

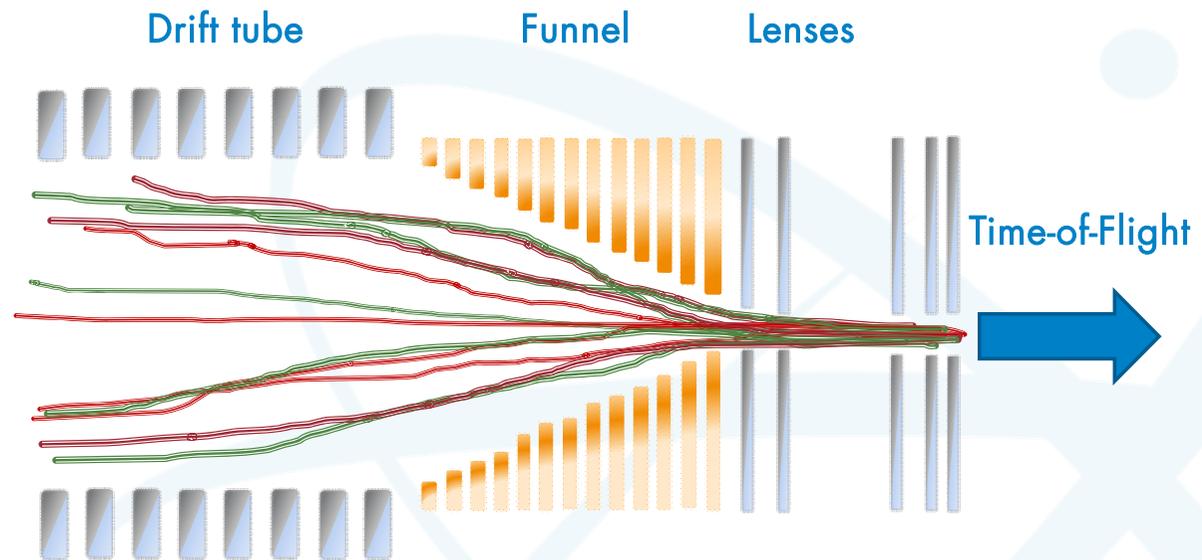
# ION-BOOSTER

THE IONICON ION-FUNNEL TECHNOLOGY

# The IONICON ion-funnel



- ▶ The new IONICON ion-funnel technology, boosting sensitivity by up to 10x
- ▶ No comprehensive modifications required
- ▶ Modular design: existing PTR-MS instruments can be upgraded
- ▶ The ion-funnel has been conceived for the PTR-TOF 1000 and as an upgrade for the 2000/8000 series.





# PTR-TOF 1000 ULTRA

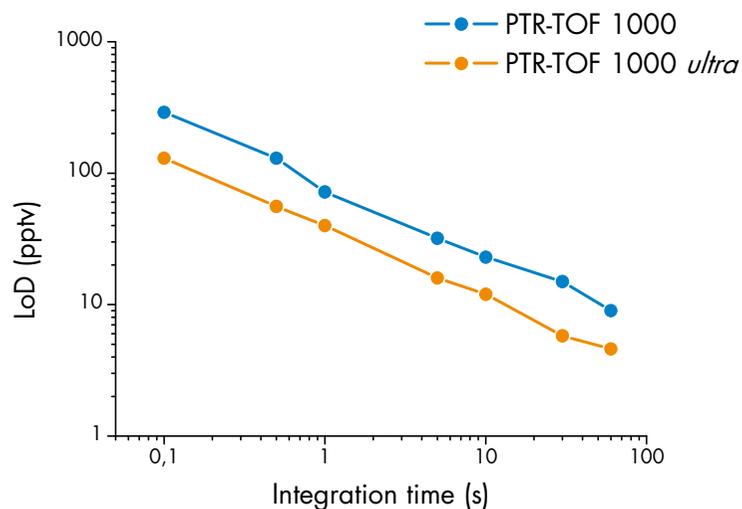
ION  
BOOSTER



The first IONICON PTR-TOFMS instrument featuring the ION BOOSTER.

# PTR-TOF 1000

## Limit-of-Detection (LoD)



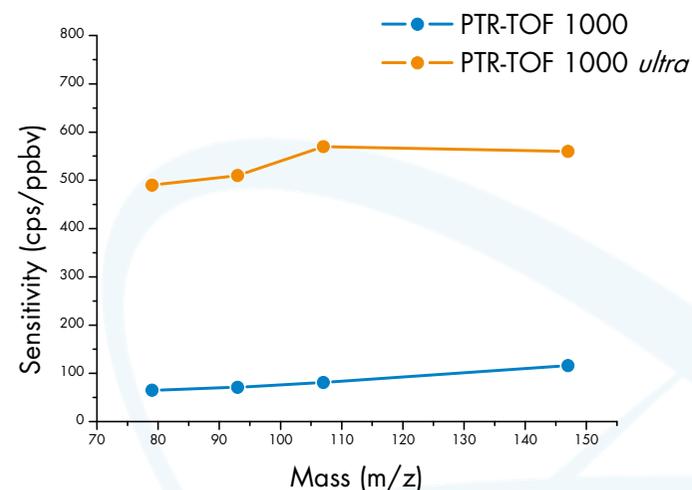
- ▶ LoDs at m/z 147 for PTR-TOF 1000 and PTR-TOF 1000 *ultra* with ION BOOSTER for integration times between 0.1 and 60s
- ▶ LoDs are calculated using the  $3\sigma$  (standard deviation) method

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# PTR-TOF 1000 ULTRA



## Sensitivity (cps/ppbv)



- ▶ Comparison of the sensitivities for PTR-TOF 1000 and PTR-TOF 1000 *ultra* with ION BOOSTER
- ▶ The sensitivities are obtained utilizing compounds from certified gas standards.
- ▶ The ion funnel adjacent to the drift tube guides the ions into the transfer lens system in a more focused way, resulting in improved transmission and thus much higher sensitivity.

**PTR-TOF 1000**

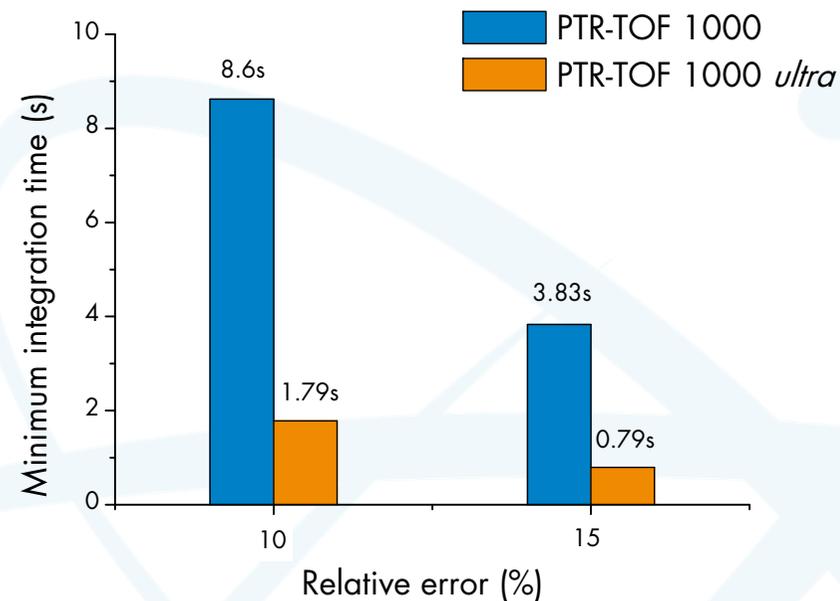
VS.

**PTR-TOF 1000 ULTRA**



## Minimum integration time

- ▶ Considerably less integration time (s) needed to achieve a relative error of 10% and 15% for PTR-TOF 1000 *ultra* with ION BOOSTER than for PTR-TOF 1000, while analyzing a concentration of 100 pptv at m/z 147.
- ▶ The integration times are calculated using measured sensitivities. The relative errors are calculated dividing the square-root of the ion count rate by the ion count rate.



# Summary of the benefits



- ▶ Next level of sensitivity: up to 10 times higher with the **ION BOOSTER**
- ▶ Shorter integration time necessary to obtain an improved Limit-of-Detection (LoD) of < 5pptv and to gain a lower relative error
- ▶ The high sensitivity makes the **PTR-TOF 1000 *ultra*** the perfect tool for applications where the data integration time is limited, e.g. nose space analysis
- ▶ The **PTR-TOF 1000 *ultra*** is IONICON's smallest and most affordable high sensitivity PTR-TOFMS instrument for fast measurements of low concentrated VOCs