

PTR3



PTR3-TOF 10K mass spectrometer - Trace VOC-ELVOC Analyzer

Sensitivity > 50000 cps/ppbv LoD < 0.1 pptv Resolution > 12000 m/ Δ m

The PTR3-TOF 10K is a new generation of ultimate performance PTR-TOF systems optimized for the **detection of highly-oxygenated organic molecules** and **RO₂ radicals**. The instrument comprises a **novel high-resolution TOF**, a **triple ion source** and an **advanced inlet system** for virtually **contact free sample introduction** in order to minimize sampling losses of reactive organic molecules.

The results are an impressive mass resolution of over **12000 m/ Δ m** and a sensitivity of more than **50000 cps/ppbv** with a low detection limit of **below 0.1 pptv** e.g. for ketones.

Expect advanced technologies such as a dual-stage core sampling inlet system, 3 electrically switchable ion sources (e.g. H₃O⁺, NO⁺, NH₄⁺) and the novel 3D tripole reactor, complemented by the renowned IONICON ION-BOOSTER funnel and hexapole ION-GUIDE.

The IONICON-exclusive **genuine PTR-MS** includes our **patented ion chemistry quality TRU-E/N**, allowing for precisely controlled E/N conditions, well-reproducible measurement results and the highest possible level of quantification accuracy.

- > **Detection of highly-oxygenated molecules**
- > **Virtually loss-less dual-stage core sampling**
- > **Novel 3D tripole reactor & TRIONSOURCE**
- > **New high-resolution ionTOF 10K**

Find out more:

www.ionicon.com/products

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IONICON PTR3-TOF 10K SPECIFICATIONS*

- Mass resolution:
 - > 10000 m/Δm (FWHM) certified for m/z > 129
 - > 12000 m/Δm (FWHM) achievable
- Sensitivity:
 - > 50000 cps/ppbv achievable for selected compounds
 - > 15000 cps/ppbv certified at m/z 129 (octanone) at 10000 m/Δm, at < 30% RH, room temp.
- Limit of Detection:
 - at m/z 129: < 100 ppqv (octanone) averaged over 60s,
 - at 10000 m/Δm, at < 30% RH, room temp., S/N=3.
- Power supply and max. consumption: 115/230 V, < 1300 W
- Dimensions (w x h x d): 60x70x140cm
- Weight: < 210 kg

*Specifications are subject to change without prior notice.
 Product pictures and illustrations may differ from actual configuration.
 Detection limit, linearity range and resolution are dependent on the substances measured, integration time and system set-up.

PTR3-TOF 10K BENEFITS

We present a revolution in analytical performance: the PTR3. This new generation of PTR-TOF (Proton Transfer Reaction Time-Of-Flight) allows for a direct and quantitative detection of volatile organic compounds (VOC) and is optimized for their oxidation products.

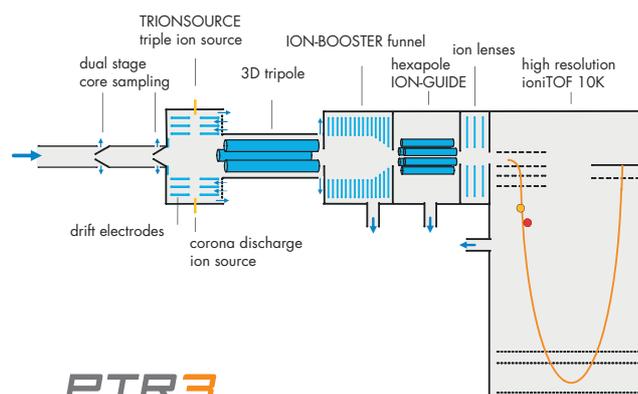
With the dual-stage core sampling inlet system, which enables analyte transfer with virtually no wall interactions, and the novel 3D tripole reaction chamber, organics ranging from volatile to extremely low volatility (ELVOC) can be measured, even at ambient temperature. In addition, the PTR3 has the unique ability to detect and quantify RO₂ radicals.

The PTR3 is operated at an elevated reaction pressure of 50 to 80 mbar while reaction kinetics are precisely defined via radial electric fields in the 3D tripole reactor which qualifies this ultimate performance instrument even for our TRU-E/N ion chemistry quality label.

Since the invention of the PTR3 by Breitenlechner et al. at the University of Innsbruck, Austria, the instrument was revised and complemented with latest IONICON technologies. Now outstanding sensitivities of more than 50000 cps/ppbv are achieved e.g. for ketones.



IONICON
ION-BOOSTER **ION-GUIDE** **ioniTOF 10K**



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ADVANCED IONICON TECHNOLOGIES

For the first time, we integrate our new TRIONSOURCE in a commercially available instrument, comprising three annularly arranged ion sources allowing for fast electrical switching between a set of reagent ions including H₃O⁺, NO⁺ and NH₄⁺.

The novel 3D tripole geometry was aerodynamically improved from its original design to further reduce surface interactions and concurrently maximize ion transmission. Extraction of analyte ions from the PTR3 ionization chamber and subsequent transfer to the TOF mass analyzer is now also enhanced by an ION-BOOSTER funnel in series with a hexapole ION-GUIDE. This setup enables precise control of extraction energies to reduce unwanted collision induced fragmentation and at the same time efficiently transmits ions of a broad m/z range.

Another breakthrough is the Time-of-Flight mass spectrometer itself. Ions are analyzed with the novel high-resolution ionTOF 10K, achieving mass resolving powers of typically 10000 to 15000 m/Δm.