

ENGINE EXHAUST PARTICLE SIZER (EEPS) SPECTROMETER

The Engine Exhaust Particle Sizer (EEPS™) spectrometer (see Figure 1) measures the size distribution of engine-exhaust particle emissions in the sub-micrometer range from 5.6 to 560 nm with the fastest time resolution available. Users can visualize and study the dynamic behavior of particle emissions that occur during transient test cycles, during the first few seconds of a cold start, or during regeneration of a particle trap or diesel particulate filter. The EEPS spectrometer displays measurements in 32 channels total (16 channels per decade). It operates over a wide particle concentration range, including down to 200 particles/cm³. It operates at ambient pressure to prevent evaporation of volatile and semi-volatile particles, and it requires no consumables. A microprocessor measures temperature and barometric pressure automatically to convert to volumetric flow.

Unique features:

- 10-Hz data collection captures transient events in real time
- Comprehensive software for data collection and analysis
- Particle size measurements from 5.6-560 nm
- Continuous, fast-scanning technique eliminates gaps in the particle size distribution
- Measures size distributions during transient engine emissions (10 samples per second)
- EEPS Instrument is designed specifically for measuring engine exhaust particles
- Five standard configurations for specific research needs
- Electrical Mobility measurement is similar to an SMPS measurement
- Uses multiple electrometers to get multiple measurements simultaneously
- Size resolution of 16 channels per decade and two decades of size (32 channels total)



Figure 1: Engine Exhaust Particle Sizer Spectrometer.

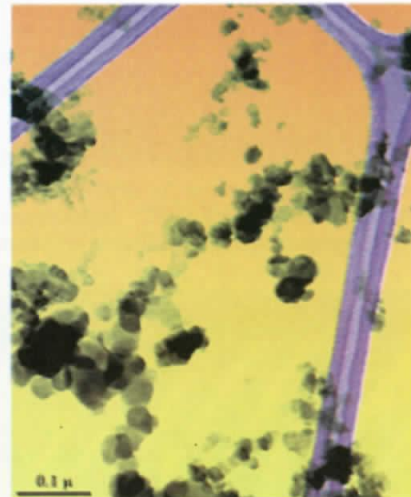


Figure 2: Soot from Diesel Engine Exhaust.

EEPS systems employ a continuous, fast-scanning technique. Electrical Mobility measurement is similar to an SMPS measurement. Additionally, EEPS uses multiple electrometers to get multiple measurements simultaneously. EEPS features the electrostatic classifier platform which can be used with any Differential Mobility Analyzer (DMA), and a large selection of Condensation Particle Counters (CPCs). Engine exhaust test cycles have fast changing size distributions on transient test cycles. SMPS is the standard method for sizing stable engine exhaust aerosol (see Figure 2).

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