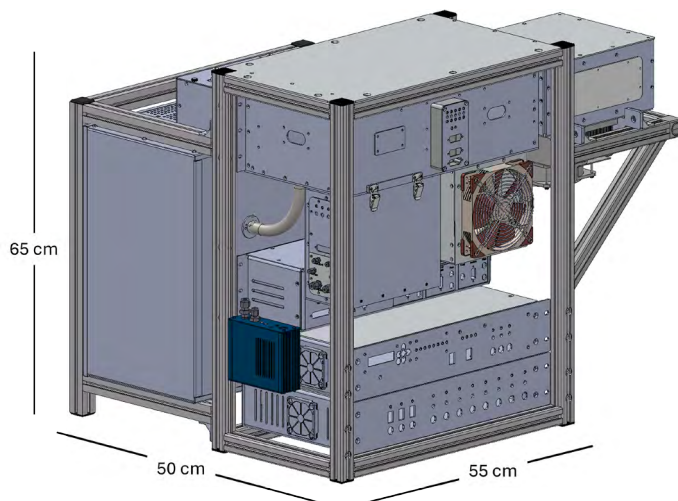


# Compact TD-GC-PTR-TOF-MS

*A compact, field-deployable TD-GC-PTR-TOF-MS for the in situ monitoring of volatile organic compounds (VOCs)*



*Online gas chromatograph (GC) system with integrated thermal desorption preconcentration coupled with a compact proton transfer reaction time-of-flight mass spectrometer*

## Applications

- Long-term monitoring of VOCs, including primary emissions and oxidation products.
- Quantitative detection of environmentally relevant biogenic and anthropogenic VOCs, including air toxics and ozone precursors.
- Mobile monitoring for detailed source characterization.

## Data Analysis Software

Analysis software packages offer fully-autonomous, real-time processing of mass spectral and chromatographic data.

- **AuTofware** offers automated data pre-averaging, mass calibration, diagnostic capabilities, background and calibration corrections, and data export procedures.
- **AutoTERN** works seamlessly with AuTofware to provide automated chromatographic analysis of processed mass spectral data. AutoTERN includes automated retention time correction and chromatographic peak fitting.

## Advantages

- Field-deployable. Compact, robust design makes advanced, research-grade measurements possible in challenging and remote environments.
- Fully automated switching between GC-PTR and direct-PTR measurements, providing automated acquisition of both online isomer-resolved data without sacrificing high time resolution detection.
- Innovative ionization cell provides exceptional sensitivity and acquisition speed without humidity dependence.
- GC thermal desorption preconcentration increases system sensitivity while the GC pre-separation enhances compound resolution and aids interpretation of complex spectra.
- Low detection limits: < 1 - 5 ppt (10 min) GC-PTR; 50 ppt (1 min) direct-PTR detection. Compact footprint (50 x 65 x 55 cm). Low power (< 600 W typical).
- Fully automated analysis software provides real-time processing for a faster, more efficient data output.

# Compact TD-GC-PTR-TOF-MS

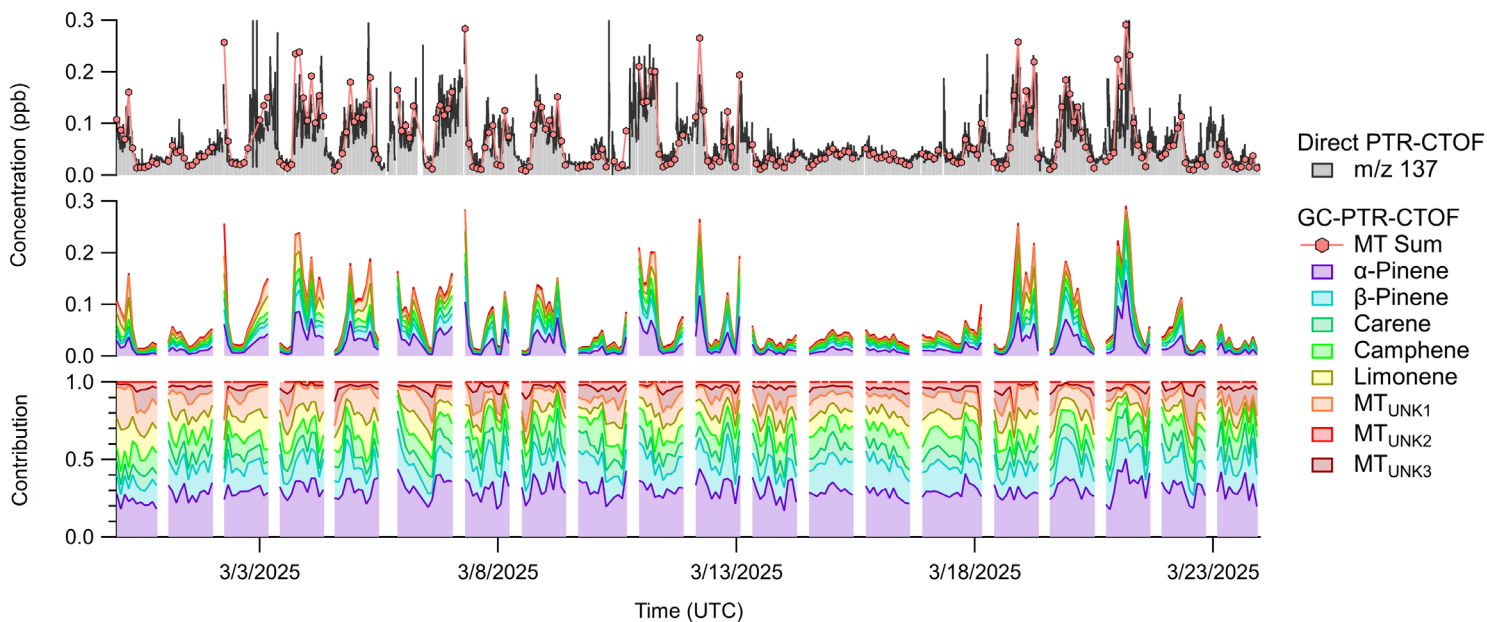
## Specifications

### Weight, Size, Power

Weight: 70 kg  
Volume: 0.2 m<sup>3</sup>  
Dimensions: 50 cm x 65 cm x 55 cm  
Power: 500 W (typical); < 600 W (start-up)

|                          | Compact PTR-TOF-MS | GC PTR-TOF-MS                |
|--------------------------|--------------------|------------------------------|
| Sensitivity (cps/ppb)    | 1,000              | Enhanced by a factor of 300* |
| Mass Resolution          | 1,000              | GC dimension of separation   |
| Limit of Detection (ppt) | < 50 (1 min)       | < 1 - 5 (speciated, 10 min)  |

\* Due to preconcentration by the GC, enhancement by factor of 300 typical for a 1 L preconcentrated sample.



Exemplary data demonstrating > 4 weeks of unattended ambient measurements in Thun, Switzerland. Here we show the direct and speciated detection of monoterpenes.

The Compact TD-GC-PTR-TOF-MS offers both *high-time resolution* detection and *chemical resolution* via pseudo-continuous GC separation.