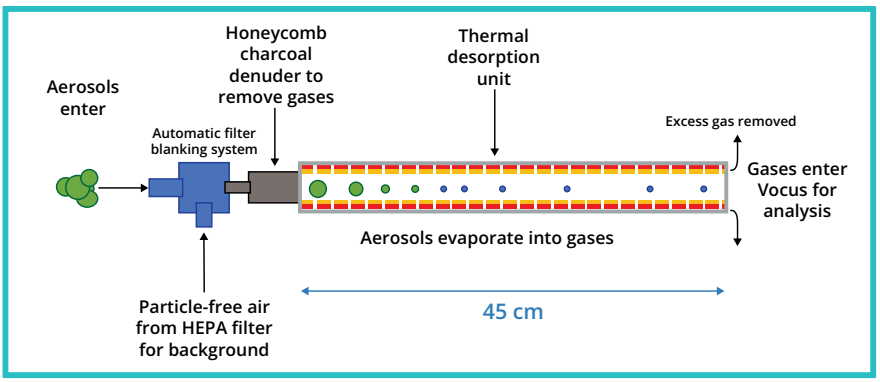
AerodyneResearch

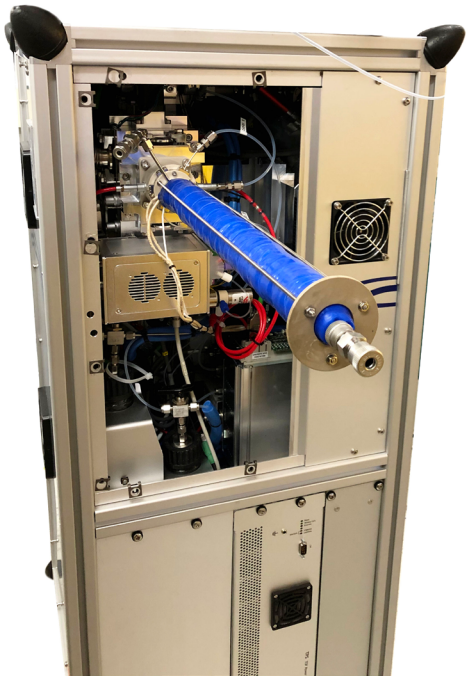
Technology Enhancing Science

VIA

Vaporization Inlet for Aerosols

Real-time chemical analysis of aerosols with Vocus technology.



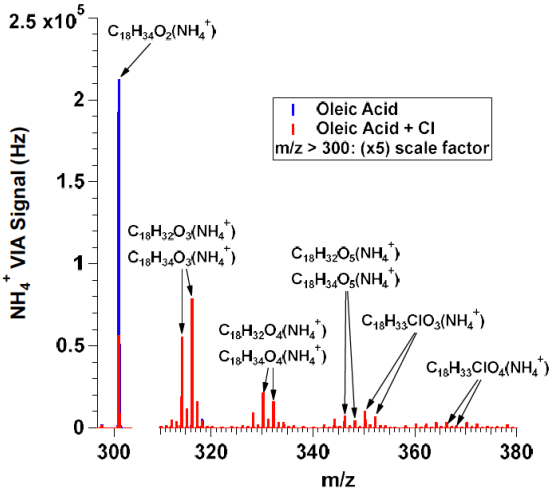


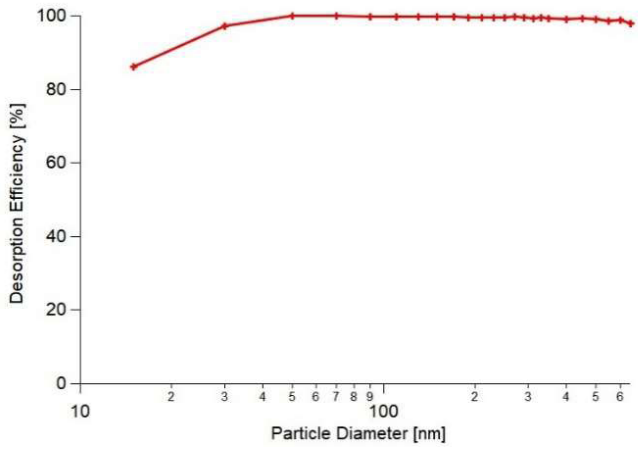
Applications

- Online identification and quantification of trace-gas- or particle-phase compounds
- Thermal desorption of organic aerosols for analysis by Vocus
- Quantification of organics using H_3O^+ PTR-MS
- Detection of HOOM with NH_4^+
- egusphere-2023-1146.pdf (copernicus.org)
- acp-23-3707-2023.pdf (copernicus.org)

Advantages

- Lack of aerodynamic lens means small particles Dp<80 nm can be measured with the same efficiency as larger particles (no complicated corrections; see below)
- Valve system to enable automated filter blanks and alternating gas- and particle-phase sampling
- Easy to remove and install (< 10 minutes)
- Integrated into Vocus control software

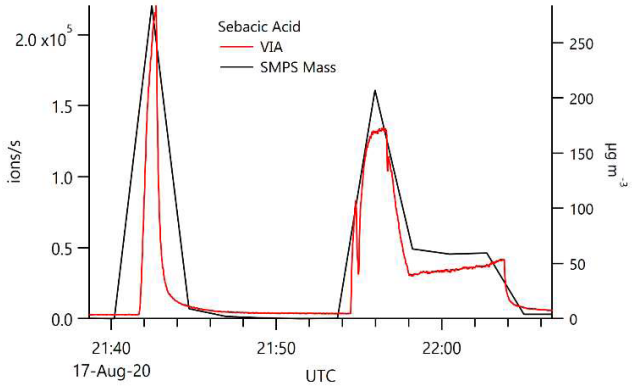




VIA - Vaporization Inlet for Aerosols

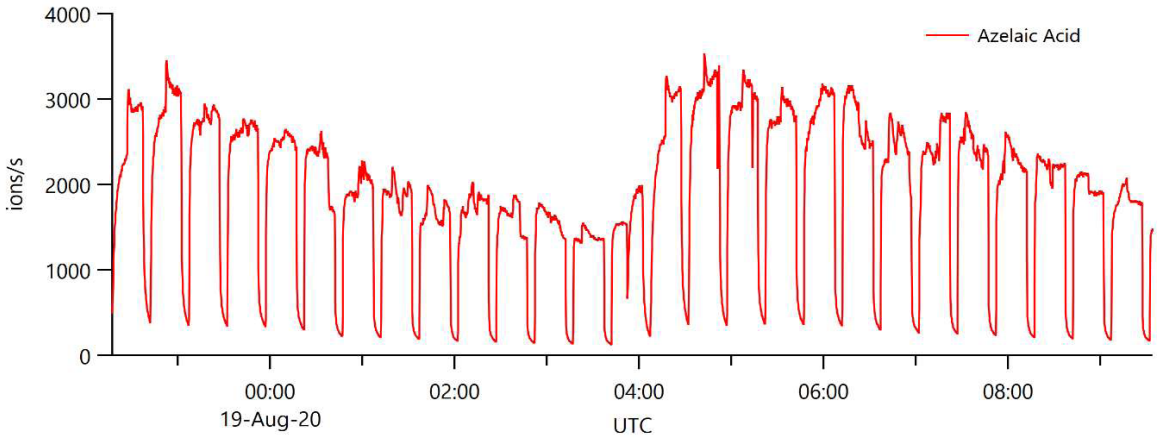
Performance and Specifications

- ng m-3 detection limits, without the need for complicated aerodynamic lens due to the high sensitivity of the Vocus PTR-TOF
- Efficient desorption from 25 to 600 nm particle sizes
- Honeycomb charcoal denuder removes > 99% of VOCs while passing through particulates and maintaining sample humidity
- Programmable desorption temperatures from 150 – 250 C, capable of thermogram ramps
- Capable of switchable gas/particle-phase analysis
- Fully integrated into TofDaq acquisition software or EyeOn control



- Left: sebacic acid concentrations next to
- Fast time response to large changes in concentration and has relatively low carryover
- Typical aerosol sensitivities up to ~ 1000 cps/μg using NH_4^+ as the reagent ion

- Automated filter blanking system enables fast and reproducible background determination
- Background periods are recognized and automatically analyzed by Tofware analysis software package
- Below: a time series of azelaic acid with automated filter blanks every 30 minutes



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