range of detection options—see page 10.

Efficient Column Handling

Hands-free selection of up to four columns. Independent heating zones for optimum separation and postcolumn conditioning.



Experience Robustness for Confidence in Daily Results

InfinityLab SFC Solutions are fully-fledged members of the InfinityLab family. While some modules have been re-engineered to cater for the demands of liquefied CO₂ as mobile phase, many modules remain unchanged and are common to both SFC and UHPLC systems.

Convenient CO₂ Handling

Programmable backpressure gradients for shorter analysis times. Full-flow transfer to MS or ELSD with new low-dispersion nozzle. Increased robustness and extended lifetime through major overhaul of booster pump.

Hybrid, Multipurpose Handling

New, unique FEED injection for SFC sampling. Classic flow-through injection for UHPLC sampling. Flexible choice of sample containers such as 2 or 6 mL vials, or microtiter plates. Highest capacity up to 432 samples in 2 mL vials.

SFC FEED injection

- Extended injection volume range from 0.1 to 90 µL
- Full choice of sample transfer solvent and injection speed
- No delay volume
- Reduced sample solvent effects

Agilent 1260 Infinity II SFC/UHPLC Hybrid System

With the easy-to-install addition of a 2-position/10-port valve and an InfinityLab LC pump, your system becomes a fully operational hybrid SFC/UHPLC solution. The option of running both SFC and UHPLC applications on the same system allows you to maximize the utilization of your analytical equipment. The core of the hybrid solution is the 1260 Infinity II SFC Multisampler. With FEED injection for SFC sampling and classic flow-through injection for UHPLC sampling, the SFC Multisampler is flushed automatically when switching between techniques.



Flexibility

Switch between UHPLC and SFC with a simple mouse click!

Develop Your SFC Methods with Maximum Flexibility

InfinityLab SFC Solutions comprise instruments, columns, software, and services that work together in perfect harmony, giving you freedom to quickly develop chromatographic methods according to your needs.

A range of software packages for fast and intuitive analysis

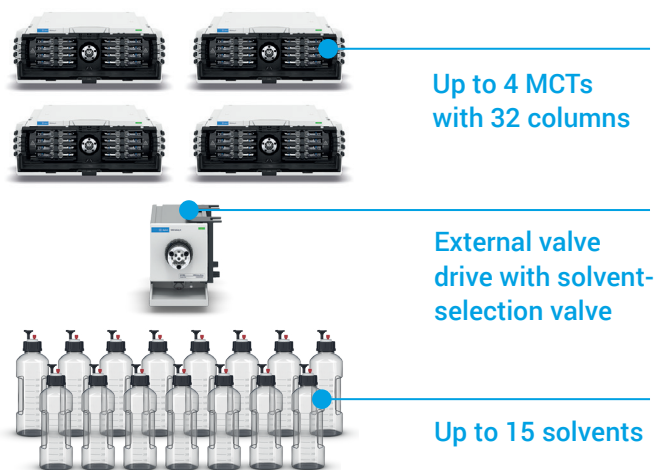
Our software solutions offer the versatility you need for your SFC applications, whatever the size of your lab. OpenLab CDS ChemStation edition simplifies method development, while OpenLab CDS 2 can quickly identify nonconforming samples with the Peak Explorer function. When combining SFC with MS detection, MassHunter enables fast, easy analysis.

Dedicated hardware for the highest degree of automation

The flexibility of the InfinityLab SFC Solutions helps you to solve your toughest development challenges. Simply install an external solvent-selection valve and gain immediate, automated access to 15 different solvents. Cluster two, three, or even four 1290 Infinity II Multicolumn Thermostats for automated screening of up to 32 columns.



OpenLab CDS and MassHunter software enable analysis tailored to your experimentation.



Easy, automated access to columns and solvents gives you ultimate flexibility in method development.

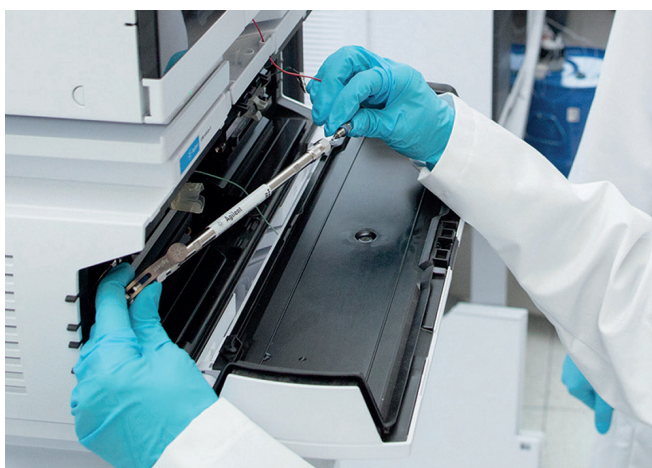


Columns and supplies for simple and quick method development

ZORBAX and InfinityLab Poroshell 120 columns are manufactured end-to-end by Agilent and offer a broad selection of stationary phases with a column choice for any separation task in SFC. From Quick Connect capillaries through Stay Safe caps, our wide range of parts, kits, and accessories are designed, manufactured, and tested under a quality system registered to ISO 9001.

"Our SFC method development strategy always includes stationary phases of Agilent Technologies, Inc. We strongly appreciate the robustness of polar ZORBAX and Poroshell phases, such as ZORBAX Rx-SIL and Poroshell 120 HILIC. They exhibit good selectivity and high separation performance, which is key for successful and efficient method development in SFC."

– **Dr. Stefan Bieber**,
Managing Director
of AFIN-TS GmbH



A wide range of columns and consumables makes it easier and quicker to choose supplies for method development.

Download our brochure for SFC columns
from www.agilent.com, search for 5994-1638EN.

Download our quick reference guide for SFC supplies
from www.agilent.com, search for 5991-8116EN.

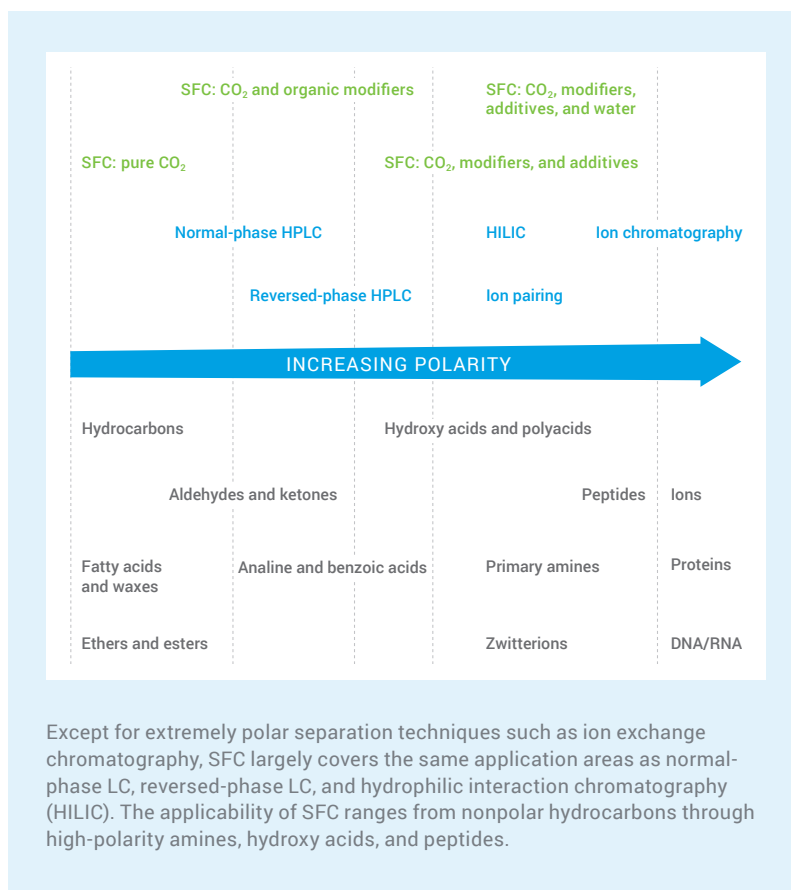
Switch to SFC and Protect Your Investment and the Environment

Switch to SFC now and benefit from an immediate reduction in the costs of solvent purchase and waste disposal. What's more, as well as protecting the environment, the virtual elimination of hazardous solvents makes your lab a cleaner place to work.

The theory behind SFC

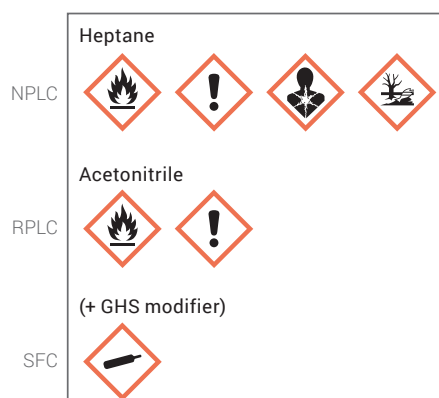
A supercritical fluid is any substance at a temperature and pressure above its critical point, where distinct liquid and gas phases do not exist. Close to the critical point, small changes in pressure or temperature result in large changes in density. These characteristics make it possible to adjust many physical properties so that a supercritical fluid can be used as a substitute for organic solvents in industrial and laboratory processes such as chromatography.

In supercritical fluid chromatography, carbon dioxide is the most commonly used solvent. Cosolvents are added to modify the mobile phase polarity, changing the selectivity of the separation system.



Benefits at a Glance

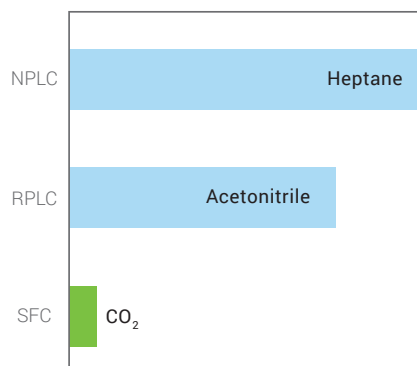
GHS classification



Reduce hazardous solvents

Replacing normal-phase LC by SFC means a significant reduction in the need for hazardous solvents such as acetonitrile, dichloromethane, or heptane. Your lab becomes a greener place to work where your only concern is the GHS classification of typical SFC modifiers such as methanol, ethanol, or isopropanol.

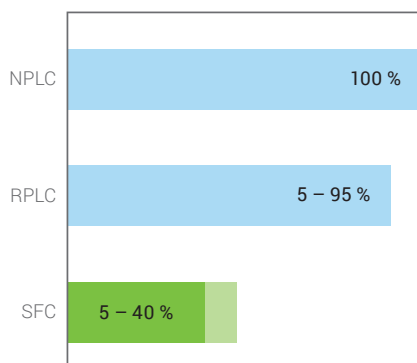
Cost per liter



Reduce solvent costs

InfinityLab SFC Solutions use food-grade carbon dioxide as the primary mobile phase. Food-grade CO₂ can be purchased at a fraction of the cost of the primary solvents used in other modes of liquid chromatography. Significant savings are also made in waste disposal, with only small amounts of modifiers being used.

Proportion of organic solvents



Reduce waste production

The proportion of organic modifier used in SFC gradients is generally significantly lower than in normal- or reversed-phase LC. As a result, SFC generates far less environmentally harmful waste. The major solvent, carbon dioxide, simply evaporates and diffuses safely into the atmosphere.

Match Detection Technique to your Application Needs

InfinityLab SFC Solutions extend and broaden your application reach by providing an orthogonal separation mechanism that can be combined with a wide variety of different detection techniques. Choose a detector that matches your needs for selectivity and sensitivity, the number of analytes, and the complexity of your sample matrix.

Number of analytes



Flame ionization detection* 1260 Infinity II SFC

Sensitive analysis of fuels by flame ionization, according to standard methods such as ASTM D5186.



Evaporative light scattering detection 1290 Infinity II ELSD

Quantitative and qualitative analysis of nonvolatile analytes that lack UV-visible chromophores such as sugars.



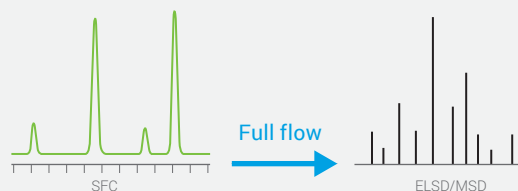
UV-visible detection 1260 Infinity II VWD and DAD

Determination of enantiomeric ratios or quantification of a small number of known analytes.

*SIM Scientific Instruments
Manufacturer GmbH

Full-flow transfer for highest sensitivity

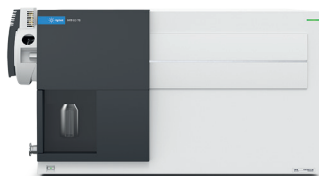
To achieve highest sensitivity, transfer the complete SFC effluent containing your precious sample to the ELSD, MSD, or LC/MS. The new low-dispersion nozzle significantly reduces the adverse effects of passing through the backpressure regulator.





Mass selective detection InfinityLab MSD

Simplified peak tracking in method development or quantification of a few analytes in simple matrices.



Triple quadrupole mass spectrometry 6470 Triple Quadrupole LC/MS

Highly sensitive and selective quantitation or targeted screening for forensics, food and environmental safety, pharmaceutical, and life science research with challenging matrices.

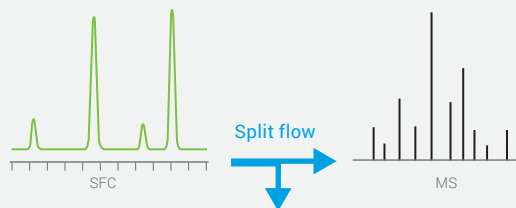


Quadrupole time-of-flight mass spectrometry 6546 LC/Q-TOF

Full screening of suspect analytes or unknowns in complex matrices using data-mining tools, and personal compound databases and libraries (PCDL).

Flow splitting for highest resolution

To achieve highest resolution, use a flow splitter in front of the backpressure regulator so that only a portion of the SFC eluent is transferred to the detector. This setup keeps the dispersion volume to a minimum and reduces band broadening.



Extend Your Application Reach with State-of-the-Art SFC

InfinityLab SFC Solutions allow you to separate and quantify complex mixtures faster and more efficiently than ever before. Deploying SFC in your lab gives you a technique that is orthogonal to normal- or reversed-phase LC and enables you to reach beyond your current application spectrum.

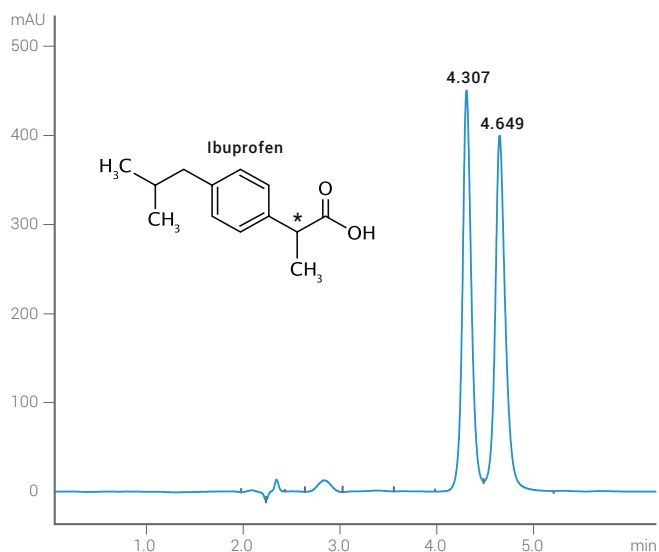
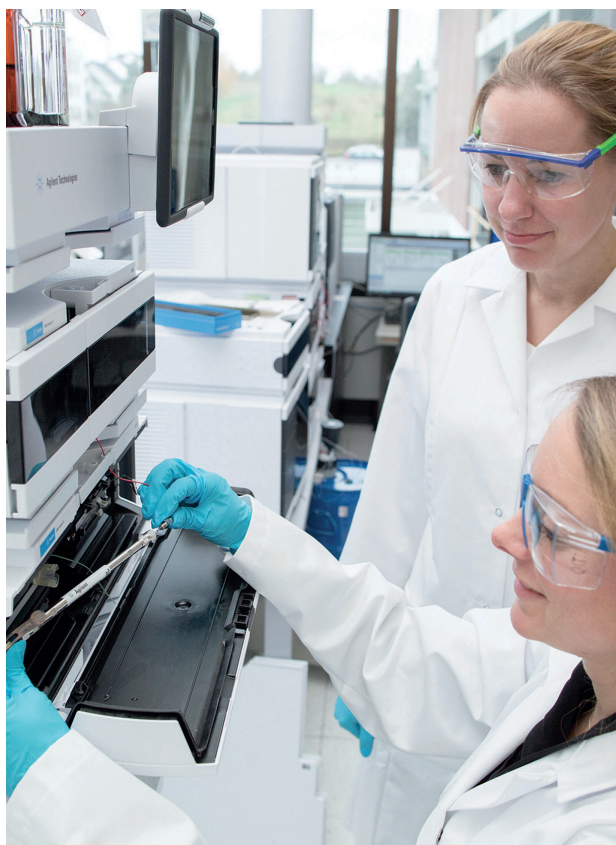


Pharmaceuticals

Develop and optimize new SFC methods for your chiral separations

The InfinityLab SFC Method Development Solution with Agilent Method Scouting Wizard facilitates software-aided method scouting of four chiral columns separating enantiomers by a factor of 10 times faster than normal chromatography.

[Download application note](#) from the Agilent InfinityLab Application Finder: search for 5994-0171EN.



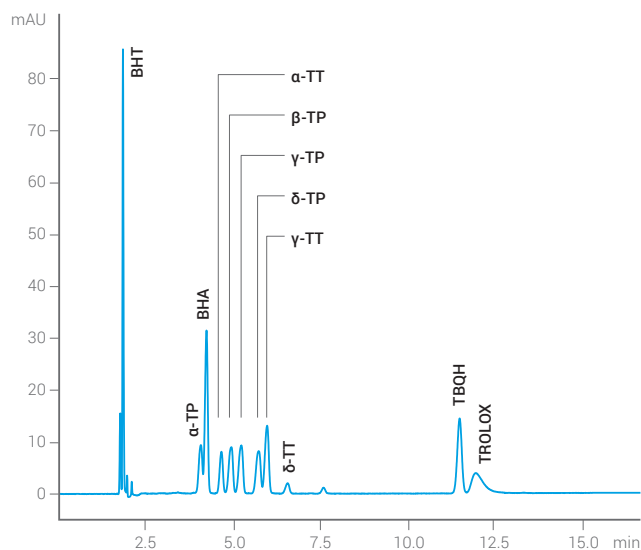
SFC is a fast way to identify speed-optimized methods for the separation of racemic pharmaceutical mixtures, for example ibuprofen enantiomers.



Use SFC to separate your most challenging samples

Vitamin E tocopherols and tocotrienols have different biological activities and chemical properties, so it is important to identify and quantify each vitamer separately. SFC enables complete resolution of all vitamers within a significantly shorter analysis time.

[Download application note](#) from the Agilent InfinityLab Application Finder: search for 5991-1546EN.



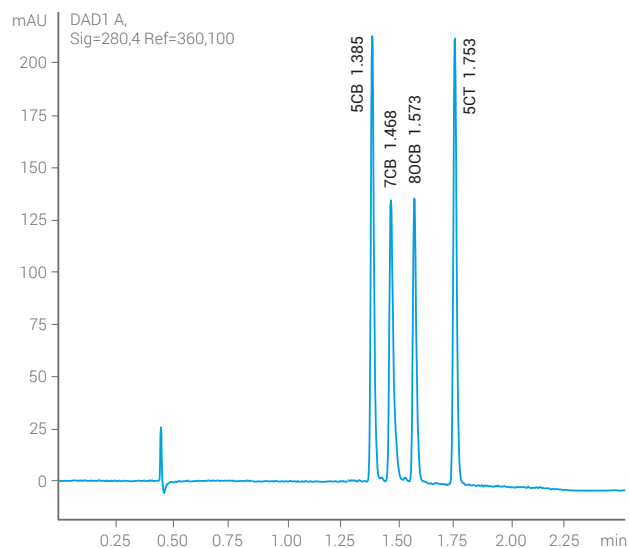
Separation and UV detection of 14 antioxidants found in vegetable oils by SFC. The concentration of each antioxidant was 10 µg/mL.



Solve separation problems faster and more reliably with SFC

The E7 liquid crystal mixture can be separated and quantified within two minutes using SFC with UV detection. This is up to 40 times faster than analysis based on normal-phase LC. Further, SFC delivers improved peak shape for more reliable quantification.

[Download application note](#) from the Agilent InfinityLab Application Finder: search for 5991-6436EN.



Separation of a mixture of liquid crystal compounds 5CB, 7CB, 80CB, and 5CT (50 µg/mL, each) within a short run time using a fast gradient.



Determine drugs of abuse at trace levels using SFC with triple quadrupole MS

SFC is an ideal separation technique for fast, quantitative screening of different classes of drugs, ranging from simple amines to complex morphine-like structures such as those analyzed in forensic toxicology applications. Highest analytical sensitivity is achieved by combining SFC with triple quadrupole mass spectrometry.

For Forensic Use.

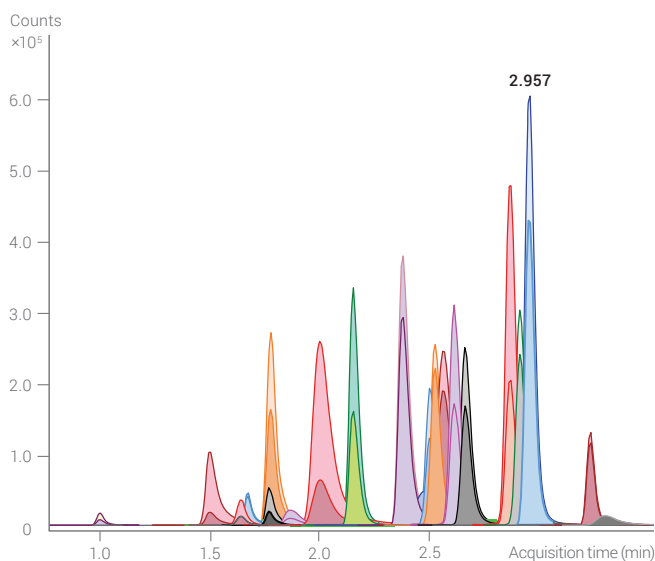
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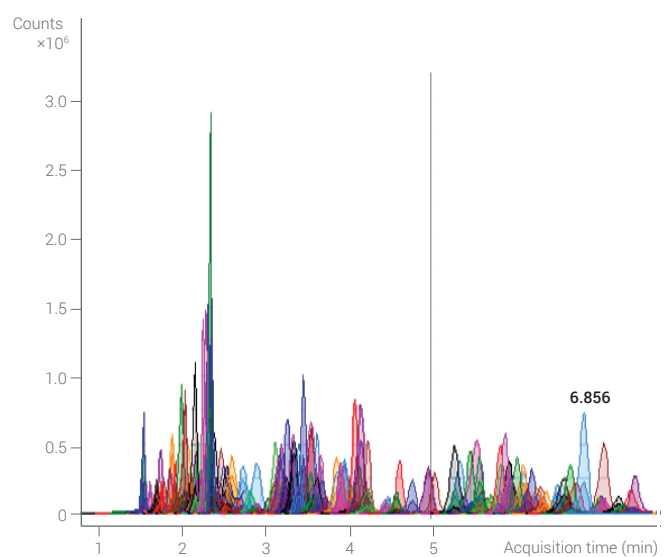
Identify and quantify more than 200 pesticides in a single SFC/MS run

The combined performance of SFC and triple quadrupole MS makes it possible to identify and quantify over 200 pesticides in a single run, dramatically faster than with a conventional HPLC method. Using dynamic multiple reaction monitoring (DMRM) also significantly improves the sensitivity of the analysis.

[Download application note](#) from the Agilent InfinityLab Application Finder: search for 5991-6151EN.



SFC separation and DMRM detection of 25 drugs within 5 minutes. The limit of detection (LOD) was 30 pg/mL.



Determination of 223 pesticides by DMRM. The first 195 compounds eluted within 10 minutes.

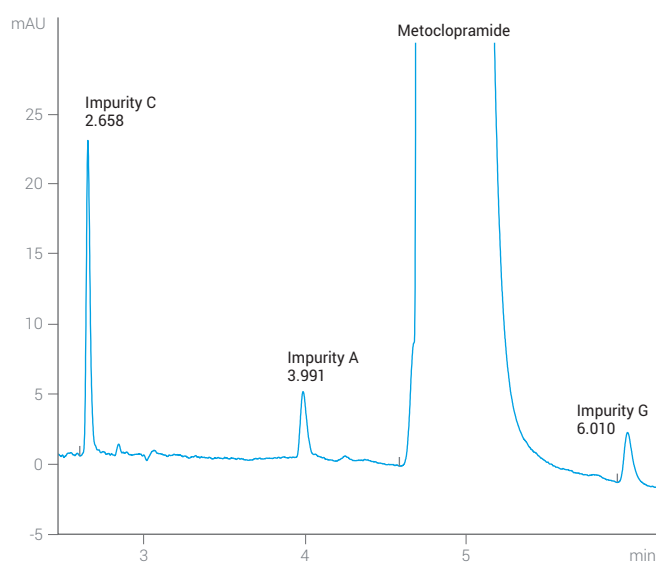


Pharmaceuticals

Detect low-level API impurities using SFC with a variable wavelength detector

SFC with variable wavelength detection (VWD) can be used to detect trace-level impurities in active pharmaceutical ingredients (APIs). When compared with DAD detection, VWD can be around four to five times more sensitive in detecting trace impurities at low flow rates and with narrow id columns.

[Download application note](#) from the Agilent InfinityLab Application Finder: search for 5994-1351EN.



Detection of low-level impurities at the 0.03% level in the API metoclopramide.

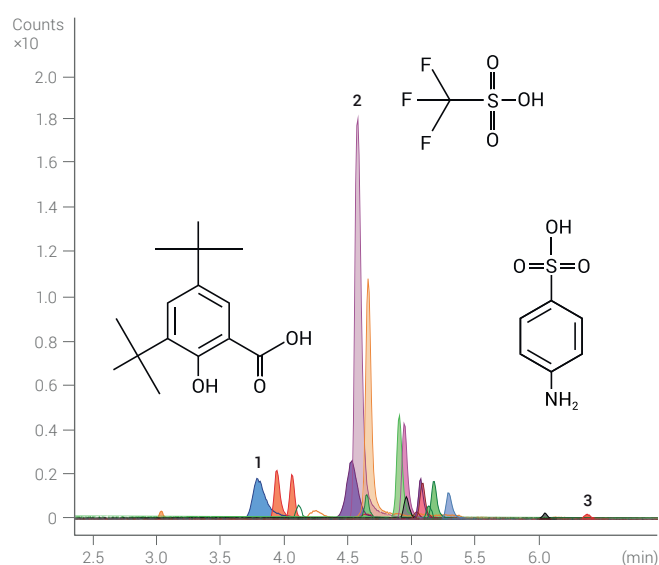


Environmental

Separate over 40 highly polar compounds with EFLC using SFC/Q-TOF MS

The 1260 Infinity II SFC Pump, with a pressure limit of 600 bar, can easily handle the pressure created by the high organic modifier concentrations in enhanced fluidity liquid chromatography (EFLC). Q-TOF MS detection and database screening enable identification of highly polar components of water samples.

[Download application note](#) from the Agilent InfinityLab Application Finder: search for 5994-1096EN.



SFC separation of highly polar compounds.

Reliable, efficient, always innovating for your best result

You can rely on Agilent InfinityLab LC instruments, columns, and supplies to deliver rugged quality and robust analytical results. But our promise to you does not stop there. Every component of the Agilent InfinityLab family is designed to work together to help you improve your workflow, increasing efficiency and reducing operational costs.

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© Agilent Technologies, Inc. 2020
Published in the USA, August 1, 2020
5994-1804EN