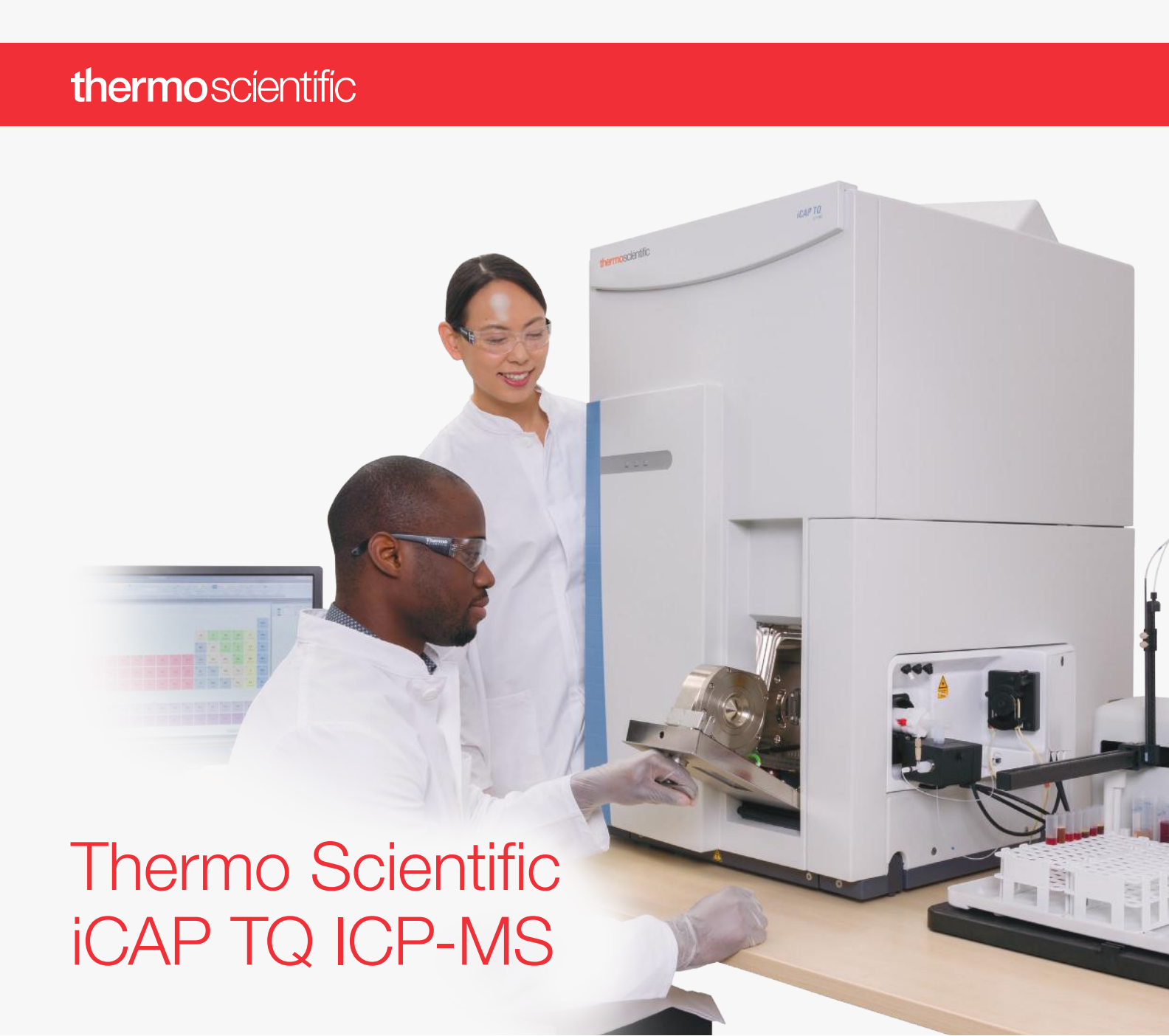




Thermo Scientific iCAP TQ ICP-MS

Redefining triple quadrupole ICP-MS
with unique ease of use

iCAP TQ ICP-MS

Ultralow limits of detection - even for the most challenging analytical applications - and surprisingly easy to use

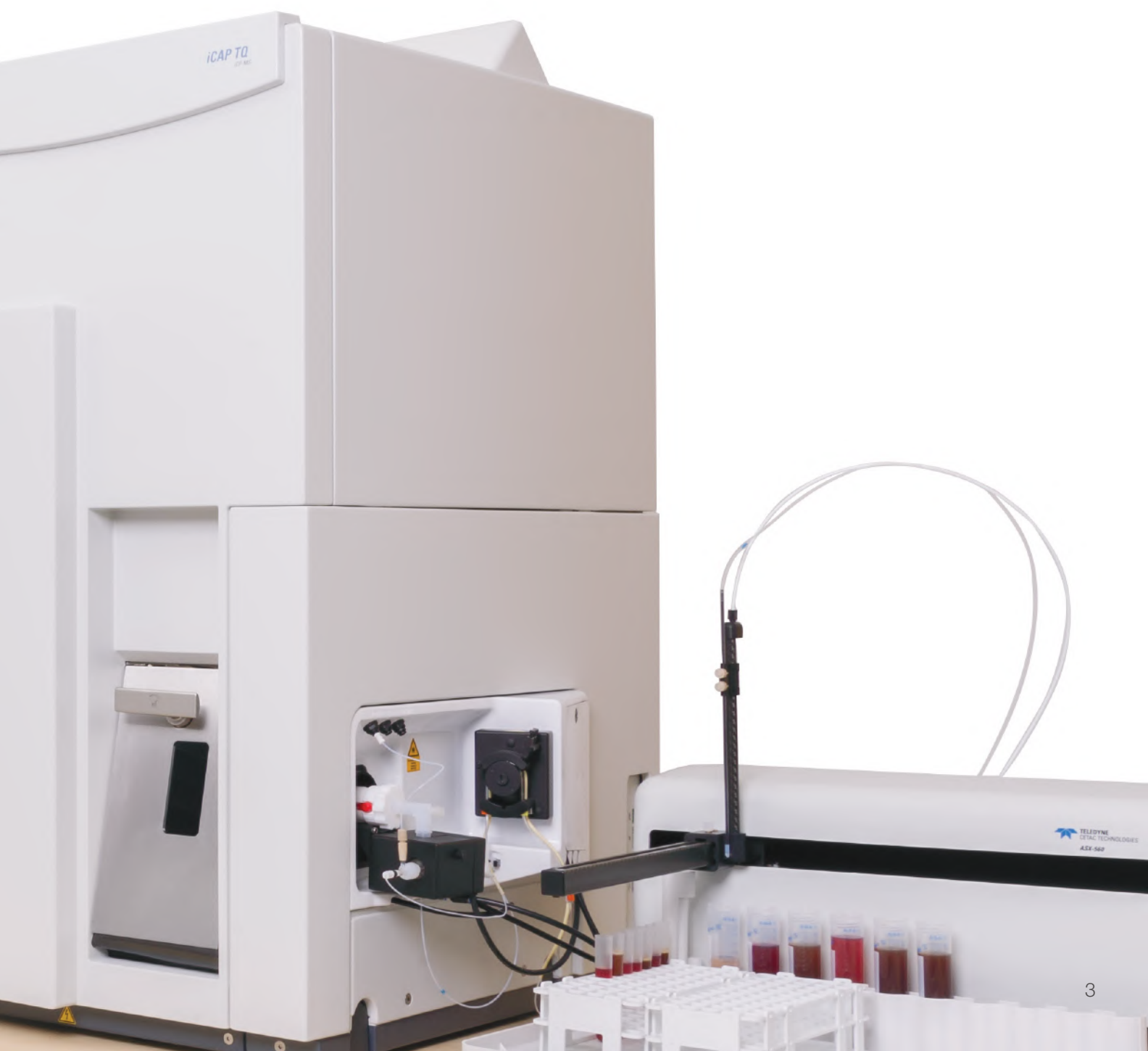
Harness the power of Triple Quadrupole (TQ) ICP-MS for uncomplicated analysis with incredible accuracy. Expand your applications and enhance your laboratory efficiency with this breakthrough technology, which is so easy to use that it can be operated by any analyst.

- Reaction Finder enables you to tackle challenging matrices without complex, time-consuming method development.
- Common Thermo Scientific™ Qtegra™ ISDS Software platform allows analysts to switch easily between ICP techniques without the need for specialist training.
- Minimal installation and bench space requirements ensure any laboratory will benefit from this technology.



The Thermo Scientific™ iCAP™ TQ ICP-MS is the solution to future-proofing your laboratory: explore developing markets, push the boundaries of your research and meet the requirements of evolving legislation.

- ‘Right first time’ analysis with powerful interference removal, even in the toughest matrices.
- Reduced re-runs in the daily workload with assured accuracy and repeatability.
- Maintains the flexibility of single quadrupole (SQ) mode for less challenging analyses.



Inside TQ Technology

Highly effective interference removal for accurate and reliable results

- Utilizes up to four different collision and reaction gases and the unique Reaction Finder simplifies method development. There is no requirement for advance knowledge of complex reaction chemistry: Reaction Finder does it all for you!
- Integrated reaction gas handling features ensure safe and reliable instrument operation.
- If SQ analysis is required, simply use the preset Single Mode Kinetic Energy Discrimination (KED) mode for rapid and reliable results.
- For ultimate flexibility, the iCAP TQ ICP-MS enables you to easily switch from SQ to TQ mode in a single sample analysis, providing the best results for your complete suite of elements.

Let Reaction Finder select the right mode for your analysis:

SQ mode: comparable to SQ-ICP-MS instruments, Q1 transmits all masses

TQ on mass mode: Q1 and Q3 set to the same mass

TQ mass shift mode: Q1 and Q3 set to different masses

TQ mass shift mode

Q3 isolates ions required for measurement (e.g. set to product ion mass for Ti^+ at m/z 114)

Q2 pressurized with reactive gas to selectively generate reaction products (e.g. $\text{NH}_3 + \text{Ti}^+ \rightarrow \text{Ti}(\text{NH}_3)_3\text{NH}^+$)

Q1 set to analyte mass (e.g. Ti^+ at m/z 48) to filter out unwanted ions

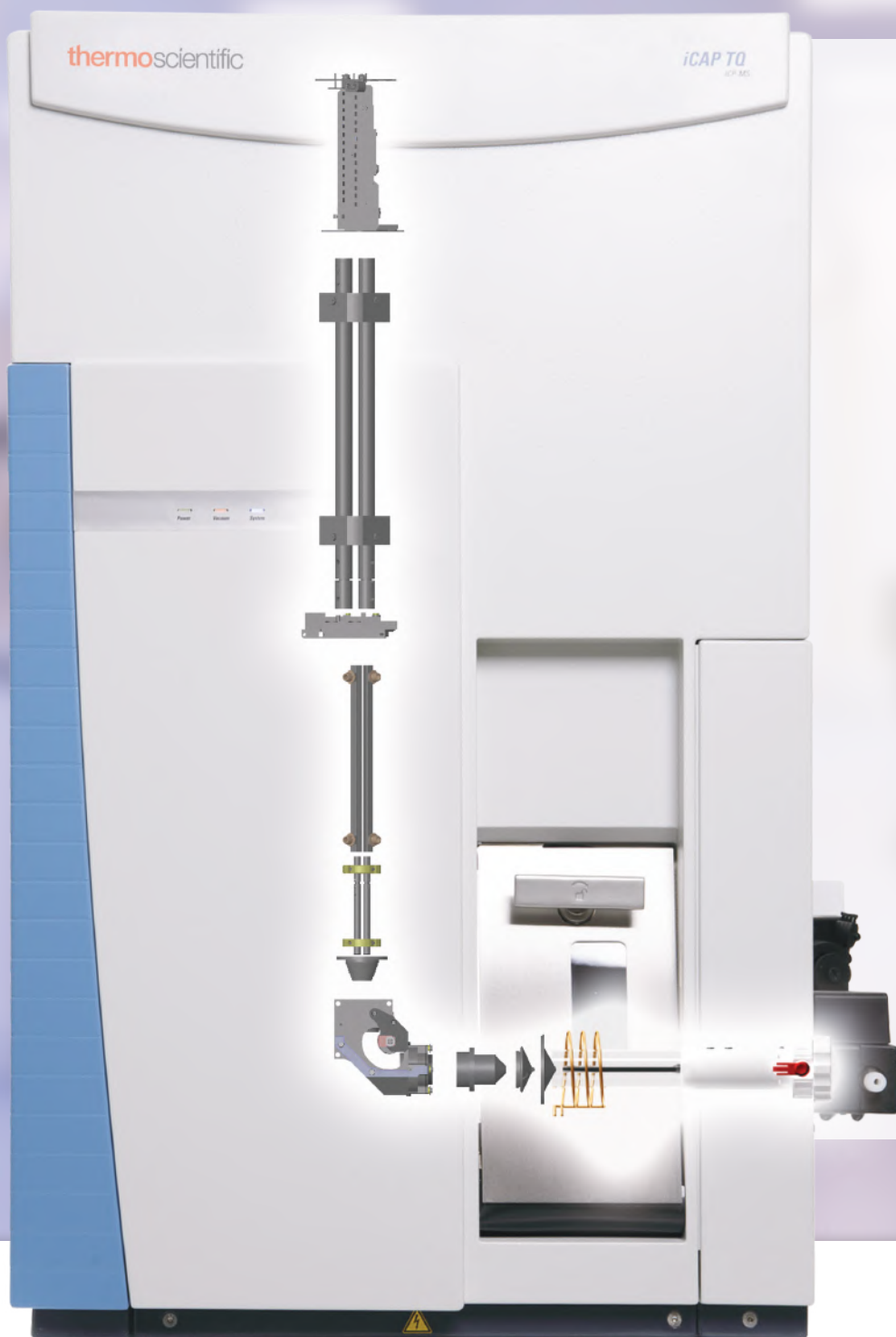
Product Ion $^{114}[\text{Ti}(\text{NH}_3)_3\text{NH}]^+$

$^{48}\text{Ca}^+$, $^{96}\text{Zr}^{++}$, $^{32}\text{S}^{16}\text{O}^+$,
 $^{31}\text{P}^{16}\text{O}^{16}\text{H}^+$, $^{24}\text{Mg}_2^+$

$^{48}\text{Ti}^+ \rightarrow ^{114}[\text{Ti}(\text{NH}_3)_3\text{NH}]^+$

$^{114}\text{Cd}^+$, $^{114}\text{Sn}^+$, $^{98}\text{Mo}^{16}\text{O}^+$

Analyte $^{48}\text{Ti}^+$



- Quick-connect, self-aligning sample introduction system, no shield or bonnet required.
- Drop-down door for easy interface access.
- Range of interfaces provide full instrument flexibility, from maximum robustness to highest sensitivity.
- Instrument stability and reliability enabled by the solid state, swing frequency RF generator with virtual grounding and optimized electronics.
- Zero user maintenance beyond the interface.
- Highest data accuracy in complex samples with the combined QCell and TQ functionality.
- Single Mode He KED for comprehensive interference removal in routine, high-throughput analysis.

Ultimate Ease of Use

Qtegra Intelligent Scientific Data Solution Software

Intuitive software enables plasma ignition to data reporting in just five clicks, enhancing your productivity for rapid results.

“After excellent training, our students were familiar with the iCAP TQ ICP-MS. They easily created their individual methods in various measurement modes and succeeded with their analyses. Although they can now choose between four different ICP-MS instruments in our laboratories, they all favor working with the iCAP TQ ICP-MS. The hardware and software design offers more convenient handling, and the possibilities using TQ-ICP-MS with high sensitivity and selectivity give added value to their research projects.”

Maria Montes-Bayón

*Associate Professor Analytical Chemistry,
University of Oviedo, Spain*

Reaction Finder

Streamline your workflow with Reaction Finder. Use this intuitive feature to achieve optimal interference removal for your target analytes via intelligent measurement mode selection.

- Removes the complexity from TQ technology.
- Automatically selects the isotope, reaction gas and product ion.
- Dramatically decreases method development time.
- Enables accessibility to all users.
- Provides the confidence of accurate data.



Enhance your productivity through automated sample handling, managed within the simple interface of Qtegra ISDS Software. Routinely tackle advanced applications with hyphenated techniques to expand your application capabilities.

Autodilution

Fully integrated control of autodilution peripherals in Qtegra ISDS Software, delivering error-free prescriptive and intelligent dilution options.

Speciation

The Qtegra ISDS Software ChromControl Plug-in provides control of chromatography systems for automated sample analysis in a single software. In addition, dedicated chromatographic data processing and compound quantification features deliver simple and reliable speciation analysis.

Nanoparticles

Enhance your laboratory with dedicated data analysis for nanoparticle size and concentration characterization using the advanced feature set provided in the Thermo Scientific npQuant Plug-in.

Laser Ablation

trQuant data evaluation simplifies quantification and data export when coupled with dedicated and highly flexible laser control plug-ins.



Environmental and Human Health

Meet the most demanding challenges
in protecting our future

Clinical Accuracy

Advance your clinical research with total confidence provided by superior interference removal. Use Reaction Finder to determine the appropriate measurement mode for your specific application to easily obtain accurate results. Perform robust and rapid analyses, even with small volume or complex samples, such as blood and urine.

Pharmaceutical Compliance

Comply with confidence: iCAP TQ ICP-MS technology meets global regulatory standards including FDA, U.S. Pharmacopeia <232> and <233>, and ICH Q3D. Full system qualification, powerful reporting and integral regulatory compliance tools in the Qtegra ISDS Software enable simplified method validation, total data security and audit assurance.

Geoscience

Optimize geochemical exploration and mining profitability with accurate mineral analysis. Discover more about your sample with easy coupling to a range of lasers for spatial analysis of precious minerals and zircons.

Environmental Health

The iCAP TQ ICP-MS is a powerful solution for routinely and accurately quantifying trace analytes in the most challenging environmental matrices. Optimize your productivity with a combination of SQ and superior TQ interference removal modes. In addition, seamless speciation is achievable in any laboratory for accurate risk assessment in environmental analysis.

Food Safety

Remove uncertainty from food safety analysis and be prepared for future legislation with speciation and nanoparticle characterization capabilities. Even the most challenging matrices are no obstacle for the iCAP TQ ICP-MS, ensuring reliable elemental analysis to support production of safe, high quality food and beverage products.

“The capability of the iCAP TQ ICP-MS in triple quadrupole mode will alleviate common problems in the measurement of trace elements such as titanium and manganese in clinical research studies.”

Dr. Chris Harrington

*Deputy Director
Supra-Regional Assay Service,
Trace Element Laboratory, UK*



Industrial Applications

Advance developments in metals, materials and chemicals

Metallurgy

Accurately quantify trace elements and impurities essential to metallurgy research and industry through the efficient removal of matrix-based interferences. Confidently measure bulk and spatial distributions with laser ablation.

Material Science

Ensure product quality and accurately determine impurities in raw materials for industrial applications. The iCAP TQ ICP-MS is the robust solution required to analyze complex samples quickly and accurately.

Semiconductor

The Thermo Scientific™ iCAP™ TQs ICP-MS delivers powerful interference removal for ultratrace detection in the most challenging matrices. With a small footprint and unique ease of use through streamlined workflows and automated method development, it is the ideal quality control tool in wafer fabrication.

Chemicals

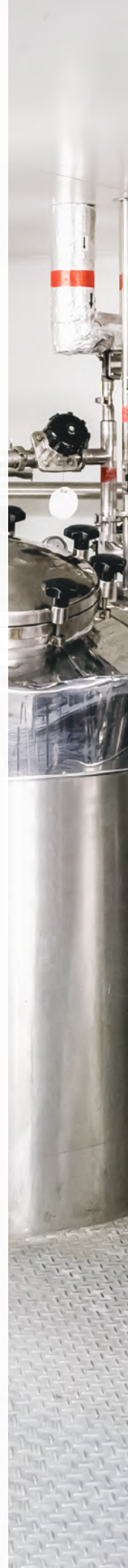
Directly measure impurities in aggressive mineral acids or organic solvents with the ultralow detection limits delivered by high performance triple quadrupole technology. The robust plasma assures reliable analysis in the toughest of matrices.

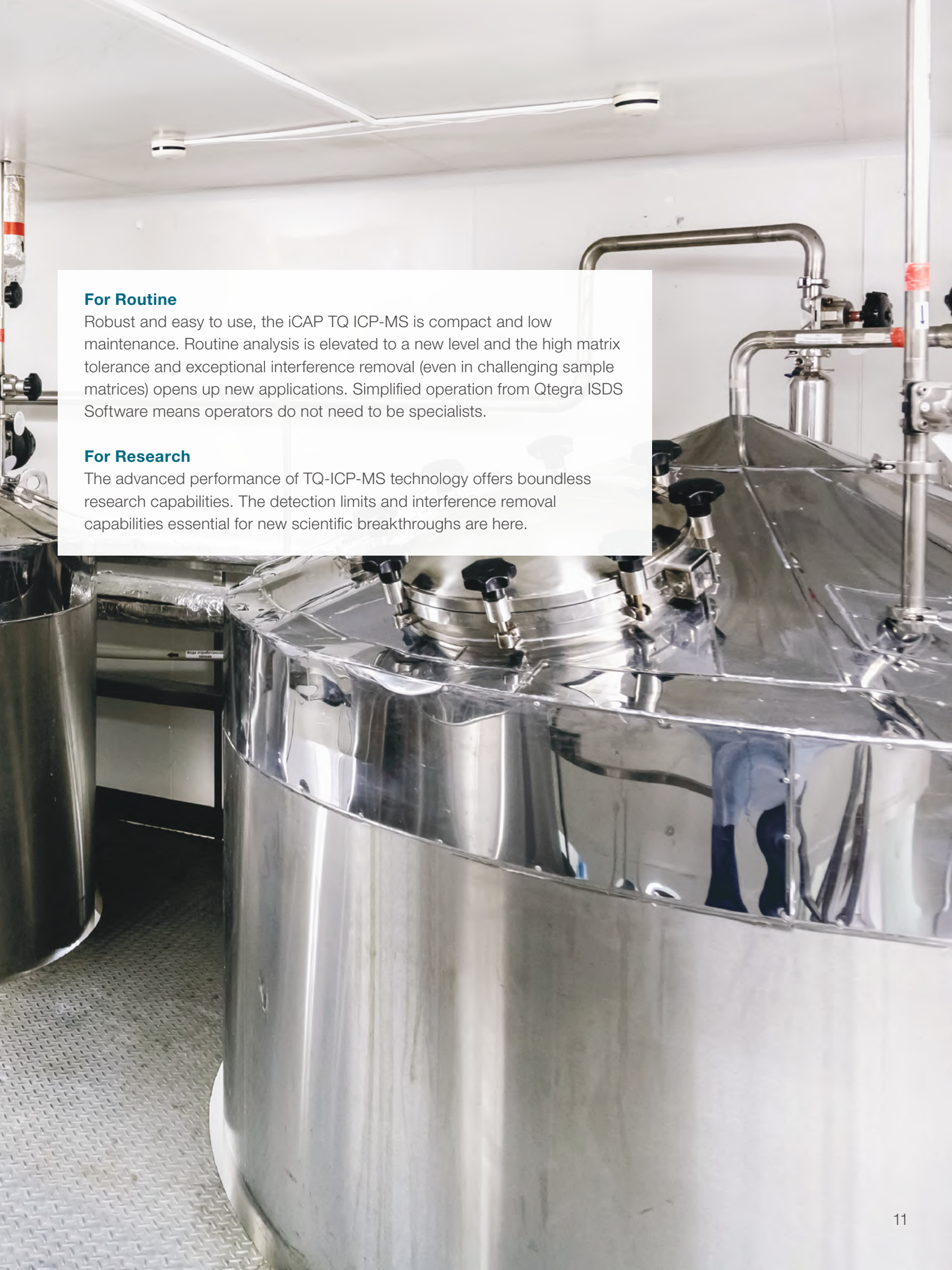
Nanoscience

Ideal for advanced nanomaterial applications. Speed and detection power, coupled with integrated npQuant software enables rapid and comprehensive characterization of engineered and natural nanoparticles.

Energy Production

Effectively monitor the fracking process or determine the ageing state and degradation of energy consumables. The iCAP TQ-ICP-MS easily provides the required detection power.





For Routine

Robust and easy to use, the iCAP TQ ICP-MS is compact and low maintenance. Routine analysis is elevated to a new level and the high matrix tolerance and exceptional interference removal (even in challenging sample matrices) opens up new applications. Simplified operation from Qtegra ISDS Software means operators do not need to be specialists.

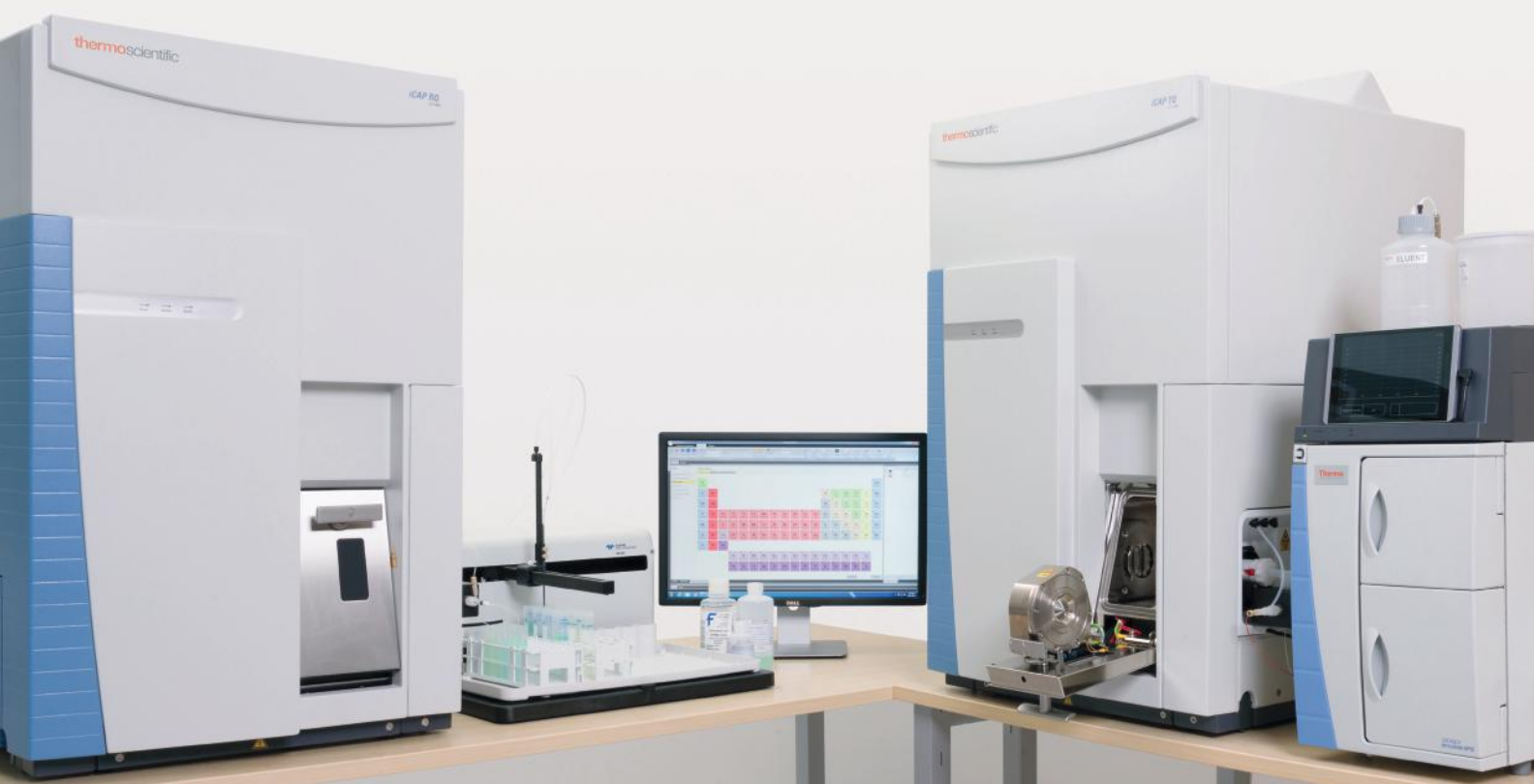
For Research

The advanced performance of TQ-ICP-MS technology offers boundless research capabilities. The detection limits and interference removal capabilities essential for new scientific breakthroughs are here.

thermo**scientific**

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/TQ-ICP-MS

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