

Open-Path Optical Extinction Analyzers (OEAs) - the next generation instruments for visibility and aerosol studies.

Measure the optical extinction and visibility in air with unprecedented accuracy. By combining open path cavity ringdown measurements with a patented self-referencing scheme, the analyzer is able to measure the optical extinction due to ambient aerosols with high precision, minimal sample handling and little or no drift.



Nikira Labs



Real-Time Total Aerosol Optical Extinction and Visibility Measurements with No Calibration, No Sampling Effects, and No Assumptions.

Optical extinction and visibility are key parameters in air quality characterization and aerosol studies. Typically, these measurements are estimated from scattering data using a set of assumptions regarding aerosol size, shape, and albedo. Worse yet, the instruments currently available in the market extractively sample the aerosols and underestimate extinction and visibility by discriminating against larger particles (i.e., humidified aerosols).

Nikira Labs' technology enables direct, real-time measurement of aerosol optical extinction and ambient visibility with little to no sampling effects or calibration. How? It is all in the technology we use. We employ cavity ringdown spectroscopy to make absolute measurements of the optical loss due to aerosols directly from first-principles. Moreover, the open-path cavity design allows for air sampling without extractive losses. Thus, the instrument measures the true ambient optical extinction and visibility without disregarding larger aerosols. The Nikira Labs solution uses NOAA's patented technology for periodic self-calibration and drift correction, eliminating the need for calibration gases and enabling long-term field deployment.

The instrument has onboard data storage for more than 2 years of continuous data. The data can be accessed via USB or cell modem. The analyzer can be powered via a user supplied battery or wall plug.

OEA Advantages

- Measure optical extinction and visibility directly from first-principles
- Self-calibration and drift correction enables long-term field deployment
- Open Path sampling provides more accurate results
- No consumables which results in lower operating costs
- Very low maintenance costs and down time
- No external pump means lower required power and lower operational costs
- Can measure multiple wavelengths

OEA Applications

- Airports
- Highways with a history of low visibility
- Highway Tunnels
- Military Applications
- Air Pollution Monitoring
- Air Quality
- Urban Pollution Monitoring
- Aerosol Research Community
- Environmental Research Networks
- Climate Change Research
- National Parks
- Forest Areas
- Volcanic Areas
- Desert Areas
- Ecophysiology Research
- Chemical Manufacturing and Research
- Semiconductor Fab and Research
- Clean Rooms



Specifications

Wavelengths: 520 nm standard; 450 nm, 632 nm, 780nm, 850 nm, 1065 nm, 1650 nm and others available upon request

Dynamic Range: 0 to >3000 Mm⁻¹

Accuracy / Precision: +/- 1 Mm⁻¹ (nominal)

Data Rate: 1 second

Measurement Technology:

Open-Path Cavity Ringdown Spectroscopy

Calibration: Self-Calibrating

Consumables: None

Temperature Range: -5 to +50 °C

Humidity Range: 0 - 99% non-condensing

Size: 49 cm x 33 cm x 18 cm (19.3" x 13" x 7")

Weight: 7.7 kg (17 lbs)

Power: 35 W (battery or wall plug operable)

Onboard Memory: > 1M readings (2 years of continuous data)

Ordering Information

OEA-520: Single Wavelength 520 nm System
Contact us for custom wavelengths.