

ANY MATRIX
ANY INTERFERENCE
ANY PARTICLE SIZE



NexION® 2000 ICP Mass Spectrometer

• Any Sample Matrix: 100+ times automated gas dilution-AMS



• Any Interference: 3 gas Channels/UCT



• Low Maintenance: TCI/QID, new RF Coil



• Any Particle Size: 100,000 points/sec data acquisition speed

TRIPLE QUAD POWER MEETS SINGLE QUAD VERSATILITY

Unrivaled ppq detection limits. Unparalleled usability. Finally analysts can have the best of both worlds with the groundbreaking NexION® 2000 ICP-MS.

The most versatile ICP-MS on the market, the NexION 2000 features an array of unique technologies that combine to deliver the highest performance no matter what your analytical challenge. Discover the effortless versatility of an instrument that makes it easy to handle:

- Any sample matrix
- Any interference
- Any particle size

THE TECHNOLOGIES THAT DEFINE PERFORMANCE

The NexION 2000's technical innovations offer unique benefits to laboratories, both large and small.

The most powerful interference removal for the best detection limits

Easily and confidently remove interferences with second-generation Universal Cell Technology™, featuring three modes of operation and three gas channels for unsurpassed flexibility and performance.

Any Mode

With three modes of operation – Standard, Collision, and Reaction – the NexION 2000 combines the simplicity of a collision cell and the efficiency of a controlled reaction cell in one instrument.

Any Gas

The NexION 2000 is **the only ICP-MS that can run pure ammonia and other reactive gases** for complete and targeted interference removal.

Any Application

Capable of handling any sample matrix and addressing any and all interferences, the NexION 2000 can be configured to provide the best results for any application.

The lowest maintenance requirements of any ICP-MS

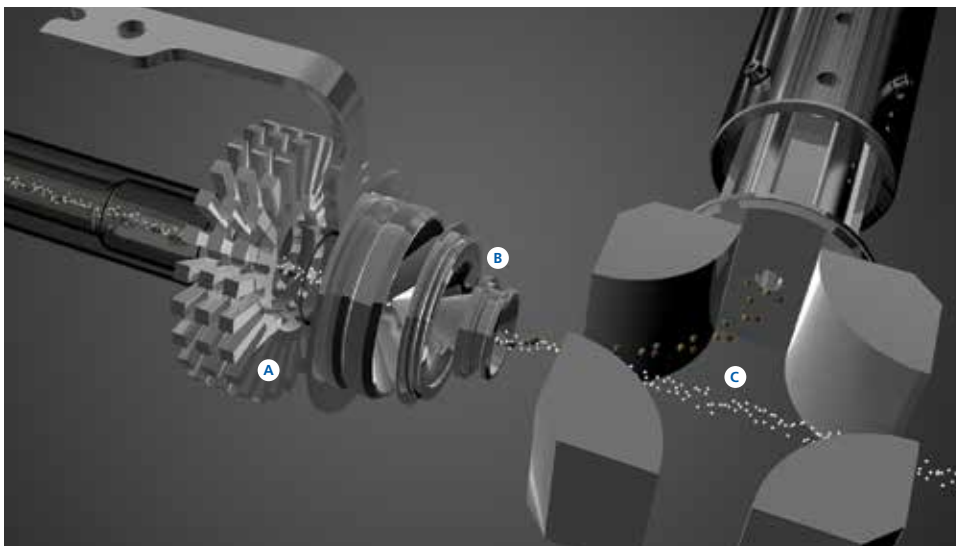
With a coil that never needs to be changed and a unique, tightly controlled ion path that creates the cleanest analytical environment of any ICP-MS, the NexION 2000 eliminates virtually all maintenance requirements, for unsurpassed instrument uptime.

LumiCoil™ Technology – Revolutionary, new RF coil that's guaranteed for life and requires no water or gas cooling.

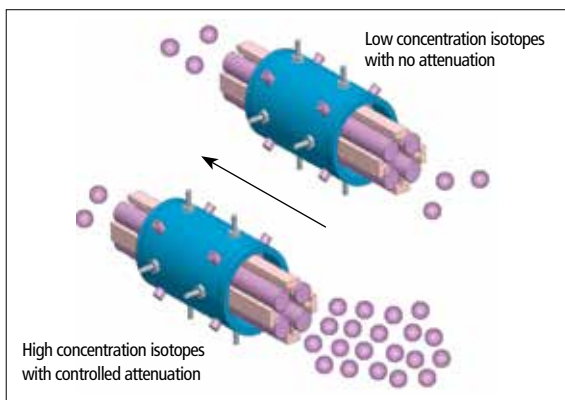
Triple Cone Interface – Features a unique, third cone to produce the most tightly defined ion beam in the interface. These cones are located outside the vacuum for quick and easy access.

Quadrupole Ion Deflector – Turns the ion beam 90° before it enters the Universal Cell, filtering off unionized material and reducing background and interferences for the most accurate results.

Together, the patented combination of the Triple Cone Interface and Quadrupole Ion Deflector controls and focuses the ion beam so effectively that the NexION 2000 is **the only ICP-MS with a cell designed to never need cleaning or replacing**.



The NexION 2000 is the lowest-maintenance ICP-MS on the market.
A: LumiCoil technology; B: Triple Cone Interface; C: Quadrupole Ion Deflector



Extended Dynamic Range (EDR) controls the number of ions passing through the Universal Cell on an isotope by isotope basis.

The most efficient analysis every time

Unlike other ICP-MS systems, the NexION 2000, with EDR, lets you adjust signal transmission so you can measure elements with low and high concentrations – in the same sample in the same run. This extends your dynamic range up to 12 orders of magnitude and optimizes productivity while preserving the lifetime of the detector.

For improved accuracy and lower detection limits, the patented Dynamic Bandpass Tuning feature in Reaction mode allows you to adjust the ejection window, efficiently screening out precursor ions while maximizing analyte transmission.

With its powerful capability to address interferences using different modes of operation, the NexION 2000 preloaded methods provide a powerful solution, regardless of the challenge.



NexION's AMS system minimizes the need for dilution prior to analysis.

The highest flexibility regardless of matrix

The NexION 2000 allows you to run samples with high total dissolved solids without manual dilution, using a powerful All Matrix Solution (AMS) sample introduction system.

By providing intelligent dilution of your entire sample, AMS gives you the flexibility to handle high dissolved solids while still being able to measure both high- and low-level elements simultaneously, **reducing reruns by 50%**.

The instrument's matrix tolerance is further enhanced by a new solid-state, free-running RF generator designed by PerkinElmer's experts to deliver superior plasma power and stability. The plasma coupling is affected through a revolutionary, new LumiCoil technology that's guaranteed for life and requires no water or gas cooling.

Introducing more options for sample introduction

Versatile from the very start, the NexION 2000 ICP-MS can be configured with your choice of SMARTintro™ color-coded sample introduction modules to suit a specific application or analysis:

High matrix with AMS (green) – using argon for greater than 100x dilutions to minimize matrix suppression and reduce deposition on the cones when running samples with high total dissolved solids.

High throughput/high matrix with AMS and SC-FAST (black) – double or triple sample throughput with no loss of detection limits.

High purity with SilQ quartz (white) or HF resistance (platinum) – two sample introduction solutions for the ultimate detection limits.

Expand Your Expectations of a Lab Services Provider

Optimize your NexION 2000 ICP-MS with our comprehensive suite of services from PerkinElmer OneSource® Laboratory Services. From instrument service and repair to analytics and optimized scientific workflows, OneSource Laboratory Services provides all the tools you need to increase your lab efficiencies and get more out of your ICP-MS.

OneSource
Laboratory Services

SMALL IN SIZE BIG ON INNOVATION



■ Quadrupole Ion Deflector

Maximizes uptime and productivity

- Completely removes unionized material, making NexION the only ICP-MS with a cell that never needs cleaning or replacing

■ Simultaneous Dual Mode Detector

Delivers the fastest data acquisition rates on the market

- 10x faster than competitive systems (100,000 data points/sec)
- Superior analysis times and single particle ICP-MS capability

■ Free-running RF Plasma Generator

Provides improved matrix tolerance

- Capable of handling the toughest matrices and solvents
- Ability to switch between cool and hot plasma in one run
- Innovative no cooling, no maintenance LumiCoil technology

■ Universal Cell Technology

Allows you to select your ideal method of interference removal and detection limits

- Three different modes of operation (Standard, Collision, Reaction) and three gas channels deliver complete analytical flexibility and minimized run times

■ Triple Cone Interface

Virtually eliminates cleaning and maintenance

- Produces the most tightly focused ion beam in the industry, eliminating sample deposition on internal components

■ Full-Color Plasma View

Enables the visual inspection of components without opening the instrument

- Quickly inspect the instrument's sampler cone, torch, and load coil
- Optimizes plasma sampling depths and simplifies analysis of organics

■ Small Footprint

Saves valuable bench space

- Compact design features dimensions of just 81 x 69 x 75 cm (W x D x H)

Peripherals to Add Performance

From sample digestion ovens to sample preparation blocks, advanced automation and 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.



ROUTINE ANALYSES MADE EASY

Even complex analyses are streamlined and simplified with Syngistix™ for ICP-MS software. Designed to mirror your workflow, the intuitive interface features left-to-right, icon-based navigation that walks you through an analysis, simplifying every step – from startup to method development to data reporting.

Common look, uncommon results

A cross-platform software, Syngistix allows users to move from one technology to another around the lab – including AA, ICP, and ICP-MS – using a common, familiar, intuitive interface for enhanced speed, efficiency, and productivity.

Instrument startup/optimization

SmartTune™ Express – Automatically checks system specifications and tuning procedures before a run to ensure all parameters are met for faster startup and more accurate results.

Routine maintenance alerts – Raise alarms when preventative maintenance is due, helping you keep your instrument in peak operating conditions.

Instrument control panel – Displays real-time information on key instrument components so you can monitor the entire system at a glance.

Method development

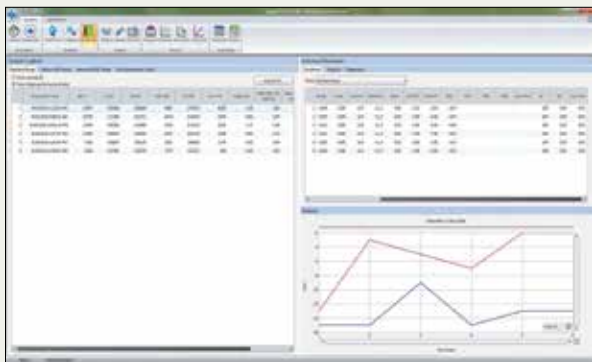
Method environment – Allows you to simply select the elements you want to measure and the software will help you pick the appropriate masses based on abundance and potential interferences.

Pre-set methods – Eliminate the need for method development in many applications.

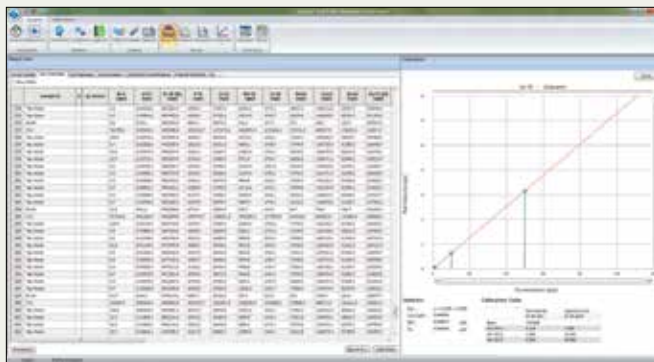
TotalQuant™ – Lets you quickly and simultaneously estimate the concentration of all elements in a sample.



Instrument Control Panel in Syngistix for ICP-MS Software



Logbook feature in Syngistix for ICP-MS Software



Reporter feature in Syngistix for ICP-MS Software



Analysis/run

Flexible quality control checks – Automate the monitoring of everything from calibration to internal standard responses during a run, ensuring reliable data even during unattended operation.

Scheduler – Increases workflow efficiency and data reliability by allowing you to automatically schedule instrument optimizations and procedures, including auto-start and shut down, tuning, and multimethod analyses.

Reviewer – Displays the sample run list, including method and sample types, in a convenient dialog box before the start of a run.

Data/results

Reporter – Displays single- or multiview calibrations during a run, giving you real-time information on detection limits and background equivalent concentrations.

Logbook – Lets you review your complete instrument performance history in a single panel so you can quickly check parameters used on a specific day and track and compare current performance data in real time.

Application specific plug-ins

You can tailor your NexION 2000 ICP-MS to specialized workflows ranging from pharmaceutical testing to speciation analysis and from semiconductor testing to nanoparticle analysis.

ENVIRONMENTAL TESTING MADE SIMPLE

Since high levels of some trace elements can be toxic for humans, plants and animals, the detection of trace elements in environmental samples is essential to ensure that living species are not unduly exposed to toxic levels of any of these elements. Whether it is drinking water, effluents, wastewater, sediments or soil, the NexION 2000 ICP-MS is the complete instrument for the analysis of trace elements in environmental samples.

Speed of analysis meets low maintenance

With the NexION 2000 ICP-MS, you can improve your productivity by:

- Cutting delays between samples with the built-in sample delivery valve for fast uptake and washout times;
- Reducing the acquisition time of your method using the fast switching between gas flows;
- Speeding up the process of standard preparation and reducing preparation errors using the real-time preparation of calibration standards;
- Reducing your sample analyses through the detection of low and high concentration elements in the same run using the per-isotope electronic dilution capability (EDR);
- Optimizing your workflows through the no-maintenance LumiCoil RF coil;
- Minimizing deposits and eliminating cleaning beyond the cones using the three wide-aperture cones and a 90 degree quadrupole ion deflector.

Future proofing regardless of the application

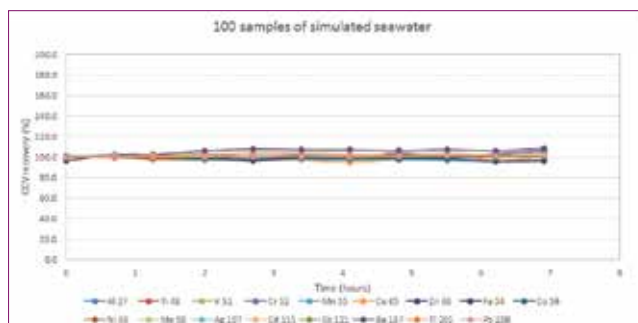
With the NexION 2000 ICP-MS, you'll be able to:

- Run high total dissolved solid samples with no manual dilution using the built-in AMS system;
- Protect your lab against any unexpected changes in regulations using the three gas channels;
- Offer more services leveraging the system's best-in-class nanoparticle detection capabilities.

Be ready for whatever trace element analysis challenges that the future might bring.

Compliance made easy

The NexION 2000 ICP-MS is the world's most robust and versatile ICP-MS, capable of handling harsh matrices as well as rapid changes in sample composition. Plus, you can leverage built-in methods for drinking water, soil, and seawater analysis for ease of implementation and compliance with international regulations such as U.S. EPA 6020, EPA 200.8, ISO 17294.



Long-term stability for the analysis of undiluted seawater.

YOUR PRESCRIPTION FOR ELEMENTAL IMPURITIES COMPLIANCE



Testing for elemental impurities in pharmaceutical products is essential to ensure no adverse effects of the drugs on patients. As such, specific regulations such as USP chapters 232/233 and ICH Q3D have been put in place to protect the consumer.

To address these demanding regulations, we've created a perfectly integrated, perfectly tailored solution – designed around the NexION 2000 ICP-MS – specifically for USP 232/233 and ICH Q3D compliance.

Sample preparation systems

- NexION 2000 can handle high-concentration DMSO for the analysis of samples readily soluble in an organic solvent
- Fast, safe, cost-effective microwave sample preparation for closed-vessel digestion with the Titan MPS

prepFAST auto-dilution systems

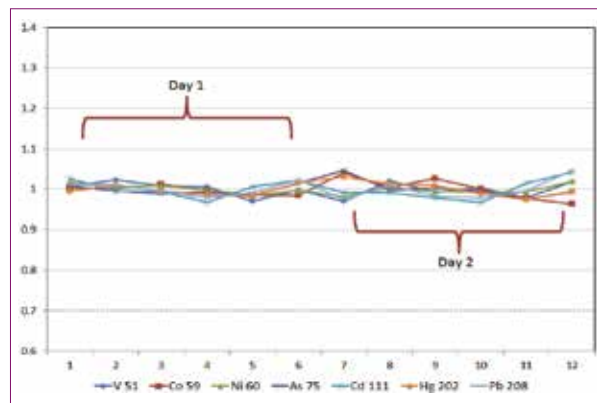
- Specifically designed for USP 233 methods for ultimate speed, control, and precision

Syngistix for ICP-MS software

- Features unique method templates for accurate measurement of metals in pharmaceutical products at the limits defined by USP 232
- Enhanced Security™ capabilities to help regulated laboratories comply with 21 CFR Part 11 and other regulations

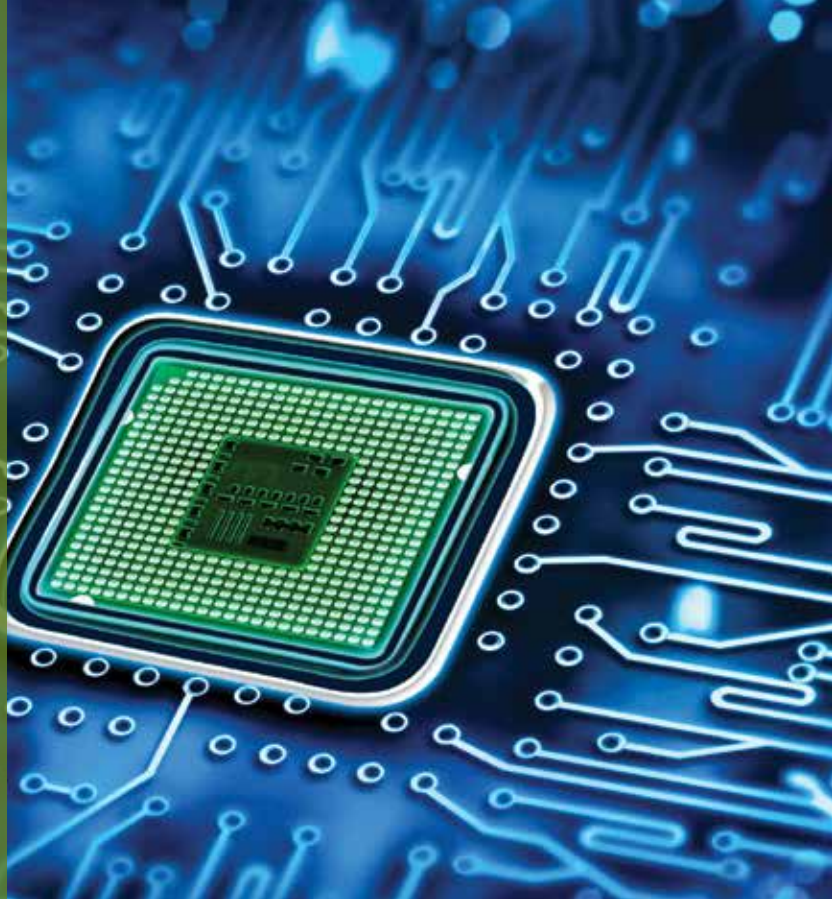
USP 232/233 and ICH Q3D toolkit

- Simplifies compliance with USP 232/233 and ICH Q3D and makes procedures easier with a range of features, including:
 - J value calculator and other tools to assist with standard preparation and method development
 - Method validation tool
 - Standard operating procedures (SOPs)
 - Sample preparation methods
 - Syngistix for ICP-MS Enhanced Security™ software information to assist in 21 CFR Part 11 compliance.



Ruggedness data - 6x stability data taken on two different days (N=12).

GIVING SEMICONDUCTOR TESTING A HELPING HAND



Since even ultratrace levels of impurities can cause defects in silicon-based semiconductor devices, detection and control is vital in the industry.

The unique combination of patented features and unrivaled detection limits in the tailor-made semiconductor version of the NexION 2000 ICP-MS ensures that your products meet the highest quality standards.

Optimized detection limits for every element

- Remove interferences with the only ICP-MS on the market capable of running pure ammonia
- Experience the best background equivalent concentrations for any semiconductor-grade material
- Reduce background and enhance signals with the highest quality quartz sample introduction system (SiIQ)
- Dedicated silicon analyses with a hydrofluoric-acid-resistant sample introduction system

More uptime, less maintenance

- Simplify operation and accelerate run times with built-in automation tools
- Enhance productivity with the only ICP-MS that has no ion lens to clean

Space-saving, small footprint

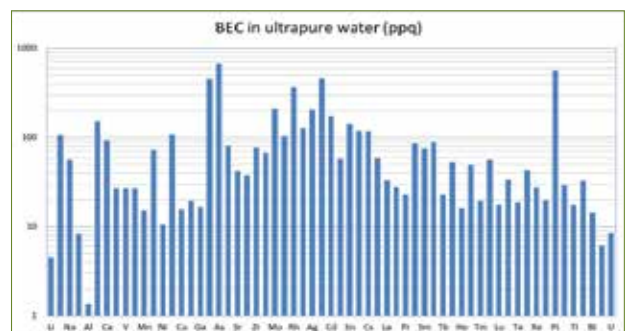
- Preserve precious space in your cleanroom with a compact design measuring just 81 x 69 x 75 cm (W x D x H)

Sub ppt-level analysis of critical elements


- Run your NexION 2000 ICP-MS with a revolutionary cool plasma to remove plasma-based interferences and accurately measure sub-ppt levels of critical trace elements such as Na, K, Ca, and Fe

Detection of metallic colloidal impurities with SP-ICP-MS

- Get greater sample insights with data acquisition rates 10x faster than any other ICP-MS
- Streamline and simplify nanomaterial characterization workflows with a dedicated software module.



Typical background equivalent concentration (BEC) in ultrapure water.



SINGLE CELLS AND NANOPARTICLES HAVE NOWHERE TO HIDE

Single Particle ICP-MS

Fast, accurate nanoparticle characterization is becoming increasingly important as nanotechnology becomes more prevalent in consumer, industrial, biotech, and healthcare products.

Analysts and researchers will benefit from our expertise and the power of the NexION 2000 ICP-MS. It's uniquely equipped to handle the challenges involved with nanoparticle detection and nanomaterial research, delivering the specificity, resolution, and sensitivity required to ensure fast, reliable results.

Single Cell ICP-MS

The transfer of analytes in and out of cells is key to many biological processes. By capturing the signal from a single cell bursting inside the ICP, the NexION 2000 permits scientists to study the cellular uptake of heteroatom-containing drugs, thereby understanding their efficacy.

With its single cell detection capabilities, the NexION 2000 ICP-MS offers a unique opportunity to study the uptake of metals into cells. It can also be used to determine the intrinsic metal content of the cells themselves in their natural environment.

Unmatched speed of acquisition

The fastest data acquisition system on the market captures readings at a rate of 100,000 points per second for precise single particle/cell analysis and allows researchers to look at information generated from each nanoparticle.

Industry-leading software

Best-in-class scanning and data acquisition speeds are combined with proprietary software-based algorithms to provide advanced characterization of nanoparticles and single cells. These modules are the first software solutions designed to handle large quantities of data, making it easy to transfer these efficiently and to interpret them accurately. They combine real-time single particle or single cell acquisition with fast data processing for routine analytical use.

Single Particle ICP-MS Software Module

- Determines the size of a specific nanoparticle
- Quantifies and differentiates between dissolved and particulate fractions of the same analyte
- Measures dissolved concentration, particle composition, particle concentration, size distribution, as well as dissolution and agglomeration tracking.

Single Cell ICP-MS Software Module

- Determines the element mass content in individual cells
- Maps cell populations based on mass content of a specific analyte
- Quantifies and differentiates between intracellular and extracellular metal content.

THE MOST TRUSTED NAME IN ELEMENTAL ANALYSIS

From Atomic Absorption to ICP-OES and ICP-MS, we have been at the forefront of elemental analysis for over 50 years.

Join forces with us and give your laboratory the benefits of cutting-edge instrumentation, consistently excellent consumables, and the industry's largest and most trusted service and knowledgeable support network.

The first company to bring together the simplicity of a collision cell and the detection limits of a true reaction cell in the same ICP-MS instrument, PerkinElmer continues to push the boundaries of the technique and technology with the NexION 2000.

Discover an instrument that offers unparalleled ease-of-use and all-matrix capability. Explore the effortless versatility of the NexION 2000 ICP-MS.



For more information, visit perkinelmer.com/NexION2000

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