

Indoor Nano Aerosol Exposure Test Chamber

Category:
D. Particle Exposure Assessment

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Short technology description/Overview (approx 300 words):

The test chamber can be used to simulate occupational exposure conditions in a controlled way and perform measurements, which for a real-life situation are usually difficult to arrange and expensive:

- Simulate processes (e.g. abrasion, wear and tear) and activities (e.g. nano powder handling), and characterize emitted nanoparticles;
- Generate nano aerosols and study aerosol physics (e.g. dispersion, agglomeration, growth dynamics);
- Characterize temporal and spatial variations of aerosol concentrations in the test chamber to gain insight in aerosol source-receptor relationships;
- Study the influence of background aerosol on nano aerosol characteristics;
- Evaluate performance of real-life engineering measures for nano aerosol mitigation
- (Interlaboratory) comparison/validation of instrumentation;
- Optimize measurement methodologies and sampling techniques;
- Generate controlled data for exposure model validation;
- Possibility for direct *in vitro* exposure of cells using an exposure module (e.g. Cultex, Vitrocell).

Main Features (Equipment Capabilities):

- Size: 6 (l) x 4 (w) x 3 (h) = 72 m³;
- Anti-Static treated walls and ceiling;
- Controllable flows (inlet/outlet/recirculation);
- Controllable pressure system (e.g. - 30 Pa for safety);
- HEPA filtered inlet (particle-free), adaptable to unfiltered inlet (background);
- HEPA filtered exhaust;
- A panel perpendicular to the flow for injecting generated aerosol;
- Panels for guiding through sample inlet tubes;
- Stainless steel sampling tubes at different heights and different distances;
- Possibility to split up into two rooms through movable panels with flow circulation;
- Temperature and humidity monitoring and logging.

Typical Samples & Images:

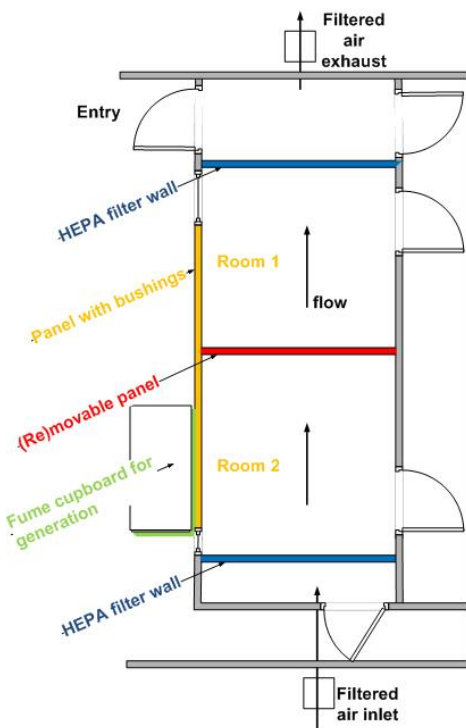


Figure 1: Indoor Nano Aerosol Exposure Test Chamber, (Left) Sidewall, and (Right) Floor Plan

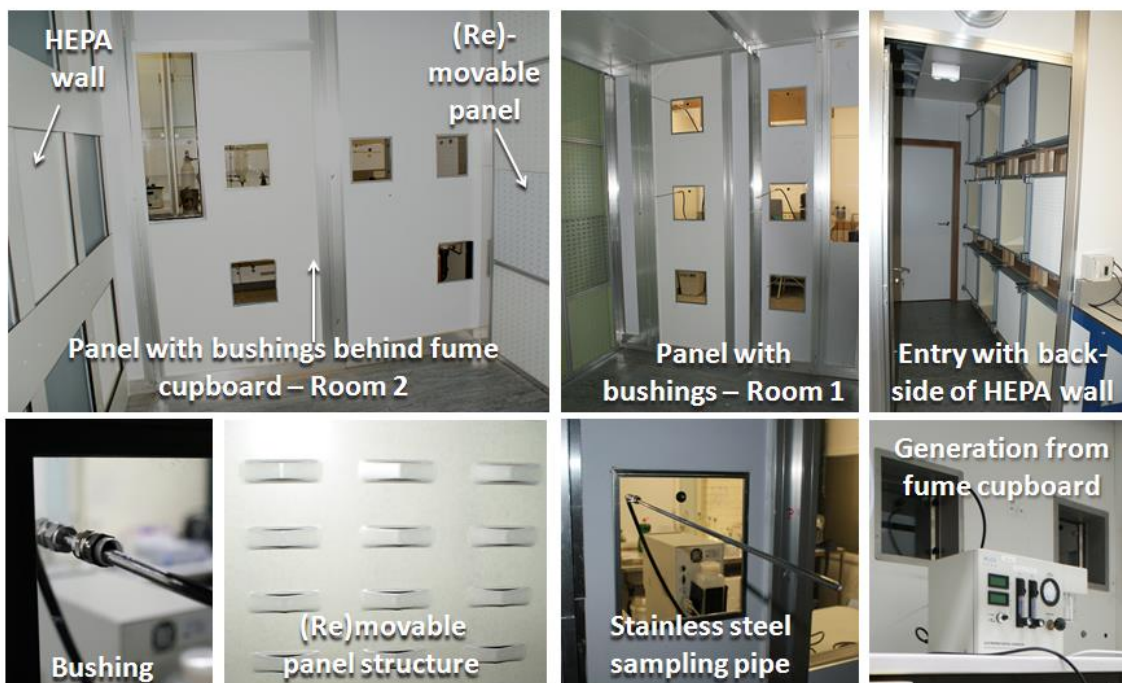


Figure 2: Pictures from inside the Indoor Nano Aerosol Exposure Test Chamber