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PRODUCT SPOTLIGHT

Thermo Scientific iCAP TQ ICP-MS

The safe use of reactive gases

The Thermo Scientific™ iCAP™ TQ ICP-MS delivers enhanced performance and ease of use for demanding routine analysis and challenging research applications. The design of the collision/reaction cell (CRC) system allows use of both inert collision gases and pure reactive gases such as hydrogen, oxygen and ammonia without concerns about laboratory safety.

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For many applications, the use of an inert collision gas such as helium combined with kinetic energy discrimination (KED) is sufficient to remove spectral interferences, however, in several cases the use of reactive gases and triple quadrupole technology leads to improved results. The use of reactive gases in combination with controlled reaction conditions through the use of a mass filter ahead of the reaction cell allows employment of dedicated interference removal tools for a given analyte. Below are examples of using a reactive cell gas to remove interferences:

- The ultratrace detection of titanium can be accomplished using ammonia cell gas with subsequent detection of ammonia cluster ions.
- Arsenic and selenium can suffer from severe interferences caused by doubly charged ions of rare earth elements (e.g. gadolinium, samarium etc.). The use of oxygen and a mass shift reaction (forming AsO and SeO respectively) can eliminate these interferences.
- Hydrogen is an effective way to eliminate argon based polyatomic interferences ($^{40}Ar^{16}O^+$ and $^{40}Ar^{40}Ar^+$) on the most abundant isotopes of iron and selenium (^{56}Fe and ^{80}Se respectively).

However, the use of pure hydrogen or ammonia gas also has implications on laboratory safety due to their flammable (hydrogen) and toxic/corrosive nature (ammonia).

The safety concept of the iCAP TQ ICP-MS includes dedicated tools to assure safe handling of reactive gases.

- Valve restriction modules will close gas lines for hydrogen and ammonia when the instrument is powered off or a failure of the vacuum system occurs, to prevent gases from accumulating inside the instrument.
- Active ventilation of the instrument´s housing into the laboratory exhaust system assures safe removal of all gases in case any leakage occurs.

In combination with the Thermo Scientific Qtegra™ Intelligent Scientific Data Solution™ Software, setting up methods using dedicated gas and reaction settings has never been easier.

The iCAP TQ ICP-MS allows full flexibility for different applications and sample types and assures complete confidence in the results. In addition, typical methods that are using single quadrupole ICP-MS (e.g. KED) can be easily transferred to the instrument.

Advanced collision/reaction gas distribution module.

Find out more at **thermofisher.com/TQ-ICP-MS**

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