



Aerosol Mass Spectrometry

The Next Generation in Aerosol Analysis

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July 2009

Digging through the garbage



Aerosol Analysis: Moving Forward

Current aerosol analysis done by filters

No size information

Over a long period of time

Elution misses much of the material

Results in pretty low resolution



AMS: Real-time, field-deployable

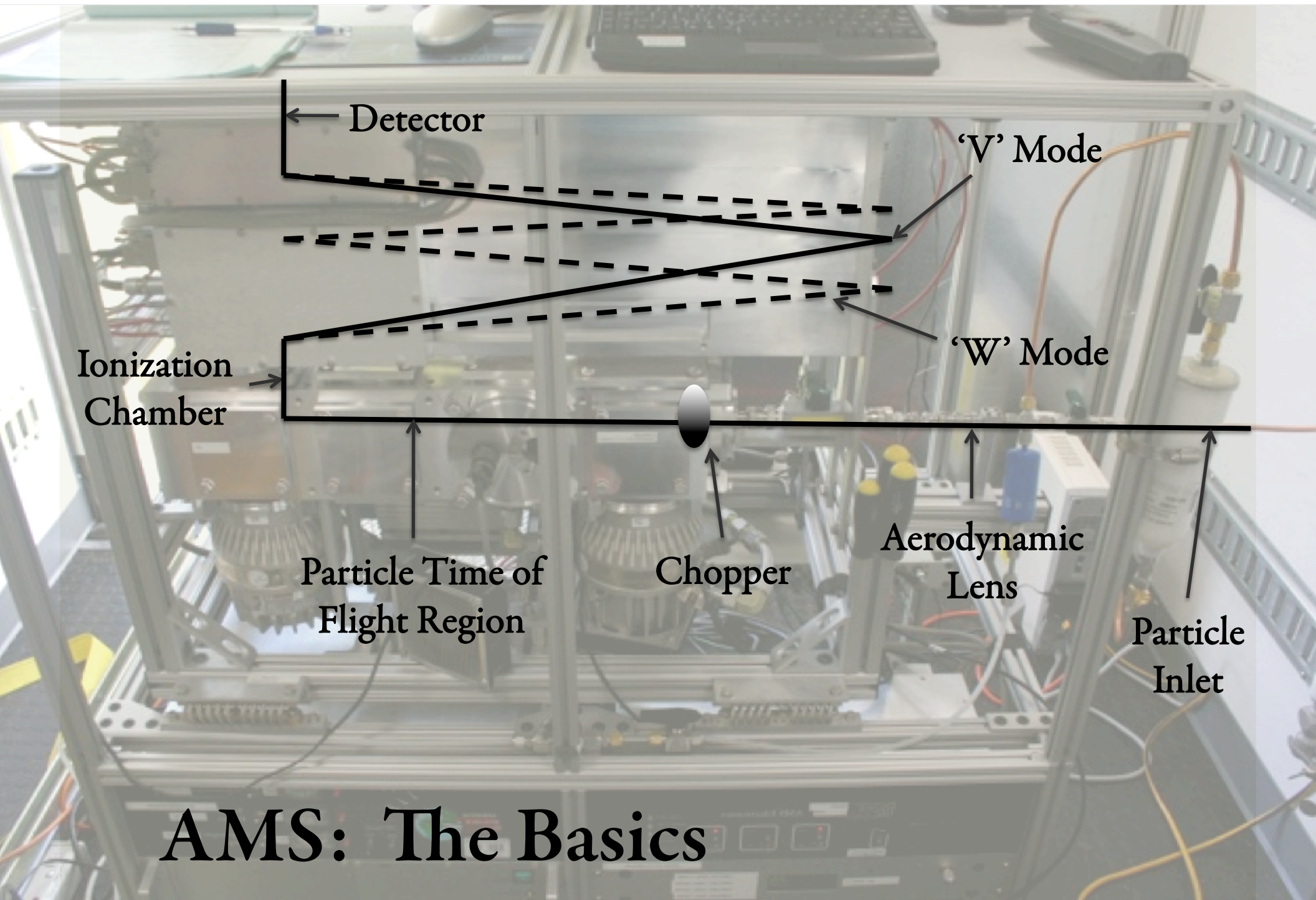
A photograph of a white AMS (Aerosol Mass Spectrometer) trailer parked in a grassy field. The trailer is a large, boxy unit with a dark door on the side and a fan on the back. In the background, there are green trees and snow-capped mountains under a blue sky with some clouds. The scene is outdoors, likely in a rural or mountainous area.

**Virtually no loss of material
when sampling**

Instant data readouts

Real-time sampling

**High resolution particle size
and composition data**



← Detector

‘V’ Mode

‘W’ Mode

Ionization Chamber

Particle Time of Flight Region

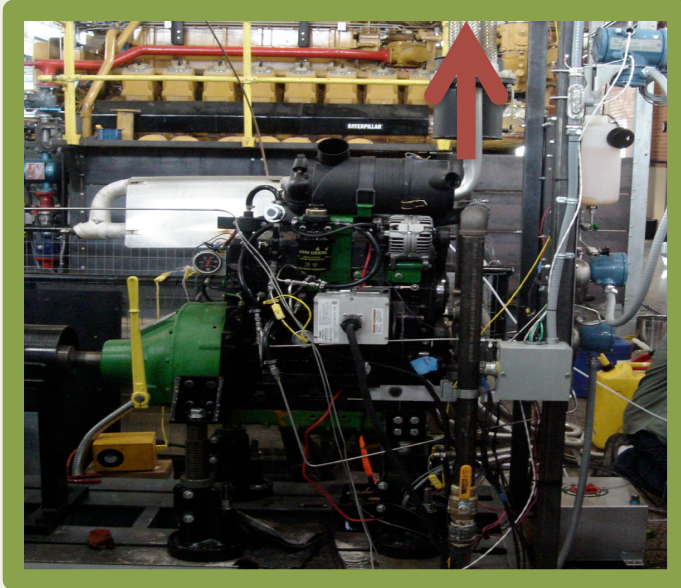
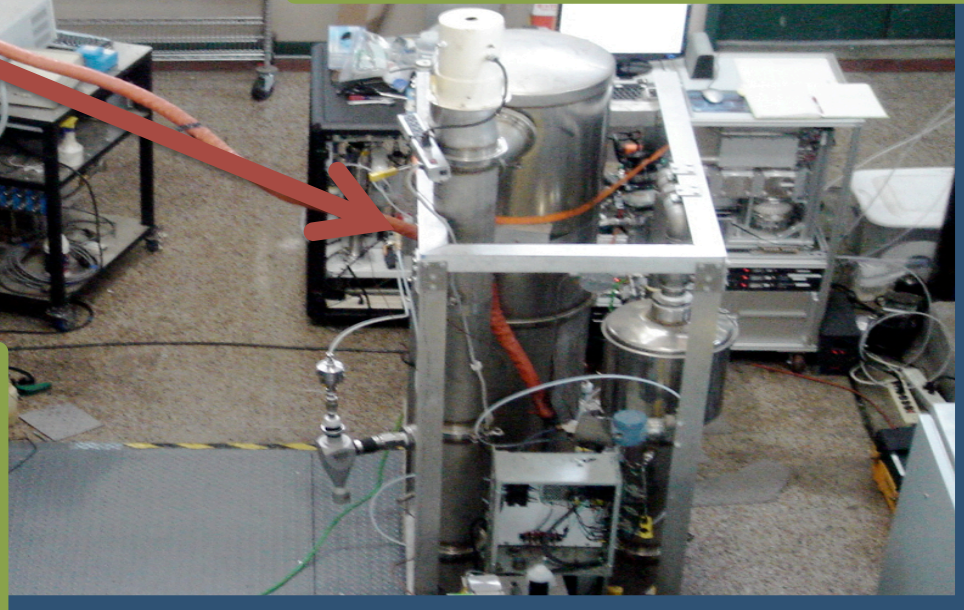
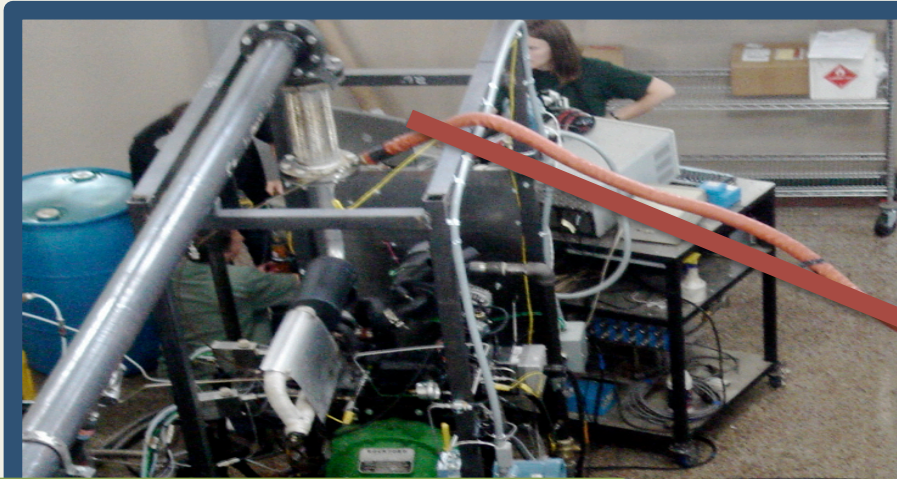
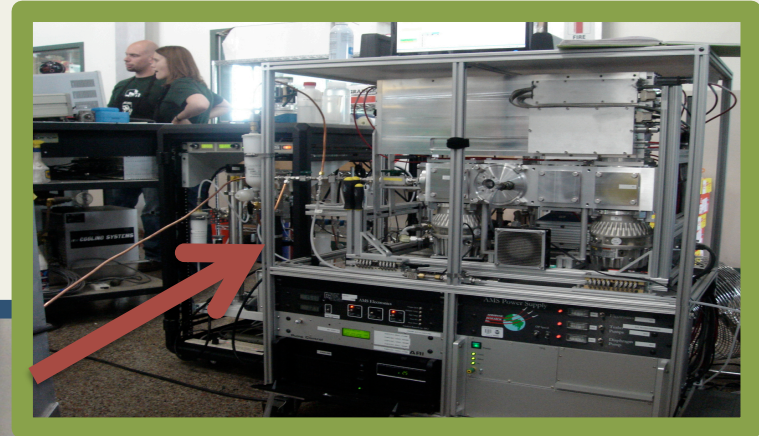
Chopper

Aerodynamic Lens

Particle Inlet

AMS: The Basics

AMS and Emissions



- Engine
- Dilution Tank, PM 2.5 Filter
- AMS

AMS and Field Work

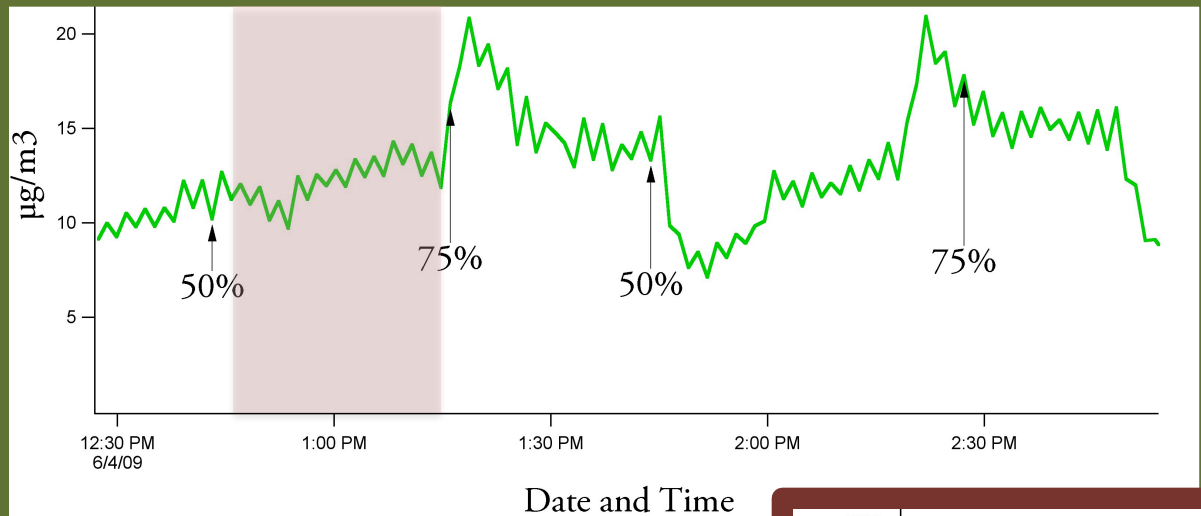
Ambient air sampling in Rocky Mountain National Park



- Week-long
- Combine data with past info of burn samples

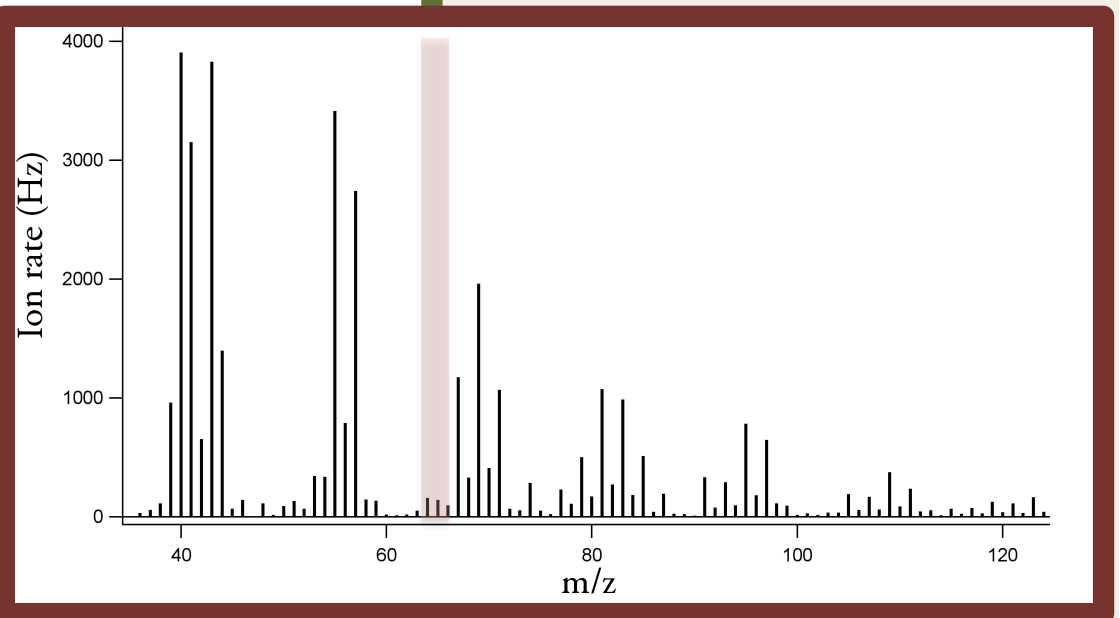


AMS: Data analysis

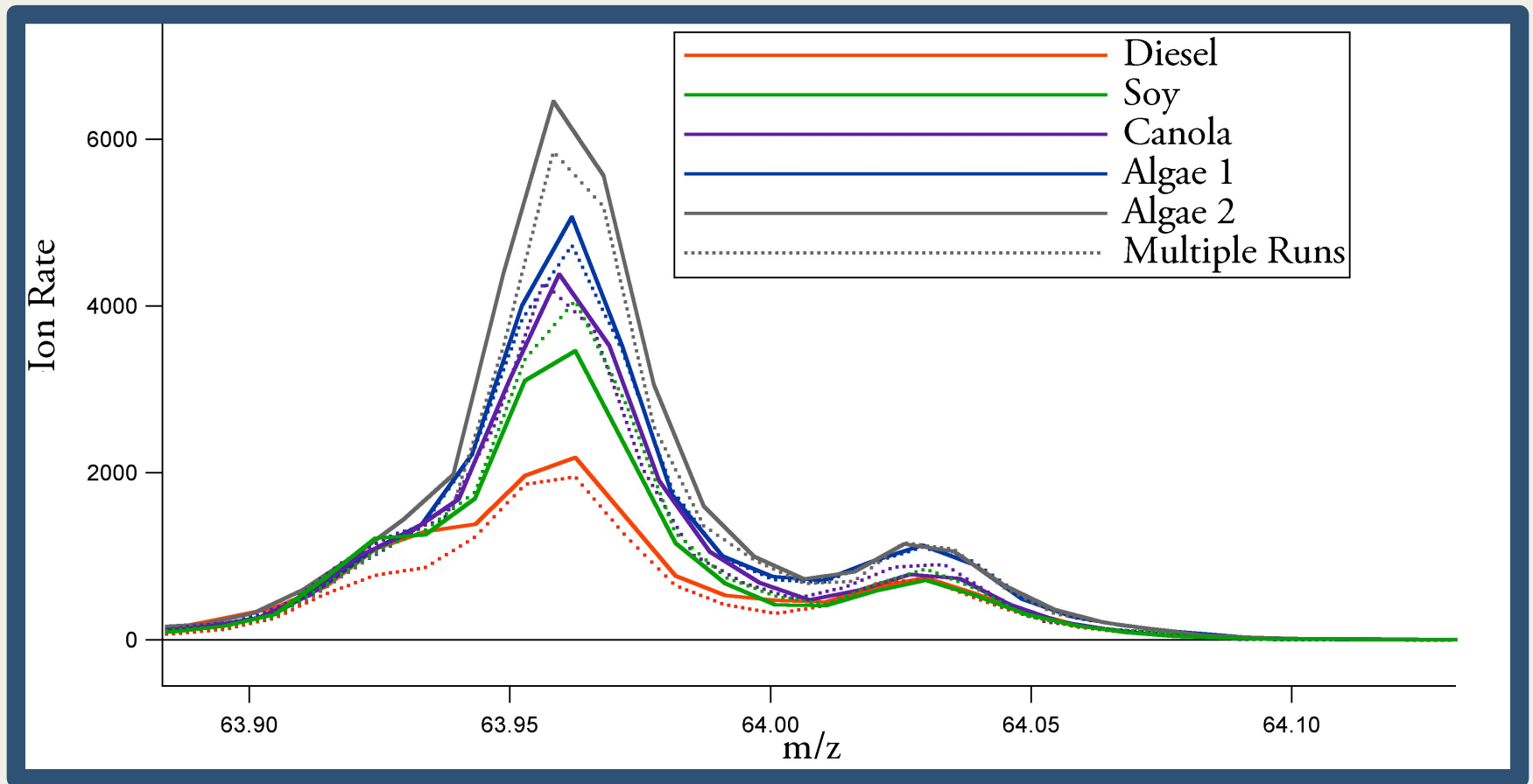


- 20% Canola Blend
- Time Series

- Total Mass Spectrum



AMS: High Resolution



High-resolution mass spectrum of $m/z = 64$

**Aerosol Mass Spectrometry:
Building a Library of Broken Shards**