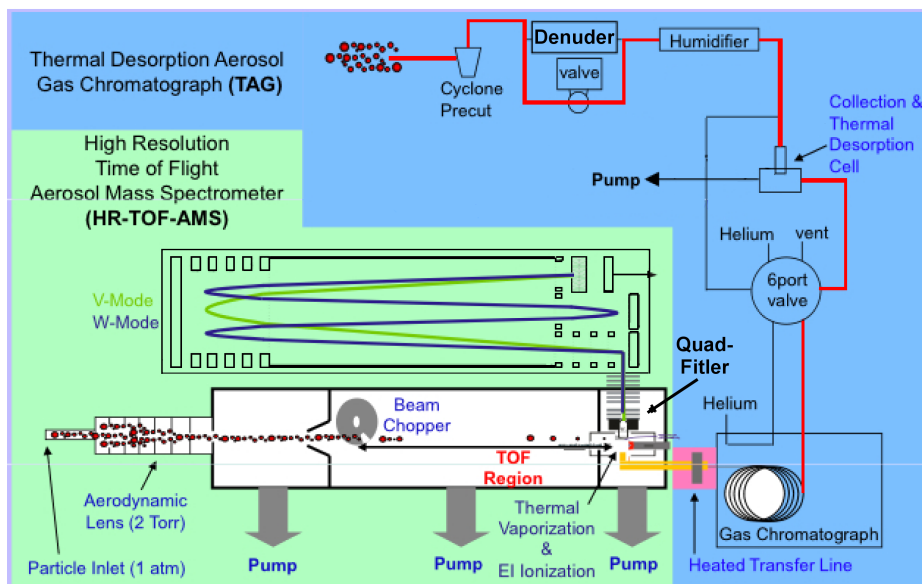


TAG-AMS Development

Thermal desorption Aerosol GC (TAG) - Aerosol Mass Spectrometer (AMS)

Real-time particle chemical composition and mass measurements combined with hourly measurements of speciated organic compounds.



APPLICATIONS:

- On-line measurement of ambient aerosol mass concentrations and chemical speciation of particulate composition on a molecular level utilizing GC separation.
- Composition analysis for particulate ammonium, nitrate, sulfate, chloride, and organic species including separation and quantification of organic aerosol species like HOA and OOA can be linked to molecular marker compounds.
- Enhanced source appointment studies.

ADVANTAGES:

- Combines two proven techniques
- GC separated compounds are analyzed using the same electron impact ion source and HR-ToF-MS that is shared with the AMS
- Standard HR-ToF-AMS measurements and simultaneous collection from the same ambient aerosol sample on the TAG Collection Thermal Desorption (CTD) cell.

COLLABORATIVE DEVELOPMENTS:

- Aerodyne Research, Inc.
TAG-AMS interface
Acquisition and analysis tools for TAG-AMS
Commercialization of the TAG module
- University of California at Berkeley
Compact GC oven
Fast GC capabilities
- Aerosol Dynamics, Inc.
Automated calibration injection system
Valveless carrier gas system
Improved CTD Cell reducing particle bounce

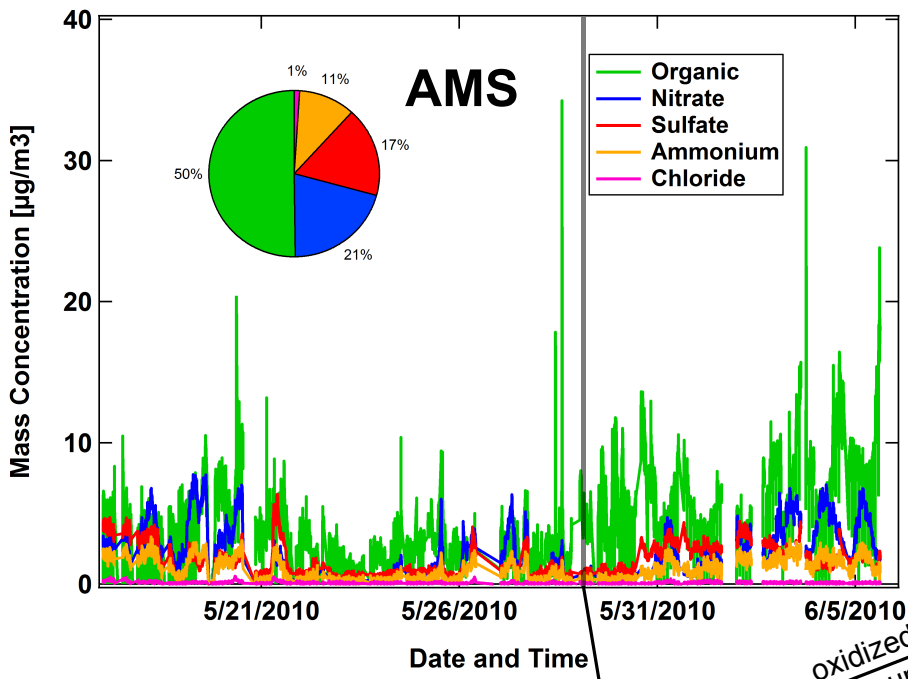
TAG MODULE VERSIONS:

- TAG module upgrade for an existing Aerodyne AMS.
- TAG module combined with a new standalone HR-ToF-MS.
- Standalone TAG module for use with existing GC-MS systems.

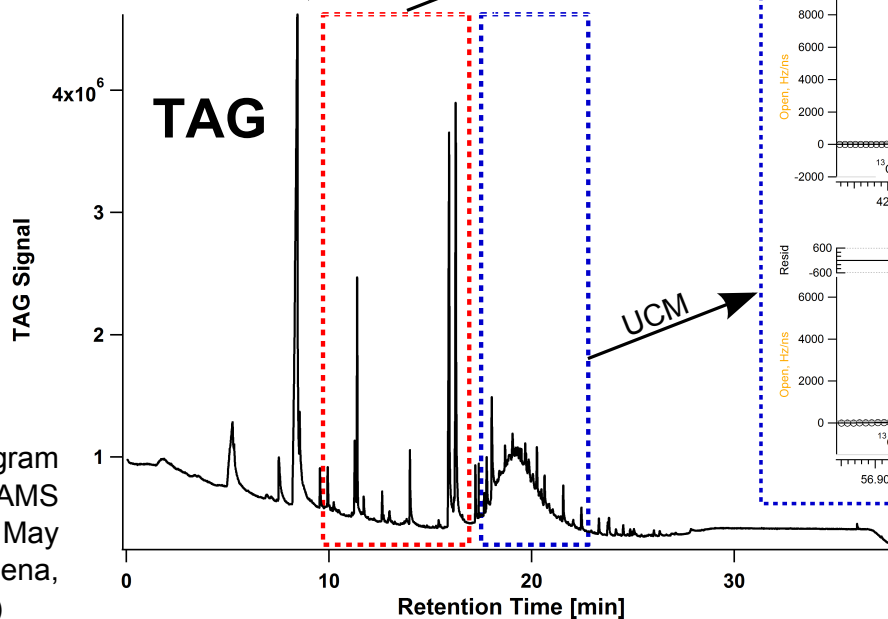
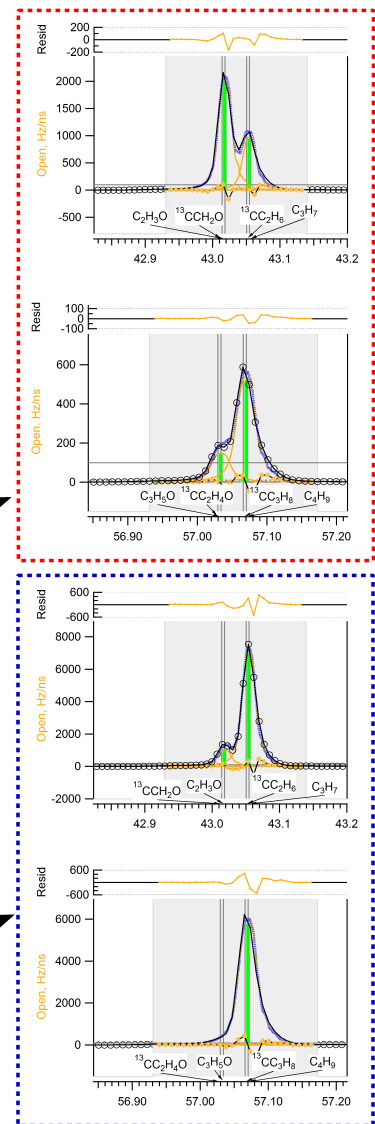
TAG-AMS

TAG MODULE SPECIFICATIONS:

- Sensitivity Range:** 10^1 to 10^2 pico gram per compound
- Data Rate:** Adjustable, depends on the GC temperature program for separation of compounds
- Sample Flow:** 10 L min^{-1} ambient
- Data System:** Custom acquisition and analysis software
- Operating Pressure:** Ambient



High resolution mass spectrometric analysis



TAG chromatogram corresponding to AMS measurement on May 29th 2 pm, Pasadena, CA (CalNex 2010)