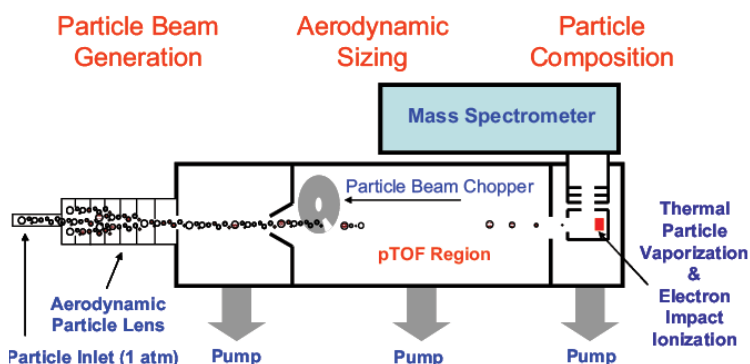




## AMS Aerosol Mass Spectrometer Systems

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



### APPLICATIONS

- Climate change and air quality research.
- Organic aerosol quantification and analysis.
  - Separation and quantification of organic components including HOA (hydrocarbon-like organic aerosol, linked to primary combustion sources) and OOA (oxygenated organic aerosol, linked to secondary aerosol sources).
  - Elemental composition (O:C, H:C).
- Mobile measurements from ship, truck and aircraft platforms.
- Fast response plume studies up to 100 Hz.
- Aerosol chamber studies.
- Combustion exhaust monitoring and source characterization.

### ADVANTAGES

- Particle beam source for efficient separation of gas and particle.
- Thermal particle vaporization with electron impact ionization source.
- Direct linear detection of sulfate, nitrate, ammonium, chloride and organic aerosol species.
- Fast response, up to 100 Hz mass spectra.
- Particle aerodynamic diameter determined from particle time-of-flight (velocity) measurements using a particle beam chopping technique.
- Several mass spectrometers to choose from: quadrupole, compact, and high resolution TOF systems.



## AMS

### SPECIFICATIONS:

Detection Limit (S/N =3) dependent on mass spectrometer option:

Mass Spectrometer System	Detection Limit* (ng/m <sup>3</sup> )	Mass Resolving Power (m/Δm) (m/z)	Mass Range
C-ToF-AMS	1.2	800	1-1000
HR-ToF-AMS:(V-mode)	2.9	2500	1-1200
:(W-mode)	32	5000	1-1200

\*Detection limits are for 1-minute integration, 3σ. Detection limits depend on chemical species. Typical values for nitrate are listed (organic DL is ~10x higher, sulfate DL is ~2x higher and ammonium DL is ~20x higher).

**Particle Size Range:**

40-1000 nm aerodynamic diameter standard or PM 2.5 option

**Data Rate:**

1-5 minute typical data reporting interval.  
Maximum mass spectra data rate 100 Hz (ToF MS systems only).  
Maximum size distribution data rate 150 Hz.

**Data Format:**

Custom acquisition and analysis software for mass loadings and size distributions. Specialized routines for high resolution data analysis (O:C ratios)

**Sample Flow:**

0.085 l min<sup>-1</sup>

**Available Options:**

Black carbon detection module, PM 2.5 lens, beam width probe, efficient particle time-of-flight (ePToF), aerosol dryer, sample line flow controller

**Size/Weight:**

41" x 24" x 53", 385 lbs  
[104.14 cm x 83.82 cm x 134.62 cm, 175 kg]

**Electric Power:**

600 W; 110VAC/60Hz or 220VAC/50Hz

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