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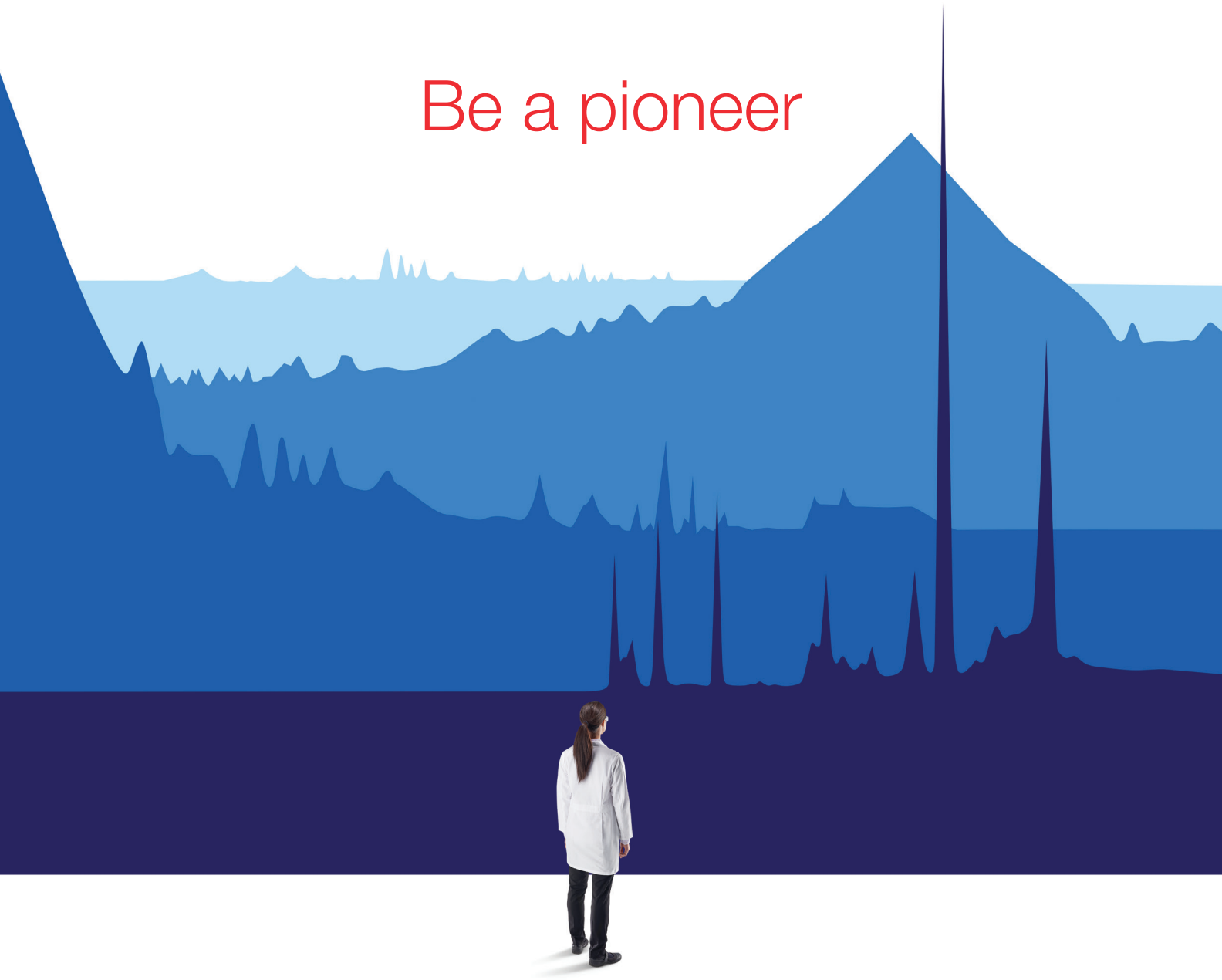
Be a pioneer



Thermo Scientific Dionex ICS-6000 HPIC system—
the freedom to explore

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The Freedom to Explore

When solving ion analysis challenges, there are sometimes more questions than answers. The ability to develop and run different methods for a single sample or for different samples is increasingly important for analytical laboratories. A highly flexible ion chromatography (IC) system provides you with the freedom to develop, explore, and run different methods simultaneously.

The Thermo Scientific™ Dionex™ ICS-6000 HPIC™ system is a truly modular, highly configurable, high-performance system. The robust system design enables operation at up to 5000 psi and produces consistent, reliable results. As a top-of-the line ion chromatography system, it is designed for users who want to push the boundaries of what is possible in ion analysis.

Accelerate Your Productivity

The Dionex ICS-6000 HPIC system offers a suite of features to get you from sample to results faster and keep your laboratory running seamlessly, including:

- Single- and dual-channel system configuration options
- Finger-tight connections that minimize dead volume and make connections easier
- Automated tracking of the usage and performance of IC consumables
- Automated eluent preparation using Reagent-Free Ion Chromatography-Eluent Generation (RFIC-EG™) technology
- Tablet control of the IC system, to easily monitor sample runs
- An optional, always ready capillary IC configuration to perform 24/7 sample analysis
- IC columns featuring 4 µm particles to optimize chromatographic efficiency with shorter sample run times and/or improved resolution

Explore the Possibilities

The Dionex ICS-6000 HPIC system is available in a variety of configurations, including:

- Standard bore, microbore, and capillary formats
- Multiple, flexible detector options

Discover Ion Chromatography-Mass Spectrometry

The Dionex ICS-6000 HPIC system is compatible with single quadrupole, triple quadrupole, and high-resolution accurate-mass (HRAM) Thermo Scientific™ Orbitrap™ mass analyzer-based mass spectrometers for performing powerful ion chromatography-mass spectrometry (IC-MS) analyses.

Solve Complex Analysis Challenges

The Dionex ICS-6000 HPIC system can address the full range of IC analysis applications. It is suitable for techniques from 2-D ion chromatography for trace-level analysis to high-performance anion-exchange chromatography with pulsed amperometric detection (HPAE-PAD) for complex carbohydrate analyses.

Accelerate Your Productivity

Single- or dual-channel configuration

When you need to run two different analyses simultaneously on a single sample or analyze two different samples concurrently, the Dionex ICS-6000 HPIC system can easily be converted to a dual-channel system.

Easy-to-install finger-tight fittings

Achieving consistent low-dead-volume connections is critical for maintaining optimum chromatographic efficiency. Conventional fittings can increase column broadening due to incorrect positioning of the ferrule, leading to reduced efficiencies and poor peak shapes. Thermo Scientific™ Dionex™ IC PEEK Viper™ fittings provide consistent, finger-tight connections with virtually zero dead volume and require minimal training time.

Consumables Device Monitor

The Consumables Device Monitor automatically identifies and tracks the installation time, use, and performance metrics of your IC consumables. Use this feature to prevent consumable installation errors, schedule preventive maintenance, and manage consumable usage, ultimately minimizing system downtime and improving productivity. It is designed to:

- Keep metrics information with the consumable, regardless of the system in which it is installed
- Simultaneously monitor up to 16 key performance metrics on up to 25 different consumables
- Verify consumable performance against product specifications and production quality assurance data

Automated eluent generation

The RFIC-EG module of the Dionex ICS-6000 HPIC system uses Thermo Scientific™ Dionex™ EGC Eluent Generator Cartridges to electrolytically generate high-purity hydroxide, carbonate, bicarbonate, or methanesulfonic acid (MSA) eluents at the concentration you specify. A high-purity source of deionized water is the only requirement. RFIC-EG provides control for isocratic or gradient conditions with unmatched method reproducibility and accuracy. Improved control of the EG cartridge also minimizes system start up times, increasing productivity.

Tablet control

The Dionex ICS-6000 HPIC system comes equipped with a tablet with an intuitive interface, enabling direct local control of the system and its status. Use the tablet or a desktop computer for system setup, maintenance, troubleshooting, and routine monitoring. The tablet interface is available in 11 different languages to customize your user experience. Additionally, the tablet enables you to:

- Communicate with the instrument via secured WiFi or a wired connection
- Control and monitor one instrument at a time, with easy instrument switching
- Access consumable installation guides and troubleshooting knowledge base

Capillary IC

Using a technique called capillary IC, column size, injection volumes, and flow rates are scaled down by a factor of 25 to 100. With a capillary channel configuration, your Dionex ICS-6000 HPIC system becomes an always ready system that can run samples 24/7, so it requires minimal calibration and equilibration time.

High-pressure IC

The Dionex ICS-6000 HPIC system is high-pressure-capable up to 5000 psi to allow the use of 4 µm-particle-size IC columns, available in 150 or 250 mm lengths. The 150 mm-length columns decrease run times, while maintaining chromatographic resolution when compared to 10 µm-particle-size columns. The 250 mm-length columns offer improved peak resolution.

Explore the Possibilities

Unmatched application range

Configure your Dionex ICS-6000 HPIC system as a hybrid system or dual system. Either configuration includes a wide variety of available column chemistries. Choose one, or combine formats, based on your sample, analytes, and mobile phase requirements.

Format	Capillary	Microbore	Standard
Typical flow rate range	5–20 µL/min	0.2–0.5 mL/min	1–2 mL/min
Column i.d. supported	0.2–0.6 mm	1–3 mm	3–7 mm
Typical yearly eluent usage	5.25 L	131 L	525 L

Versatile detection capabilities

The Dionex ICS-6000 HPIC system supports a variety of detectors, including:

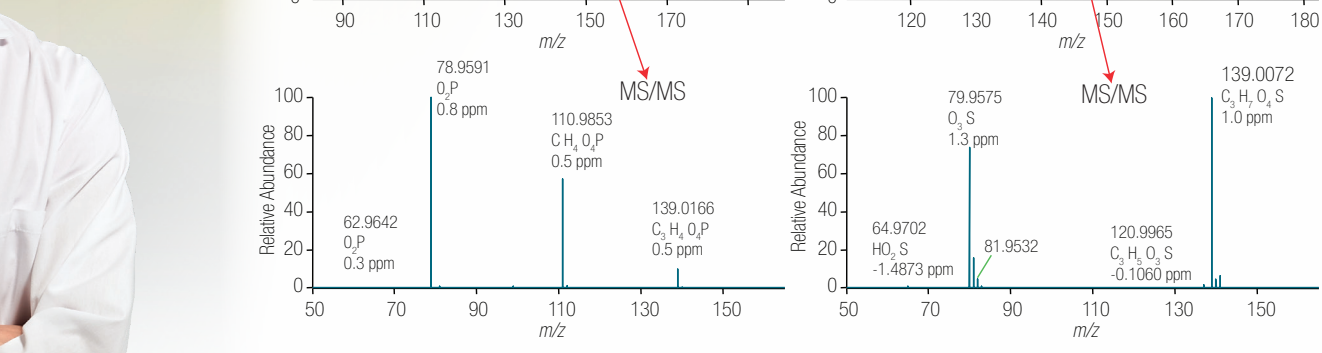
- Suppressed conductivity
- Electrochemical, including DC amperometry and integrated amperometry
- UV-Vis absorbance, including variable wavelength and photodiode array
- Inductively coupled plasma mass spectrometry (ICP-MS)
- Mass spectrometry (MS)

IC-MS Enabled

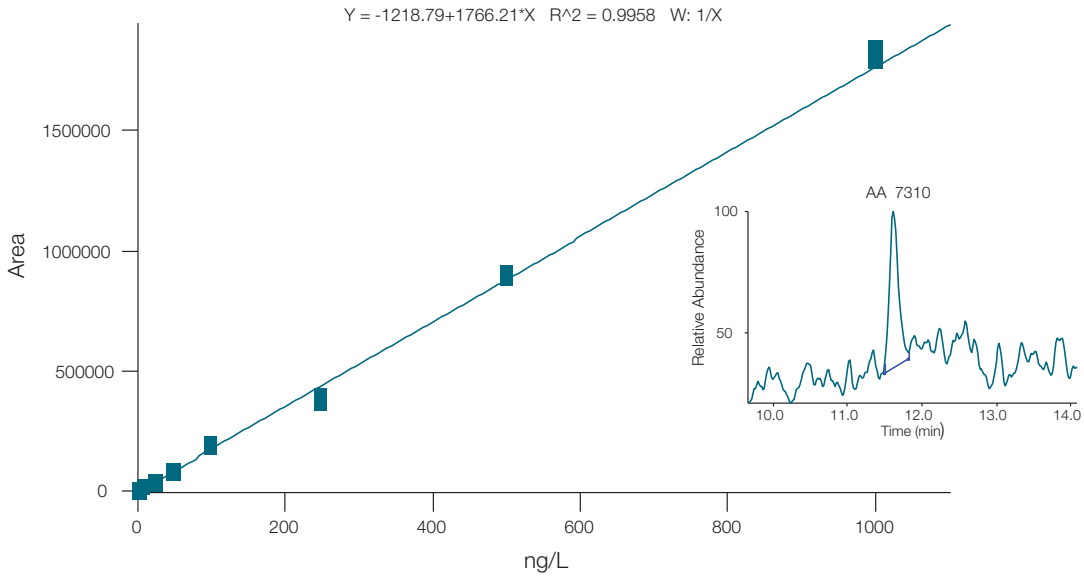
Detection using mass spectrometry enhances your chromatographic analyses with improved selectivity and higher sensitivity. IC with suppressed conductivity is ideally suited for IC-MS applications because the suppressor converts the mobile phase into water using Reagent-Free Ion Chromatography (RFIC™) technology. The Dionex ICS-6000 HPIC system can be used for a wide variety of sample analyses due to its quaternary gradient capability and low-temperature thermal control. Additionally, all data analysis and reporting can be performed using the Thermo Scientific™ Chromeleon™ 7.2 Chromatography Data System (CDS) software.

Adding MS to your workflow:

- Enables direct injection with no derivatization
- Eliminates sample preparation, saving time
- Precludes use of organic modifiers in separations
- Provides confirmatory, orthogonal information



HRAM MS/MS fragments facilitate identification of unknown compounds. IC, combined with HRAM mass spectrometry, is an ideal solution for component identification in non-targeted and unknown workflows. In this figure, identification of lithium-ion battery failure analysis products using HRAM MS/MS offers four-decimal-point accuracy to distinguish between species. The unique fragmentation signature enhances that confidence.



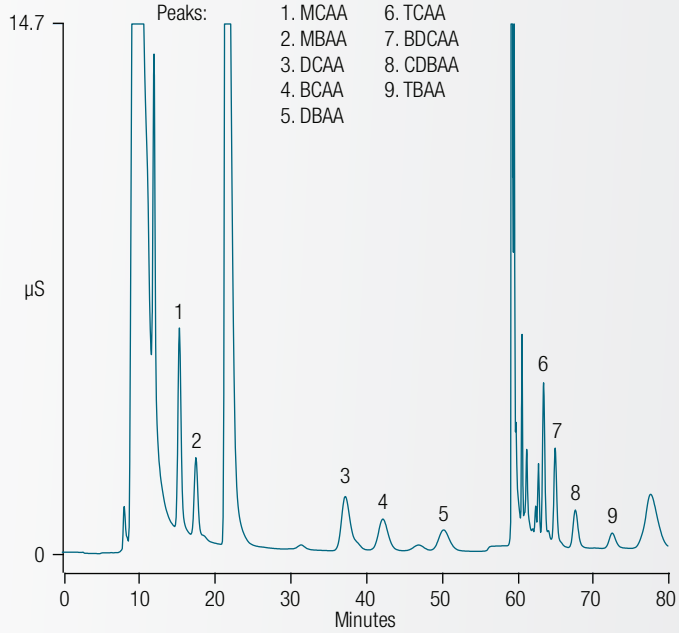
Targeted MS/MS analysis enables quantitation of molecules in a wide variety of matrices. IC, combined with triple quadrupole mass spectrometry, is an ideal solution for resolving molecules that are often difficult to separate from a matrix using conventional liquid chromatography techniques. In this chromatogram, glyphosate in drinking water is detected at a level of 5 ng/L. The linearity of the assay allows quantitation over 3 orders of magnitude, from 5 ng/L to 1000 ng/L, enabling a wide detection range without having to dilute samples.

Solve Complex Analysis Challenges

Trace analysis using two-dimensional ion chromatography

The Dionex ICS-6000 HPIC system is ideal for 2D-IC analyses. This technique is particularly important when performing trace analysis in the presence of a high concentration of interfering matrix ions. It achieves improved selectivity and signal enhancement without complicated sample preparation.

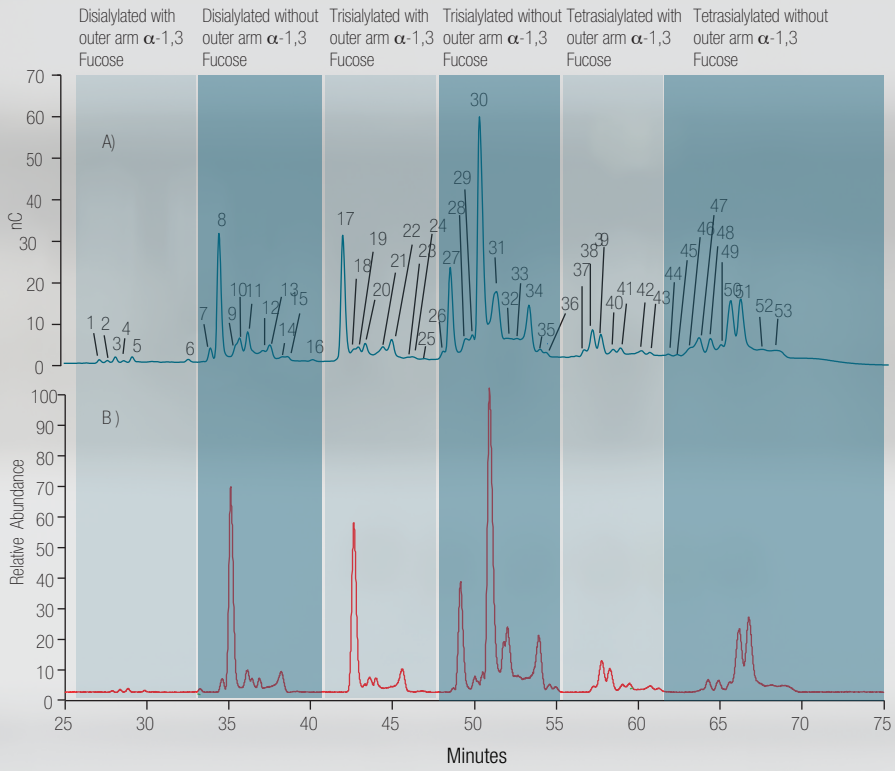
Columns:	Thermo Scientific™ Dionex™ IonPac™ AG26/AS26, 0.4 mm i.d.
Flow Rate:	0.012 mL/min
Eluent:	5.2 mM KOH (0–53 min) 155 mM (53.1–60 min) 100 mM (60.1–80 min)
Eluent Source:	Thermo Scientific™ Dionex™ EGC Capillary Eluent Generator Cartridge
Detection:	Suppressed conductivity, Thermo Scientific™ Dionex™ AERS™ Anion Capillary Electrolytic Suppressor, 25 mA
Concentrator:	Thermo Scientific™ Dionex™ IonSwift™ MAC-200 column
Temp.:	15 °C
Sample:	20 µg/L HAA9 in 100 mg/L NH_4Cl
Peaks:	1. MCAA 6. TCAA 2. MBAA 7. BDCAA 3. DCAA 8. CDBAA 4. BCAA 9. TBAA 5. DBAA



Second dimension separation of HAA9 following concentration of 20 µg/L HAA standards injected onto the first dimension.

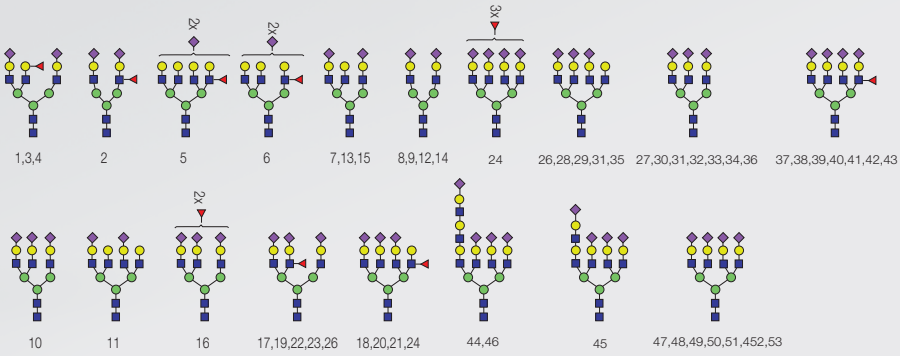
Complex carbohydrate analysis using HPAE-PAD

HPAE-PAD enables the analysis of carbohydrates ranging from mono- to oligosaccharides and can be easily coupled with MS instruments. For high-mannose, complex, and hybrid oligosaccharides, separations are enabled by sodium acetate gradients in sodium hydroxide.



hAGP-N-linked glycan analysis using HPAE-PAD coupled with MS. This technique enables high resolution separation of glycans based on charge, linkage, position, and fucosylation. MS also provides highly reliable annotation of glycan species.

Annotated glycans on hAGP

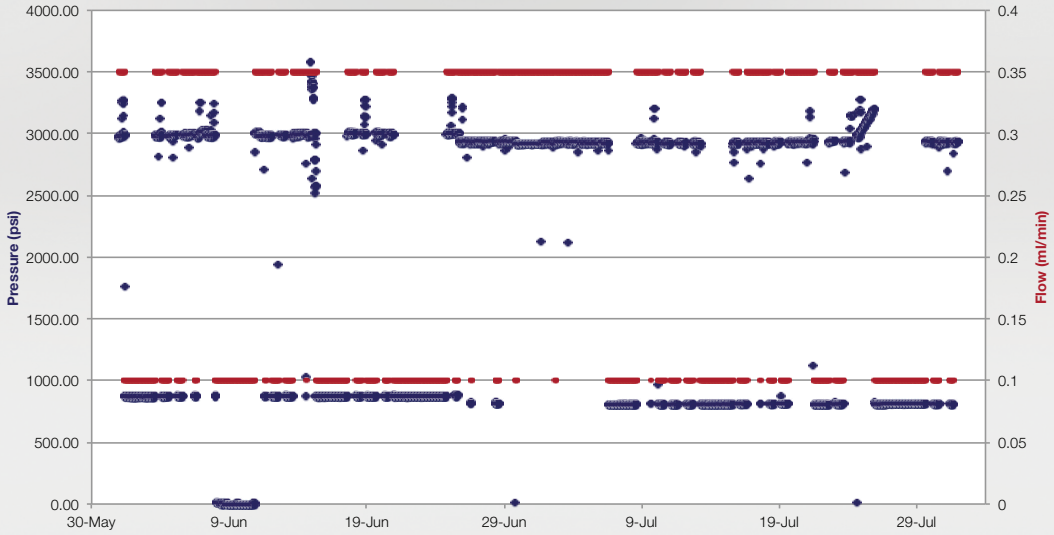


Gain More Time for Data Analysis

Experience the full capabilities of the Dionex ICS-6000 HPIC system by using the Chromeleon 7.2 CDS software. Our CDS software not only delivers a superior user experience, but also boosts productivity. The Chromeleon CDS software features:

- Cobra™ Peak Detection — automated and optimized integration of your chromatogram with the Cobra Peak Detection algorithm
- Simplified administration — centralized administration of licenses, users, and network resources
- Easy-to-use interface for tracking IC consumable performance and usage via the Consumables Device Monitor
- Thermo Scientific™ AppsLab Library of Analytical Applications — online repository of searchable chromatography methods for multiple industries
- Ability to perform IC-MS analyses as the first CDS software to control MS systems

Maximize System Uptime



Example report from Unity™ Lab Services providing an evaluation of the instrument pressure trend over time. This report enables the operator to identify pressure spikes and match them to analyzed samples.

Unity Lab Services provides a single point of contact to support your instrument service needs. Additionally, Unity™ Remote Services enable remote support personnel to troubleshoot instrument performance issues. Unity Remote Services increase confidence in your system by:

- Monitoring only instrument performance functions, not sample data
- Increasing system uptime using proactive remote assessment and correction of potential performance problems
- Boosting laboratory productivity by minimizing operator troubleshooting time

We support and recognize you and your mission to ensure that the world is healthier, cleaner and safer in everything we do.

This is why, since 1975, we have dedicated ourselves to the development and innovation of ion chromatography (IC) technologies including instruments, separation chemistries, suppressors, and software. We understand that when you purchase an IC instrument, you are purchasing a relationship as well. We strive to support your laboratory by sharing what we've learned as an industry leader, acting as trusted advisors, and providing the level of service and support you need.

Find out more at **thermofisher.com/ICS6000**

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