

HUMAN HEALTH

ENVIRONMENTAL HEALTH

AN ICP-MS
THAT'S BETTER
BY A POWER
OF THREE



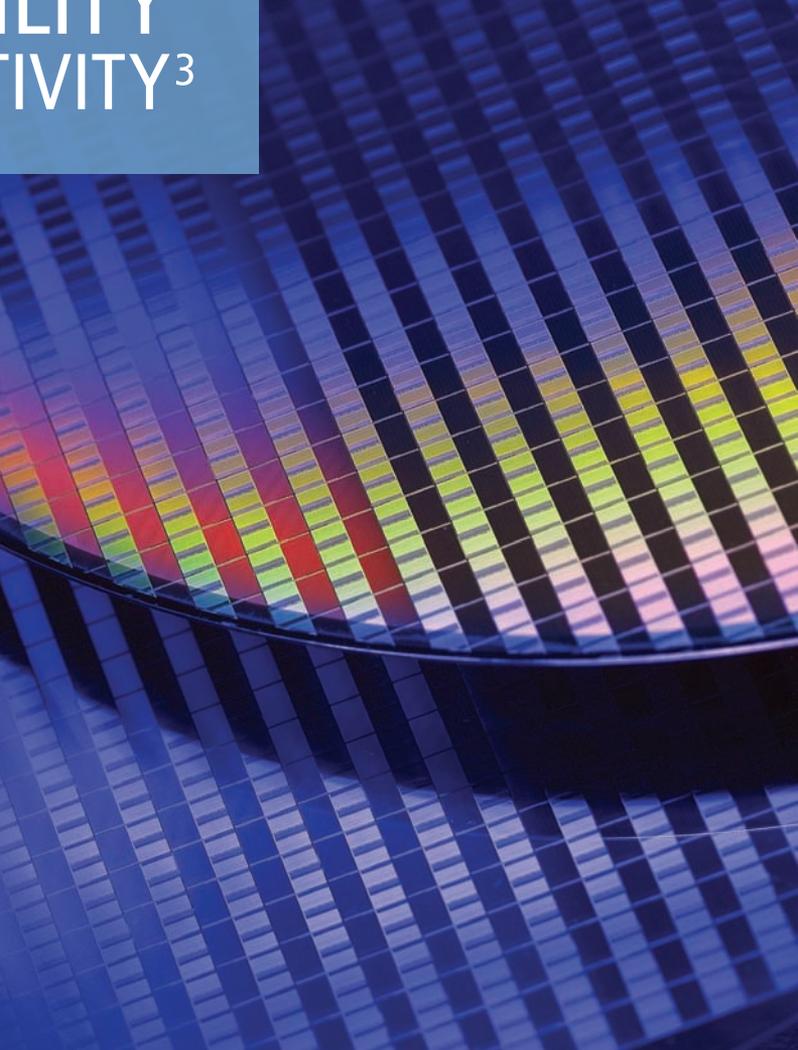
NexION 300 Series ICP Mass Spectrometers

Three cones. Three quadrupoles. Three modes of operation.


PerkinElmer[®]
For the Better



FLEXIBILITY³
STABILITY³
SENSITIVITY³



THE BEST THINGS COME IN THREES



To leverage the true power of ICP-MS in your lab, you need a solution that lets any scientist analyze any sample at any time. All while generating clear, reliable, informative results. It requires an instrument that offers a unique level of simplicity, flexibility and sensitivity—exactly what you get with the NexION® 300 series ICP-MS.

Engineered with an array of groundbreaking technologies to optimize performance and productivity, the NexION 300 has changed the face of ICP-MS by being the first instrument to offer:

3 cones for unrivaled stability

- Sampler Cone
- Skimmer Cone
- Unique Hyper Skimmer Cone

3 quadrupoles to maximize sensitivity for every element in a run

- Proprietary Quadrupole Ion Deflector
- Reaction Cell with Scanning Quadrupole
- Powerful Analyzing Quadrupole

3 modes of operation for ultimate application flexibility

- Standard Mode
- Collision Mode
- Reaction Mode

Experience the proven performance of the NexION 300 ICP-MS. And discover the instrument that puts the power of ICP-MS in the hands of anyone.

THE PATH TO MORE CONFIDENT RESULTS



The unique ion path in the NexION 300 ICP-MS creates the cleanest, most stable environment of any instrument for more accurate and consistent results. From its robust sample introduction systems all the way through to its industry-leading detector, every component has been designed for greater flexibility and optimum performance. The entire system has also been engineered to minimize maintenance by eliminating deposits on internal components, limiting cleaning requirements to the easily accessible cones for unrivaled uptime.

Sample Introduction

The large, open sample introduction area on the NexION 300 ICP-MS accommodates a broad range of sample introduction systems that can be quickly and easily switched out to suit a particular application or matrix:

- Laser ablation for solid samples
- Liquid, gas and ion chromatography for speciation analysis
- Peltier cooled organic sample introduction system
- Glass or quartz cyclonic sample introduction systems

Triple Cone Interface

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

Pressure within this unique Triple Cone Interface (TCI) is reduced in smaller steps than in other ICP-MS 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 simplify maintenance and minimize downtime.



Unique Triple Cone Interface delivers both sensitivity AND stability while offering quick, easy access for the simplest maintenance.

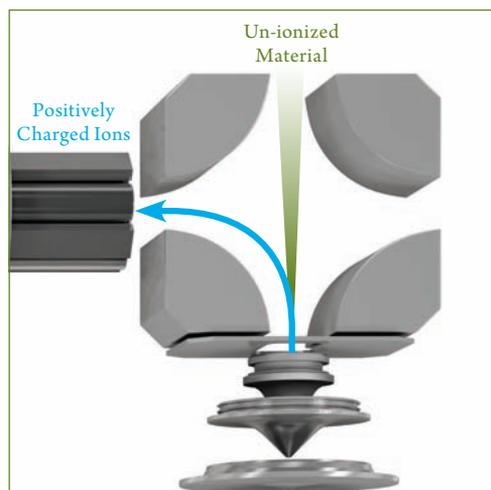
Quadrupole Ion Deflector

Complementing the Triple Cone Interface to enhance stability and eliminate drift is the first of three quadrupoles in the NexION 300 ICP-MS: the Quadrupole Ion Deflector.

This breakthrough filtering feature turns the ion beam 90 degrees before it enters the patented Universal Cell and analyzing quadrupole, providing unparalleled stability, and reducing background and interferences for the most accurate results. The Quadrupole Ion Deflector (QID) is the only filter of its kind that allows you to adjust your mass bandpass on the fly, automatically, to maximize sensitivity for every element in a run.

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 exceptional signal stability—hour after hour—even when running the most challenging matrices. The beam-focusing efficiency of the three cones and their exact alignment with the Quadrupole Ion Deflector eliminates the need for extraction lenses, delivering the most stable ion beam, dramatically reducing drift while minimizing maintenance requirements.

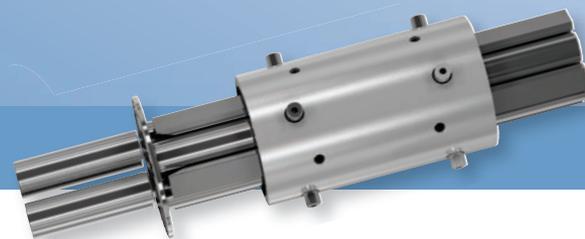
The instrument is so effective at removing un-ionized material that it is the only ICP-MS with a cell that never needs cleaning or replacing, maximizing instrument uptime and return on investment.



The Quadrupole Ion Deflector turns ions 90°, filtering off all neutrals for greater stability and consistency.



ELIMINATING INTERFERENCES WITH UNIVERSAL CELL TECHNOLOGY



The first instrument to bring together the simplicity and convenience of a collision cell and the exceptional detection limits of a true reaction cell, the NexION 300 ICP-MS gives you the choice of the two most powerful polyatomic interference-removal techniques. Coupled with the spectrometer's Standard mode, this patented Universal Cell Technology™ (UCT) allows the instrument to be run in three different modes to suit your required level of interference removal and detection limits.

Three Modes. Complete Flexibility.

With its three modes of operation, the NexION 300 ICP-MS lets you minimize analysis times without compromising your desired level of interference removal or detection limits. The instrument's Universal Cell Technology also delivers the easiest, most customizable operator experience with:

- The flexibility to use a wide range of reactive and non-reactive gases.
- No compromises on how you choose to work.
- No hassles switching from one mode to another. (Active venting allows the system to switch between Helium and non-Helium modes in <10 seconds.)

The World's Most Effective, Reliable And Flexible Reaction Cell.

Unlike other ICP-MS instruments that produce inconsistent, unreliable results in Reaction mode due to reaction byproducts in the cell, the NexION 300 ICP-MS gives you complete control of the chemistry inside the cell for absolute confidence in your data.

Dynamic Bandpass Tuning

NexION's unique Dynamic Bandpass Tuning (DBT) feature efficiently screens out interferences while maximizing analyte transmission. The DBT function ejects the precursor ions before they can react to form new interferences.

Mass Shift

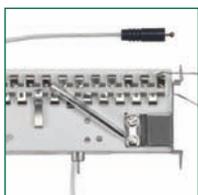
For analyses in which your analyte is reactive but your interference is not, the NexION 300 ICP-MS allows you to shift the measurement of your target to a mass free from the interferent.

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

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

| | INTERFERENCE REMOVAL | | |
|----------------------|---|---|---|
| BEST | | | |
| BETTER | | | |
| GOOD | | | |
| | STANDARD MODE | COLLISION MODE— WITH KINETIC ENERGY DISCRIMINATION (KED) | REACTION MODE— WITH A SCANNING QUADRUPOLE |
| DETECTION LIMITS | Low | Lower | Lowest |
| HOW IT WORKS | The cell gas is turned off and the system works like a non-cell instrument, providing a level of sensitivity equal to Collision or Reaction mode for elements not requiring interference correction. | A non-reactive gas is introduced into the cell to collide with interfering ions with larger diameters, reducing their kinetic energy so they may be removed through Kinetic Energy Discrimination. | A highly reactive gas (or gasses) is introduced into the cell to create predictable chemical reactions. Any side reactions and resulting new interferences are instantly removed by a scanning quadrupole so only the element of interest is passed to the analyzing quadrupole and detector. |
| WHY NEXION IS BETTER | A unique, actively vented cell design quickly and completely removes residual gases, allowing the NexION 300 ICP-MS to be run in true Standard mode—with the cell turned off—for optimum sensitivity. Without being able to quickly vent their cells, other ICP-MS instruments are forced to use Kinetic Energy Discrimination (KED) even in Standard mode because of potential interferences, decreasing sensitivity and limiting their operation to a single gas. | With its Extended Dynamic Range (EDR) capabilities, the NexION 300 ICP-MS allows you to selectively attenuate the signal of specific masses so you can measure elements with both low and high concentrations in the same sample in the same run—no need to use other techniques such as GFAA or ICP-OES. | Patented Dynamic Bandpass Tuning (DBT) removes all masses within a range of 20 amu—on both the low end (RPq) and high end (RPa)—eliminating the possibility of reactions and the formation of new products. Ions outside the boundaries of your defined stability region are unstable in the quadrupole and are ejected from the cell, enabling the use of reactive gases such as ammonia, oxygen and methane for superior, more targeted interference removal. |
| IDEAL USES | Routine applications requiring high throughput that have few interferences, making it popular in geochemical laboratories. | Applications that may be susceptible to interferences, or analyses where you simply want to remove any unknown interferences. Simple yet effective, Collision mode is commonly used for semi-quantitative analysis, environmental testing, as well as the testing of unknown samples. | Applications demanding the very best performance and an unprecedented level of interference removal. Ideal for industries ranging from semiconductor to biomonitoring and renewable energy. |

THE NEXION 300 ICP-MS BETTER BY DESIGN



Simultaneous dual mode 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 (~3000 data points per second to keep up with the scan

speed of the analyzing quadrupole), making the NexION 300 ICP-MS ideal for the emerging nanomaterials field.

Analyzing quadrupole—Offers the highest analytical mass range available (all the way up to 285 amu) and exceptionally fast scanning for rapid peak hopping.

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

Low liquid uptake nebulizer—Saves money by reducing sample consumption and minimizing lab waste. Every NexION 300 ICP-MS 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.

Pioneered By PerkinElmer. Adopted By The Industry.

With a long history in ICP-MS, PerkinElmer has been at the forefront of industry innovation with breakthroughs ranging from the free-running generator to Dynamic Reaction Cell™ technology to Universal Cell Technology.

Universal Cell Technology—Offers three modes of operation (Standard, Collision or Reaction) depending on the level of performance required. Switching modes is quick and easy so users can select their required level of performance 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.

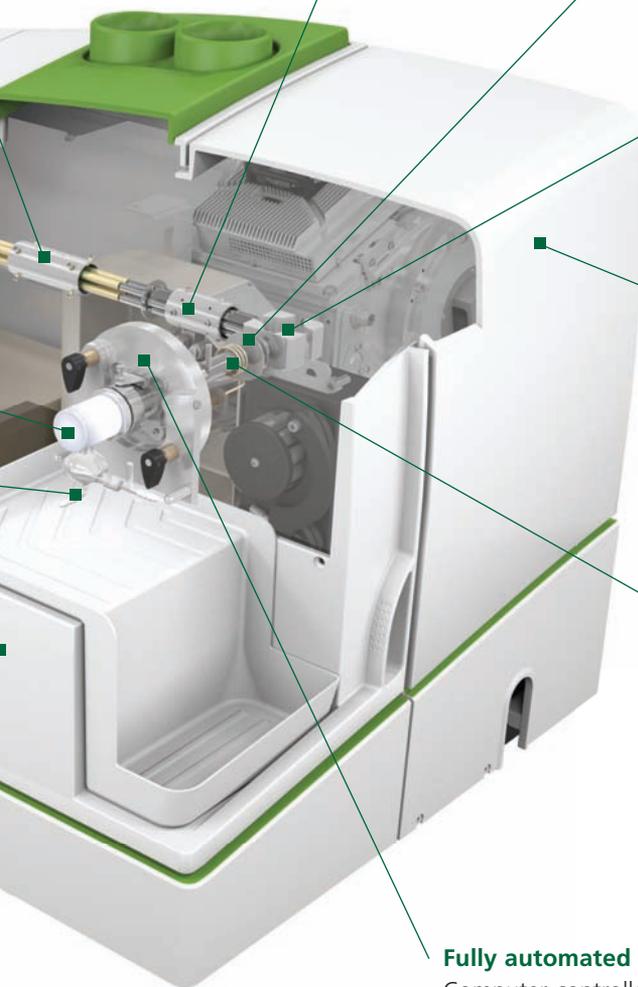
Quadrupole Ion Deflector—Allows only ions of a specified mass range to pass into the Universal Cell, enhancing sensitivity while keeping the cell clean—making it the only ICP-MS on the market with a cell that never needs cleaning or replacing.

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 ICP-MS instruments.

Full color plasma view—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.



THE INDUSTRY'S MOST ADVANCED YET INTUITIVE SOFTWARE

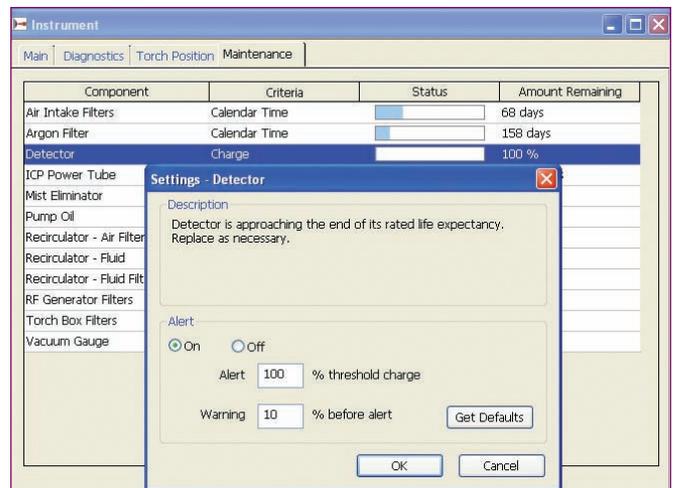


For an instrument engineered to perform complex analyses, the NexION 300 ICP-MS is remarkably easy to use. Every step in NexION ICP-MS software—from startup to final report generation—can be controlled and customized through a simple drag-and-drop interface. No matter what type of analysis you're performing—qualitative, semi-quantitative, quantitative or specialized (isotope-ratio, isotope-dilution)—all the tools you need are at your fingertips. Pre-set methods and application-specific templates are also available to simplify and accelerate many of today's most commonly performed analyses.

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 advanced design of the NexION 300 ICP-MS.



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

Simple Method Development

Method development has never been easier than with the NexION 300 ICP-MS. 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 eliminate the need for method development in many environmental and biomonitoring applications.

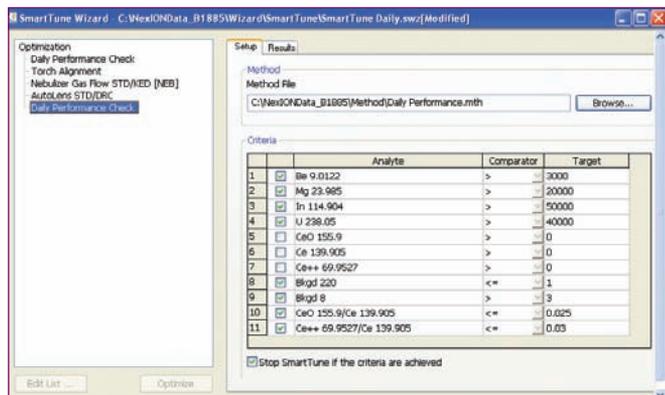
NexION ICP-MS software also features TotalQuant™, a useful tool for quickly determining what is in an unknown sample. With just a single standard, you can instantly obtain estimated concentrations for all elements simultaneously.

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.

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 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.

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

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

The NexION Report View uses a table format to allow for flexible and quick reviews of an analytical run. The user can select from six different tabs to view data ranging from mean measured intensity, concentrations for all samples, to graphic display of internal standards plotted over time. In addition, all data and internal standard charts can easily be exported into Excel. The QC tab/functionality allows for the review of all QC associated with a sample run.

Speciation Analysis—For 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 PerkinElmer's specialized Chromera® speciation software, these systems provide the most flexible and accurate speciation analysis available, allowing you to pinpoint the exact toxicity, bioavailability, metabolism and environmental mobility of elements.

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 software does better than Chromera.

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 no interference-removing correction capabilities, including routine geochemical analysis |
| 300X | Single-channel Universal Cell (1 gas line) or Dual-channel Universal Cell (2 gas lines, not ammonia) | General purpose, particularly environmental |
| 300D | Dual-channel Universal Cell (2 gas lines) | Analyses requiring availability of KED and/or scanning quadrupole at all times, particularly biomonitoring |
| 300S | Dual-channel Universal Cell (2 gas lines) optimized for sensitivity | Designed specifically for the semiconductor industry |



Create Your Ideal ICP-MS System

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

From sample digestion ovens to autosamplers, automated FIAS systems to a complete array of consumables (including cones, torches, nebulizers and standards), we have everything you need to get the most out of your instrument, your analyses, and your lab.

The Number One Source For Laboratory Services

As the most experienced, most complete provider of laboratory services worldwide, PerkinElmer OneSource® is uniquely positioned to offer a more valuable, customizable and profitable partnership.

Far beyond the traditional model of a laboratory services company, OneSource becomes an integral part of your business, providing a level of technical support and scientific expertise that's truly unique in the industry.

Having a single, consolidated care and repair program that covers all your instrumentation offers enormous benefits and cost efficiencies. But we don't stop there. OneSource brings the most experienced people and advanced technologies to bear on the operational issues you face every day, streamlining workflows, consulting on scientific challenges, even supporting the computer systems behind your instruments.

Discover the most integrated approach in the industry. And take advantage of the ideal set of tools to help empower your science and drive your business.

OneSource
Laboratory Services

- Business intelligence solutions
- Scientific & laboratory IT services
- Instrument service & repair
- Qualification & validation
- Method development services
- Asset procurement & disposition
- Relocation services

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