



Thermo Scientific  
iCAP RQ ICP-MS

Robust ICP-MS with ease of use  
and high productivity for routine laboratories

# iCAP RQ ICP-MS

The reliability, analytical performance and ease of use needed to meet the demands of the highest throughput labs

## More productivity

Choose the Thermo Scientific™ iCAP™ RQ ICP-MS for a complete multi-element analysis solution for your high-throughput routine lab. With comprehensive interference removal for assured data accuracy and intuitive workflows to boost productivity, this single quadrupole (SQ) ICP-MS will expand your analytical capabilities.

Our user-inspired hardware and software maximizes ease of use and streamlines workflows to achieve 'right-first-time' analysis, essential to all busy laboratories.

Increase throughput, minimize sample re-runs and save analysts' valuable time and effort with intuitive features and broad compatibility with automated accessories.

- 'Get Ready' one-click set-up for easy, reproducible analysis
- Cone change in as little as 60 seconds
- Fast, easy operation with quick-connect sample introduction components

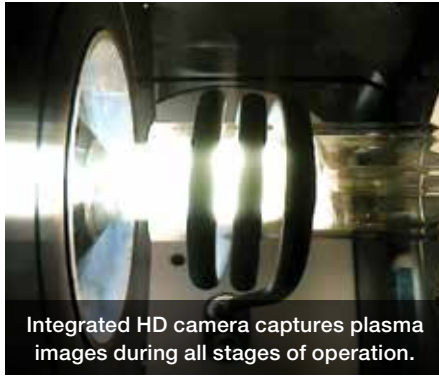
## More robustness

With its logical, problem-solving hardware design that meets real laboratory needs through minimized maintenance and maximized up-time, the iCAP RQ ICP-MS is a powerful, reliable workhorse analyzer.

Run samples 24/7 with complete confidence.

- Matrix tolerance and minimized drift in challenging samples, such as seawater
- Reliable, robust plasma operation, even for volatile organic solvents such as 100% acetonitrile
- Advanced heat management for long-term mass stability
- Robust electronics and RF generator design





Integrated HD camera captures plasma images during all stages of operation.



Bench height, open access, sample introduction system.



# Inside SQ technology

For the simplest possible method development and smart design features that drive productivity

- Measure all analytes in a single helium Kinetic Energy Discrimination (He KED) mode
- In He KED mode, even lithium and beryllium can be measured at sub ppt levels
- Excellent interference removal with high ion transmission
- Reactive gas capability targets specific interference ions for challenging applications

Comprehensive interference removal is achieved

**Q2** Quadrupole isolates ions required for measurement

**Q1** He KED filters out unwanted polyatomic interferences

Low Mass Cut Off filters out unwanted precursor ions

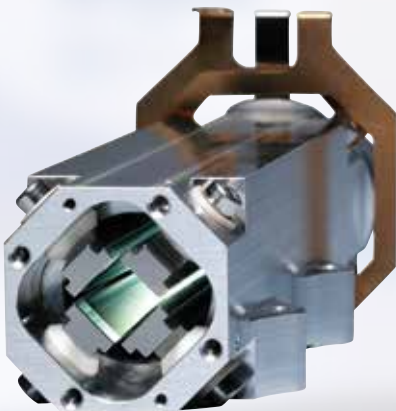
Target analyte  
 $^{75}\text{As}^+$



$\text{ArCl}^+$ ,  $\text{Ca}(\text{OH})_2\text{H}^+$

$^{40}\text{Ar}^+$ ,  $^{40}\text{Ca}^+$ ,  $^{35}\text{Cl}^+$ ,  $^{16}\text{O}^+$ ,  $^1\text{H}^+$

Complex sample matrix

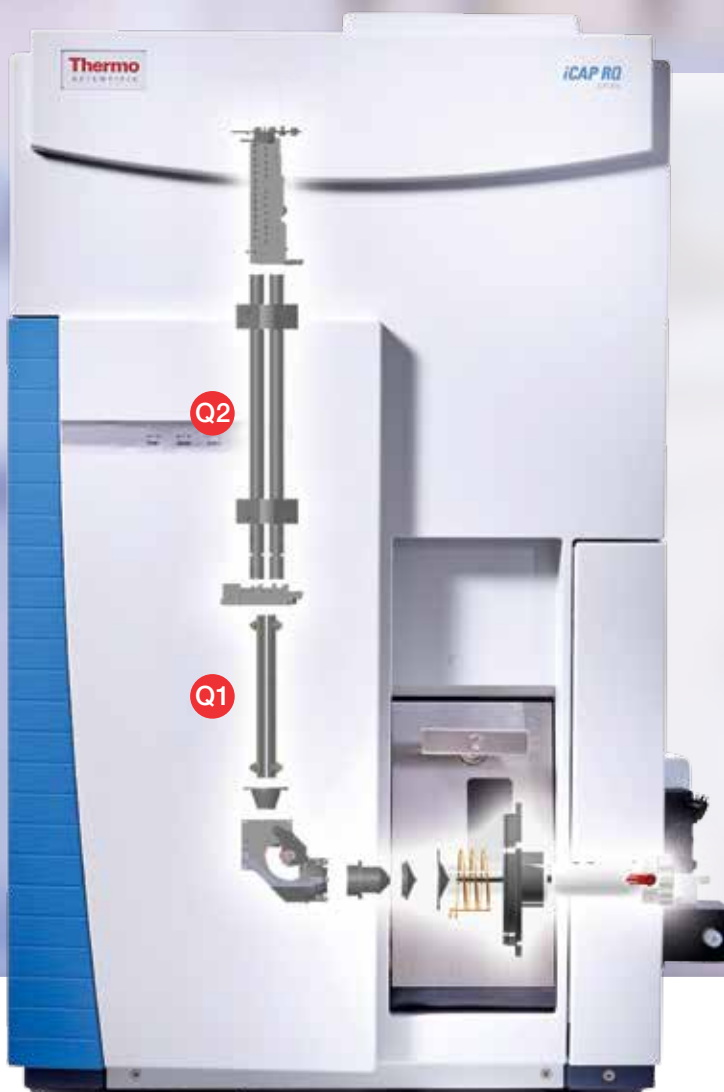
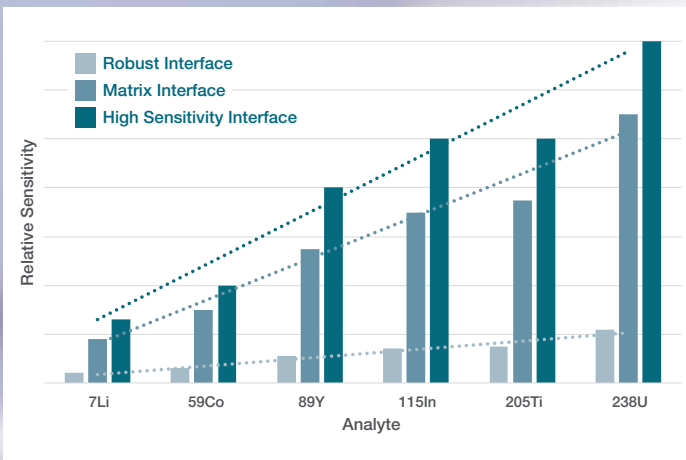


QCell Low Mass Cut Off (LMCO) removes precursors to interferences and reduces BECs even further than He KED alone.



Table 1. Choose from three dedicated interface types for maximum coverage of sensitivity and dynamic range.

Interface	When	Why	Who
Robust	Long-term analysis of dirty, high matrix samples	Minimal drift and reduced user maintenance	Environmental and routine industrial applications
High Matrix	Typical, everyday matrix types	Best balance for sensitivity and matrix tolerance	Food safety, pharmaceutical and drinking water analysis
High Sensitivity	Advanced applications; e.g. laser, nanoparticles	Best signal to noise ratio and lowest detection limits	Geoscience, advanced materials, research



- Compact, vertical design to save valuable lab space
- Powerful detector for high sensitivity
- QCell combined with unique flatapole design enables high data accuracy
- Simplified methods with He KED comprehensive interference removal
- Zero user maintenance beyond the slide valve
- Solid state RF generator and robust electronics ensures stability and maximizes uptime
- Plasma robustness to cope with the most challenging matrices
- Quick-connect, self-aligning sample introduction system
- Drop-down door for simplified cone access

# Qtegra Intelligent Scientific Data Solution (ISDS) Software

Universal software for ultimate ease of use and productivity in high-throughput lab and demanding applications

## Workflow solutions

Maximize productivity and simplify workflows utilizing intelligent features and automation.

Method development is streamlined with Thermo Scientific™ Qtegra™ Intelligent Scientific Data Solution™ (ISDS) Software's intuitive user features; productivity is enhanced through a range of automated sample handling options, all managed within a logical dashboard interface.

### Sample handling

Our analysis-specific sample handling kits and additional mass flow controllers simplify instrument configuration and enable reproducibility. Plug-in compatibility with a wide range of industry standard autosamplers and sampling valves optimises your workflows.

### Autodilution

Increase throughput and automate the entire workflow from sample preparation to data review with an intelligent sample management accessory. Ensure error free operation of the full sample batch, including:

- Complete calibration from a single standard
- Intelligent dilution of high matrix or over range samples

### Argon gas dilution

Eliminate the need for manual sample dilution and reduce matrix build-up on the interface by using automated Argon Gas Dilution (AGD). This feature provides a simple solution for direct analysis of high matrix samples at % level concentrations, enabling extended periods of operation without cleaning.

## Advanced applications

Accelerate your innovation with the advanced applications enabled by hyphenated techniques. Our simple coupling kits and a range of Qtegra ISDS Software plug-ins allow easy pairing with IC/LC, GC and laser ablation systems.

### Single particle characterization

Explore the expanding field of nanoparticle analysis and enhance food and environmental nanoparticle characterization with our npQuant Plug-In for Qtegra ISDS Software for accurate single particle ICP-MS (spICP-MS) analysis.

### Speciation

Fully control a range of IC, LC and GC systems for speciation applications directly with the Qtegra ISDS ChromControl Plug-In, powered by SII: the Thermo Scientific Chromeleon CDS Software Device Control Interface.

### Laser ablation

Expand capabilities, minimize sample preparation and improve analysis times for solid samples. Easily integrate laser ablation systems with third party plug-ins to obtain the best spatial and depth characterization.



## Universal simplicity

Our easy-to-use Qtegra ISDS Software delivers all the support features essential to any busy laboratory, while containing all the flexibility needed to achieve the most challenging applications.

This software approach, common to other Thermo Scientific ICP techniques, reduces training requirements and makes the addition of a SQ-ICP-MS into your lab a simple process.

## Low cost per sample

Operator time is freed up with simple workflows and a minimal number of steps per task. The 'Get Ready' feature takes your iCAP RQ ICP-MS from standby to ready for analysis, through a fully automated process, saving time and ensuring consistent analysis. A fully integrated QA/QC protocol reduces failures, driving down re-runs and cost per sample.

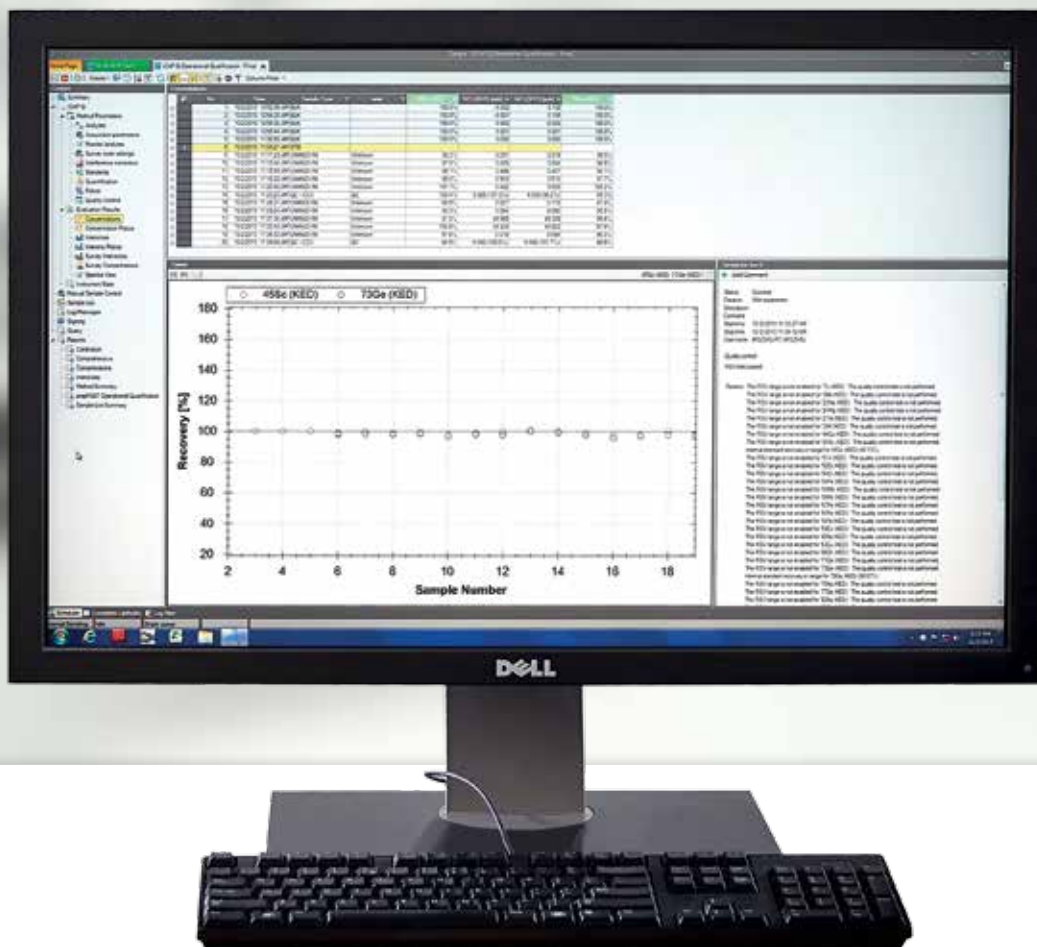
## Data and report management

Automated report generation and export features, including full LIMS compatibility, makes data management effortless. Customize report formats to fit with the needs of the laboratory or your customers.

## Compliance support

All the features needed to enable compliance with regulatory requirements are available within Qtegra ISDS software:

- 21 CFR Part 11 Compliance as standard
- EPA and FDA regulatory compliance and audit support
- Data security and access control
- Compliance management tools
- Advanced reporting capability





# Environmental and human health

Handle a broad variety of sample types  
with ease and accuracy

## Environmental

Confidently measure both trace and major analytes in some of the most challenging matrices. Optimize productivity and accuracy with comprehensive interference removal for reliable multi-elemental analysis.

Whether analyzing drinking water, wastewater or soil digests, the high-throughput iCAP RQ ICP-MS meets demanding environmental requirements, such as US EPA 200.8, with ease.

## Pharmaceutical compliance

Comfortably meet the most demanding global pharmaceutical regulations and legislation, including:

- International Council on Harmonization (ICH) guideline Q3D
- U.S. Pharmacopoeia (USP) chapters, 232, 233 and 2232

Comply with the most rigorous data audit and security measures. Our Qtegra ISDS software is fully compliant with Food and Drug Administration (FDA) 21 CFR Part 11 and is equipped with full IQ/OQ procedures for simple implementation in GMP/GLP regulated environments.

## Clinical research

Detect the smallest traces of toxic and essential elements with the robustness, sensitivity and LoDs needed for complete analyte quantitation, even in tough matrices.

Accelerate your research with assured accuracy, utilizing analysis-boosting features such as auto-optimization of QCell reaction mode.

## Food safety

Simultaneously measure toxic and essential elements for food quality and safety assessment. Be ready to meet food safety legislation and regulatory requirements with a suite of integrated QC features.

Couple metal-free Ion Chromatography systems to ICP-MS to easily and accurately speciate critical elements such as chromium, arsenic and mercury.

## Geoscience exploration

Robust long-term analysis of the toughest rock digests and lithium metaborate fusions. Customized interface ensures minimal drift over time and integrated QC checks enable automatic self-assessments of performance.





# Industrial applications

Robust, reliable performance,  
even in the toughest environments

## Advantages of the iCAP RQ ICP-MS

- Analyze challenging matrices, across a broad range of sample types
- Reliable and robust plasma, even in the presence of 100% organic solvents
- Effective comprehensive interference removal, for assured accuracy
- Simple maintenance, minimal down-time
- Straightforward to set up, ergonomic and intuitive to use
- Common software platform across our ICP techniques reduces training and enables operator flexibility
- Easily configured for laser ablation solid sampling
- Ability to analyze natural and engineered nanoparticles
- Hardware and software ready to easily integrate advanced hyphenated techniques

## Material analysis

Whether running low-level alloy QA/QC analysis or qualifying advanced materials in the aerospace industry, the iCAP RQ ICP-MS can be easily configured to your needs.

Simplify material analysis with fully integrated, fast sampling accessories and intelligent dilution for automated sample preparation.

Flexibility of collision/reaction modes for optimal interference removal enables accurate analysis in a broad range of material types.

## Nuclear

Achieve advanced isotopic detection utilizing a high sensitivity interface and superior mass stability. Unique ion optics offer low background and high signal to noise ratios for optimal detection limits.

Collisional focusing with our unique QCell technology ensures the abundance sensitivity required for the challenge of measuring isotope ratios.





thermo scientific

# iCAP Qnova Series ICP-MS

For easy, powerful and routine SQ-ICP-MS  
and TQ-ICP-MS analysis



Find out more at [thermofisher.com/SQ-ICP-MS](https://thermofisher.com/SQ-ICP-MS)

**ThermoFisher**  
SCIENTIFIC

**For Research Use Only. Not for use in diagnostic procedures.** © 2017 Thermo Fisher Scientific Inc. All rights reserved. Teledyne CETAC is a trademark of Teledyne Instruments Inc. Dell is a trademark of Dell Inc. FDA is used in trade by the United States Food and Drug Administration. All other trademarks are the property of Thermo Fisher Scientific and its subsidiaries unless otherwise specified. **BR43317-EN 0517**