



CHARON



**DIRECT PARTICLE &
GAS-PHASE MONITORING
WITH CHARON PTR-TOFMS**



THE WORLD'S LEADING PTR-MS COMPANY



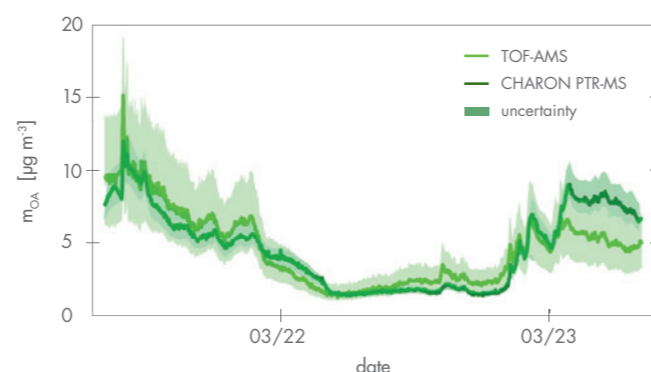
IONICON

CHARON PTR-TOFMS: THE ALL-IN-ONE ONLINE ANALYZER

- **One Instrument for Particles and Gases:** sequentially characterize almost the full range of organic compounds in the gas- and particle-phase with one single instrument.
- **VOC, IVOC, SVOC and LVOC:** on-line and real-time detection of volatile- to low volatile organic compounds on a molecular composition level.
- **Broad Linearity Range:** detect virtually all particulate organic compounds in the atmosphere with individual concentrations of less than 100 pg m^{-3} . The upper limit of detection is in the range of 1 mg m^{-3} .
- **High Temporal Resolution:** our novel Extended Volatility Range (EVR) setup allows for detecting of even the stickiest compounds in world leading PTR-MS response times.
- **Selective Reagent Ionization (SRI):** use H_3O^+ mode for most quantitative results. Switch to NH_4^+ adduct mode for almost fragmentation free ionization within seconds.

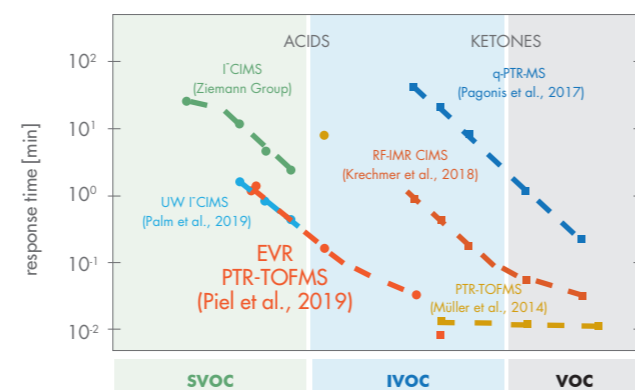
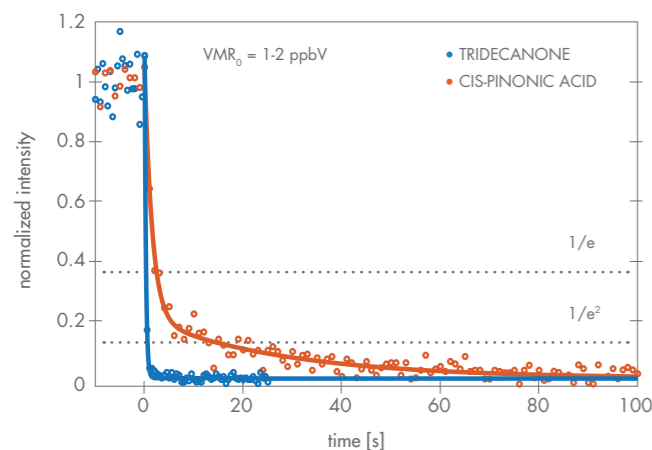
A NEW GENERATION OF QUANTITATIVE OPERATION

- CHARON provides bulk elemental composition ratios (e.g. $\text{O}:\text{C}$, $\text{H}:\text{C}$, OS_C) as well as bulk-average molecular formulas.
- Excellent agreement with existing measurement techniques (e.g. TOF-AMS).
- Follow individual tracer compounds within single seconds response times.
- Fully automated operation.



EXTENDED VOLATILITY RANGE: WORLD LEADING RESPONSE

- Material optimizations of our pressure controlled inlet system and TRU-E/N reaction chamber allow for detecting even LVOCs in real-time.
- These optimizations result in world leading PTR-MS e^- response times that are comparable to and even outperform many of the fastest CIMS techniques available in the market.



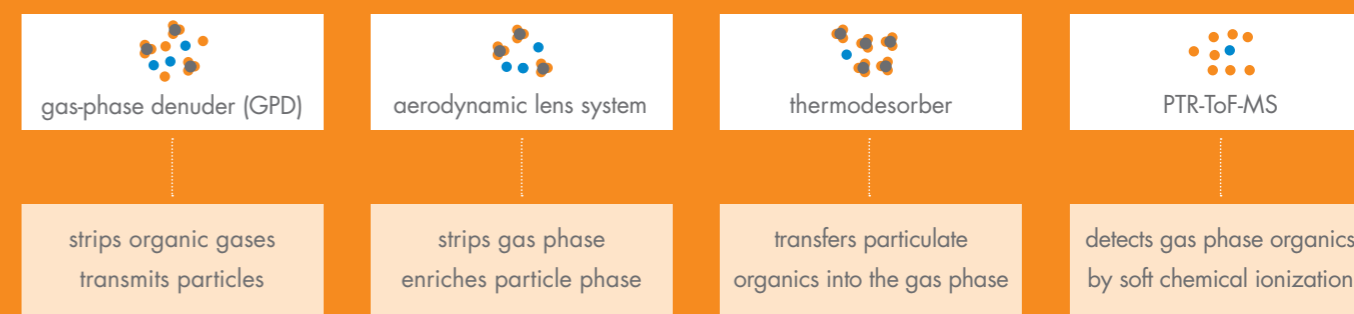
The all-in-one monitoring solution based on the most versatile, reliable and proven technology for VOC analysis available in the market: genuine IONICON PTR-MS with our patented ion-chemistry quality and TRU-E/N.

INTERESTED? LEARN MORE HERE: WWW.IONICON.COM/CHARON



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INLET FLOW DIRECTION

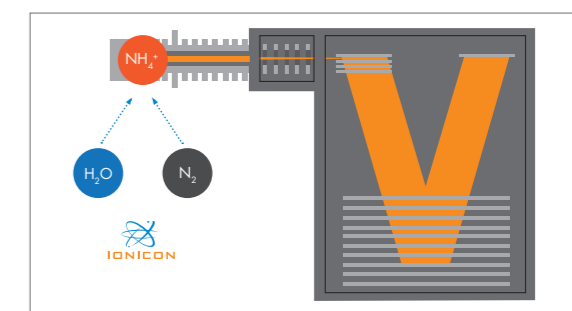
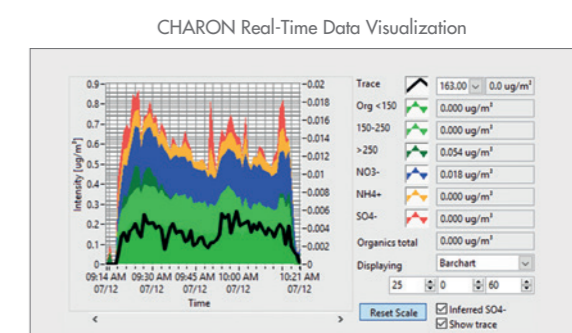


THE GENUINE PTR-MS H_3O^+ MODE

- Measure almost the full range of non-refractory sub- μm particulate matter including organics, ammonium and nitrate.

SELECTIVE REAGENT IONIZATION: INTRODUCING THE A.NH_4^+ MODE

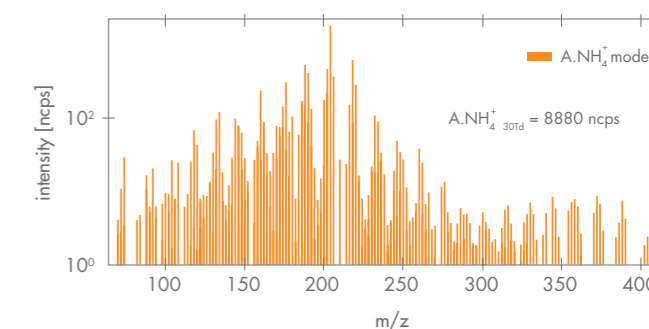
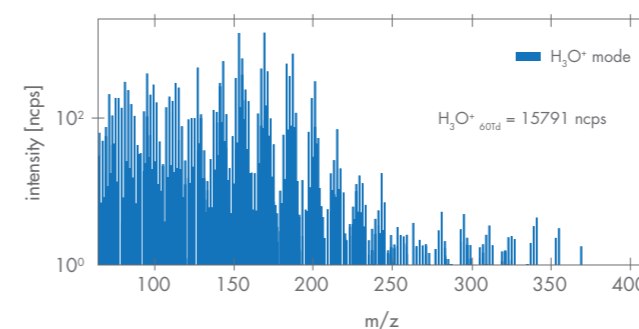
- Produce ultra-pure NH_4^+ reagent ions solely from H_2O and N_2 . No corrosive NH_3 is needed (PCT application submitted).
- Switch from H_3O^+ to NH_4^+ mode within seconds with SRI.
- Detect oxygenated organic analytes almost fragmentation free (A.NH_4^+) at reduced E/N.



Production of NH_4^+ reagent ions from N_2 and H_2O

SRI APPLICATION CASE-STUDY: LIMONENE OZONOLYSIS

- A mass spectrum of a limonene SOA in H_3O^+ mode includes monomers ($\text{C}_7\text{--C}_{10}$) and dimers ($\text{C}_{14}\text{--C}_{20}$) but also ionic fragments ($<\text{C}_7\text{--}(\text{H}_2\text{O})_n$).
- The bulk-average molecular formula is $\text{C}_{8.98}\text{H}_{14.01}\text{O}_{3.29}\cdot\text{H}^+$.
- The same limonene SOA in NH_4^+ mode results in $\sim 56\%$ ion intensity of fragmentation free A.NH_4^+ ions (monomers and dimers only).
- The bulk-average molecular formula is $\text{C}_{8.94}\text{H}_{13.45}\text{O}_{3.84}\cdot\text{NH}_4^+$.





WE PROVIDE ULTRA-SENSITIVE SOLUTIONS FOR REAL-TIME TRACE GAS & AEROSOL ANALYSIS.

We are pioneers and the world's leading company in Proton Transfer Reaction – Mass Spectrometry (PTR-MS), an extremely sensitive technology for monitoring volatile organic compounds (VOCs), invented by the founders of our company.

Our renowned PTR-MS trace gas analyzers contributed to hundreds of high-impact publications and continuously enable gaining new insights in various science domains.

We have more than 20 years of experience in analytical instruments engineering that account for known reliability, ultra-low detection limit, very high sensitivity, fast response time and robustness of our products.

We manufacture our air monitoring solutions at our company headquarter in Innsbruck, Austria.

Get in touch and we'll solve your analytical challenge!

IONICON Analytik GmbH
Eduard-Bodem-Gasse 3
6020 Innsbruck
Austria
Tel.: +43 512 214 800
info@ionicon.com
www.ionicon.com



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