Advanced Techniques for Nanoparticle Measurement

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Particle Measurement

Measure airborne nanoparticle concentration

Collect airborne nanoparticle samples

Release source - TSE
Particle Concentration Measurement

TSI Fast Mobility Particle Spectrometer (FMPS)
- 5.6 to 560 nm, 32 channels, 1 second cycle time, 10L/min flow rate
Data from FMPS- Total Concentration
Data from FMPS - size distribution

Particle Concentration Measurement

TSI Aerodynamic Particle Sizer Spectrometer (APS)
- 0.5 to 20 μgm aerodynamic sizing
Data from APS
**Particle Sampling**

TEM- PHILIPS EM400T  
SEM- JEOL JSM-1401F FE-SEM

- TEM grid (diameter 3.05 mm), copper, carbon tapes
- Polycarbonate filter (diameter 45 mm)
- Back up pad
- Cassette base
Airborne Nanoparticles

Nanoalumina particle

Avg. size: 45 nm

Avg. bulk density: 260 kg/m³
TEM images

Nanoalumina Aerosols

Source

BZ

80 nm

100 nm

0.0810 micron

0.0195 micron

0.103 micron
SEM images

- Nanosilver and cluster of fullerene
SEM image and EDS of nanoalumina
Smoke Test for Airflow Pattern

- Fog machine- Generate smoke for tests.
Smoke Test

- Conventional hood
- Air-curtain hood
Aerosol particles from 5 nm to 20 μm