

HUMAN HEALTH

ENVIRONMENTAL HEALTH

DO THINGS
THE WAY
YOU WANT



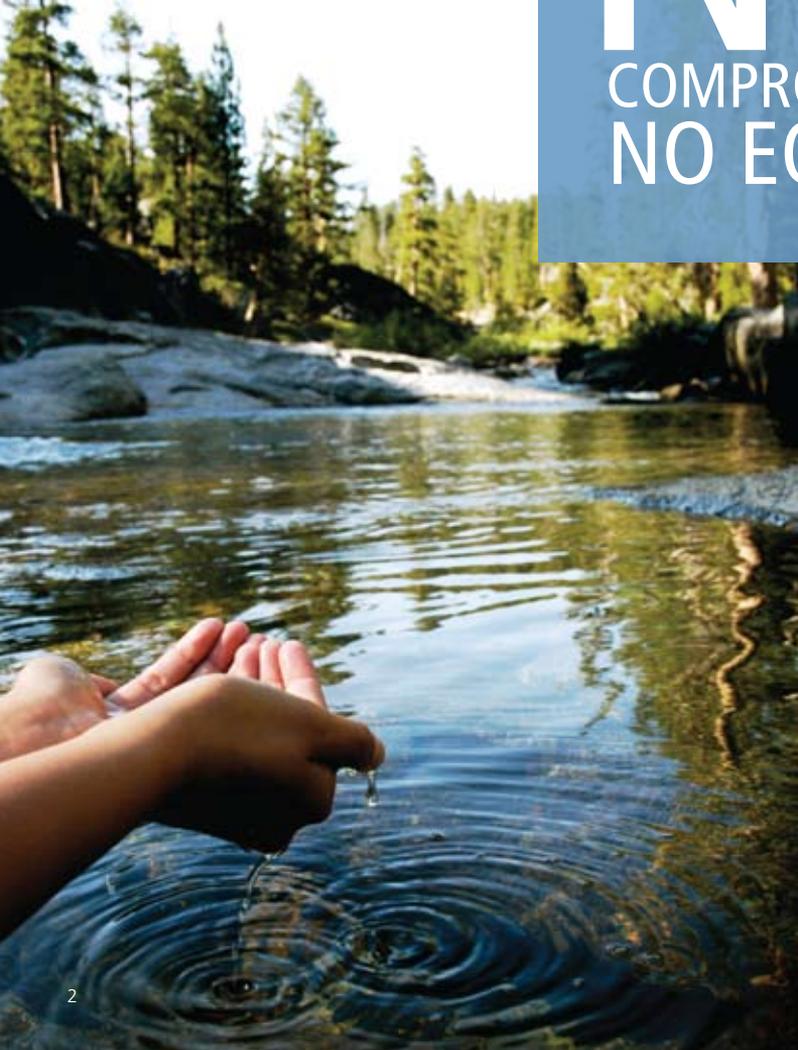
NexION 300 ICP-MS

Three modes of operation. Two interference-removing techniques.
One revolutionary instrument.


PerkinElmer[®]
For the Better



NO
COMPROMISES.
NO EQUAL.





REVOLUTION

WELCOME TO THE FUTURE OF ICP-MS TECHNOLOGY

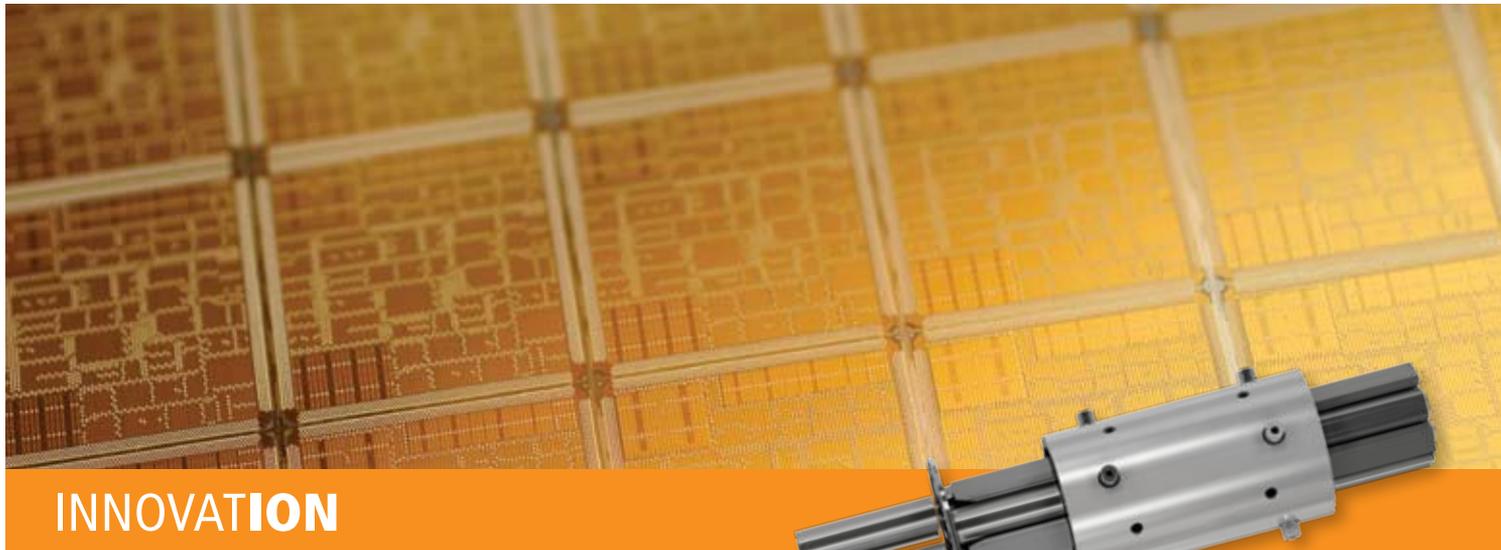
Engineered to deliver a level of stability, flexibility and performance never before seen in an ICP-MS instrument, the award-winning NexION® 300 represents the first truly significant and revolutionary industry advancement in recent memory.

For the first time ever, a single ICP-MS instrument offers both the simplicity and convenience of a collision cell and the exceptional detection limits of a true reaction cell.

With this patented Universal Cell Technology™ (UCT), analysts can now choose the most appropriate technique for a specific sample or application. No restrictions on which gases you can use. No limits on your mass range. No compromises on how you choose to work. And no hassles switching from one mode to another. Just the promise of superior accuracy and detection limits, faster analysis times, and an easier, more customizable operator experience than with any other instrument on the market.

Signal responses are kept stable hour after hour by a unique Triple Cone Interface and Quadrupole Ion Deflector. Designed to remove an unprecedented level of un-ionized material (and preventing it from entering the Universal Cell), this innovative ion path keeps the instrument clean, minimizing drift and completely eliminating the need for cell cleanings.

The NexION 300. Welcome to the next generation of ICP-MS.



INNOVATION

ELIMINATING INTERFERENCES WITH UNIVERSAL CELL TECHNOLOGY

Only PerkinElmer offers a collision cell (with Kinetic Energy Discrimination) and a true reaction cell (with a scanning quadrupole), to bring together the two most powerful polyatomic interference-removal techniques in the same instrument for the first time.

Together with the instrument's Standard setting, this patented Universal Cell Technology (UCT) allows the instrument to be run in three different modes depending on the level of interference removal and detection limits required.

Standard Mode:

Unlike other systems, the NexION 300's cell is actively vented to remove residual gases. This enables the instrument to run in true Standard mode—with the cell turned off—so you experience none of the decreased sensitivity encountered with passively vented systems. Without being able to quickly vent their cells, instruments from other manufacturers are forced to use KED even in Standard mode because of potential interferences, and are limited to using only a single gas. For elements not requiring interference correction, Standard mode can provide sensitivity equal to that of Collision or Reaction mode when done properly.

Collision Mode—with Kinetic Energy Discrimination (KED):

Ideal for semi-quantitative analyses, environmental sample monitoring, and the testing of unknown samples, the NexION 300's Collision mode offers the perfect mix of performance and simplicity. By using a simple non-reactive gas, Collision mode removes many interferences to deliver better detection limits than Standard mode for some elements.

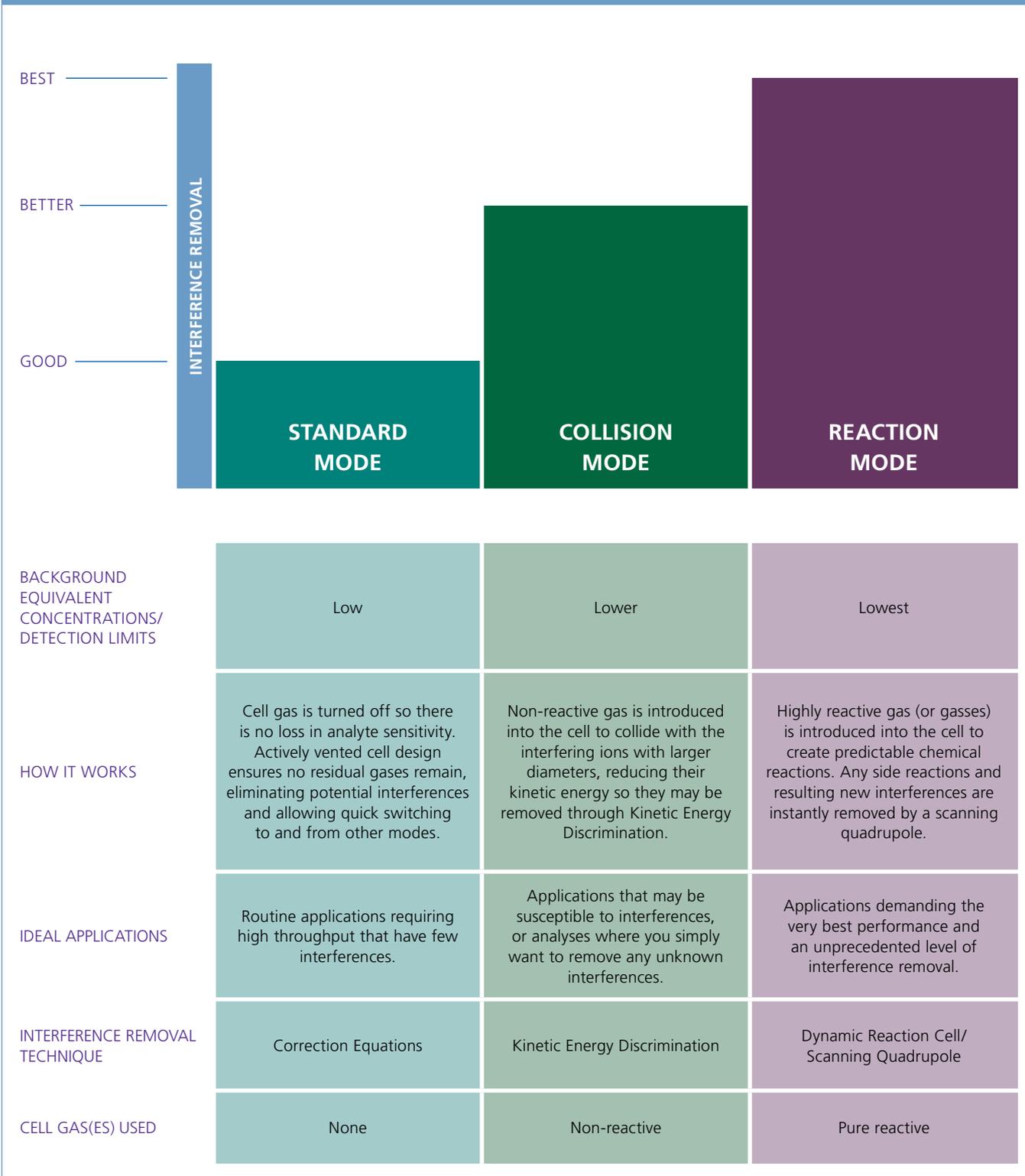
Reaction Mode—with a scanning quadrupole:

Universally recognized as the technique offering the ultimate detection limits (even with the most difficult elements and matrices), the NexION 300's Reaction mode removes any and all interferences with little or no loss of analyte sensitivity. Unlike other instruments that claim to have a Reaction mode, NexION features a scanning quadrupole that removes targeted interferences and reaction products in the Universal Cell, enabling any reactive gas to be used in the system, and allowing only the element of interest to pass to the analyzing quadrupole.

Running in Reaction mode, the NexION 300 offers the ultimate detection limits for difficult elements, including:

- Iron
- Calcium
- Potassium
- Magnesium
- Arsenic
- Selenium
- Chromium
- Vanadium

DO THINGS THE WAY YOU WANT WITH THREE MODES OF OPERATION.





INNOVATIVE DESIGN PRODUCES
**THE WORLD'S
MOST STABLE
ICP-MS**

Before the ion beam even enters the Universal Cell, it is defined and focused more thoroughly and effectively than on any other instrument by a revolutionary Triple Cone Interface (patent pending) and a proprietary Quadrupole Ion Deflector. By removing most neutrals and photons, this innovative combination eliminates drift and delivers exceptional signal stability hour after hour, even when running the most challenging matrices.

Reproducible performance can only be attained with a clean cell. And no other instrument does more to prevent sample deposition than the NexION 300. In fact, the instrument has been engineered to remove un-ionized material so effectively that its cell does not require routine cleaning.

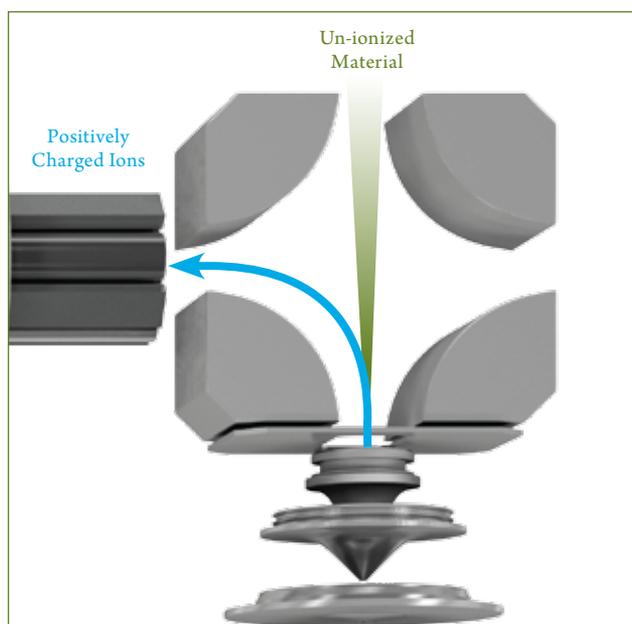
The end result is a system that rarely needs to be recalibrated, delivering superior productivity and maximum uptime.



Triple Cone Interface

In addition to the sampler cone and skimmer cone typically found on all other ICP-MS systems, the NexION 300 also features a unique hyper skimmer cone for the most tightly defined ion beam available.

Pressure within the two-chambered design is reduced in smaller steps than in other instruments, providing less dispersion of ions and preventing sample deposition on internal surfaces. Voltages never need adjusting and all three cones are outside the vacuum area so they can be quickly and easily removed, cleaned and replaced to minimize instrument downtime.



Quadrupole Ion Deflector

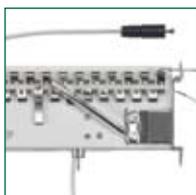
Designed around a proprietary, miniaturized quadrupole, this breakthrough filtering feature turns ions 90 degrees, focusing those of a specified mass into the Universal Cell and discarding all neutral species.

The path through the Quadrupole Ion Deflector is aligned with the tightly defined ion beam leaving the Triple Cone Interface. This ensures ions and neutrals never impact the component's surfaces, keeping it clean for superior stability and eliminating cleaning requirements.



CONFIGURATION

FEATURES AND BENEFITS OF THE NEXION 300 ICP-MS



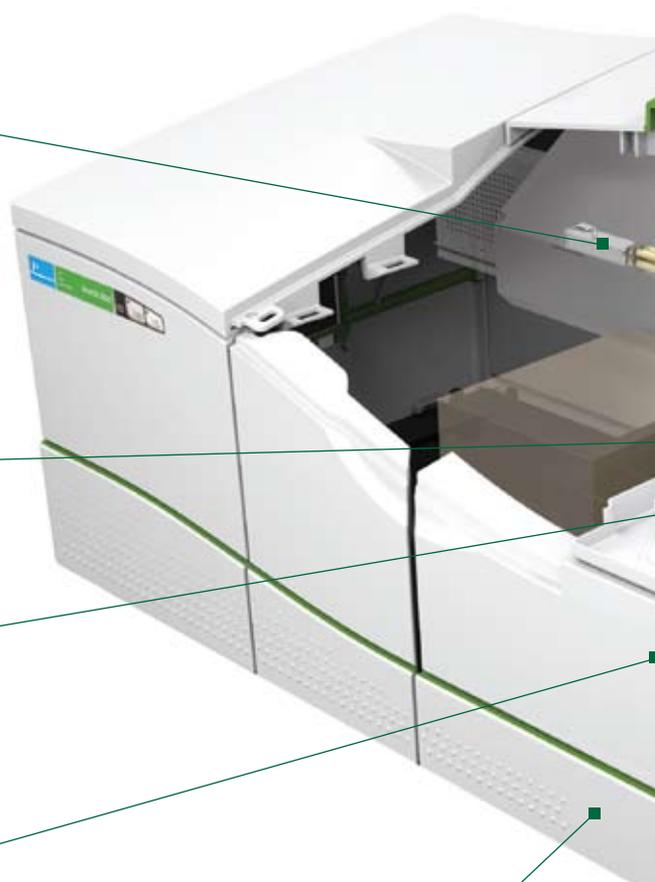
Simultaneous dual mode (analog/digital) detector—Provides over nine orders of dynamic range and measures both high- and low-level analytes simultaneously. Also delivers the fastest data acquisition rates of any ICP-MS instrument on the market, making the

NexION 300 an ideal tool for the emerging nanomaterials field.

Large, open sample introduction area—Accommodates a wide variety of sample introduction systems and is easily accessible to both left- and right-handed users.

Low liquid uptake nebulizer—Saves money by reducing sample consumption and minimizing lab waste. Every NexION 300 ships with a concentric nebulizer and cyclonic spray chamber and can be user-defined for specific applications.

Free running RF plasma generator—Unlike other systems, the NexION 300's RF generator features no moving parts for reliable, robust performance, and instantly changes to accommodate any plasma—ideal for petrochemical applications and speciation solvents.



Benchtop design with no rear connections—Saves valuable laboratory space and allows operation and installation up against a wall.

Fastest-scanning quadrupole in the industry (>5000 amu/sec)—Offers the fastest peak hopping and highest analytical mass range available (all the way up to 280 amu).

Universal Cell Technology—Offers three modes of operation (Standard, Collision or Reaction) depending on the level of performance required. Switching between modes is quick and easy so users can select the best mode for a particular analysis without compromising speed.

Triple Cone Interface—Produces the most tightly focused ion beam in the industry, reducing build-up on internal components (particularly the Quadrupole Ion Deflector) so maintenance and cleaning are minimized.

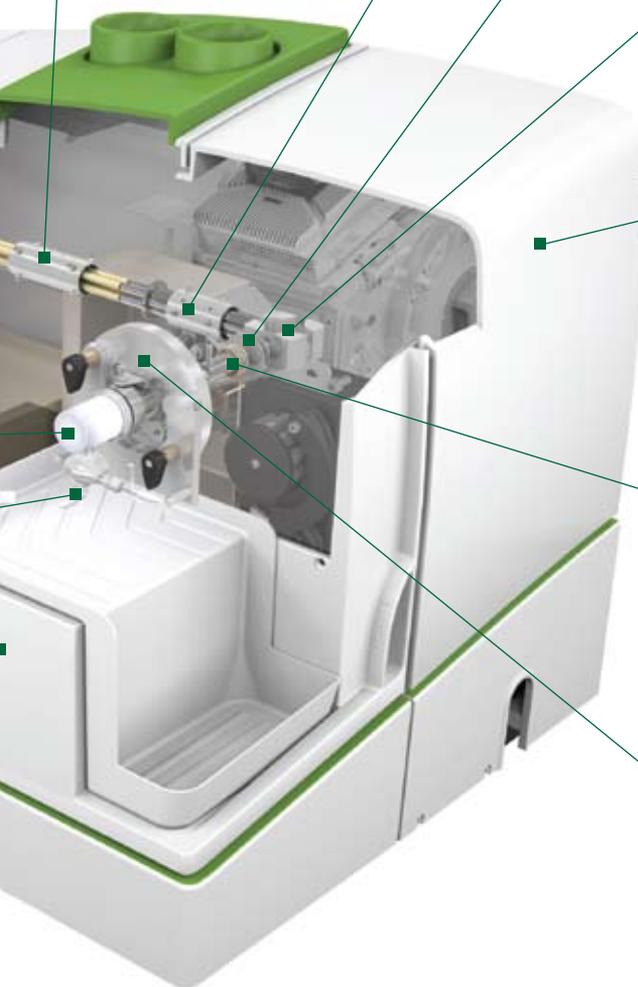
Quadrupole Ion Deflector—Allows only ions of a specified mass to pass into the Universal Cell, enhancing sensitivity while keeping the cell clean—making it the only ICP-MS on the market with a cell that never needs cleaning or replacing.

Custom-designed, four-stage vacuum system—Features the highest capacity turbo and roughing pumps and allows the use of any collision or reaction gas in the Universal Cell. Pump down can be achieved in a fraction of the time of other systems, allowing users to get back to running samples 2-3 times faster than with other instruments.

Full color plasma view window—Allows the visual inspection of the cones, torch and load coil without opening the instrument. Enables the easy optimization of plasma sampling depth and simplifies analysis of organics.



Fully automated X, Y, Z torch positioning—Computer-controlled for maximum ion transmission. Offers automatic one-touch optimization which, when combined with PerkinElmer's patented PlasmaLok® technology (for secondary discharges), completely eliminates the need for costly consumable parts (like shields) required on other instruments.





OPTIMIZATION

THE INDUSTRY'S MOST ADVANCED YET INTUITIVE SOFTWARE

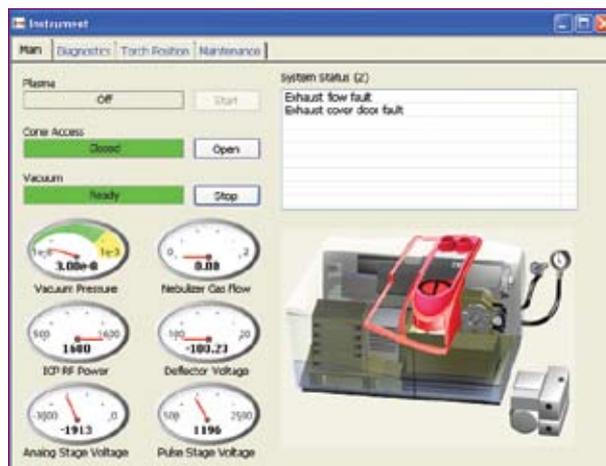
For an instrument engineered to perform complex analyses, the NexION 300 is remarkably easy to use. Every step—from start-up to final report generation—can be controlled and customized through a simple drag-and-drop interface.

NexION's sophisticated software is so comprehensive and intuitive that even inexperienced operators can achieve reliable, accurate results in a fraction of the time of other systems. No matter what type of analysis you're performing—qualitative, semi-quantitative, quantitative or specialized (isotope-ratio, isotope-dilution)—all the tools and features you need are at your fingertips. Pre-set methods and application-specific templates can be used to simplify and accelerate many of today's most commonly performed analyses, while user-selectable fields offer complete programming freedom to tailor the instrument to a specific need or sample matrix.

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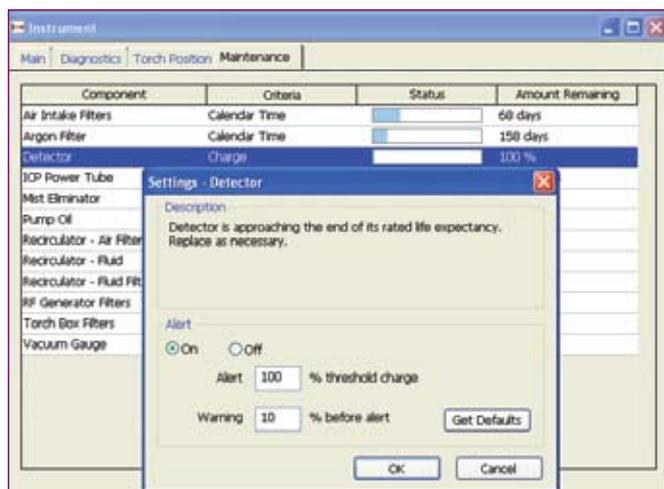
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The instrument status window provides real-time monitoring of the system. In this example, the software warns that the exhaust cover door is open and flow is interrupted.

Routine Maintenance Alerts

To keep the instrument running at peak performance, alarms may be set to remind you when it's time for simple preventative maintenance tasks such as oil changes and tubing replacement. The system will even display how many hours of use you have received to date from various components and when they may need attention. One alert you will never see is for routine cleaning of the cell—something not required with the NexION 300's advanced design.



The maintenance tab in the instrument window allows the user to set up and customize alerts.

Simple Method Development

Method development has never been easier than with the NexION 300. Simply select the elements you need to measure and the software will help you pick the appropriate mass based on abundance and potential interferences. Pre-set methods will eliminate the need for method development in many environmental and biomonitoring applications.

The NexION 300's software also features TotalQuant™, a useful tool for quickly determining what is in an unknown sample. With just a single standard, you can instantly obtain estimated concentrations for all elements simultaneously.

Flexible Quality Control Checks

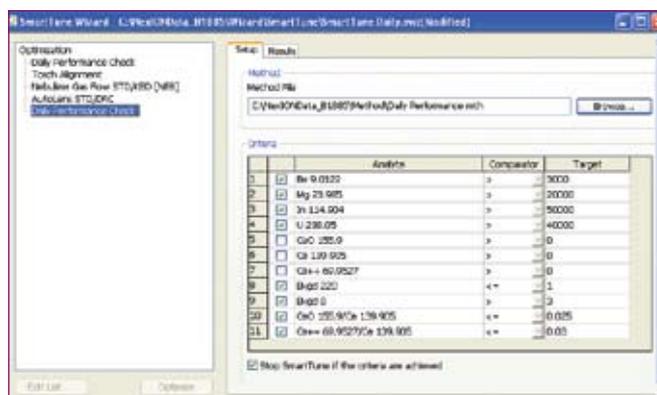
Monitoring calibration, checking standard responses and taking action to correct any problems with an analysis can all be done using the software's automated quality control checking feature. Flexible and customizable, it ensures good quality data even when the instrument is being run unattended.

Speciation Analysis

An optional software package (Chromera®) is available that seamlessly integrates the NexION ICP-MS and PerkinElmer chromatography systems. See page 13 for more details.

SmartTune Optimization Wizard

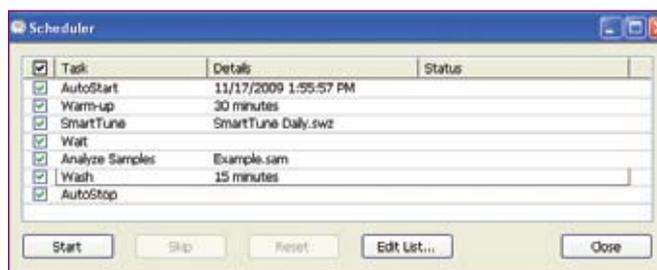
Designed for maximum productivity and effortless operation all day, every day, SmartTune automatically sets up all your tuning procedures, runs them in the sequence you select, and prints out a final tuning report based on your chosen pass/fail criteria.



The SmartTune optimization wizard sets up user-defined optimization and performance-check procedures, automatically running them while you perform other tasks—maximizing your productivity.

Scheduler

By allowing labs to automatically schedule instrument optimizations and procedures—including auto-start and shut down, warm-ups, instrument tuning and analysis of samples using multiple methods—the Scheduler feature increases workflow efficiency while reducing operator intervention for improved data reliability.



The Scheduler feature lets you create a list of tasks for the instrument to perform automatically, minimizing your involvement and maximizing workflow efficiencies.

Build Run List

The Build Run List feature automatically builds an exact listing of all your standards, quality control checks and samples before you start your automated analysis, eliminating unexpected sample-run orders and errors.

Customizable Reporting

The NexION 300 software has a variety of options already built in, and report styles/formats can also be customized to suit your specific reporting needs.



SPECIATION

THE MOST ACCURATE ELEMENTAL SEPARATION AND DETECTION

The NexION 300 ICP-MS can be easily integrated with liquid chromatography (LC), gas chromatography (GC) and ion chromatography (IC) systems to deliver a complete solution for the separation and determination of individual metal compounds. Coupled with—and controlled by—PerkinElmer's specialized Chromera® software, these integrated systems provide the most flexible and accurate speciation analysis available.

By adding the LC, GC or IC separation capability to the NexION 300, the instrument is able to answer “what forms” of a species are present in a sample and not just “how much”. This allows you to pinpoint the exact toxicity, bioavailability, metabolism and environmental mobility of elements, giving you the information you need to accurately assess a situation and guide any remedial action.

Gaining momentum in environmental, consumer product and food safety applications, effective speciation analysis requires the precise identification of the beginning and end of a peak, even in noisy data—something no other technology does better than Chromera.



Clarus® Gas Chromatography Platform



Flexar™ Liquid Chromatography Platform

Elemental speciation analysis using the NexION 300 ICP-MS and Chromera software.

Unlike other speciation solutions that require users to separately and manually control their ICP-MS and chromatography systems, Chromera seamlessly integrates the two with a unified user interface that manages both. No more tediously switching between the two systems at start up. No more back and forth when setting up operating parameters. Just the simplest, most streamlined operator experience to maximize efficiency and optimize workflow.

Chromera simplifies the operation and management of your separation and detection instruments with a variety of customizable built-in features.

Instrument Control

Chromera allows control of all PerkinElmer LC hardware and ICP-MS components. When Chromera is started, control for all components is established and shown in the Device Connections window. The user can then manually start set system parameters through the Manual Control window and Control Panel. When an analysis is started, Chromera automatically checks that all components are equilibrated and ready and will not allow the analysis to begin until all devices are ready. During an analysis, the hardware components can be monitored in real time in the Status Panel.

The screenshot displays the Chromera software interface. The **Manual Control** window is the primary focus, containing several sections: **Monitor Baseline** with 'Start' and 'Browse for method...' buttons; **Pump Settings** with a table for Flow Rate (mL/min), %A, and %B; **Purge Pump** with a table for Flow Rate (mL/min) and 100% A, B, and C checkboxes; **Flush Autosampler** with a table for Flush Volume (µL) and Number of Flush Cycles; **Oven** with a table for Temperature (°C) and Tolerance +/-; and **Peltier Tray** with a table for Temperature (°C) and Tolerance +/-.

The **Status Panel** on the right provides real-time monitoring of various parameters: Pump Pressure (640 psi), Switching Valve Position (LC To Waste), Vacuum Pressure (2.22E-05 Torr), AX (95), DC (5), Cell B Gas Flow (0.797 mL/min), Sequence Progress, Torch Box Temperature (43.365 °C), Main Water Temperature (21.387 °C), Filter Oven Temp (40 °C), and Pump Elapsed Time (2.0 min).

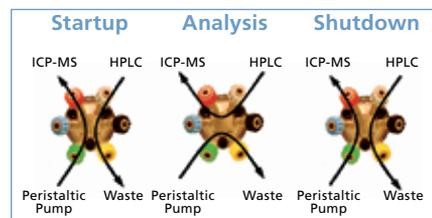
The **Control Panel** at the bottom left offers direct control options: Stop Plasma, Start Peristaltic Pump, Stop Peristaltic Pump, Stop LC Pump, and Switch LC to Waste.

Database

A new database has been implemented, which allows importing or exporting of data, sequences, and methods, as well as creating, backing up, and restoring databases, and deleting, archiving, and retrieving data.

Switching Valve

An automated switching valve allows the NexION 300 ICP-MS to warm up and be optimized while at the same time equilibrating the LC column with mobile phase. When a speciation analysis is started, the valve automatically switches the LC effluent to the NexION 300; when the analysis is complete, the valve automatically diverts the LC flow to waste. Coupled with the ability to automatically shut down all hardware at the end of a run, the valve allows the LC column to be washed with aqueous solution and conditioned with organic solvent without having to worry about harming the ICP-MS.



Wizards

Wizards are available to aid in creating sequences and reports.

Data Selector

A new interface with the database has been designed which allows data to be previewed before it is opened: highlighting a sample row automatically displays the chromatograms of that sample, allowing users to quickly determine if they are opening the desired sample.

Run Time—Active Sequence

While performing an analysis, the Sequence progress and data are available in the Run Time environment. The Status Panel allows for real-time monitoring of the hardware components during data acquisition.

Post Run Data-Viewing Options

After data acquisition, data can be viewed in the Post Run environment in several ways: as a matrix of individual chromatograms, as individual chromatograms one at a time, overlaying the data, or as 3-D plots. The quantitative results are available below the chromatograms and are updated each time a sample is run.

Dictionary Files

Dictionary files are available which ease method creation: enter the names of species and calibration standards, and they are automatically saved. The next time a method is created, simply select the names from a drop-down list. These files can be edited outside of the method: add, remove, or change names through the Dictionary Editor.



CUSTOMIZATION

CREATE YOUR IDEAL ICP-MS SYSTEM

PerkinElmer offers a wide selection of consumables, supplies and compatible systems designed and tested to enhance the performance, productivity and reliability of every NexION 300 instrument.

For more information on any of the products shown here, or for a complete listing of all NexION accessories available, please visit www.perkinelmer.com/nexion300.



Multiwave 3000

- Microwave sample digestion system with built-in cooling system to reduce cycle time, improving productivity

Laser Ablation Systems

- A variety of fully integrated solutions that allow you to analyze solids quickly and easily without any necessary sample preparation

S10 Autosampler

- Large, flexible sampling capacity
- Fast, accurate random access
- Corrosion-resistant components

High Throughput Sample Introduction Systems

- Minimizes sample uptake and washout time
- Throughput increased up to 2-3 fold
- Eliminates sample contact with peristaltic pump tubing

FIAS

- Fully automated flow-injection system simplifies and speeds up analyses requiring complex sample preparation such as mercury and other hydride-forming elements

SMS 100 Mercury Analyzer

- Enables the determination of total mercury in solid or liquid samples without acid digestion or sample preparation

ICP-MS Consumables

- Cones
- Torches
- Nebulizers
- Standards

NEXION 300 ICP-MS: AVAILABLE CONFIGURATIONS

MODEL #	OVERVIEW	SUITED APPLICATIONS
300Q	No cell (Can be field upgraded to include a Universal Cell at any time)	Simple analyses requiring accepted interference-correction capabilities, including routine geochemical analyses
300X	Single-channel Universal Cell (1 gas line)	General purpose, particularly environmental
300D	Dual-channel Universal Cell (2 gas lines)	Analyses requiring availability of KED and/or a scanning quadrupole at all times, particularly biomonitoring
300S	Dual-channel Universal Cell (2 gas lines) optimized for sensitivity	Designed specifically for the semiconductor industry



No matter what your application, the NexION 300 is the only ICP-MS that lets you maximize productivity without compromising sensitivity or performance.



Capable of performing any analysis—from the simplest semi-quant to ppt levels of difficult elements—NexION is the only instrument in the world that delivers the flexibility to suit every laboratory across a broad array of diverse markets.



OTHER SOLUTIONS FROM THE WORLD LEADER IN ATOMIC SPECTROSCOPY

The award-winning NexION 300 ICP-MS is just the latest innovation in a long line of trusted atomic spectroscopy solutions from PerkinElmer. Our full family stretches from a broad array of atomic absorption instrumentation to the world's most popular ICP-OES solutions, as well as mercury analyzers and sample preparation tools.

For more information, visit us at www.perkinelmer.com/atomicspectroscopy.



COLLABORATION

A CONSTANT RESOURCE FOR CUSTOMER SUPPORT AND INSTRUMENT CARE

With a global team of certified, factory-trained Customer Support Engineers in more than 150 countries around the world, OneSource Laboratory Services from PerkinElmer lives up to its name by being the single source for all your instrument maintenance and repair needs.

Flexible and scalable, OneSource programs are tailored to the specific needs and goals of individual customers. From complete, all-inclusive long-term contracts to an a-la-carte offering of individual services, we have the people, experience and resources to deliver the ideal solution to labs of all types and sizes.

OneSource offers the most comprehensive portfolio of professional laboratory services in the industry, including complete care programs for virtually every technology and manufacturer. By allowing you to consolidate all your service contracts under a single supplier, and by providing responsive, expert technical advice and support at a moment's notice, we ensure your instrumentation—and your lab—is running at optimum levels at all times.

Whether it's care and repair, validation and compliance, asset management and laboratory relocation, software and hardware upgrades, or education and training, OneSource is... the ONE you can count on.

PerkinElmer has more people focused on ICP-MS applications than any other company worldwide.

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