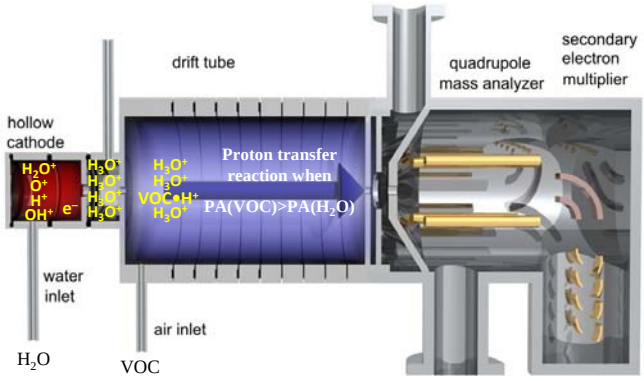
Contributing Efforts to DAURE using the Proton Transfer Reaction Technique for VOC Analysis

M. Müller, A. Metzger, **S. Schallhart**, A. Wisthaler, A. Hansel

Institute of Ion Physics and Applied Physics, **University of Innsbruck**, Austria

PTR-MS:

Reaction: $H_3O^+ + VOC \rightarrow VOCH^+ + H_2O$



What do we detect:

- Most hydro carbons and derivates
  - Terpenes
  - Aromatics
- Photo oxidation products and other oxyVOCs
  - Ketones
  - Aldehydes
  - Alcohols
- Aerosol precursors
  - DMS and oxidation products (DMSO)
  - High molecular species (semi volatile)

Environmental Physics & Ion-Molecule-Reactions

Performance Summary PTR-MS:

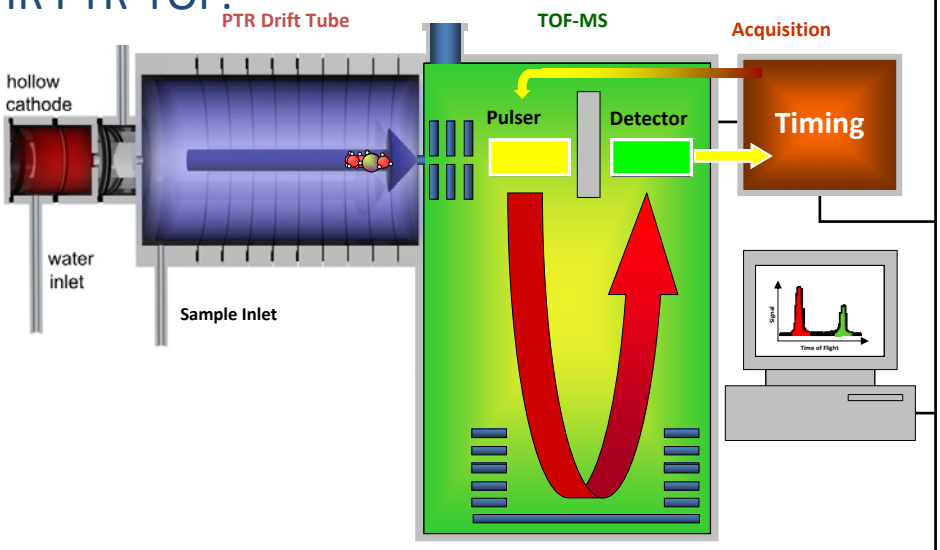
Advantages:

- Compact organic trace gas analyser
- Mostly non dissociative ionization
- Excellent sensitivity
- Low limit of detection ~10 pptv

Disadvantage:

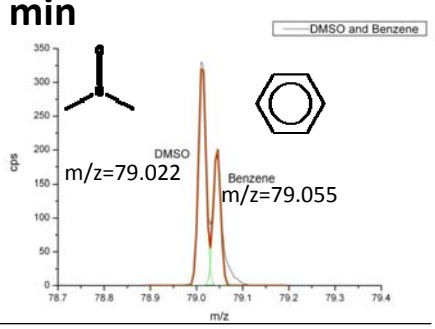
- Poor selectivity

HR PTR-TOF:



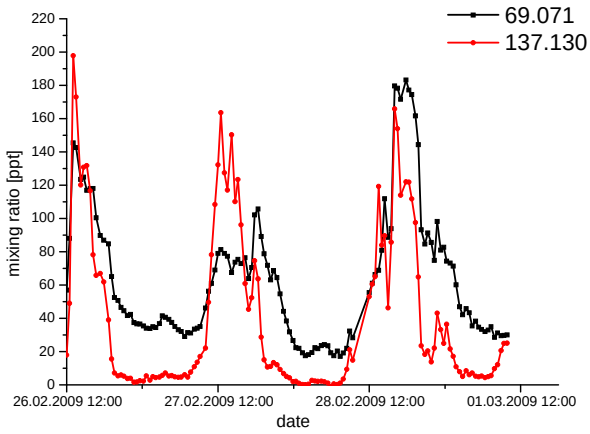
Performance Summary HR PTR-TOF:

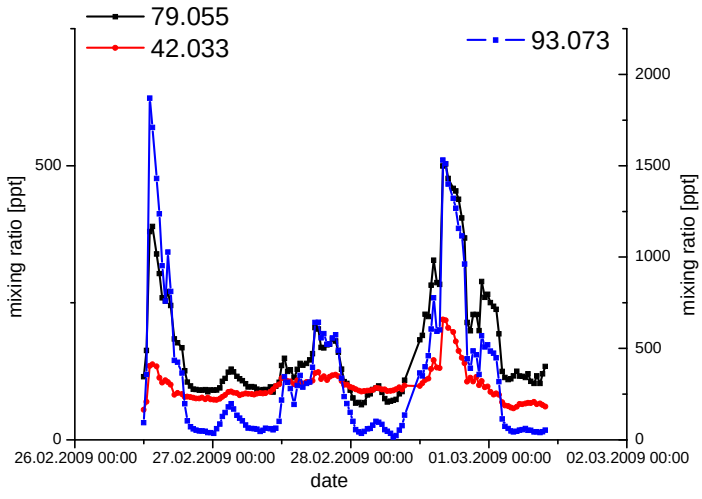
- **Detects all ions in one instant**
- **Separation of isobars is possible**
- **Identification of the elemental composition**
- **Low pptv range LOD @ 1 min**
  - **Aromatics (7ppt)**
  - **Acetonitrile (5ppt)**
  - **a-Pinene (5ppt)**
- **High sensitivity**



What do we have till now?

Biogenic emissions





Biomass burning?

To discuss: Inlet @ the right place?

THANK YOU