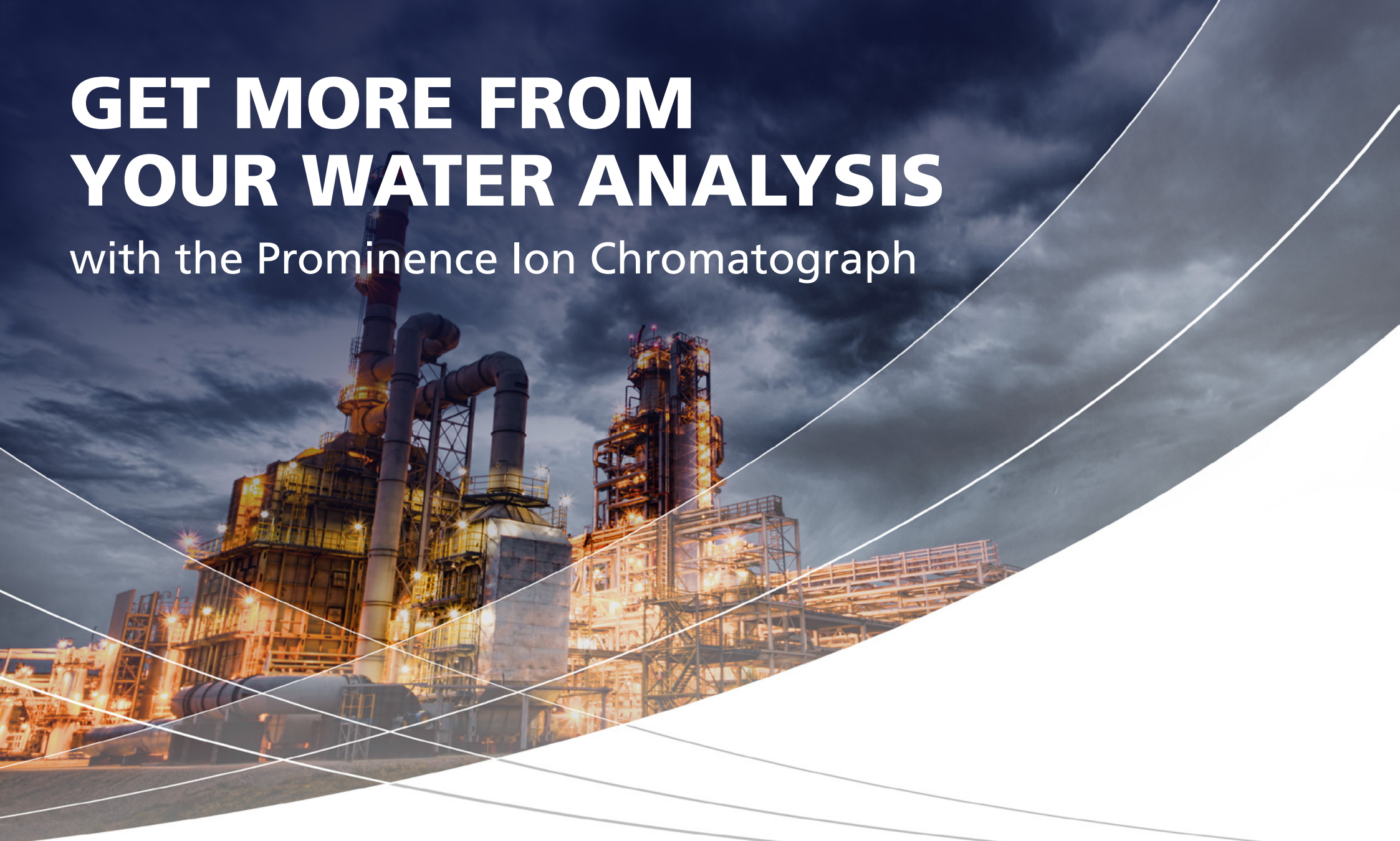


GET MORE FROM YOUR WATER ANALYSIS

with the Prominence Ion Chromatograph



Ion chromatography (IC) is a fast, easy technique for the analysis of trace amounts of ions in water and wastewater, including inorganic anions, cations and organic acids, among others.

THAT'S WHY SHIMADZU—

THE MOST TRUSTED NAME IN LC

**—NOW OFFERS THE PROMINENCE
ION CHROMATOGRAPH.**



Our newly developed electroalytic ion suppressor is built around the well-established principles of electrolytic suppression and minimizes peak dispersion, achieves high sensitivity and provides highly stable results without chemical regenerants.

Created for high performance, the Prominence IC is built upon the high-precision characteristics of Shimadzu's HPLCs and is available in a completely inert configuration, yielding highly repeatable injections, low carryover and reliable results.

This eBook presents Shimadzu's Prominence ion chromatograph and demonstrates how this IC can help you to get more from your water analysis workflows.

Electrolytic Suppression, Reimagined

Electrolytic suppression is widely used to increase the sensitivity of IC analyses. Shimadzu has built upon this technique with its patent-pending ICDS-40A suppressor—a newly developed electrodialytic anion suppressor that minimizes drift and noise.

This unique solution for electrolytic suppression features:

- A unique, folded eluent flowpath that doubles cation exchange surface area in a smaller physical volume
- A small volume that ensures greater thermal stability and minimal dispersion
- No need for hazardous and costly chemical regeneration solutions

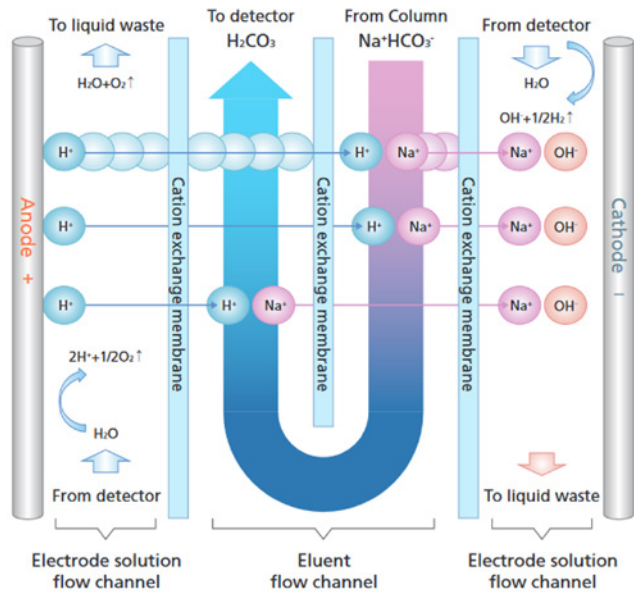
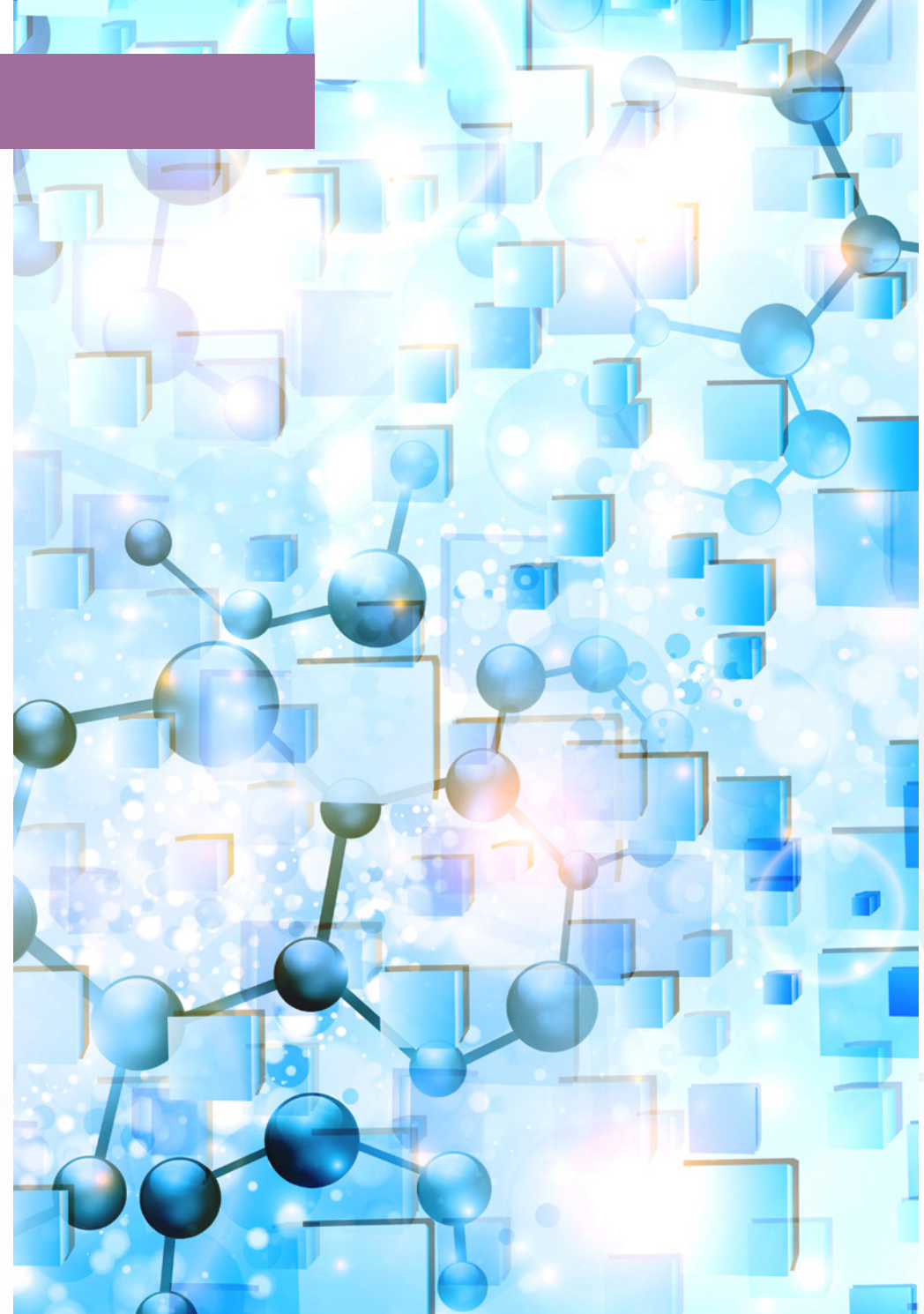


Figure 1: Internal structure of the ICDS-40A suppressor and the electrodialytic effect.



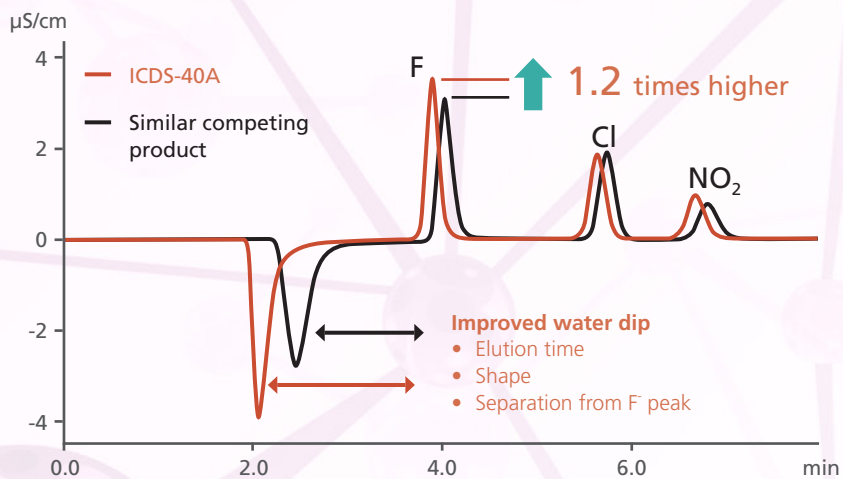


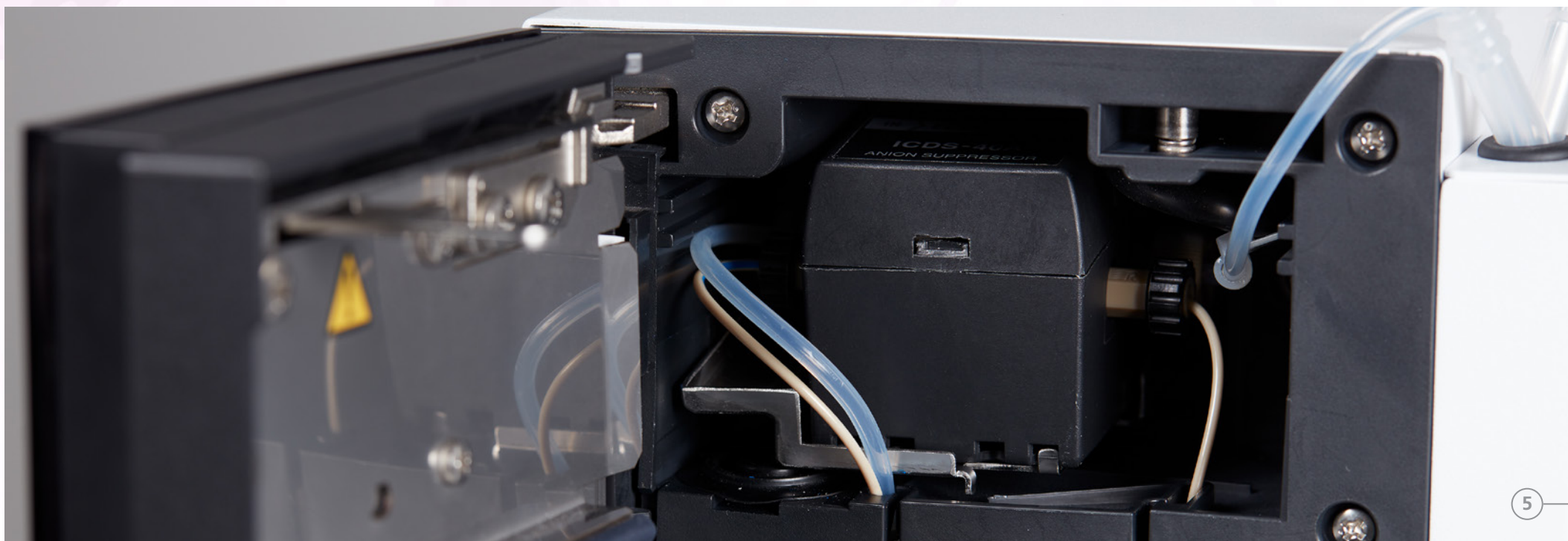
Figure 2: Comparison of Prominence IC water dip and peak dispersion to another common electrolytically suppressed ion chromatograph available on the market. Increased peak heights and separation between the water dip and analyte peaks facilitate quantification of early-eluting peaks.

Better Resolution, Better Stability

The ICDS-40A suppressor features two unique design aspects that minimize peak dispersion and limit unwanted shifts in retention time:

- Small size and internal volume—The small volume means there is less space for eluting peaks to disperse post-column and a smaller thermal mass to control.
- Redundant thermal control—The suppressor itself is temperature-controlled, but its small size enables it to be housed in the column oven, providing two layers of highly stable temperature control.

These features improve the separation of the water dip from early-eluting peaks, provide greater peak heights, and ensure higher repeatability and reproducibility by preventing thermally induced shifts in retention time.



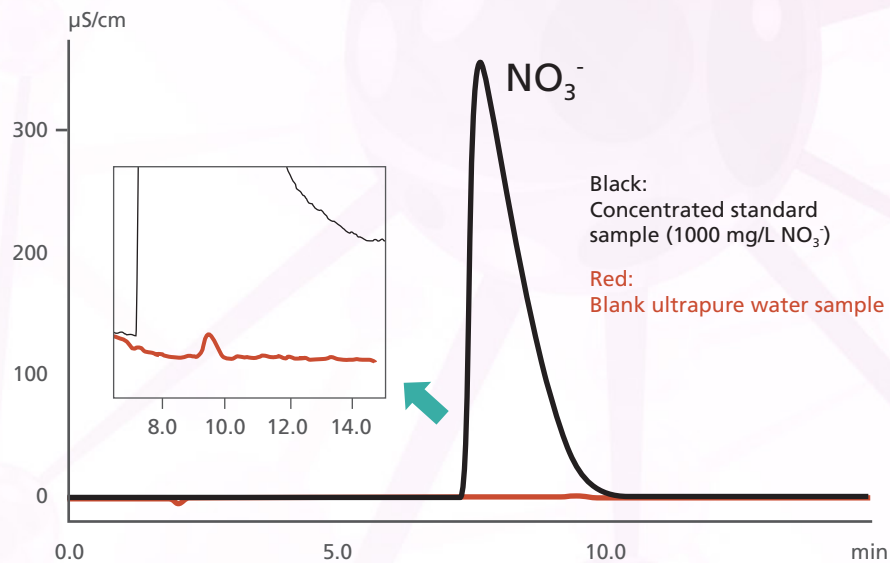


Figure 3: Demonstration of low carryover between samples. A blank ultrapure water sample was injected immediately following a sample that contained 1000 mg/L NO₃⁻.

High Precision and Reliability from Shimadzu's World-class HPLC Platform

In addition to the novel suppressor design, the Prominence IC is built around Shimadzu's renowned HPLC platform.

This improves analytical reliability by offering superior solvent delivery performance, high injection accuracy and reproducibility, low carryover, and high thermal precision of the oven temperature. All of this adds up to a highly precise, reliable and easy-to-use ion chromatograph.

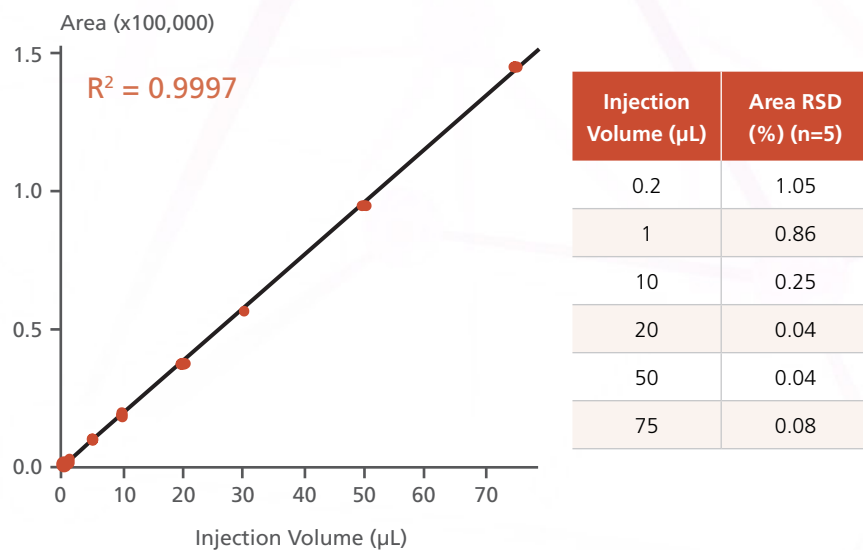


Figure 4: Demonstration of high-injection accuracy and reproducibility. Five repeated injections of a 10 mg/L Br solution at various volumes show a linear relationship for peak area and low %RSDs.

Shimadzu Prominence IC

Width = 16.5"

A Smart Use of Benchtop Space

Space in your laboratory runs at a premium. The Prominence IC is nearly 50% narrower than comparable ion chromatographs on the market. A narrow-width column oven and a modular autosampler help to create this unique, space-saving form factor.

This means more room for other instruments, data stations and bench space for other work.



Fast EPA 300 Analysis in Less Than 4 Minutes

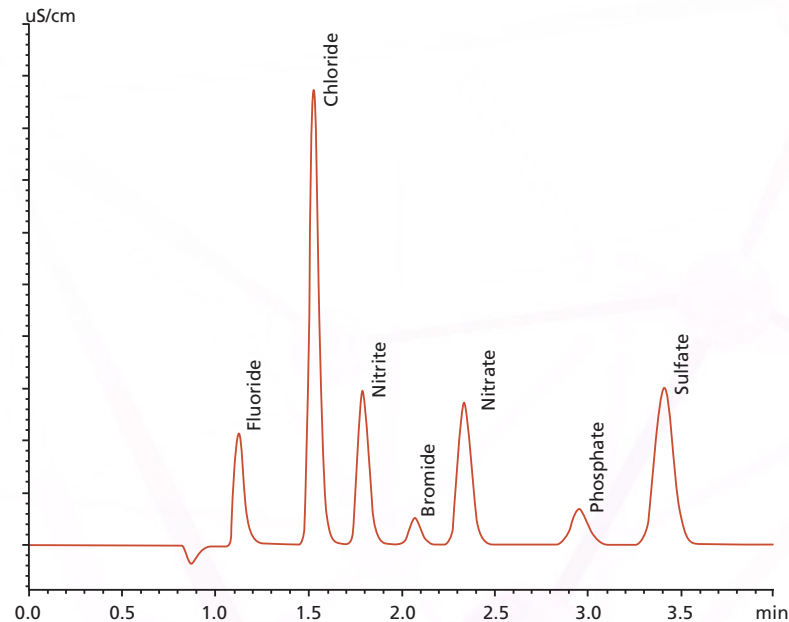


Figure 5: Chromatogram of results from EPA 300 analysis of anions in water using the Prominence IC. These method conditions are optimized for high sample throughput.

ANIONS	1 DAY		4 DAYS	
	T _r Precision (RSD)	Area Precision (RSD)	T _r Precision (RSD)	Area Precision (RSD)
Fluoride (F ⁻)	0.06%	0.07%	0.12%	0.72%
Chloride (Cl ⁻)	0.06%	0.07%	0.15%	0.78%
Nitrite (NO ₂ ⁻)	0.06%	0.14%	0.18%	0.70%
Bromide (Br ⁻)	0.07%	0.24%	0.20%	0.75%
Nitrate (NO ₃ ⁻)	0.08%	0.20%	0.22%	0.97%
Phosphate (PO ₄ ³⁻)	0.15%	0.25%	0.24%	0.64%
Sulfate (SO ₄ ²⁻)	0.13%	0.18%	0.30%	0.63%

Table 1: Demonstration of retention time and area count repeatability conducted over a four-day period.

Created for Performance: EPA Methods 300 and 300.1

Regulatory compliance for water analysis is critical. We have demonstrated the performance of the Prominence ion chromatograph against common methods, such as EPA 300 for common anions and an extended version, EPA 300.1, that includes common inorganic disinfection byproducts (DBPs).

Through experimentation, we have found that running common ion chromatography standard test methods on the Prominence IC enables:

- **Lower cost of operation**—No expensive or hazardous chemical regenerants to purchase and dispose of.
- **Excellent resolution**—No interference of the water dip on the early-eluting peaks and the ability to extend runs to maximize both resolution and injection volume for trace analysis.
- **High precision and stability**—Repeatable results from routine analysis means more time analyzing and less time performing maintenance.

For more in-depth details on EPA 300 and 300.1 analyses, take a look at our application notes on these methods.

[Click to View](#)

EPA 300

EPA 300.1

The Science You Know, The Service You Trust

As the world's second largest supplier of analytical instrumentation, Shimadzu experts know that keeping instruments in top condition is critical to our customers' success. Our support for the Prominence IC is no different. As with all our instruments, our customers are empowered by:



Local Support—Dispatched from our ten U.S.-based offices, our technical support and service teams are always nearby.



Free Phone Support—For the life of your instrument, we offer 100% cost-free support over phone and email.



Affordable and Flexible Service Plans—Our service teams offer optional extended service plans to keep your instruments running at factory specifications without you having to lift a finger.



Training and Education—Hands-on training comes with the installation of any instrument. We also offer in-person and online training courses that focus on the theoretical and applied aspects of instrument operation to build your knowledge or learn new skills.

Shimadzu's Prominence ion chromatograph is the the next generation of electrolytically suppressed ion chromatography. It enables sensitive, stable, cost-efficient and method-validated analysis, all in a small footprint.

Better yet, it's built around Shimadzu's excellence in liquid chromatography and backed by renowned service and support.



Explore this and other instrumentation for your industrial laboratory at www.RefineYourLab.com

For information or help finding the right
solution for your industrial laboratory, visit
www.RefineYourLab.com



7102 Riverwood Drive, Columbia, MD 21046, USA
Phone: 800.477.1227 / 410.381.1227
www.ssi.shimadzu.com