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A N A L Y T I K



WWW.PTRMS.COM



PTR-MS

PROTON TRANSFER REACTION – MASS SPECTROMETRY

- > Very low detection limit (pptv-range)
- > Real-time quantification of compounds
- > Online VOC monitoring
- > No sample preparation – direct injection



PTR-MS

...in environmental and atmospheric research...

...in food & flavour science...

...in material and packaging research...

...for industrial VOC monitoring...

...for dioxin precursor measurements...

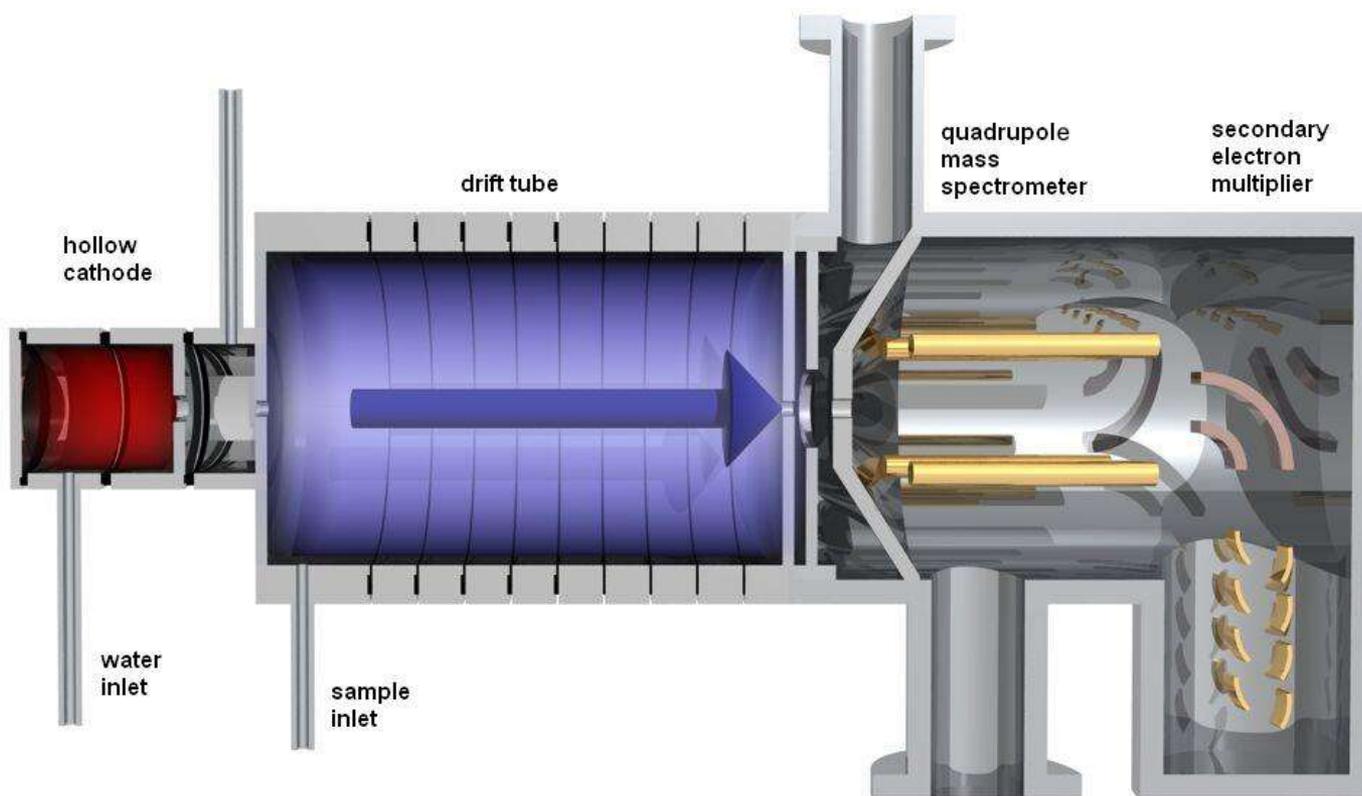
...for indoor VOC contamination monitoring...

THE SOLUTION FOR ONLINE TRACE GAS ANALYSIS



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ANALYTIK

> The Technology



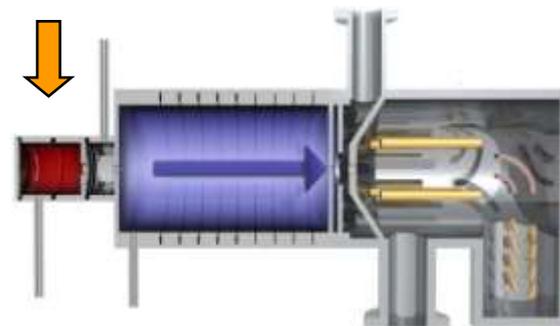
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THE SOLUTION FOR ONLINE TRACE GAS ANALYSIS



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The ion source:



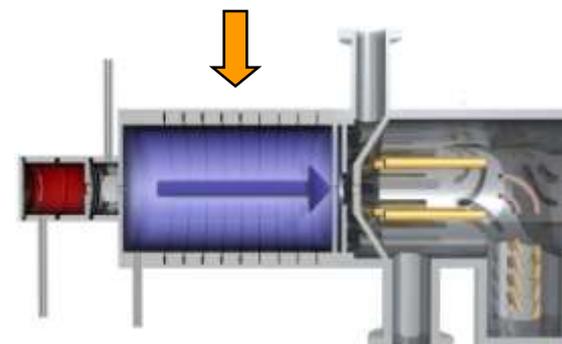
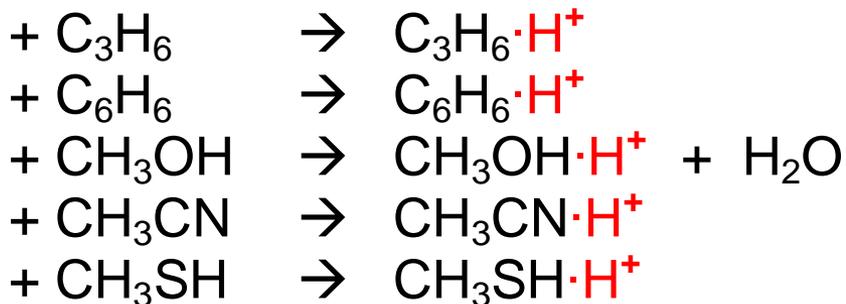
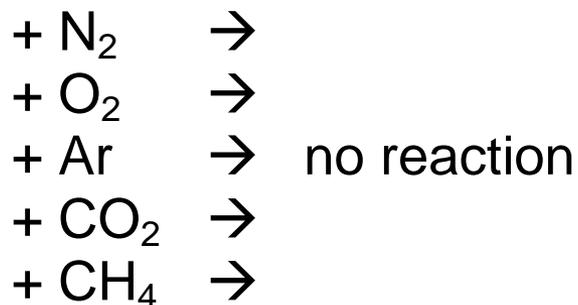
- H_3O^+ is produced
- Protonated water





The reaction chamber:

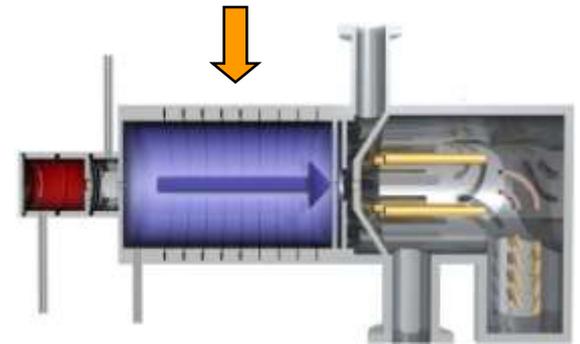
$H_2O \cdot H^+$





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The reaction chamber:



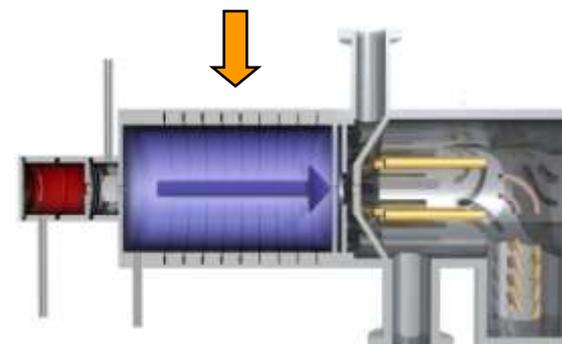
- No reaction with common constituents of air
- No loss of primary ions
- Trace gas concentration is linear to ion count rates

➔ Very low detection limit of down to **5 pptv**



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The reaction chamber:

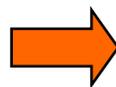


- Proton Transfer Reaction – ionisation method
- Ultra soft technique compared to charge transfer or electron impact

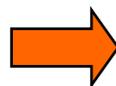
➔ Very low mass fragmentation

Mass Fragmentation:

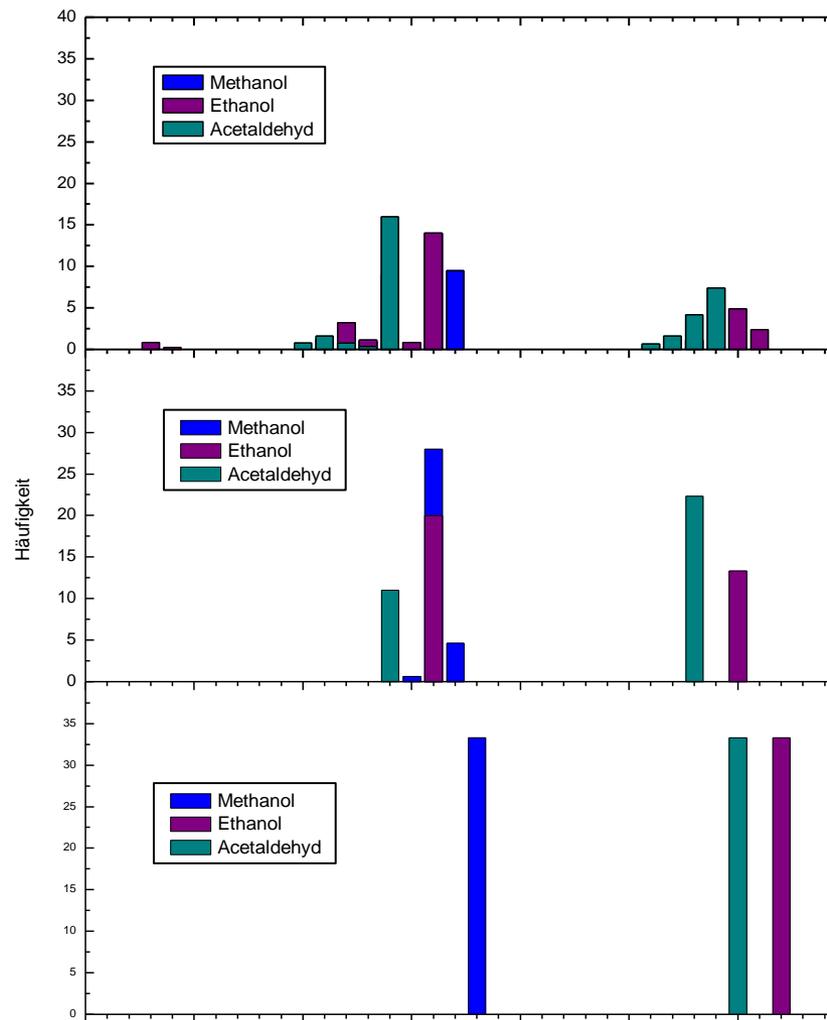
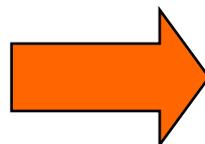
Electron impact
about. 70eV



Charge transfer
with Xe+



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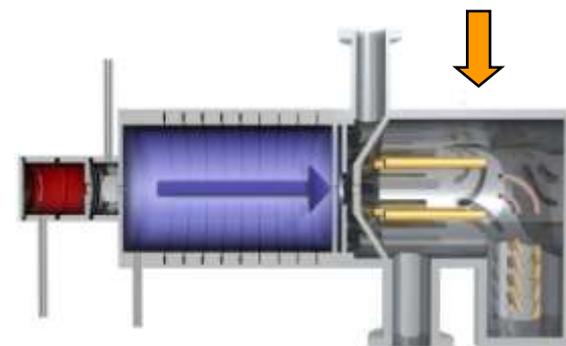




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The detection system:

- Quadrupole mass spectrometer
- SEM / Channeltron detector
- Quantification of trace compounds



➔ Very fast - response time about **100 ms**



> The advantages:

- Detection threshold of down to 5 pptv
- Real-time online measurement
- Soft ionization method – low fragmentation
- No sample preparation – direct injection
- Fast and accurate quantification of masses

> The PTR-MS product range:



Over 100 instruments sold to Europe, USA,
Canada, Australia, Japan, New Zealand, China,
Korea...

HIGH SENSITIVITY
PTR-MS



- Ultra-Sensitive
- Real time
- Online VOC detector

- 5 pptv
- 1 – 512 amu
(2048 on request)

STANDARD PTR-MS



- Sensitive
- Real time
- Online VOC detector

- 30 pptv
- 1 – 512 amu

THE SOLUTION FOR ONLINE TRACE GAS ANALYSIS

COMPACT PTR-MS



- Compact
- Real time
- Online VOC detector

- Short start up time
- Small and light
- Easy to handle
- 1-300 amu
- 500 pptv

Customized...

PTR-MS

...Solutions

→ tailored to your needs!

Measurement campaigns
with several PTR-MS
systems:

- in the air
- in the sea



Customized...

PTR-MS

Solutions for the Industry

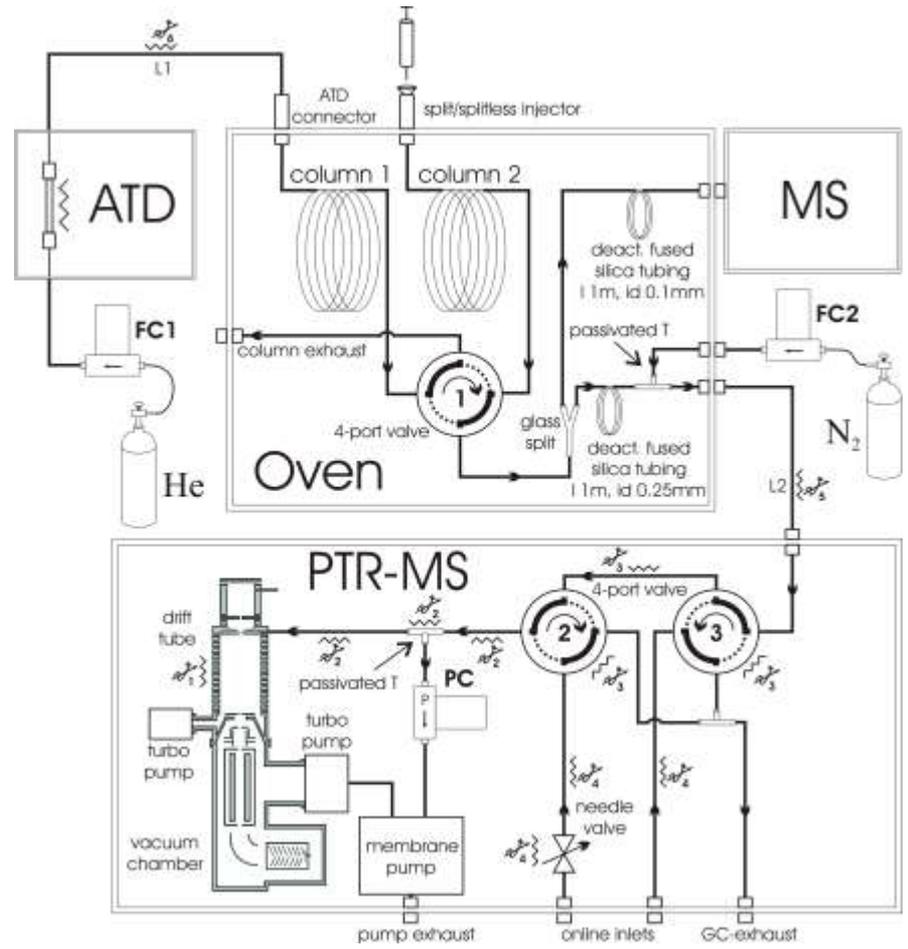
- > Automated VOC monitoring systems
- > Real-time monitoring of selected compounds
 - Low cost per sampling point
 - Modular software
 - Scalable solution
 - Easy-to-use
 - Little maintenance



Picture: Pixelquelle.de



> GC-PTRMS
For better identification



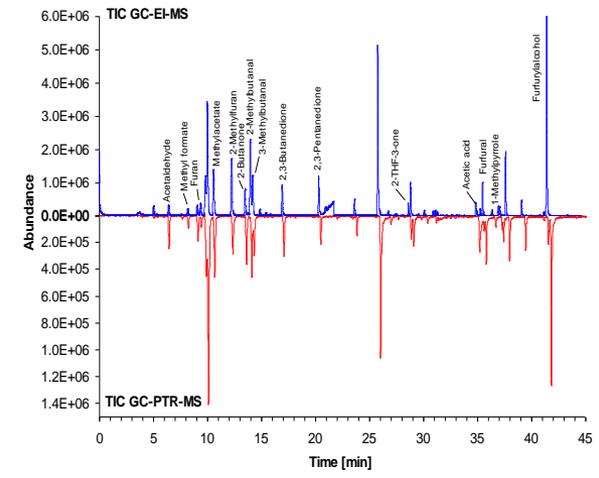
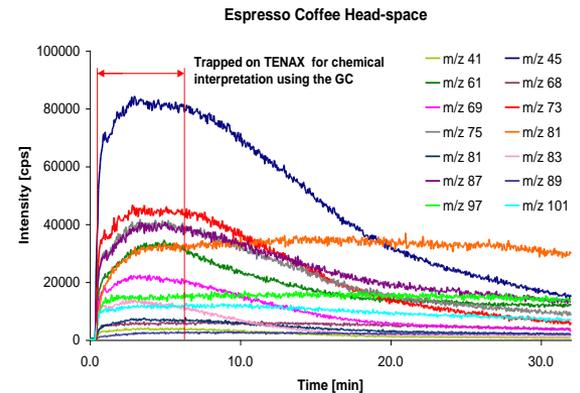


> Emission of volatile organic compounds from liquid coffee:



Simultaneous measurement with:

GC-MS blue
 and
 GC-PTRMS red





> Application fields of PTR-MS:

Environmental research

- Atmospheric chemistry
- Emissions control
- Leaf wounding VOC detection

Food and aroma research

- Coffee headspace measurement
- Aroma science
- Nose space air analysis
- Determination of food freshness



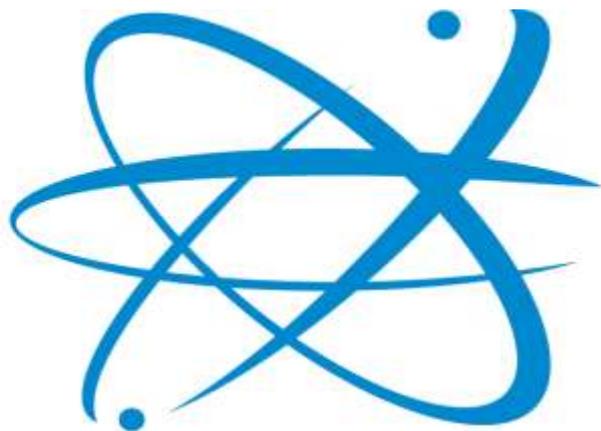
> Application fields of PTR-MS:

Ambient air control

- Indoor air VOC detection (SBS monitoring)
- Cleanroom environment analysis

Industrial applications

- Waste incineration process control
- Production process control
- Material and packaging research
- Online VOC monitoring in chemical plants



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WWW.PTRMS.COM

A-6020 Innsbruck • Technikerstrasse 21a • Telefon: +43 / 512 / 50 74 800 • Fax: +43 / 512 / 50 79 818 • Mail: info@ptrms.com • Internet: www.ptrms.com

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