MI-TRAP: Mitigating Transport-Related Air Pollution in Europe

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CALAC+ Forum, Lima, 7-8 May 2025

MI-TRAP project overview

- Horizon Europe project with partners from 11 different countries aiming to improve urban air quality.

Objectives:

1. Bridging Gaps: Addressing disparities between transport emission standards and ambient air quality limit values

2. Real-time Monitoring: Enabling dynamic traffic/port/air/rail management through real-time air quality monitoring

3. Supporting Reduction Plans: Backing emissions and noise reduction plans

4. Ready-to-Use Technologies: Establishing innovative tools and solutions
   - Ultrafine particles down to 10 nm as mandated by the latest European air quality directive

5. Citizen Engagement: Enforcing the zero pollution strategy by engaging citizens through a citizen science methodology as part of open science practices

Air quality monitoring of particulate matter

Currently:

- Primarily mass concentration measured (PM2.5 and PM10)
- 24-hour time resolution, insufficient to capture traffic variability
- Ultrafine particles (< 100nm) have negligible mass and are overlooked in mass based metrics
- Insufficient information to perform source apportionment

MI-TRAP Goals:

- Measure particle number down to 10 nm
- Measure solid particle number (sPN) and bare black carbon (bBC) mass in addition to total PN (tPN) and BC mass
  - This harmonizes ambient measurements with tailpipe emissions regulations
  - Measuring particles with and without the volatile components allows for better source apportionment
- Near real-time measurements will allow for cross-referencing with near real-time traffic data

Black carbon monitor calibration

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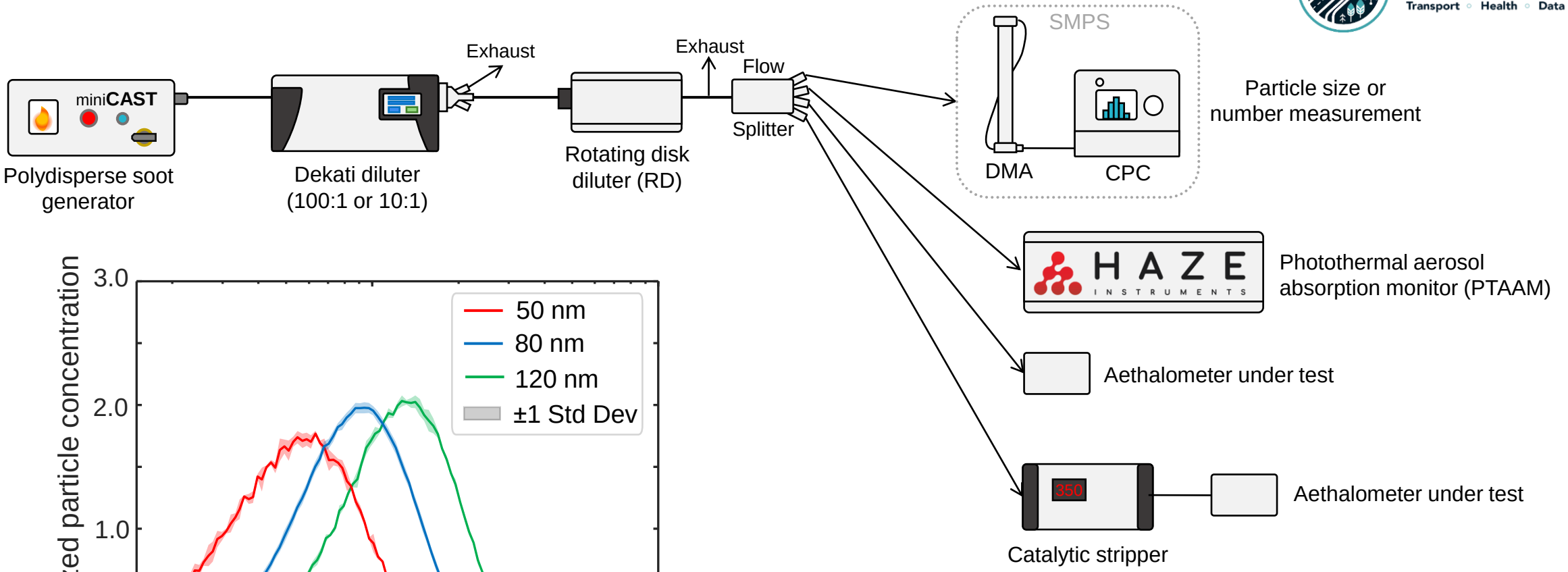
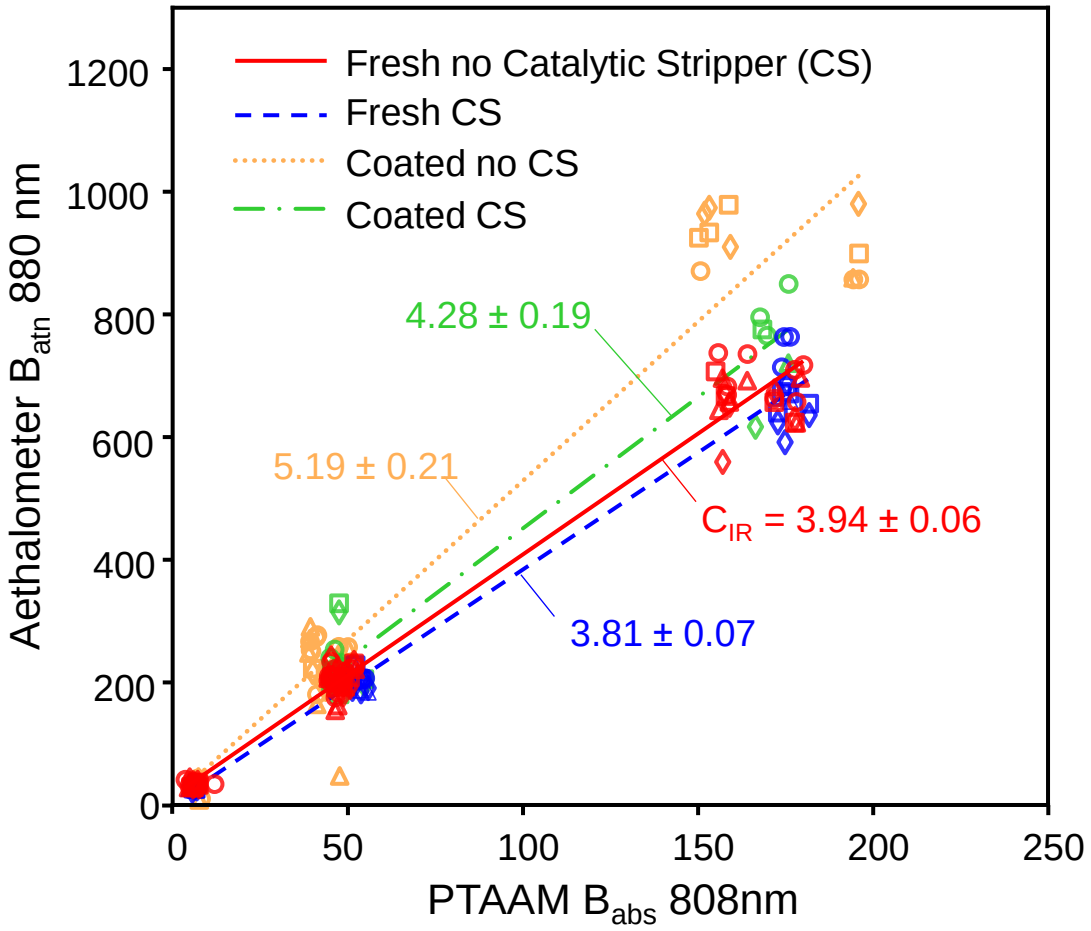
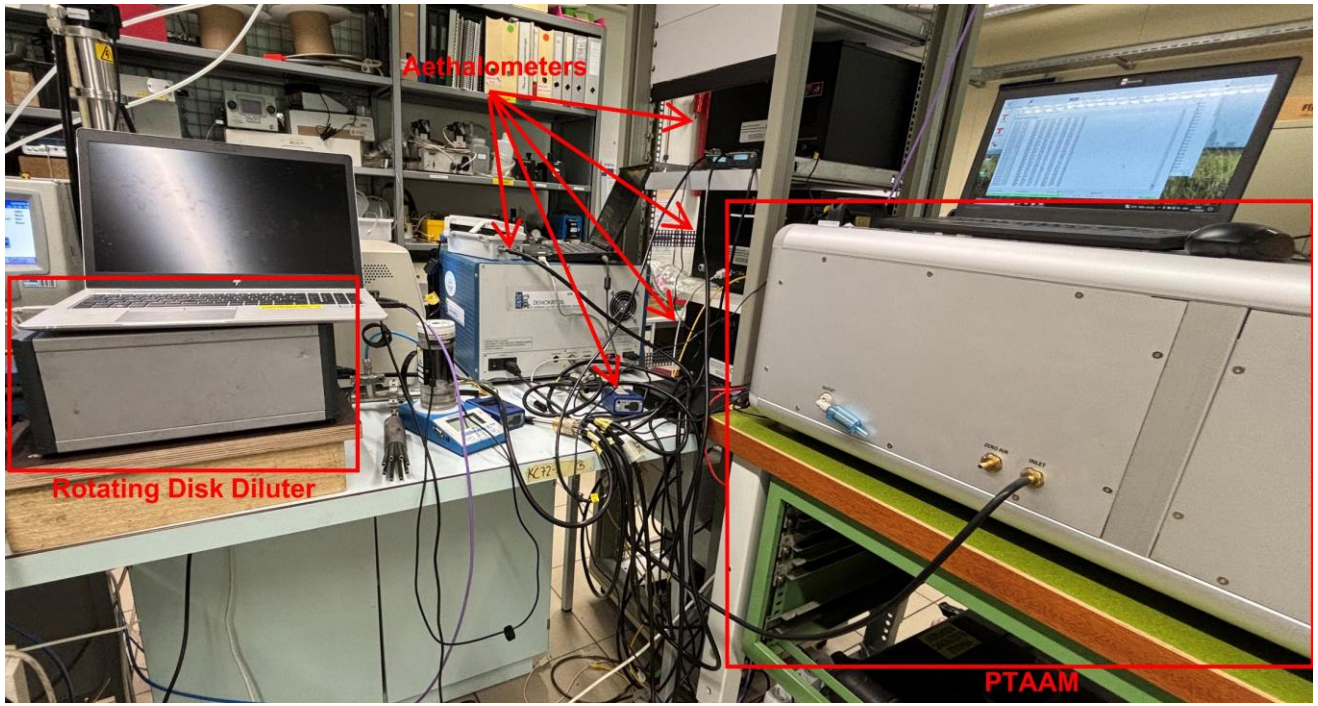
MI-TRAP
Transport ◦ Health ◦ Data

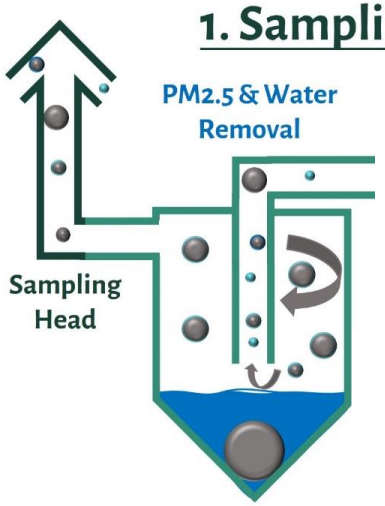


Black carbon monitor calibration

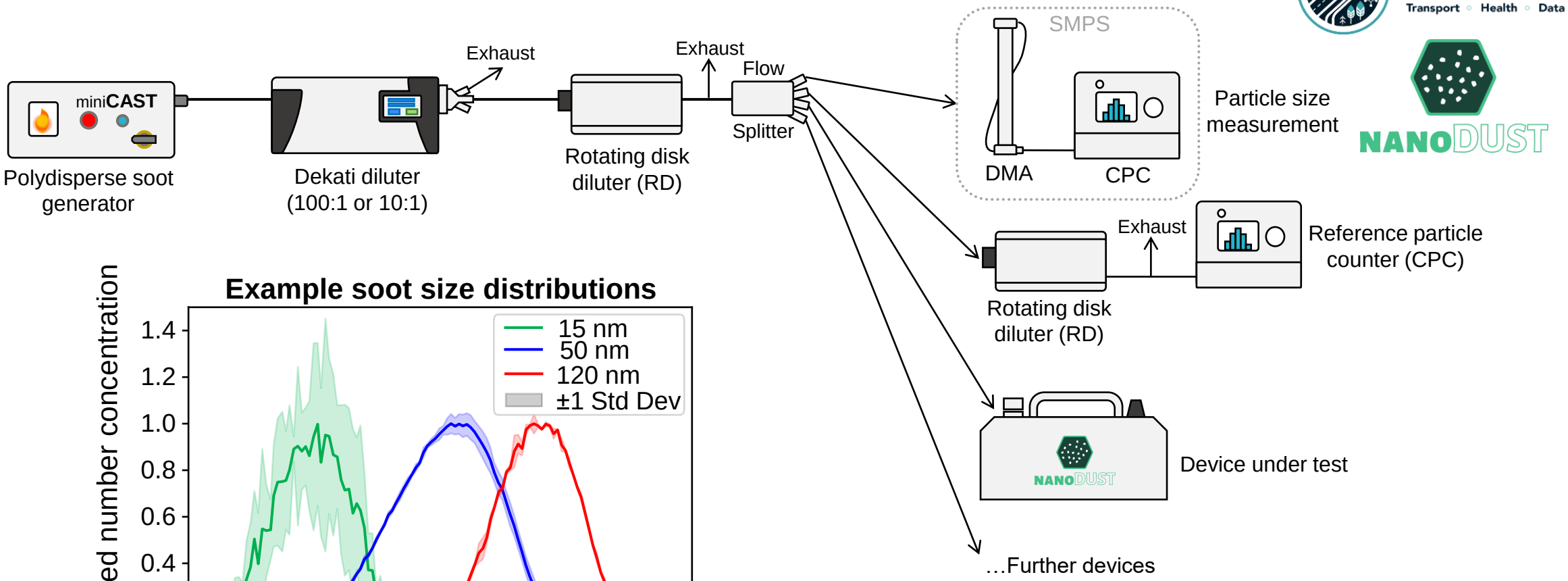




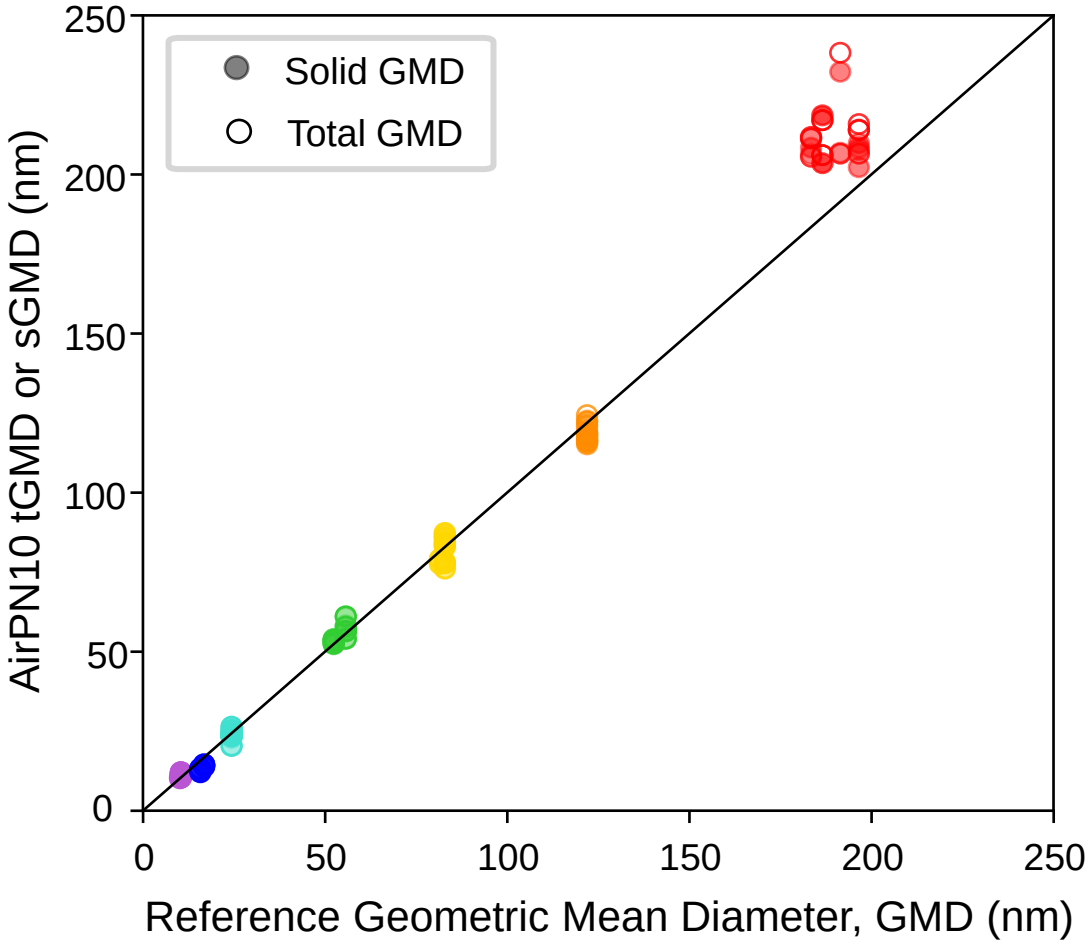
Development of a mid-cost particle counter

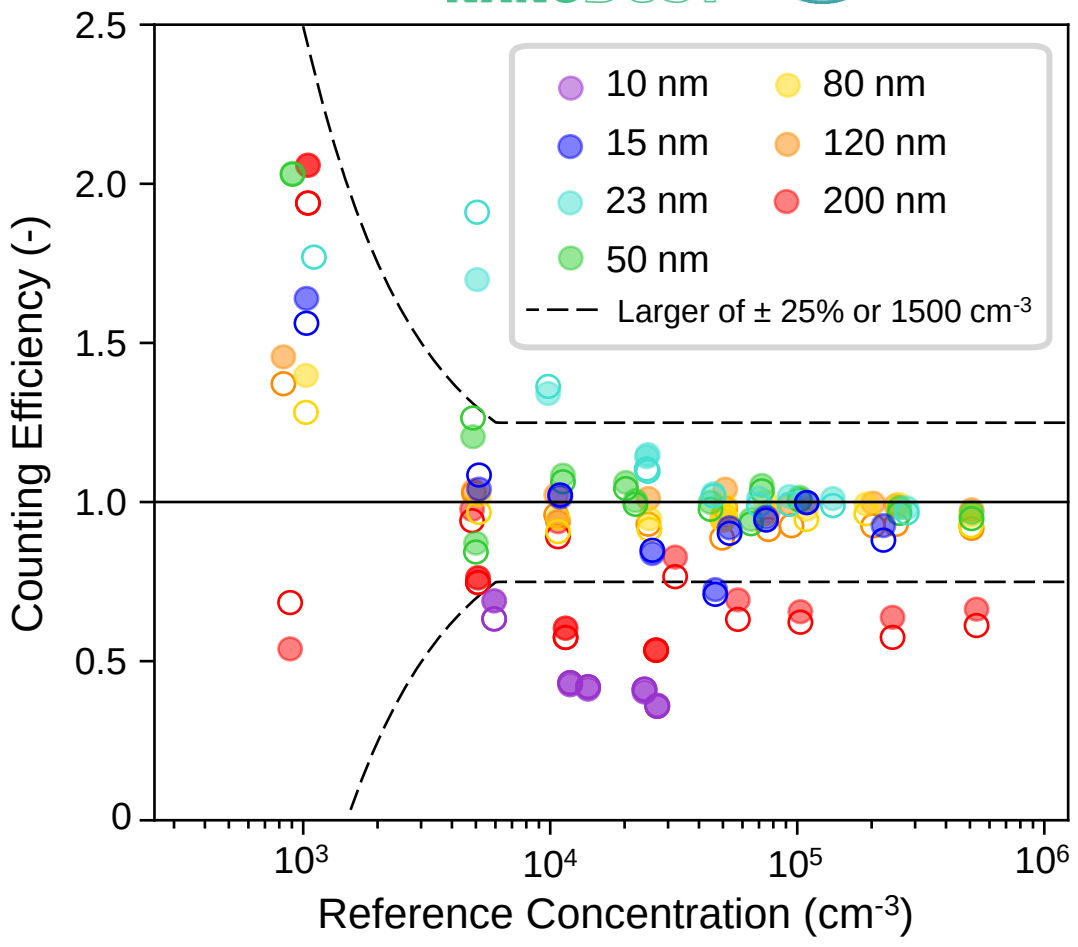


Calibration of particle counters



AirPN10 characterization





MI-TRAP pilot cities

- Technologies developed in the project will be tested for 3 months at a time in 10 cities
- Each city will have high-resolution, state-of-the-art instruments as well as cost-effective and portable devices

View inside cost-effective MI-TRAP box

Summary

- MI-TRAP aims to improve air quality monitoring and bridge the gap between tail pipe emissions and ambient air quality measurements

- New technologies such as mid-cost devices capable of monitoring solid and total particle number down to 10nm are being developed

- These technologies are currently being deployed in 10 pilot cities across Europe

- At the end of the project, the tools developed will be available online to aid policy-makers and other stakeholders understand the impact of transport on air quality and human health

Thank you for your attention

More information at mitrap-project.eu and nanodust.de

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Funded by
the European Union