Cambustion

Solutions for filter testing

AAC — Aerodynamic Aerosol Classifier

- Select **truly** monodisperse particles by aerodynamic diameter.
- None of the multiple charging issues and a higher transmission efficiency compared to DMA.
- Resolve the minimum efficiency curve of filter media samples and measure the MPPS with the highest accuracy.
- Aerodynamic diameter is the most relevant metric in applications related to inertia and particle interception, such as particle collection in filters.
- Versatile instrument for other aerosol and filtration applications such as pair with CPC to scan particle size distributions.

AD60 — Aerosol Diluter

- Wide range aerosol diluter achieving dilution factors of one to three orders of magnitude.
- Flexible input and output flows allows the aerosol source to match measurement requirements.
- Active control and monitoring for stability and accuracy.

5210 CPC — Condensation Particle Counter

- Unique wide size range from 5nm — 10 µm, covering testing requirements for HEPA/ULPA filter grades, general HVAC media and PM10 ambient monitoring.
- Wickless mixing design for low maintenance, calibration stability and portability.
- Fast response and high ceiling for coincidence correction.

Example Experimental Setup

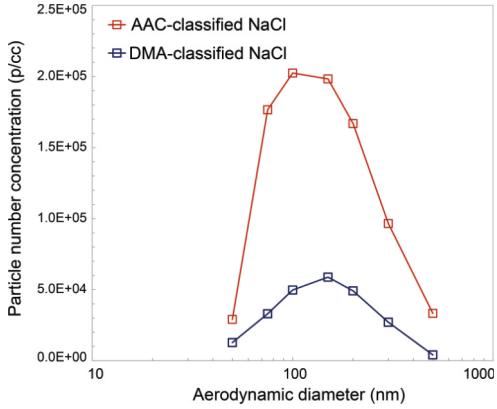
Determining most penetrating particle size (MPPS) using size-classified particles

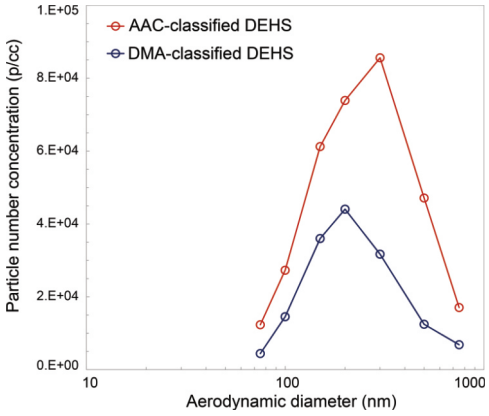
- We offer systems for testing filter media samples with flexibility for other applications in the laboratory.
- The AAC can be substituted for a DMA in an existing setup, with minimal adjustment of flows.
- The AAC facilitates consistent measurement of the MPPS, regardless of the challenge aerosol size distribution.

Experimental Data

Comparing AAC and DMA

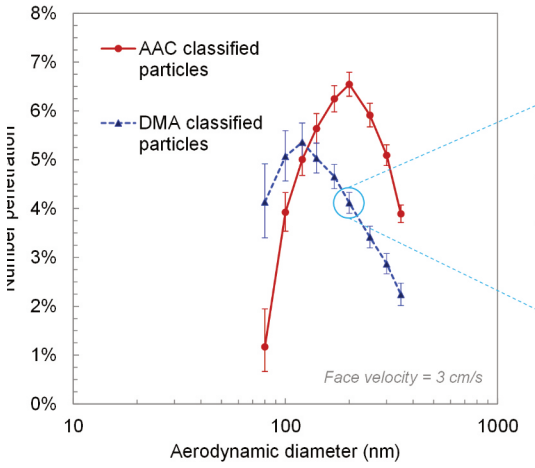
Demonstrated higher transmission by AAC of solid and liquid particles





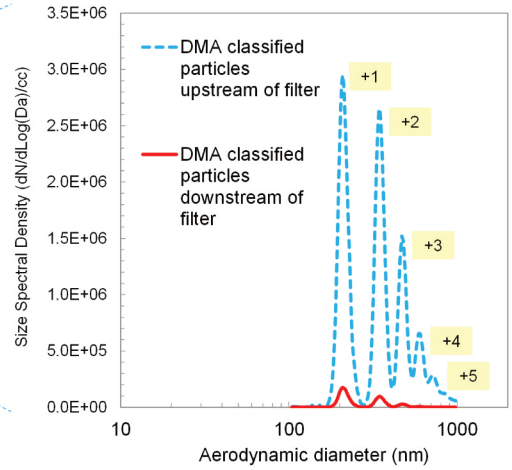
Misleading MPPS measurements by DMA due to multiple charge artefacts

Particle penetration through E10 air filter media:



Larger, multiply charged particles in DMA output distort measurement of filtration efficiency

AAC Scan of DMA output at 200 nm:



Consequences of DMA derived data...

- Different aerosol sources may indicate apparently inconsistent filter performance.
- Misleading test results can subsequently affect:
  - **Prediction of real-world filter performance**
  - **Design for specific applications, especially where particle concentrations are regulated**

The AAC is the superior alternative...

- No particle charging issues
- Measures the correct MPPS regardless of the challenge aerosol source.
- Based on the most relevant parameter, aerodynamic diameter.

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