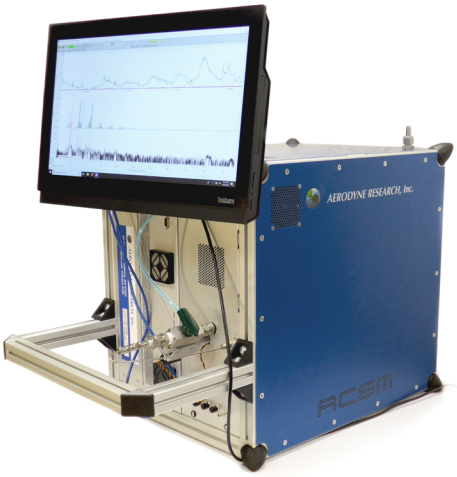
AerodyneResearch

Technology Enhancing Science

TOF-ACSM

Time-of-Flight Aerosol Chemical Speciation Monitor

Measure real-time, non-refractory aerosol particle mass and chemical composition.

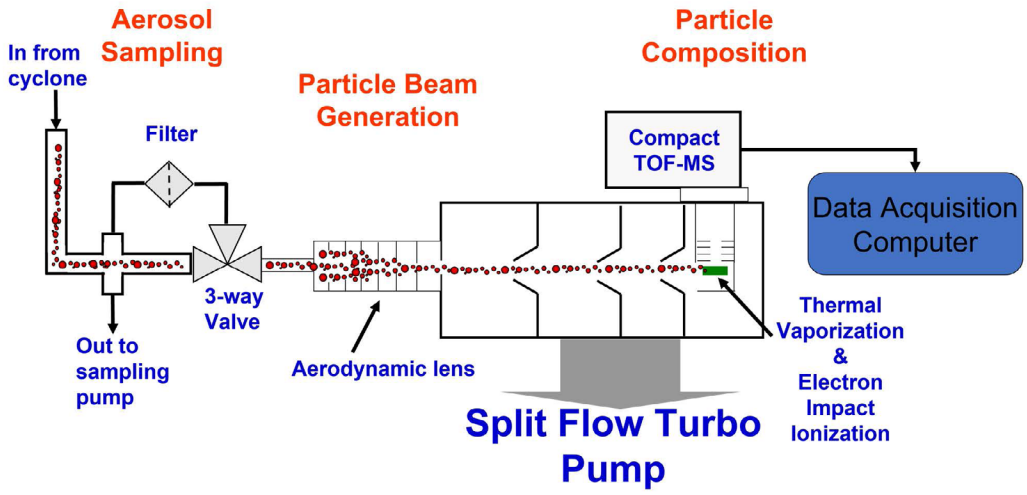


Applications

- Continuous on-line measurement of ambient aerosol mass concentrations and chemical composition including ammonium, nitrate, chloride, sulfate, and organic species
- Routine/long-term air quality monitoring
- Field measurements of aerosol chemical composition from high pollution at urban sites to pristine background at remote locations
- Aerosol chamber studies
- Optical/CCN closure
- Source characterization
- Industrial process monitoring

Advantages

- Aerodynamic particle lens for efficient gas-particle separation
- Mass spectrometric analysis (0-200 amu)
- Automated zeroing (filter)
- Minimal maintenance, remote control ready
- Direct linear detection of sulfate, nitrate, ammonium, chloride and organic aerosol species through two-step thermal vaporization (~600 C) and electron impact ionization process
- Improved separation and quantification of organic aerosol species, including primary and secondary organic aerosol, compared to the Q-ACSM



TOF-ACSM

Specifications

Detection Limits (μg m^{-3}, 10 minute, 3σ)

Organics:	0.31
Sulfate:	0.04
Nitrate:	0.09
Chloride:	0.06
Ammonium:	0.19

Sample Flow

- 85 cc min^{-1} (volumetric flow)

Data Rate

- Adjustable, 10 minutes is typical

***Specifications depend on instrument settings and are subject to change without notice.**

Size/Weight

- Benchtop - 25.6 in x 20.1 in x 23.6 in; 165 lbs [65 cm x 51 cm x 60 cm; 75 kg]

Electrical

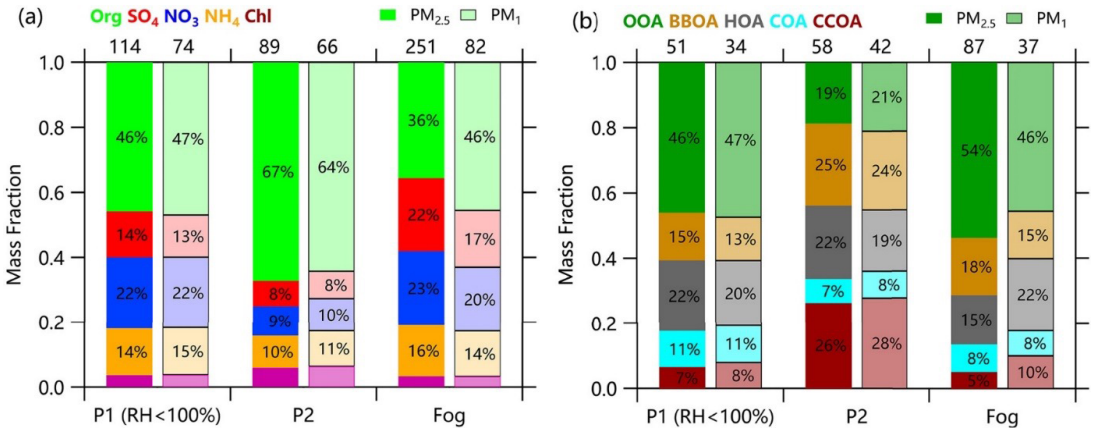
- 600 W max, 350 W typical
- 90-260 VAC, 50-60 Hz

Software

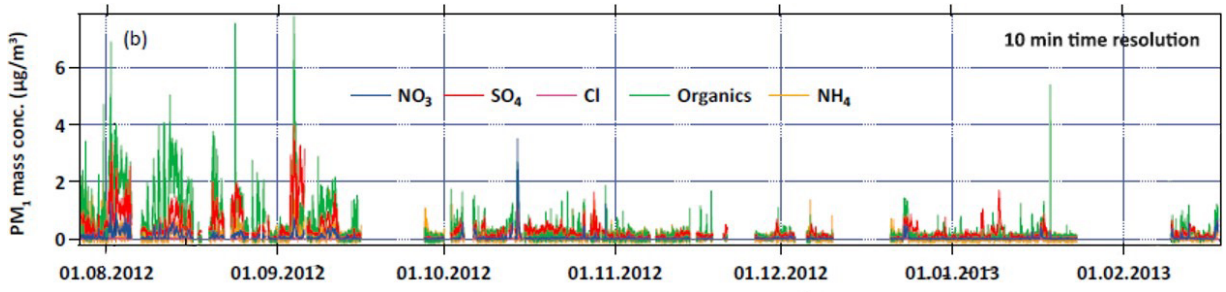
- Custom acquisition and analysis routines
- Specialized routines for PMF analysis of the organic fraction

Aerosol Size Range

- 70-700 nm vacuum aerodynamic diameter (standard lens)
- 110-3500 nm (PM2.5 lens option)



TOF-ACSM-measured PM1 and PM2.5 chemical composition and organic aerosol sources in Gucheng, China under different ambient conditions (Sun et al., Geo. Res. Lett, 47, 2020)



TOF-ACSM measured mass loadings from field deployment atop the Jungfraujoch in 2012-2013 (Fröhlich et al., Atmos. Meas. Tech., 6, 3225, 2013)

Aerodyne Research

45 Manning Road
Billerica, MA 01821
(978) 663–9500
www.aerodyne.com

CONTACT US