

LTOF-AMS

Long Time-of-Flight Aerosol Mass Spectrometer for Increased Chemical Resolution of Particulate Matter

Measure real-time, non-refractory, size-resolved particulate chemical composition and mass.

Applications

- Air quality and climate change research
- Elemental composition (O:C, H:C, N:C)
- Fast response plume studies up to 5 Hz
- Aerosol chamber studies
- Combustion exhaust monitoring and source characterization

Advantages

- Aerodynamic particle lens for efficient gas-particle separation
- Resolution approaching 7000 m/ Δ m
- Linear universal detection of sulfate, nitrate, ammonium, chloride and organic aerosol species through two-step thermal vaporization (~600 C) and electron impact ionization process
- Single particle detection mode via event trigger
- Particle aerodynamic diameter determined from particle time-of-flight (velocity) measurements using a particle beam chopping technique
- Compatible with 1064 nm laser vaporization module
- Improved separation and quantification of organic aerosols species, including primary and secondary organic aerosol, compared to HTOF-AMS



LTOF-AMS

Specifications

Particle Size Range

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

Mass Resolution

- Up to 7000 $m/\Delta m$

Mass Range

- Typically, 1-1000 m/z

Data Rate

- 1-5 minute typical data reporting interval
- Typical fast MS mode data rate 1 Hz

Data System

- High speed acquisition of 1.6 GHz with custom firmware for single particle (event trigger) mode

Software

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

Sample Flow

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

Size/Weight

- 55 in L x 24 in D x 27 in H; 275 lbs
[140 cm x 61 cm x 69 cm; 125 kg]

Electrical

- 600 Watts max, 90-260 VAC, 50-60 Hz

Available Options

- PM2.5 inlet for extended size-range
- Capture vaporizer for improved mass accuracy
- Laser vaporizer for black carbon and metal particle measurements

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

