AERODYNE RESEARCH, Inc.

CAPS PM_{ssa} Monitor

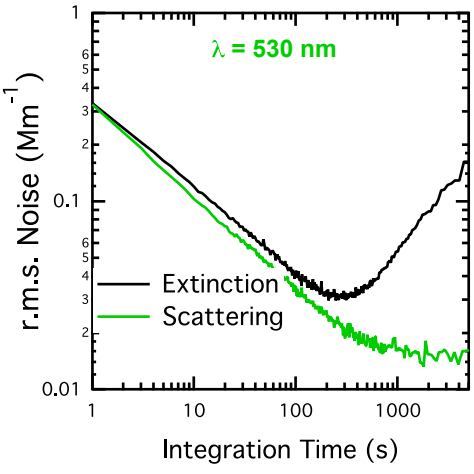
Accurate and Precise Continuous Monitoring of Particle Extinction, Scattering and Single Scattering Albedo (SSA=Scattering/Extinction)

APPLICATIONS

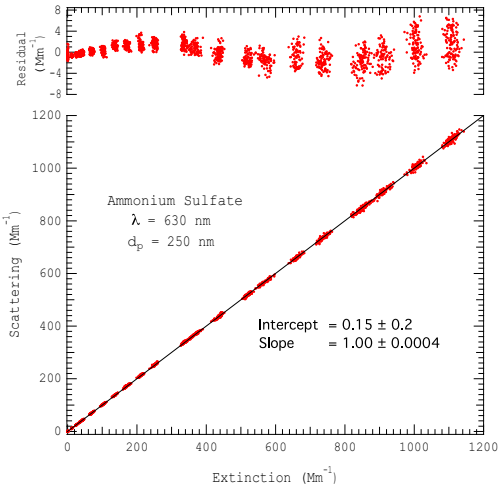
- Climate Change Research
- Optical Properties Closure
- Roadside Monitoring
- Combustion Plume Analysis
- Aircraft Engine Exhaust Monitoring
- Air Quality Monitoring

ADVANTAGES

- Inverse nephelometer incoporated into CAPS extinction cell
- Measurement of optical extinction and scattering at the 1 Mm^{-1} level
- Choice of 1 of 5 Wavelengths:
  - Blue (450 nm)
  - Green (525 nm)
  - Red (630 nm)
  - Far Red (660 nm)
  - Near IR (780 nm)
- Autonomous Operation



Allan analysis of monitor noise in both extinction and scattering channels at a wavelength of 530 nm (green). Note that the scattering channel has minimal baseline drift.



Correlation plot of measured scattering versus extinction for 250 nm diameter ammonium sulfate particles at a wavelength of 630 nm.

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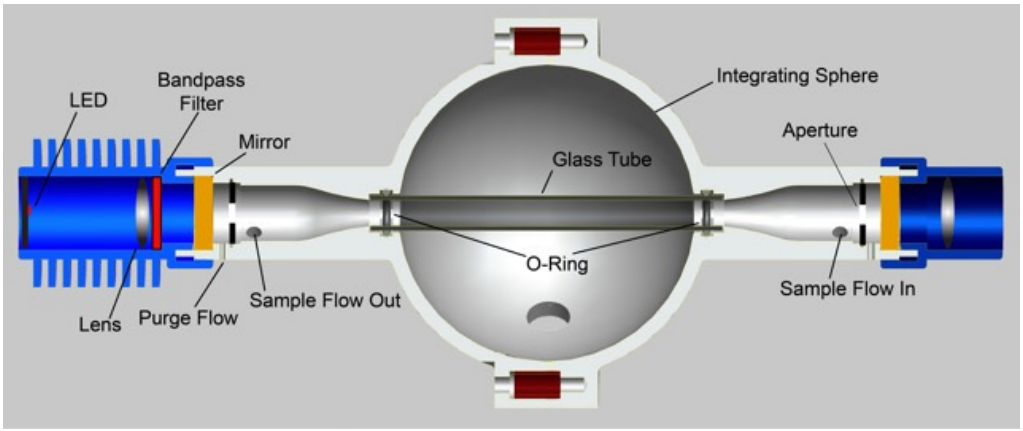
SPECIFICATIONS:

Sensitivity (S/N =3)	3.0 Mm^{-1} (1 s), 0.5 Mm-1 (60 s) both channels SSA ± 0.03 (30 s)
Response Time (10-90%)	1 s
Sample Flow	0.85 l min^{-1} (volumetric flow), Internal Pump
Operating Pressure	Ambient
Materials Exposed to Sample:	Conductive Urethane, Stainless Steel, Conductive Silicone, and Aluminum
Data Output:	RS-232, USB, Ethernet (Data Acquisition Program Included) On-board Data Storage (6 GB) Front Panel Display
Size/Weight:	24” x 19” x 9” (5U), 35 lbs [61 cm x 43 cm x 23 cm, 16 kg]
Electric Power:	50 W; 100-250 VAC (50-60 Hz)



REFERENCES

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