

Institute for
Chemistry & Environmental Engineering,
Faculty for Mechanical Engineering
at the
University of the Bundeswehr Munich (UniBwM)

Prof. Dr. Thomas W. Adam

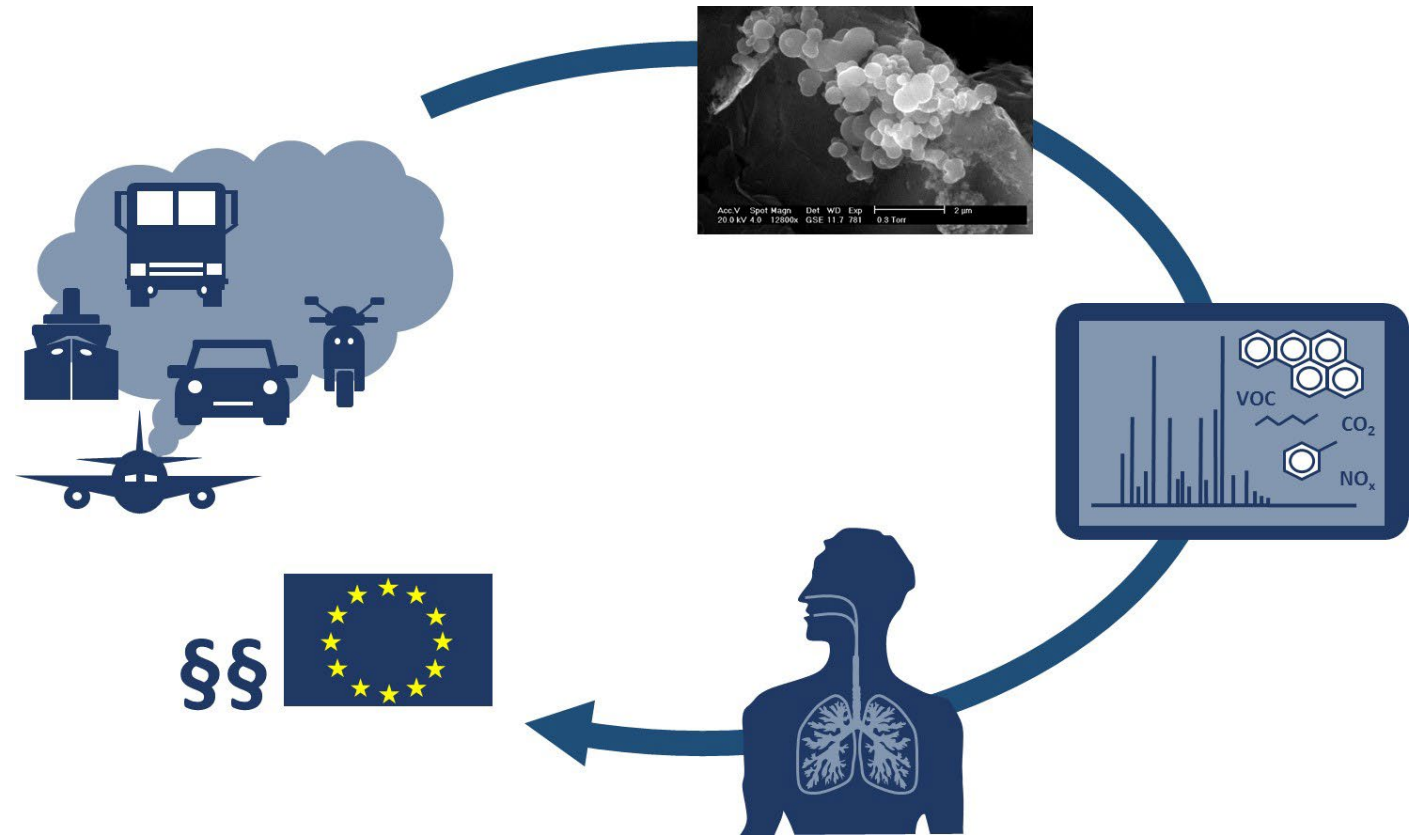
8 years Professor at **University of the Bundeswehr Munich**

among others...

- 5 years at **AUDI AG Ingolstadt**, Emission test center
- 3 years **EC-JRC Ispra**, Transport & Air Quality Unit
- 9 + 5 years at **Helmholtz Zentrum Munich**

→ **Automotive field: Research, Policy-making, Industry**

- Chemical & Physical Characterization of Aerosols
- Method Development
- Air Pollution
- Atmospheric Ageing
- Health Effects
- Policy Making



Aerosol Scientists

- Analytical Chemists
 - Physicists
 - Environmental Scientists
 - Engineers
- currently 14 people
+ students



Emission (Dynos, Test benches) and Ambient Air (Field, Test Track)

- 4WD Chassis Dyno
- Brake/Tyre Dyno
- Helicopter Turbine
- Jet combustor
- H₂ Electrolyser
- Fuel cell system test bench
- Dynamic Engine Test benches + research engines



Real-time Measurements, Mobile Labs, Analytical Chemistry Labs



Combustion Emission, e.g.

- Road: alcohol blends
- Aircraft: SAF, Fischer-Tropsch
- Marine: (scrubbed) HFO, MGO, HVO

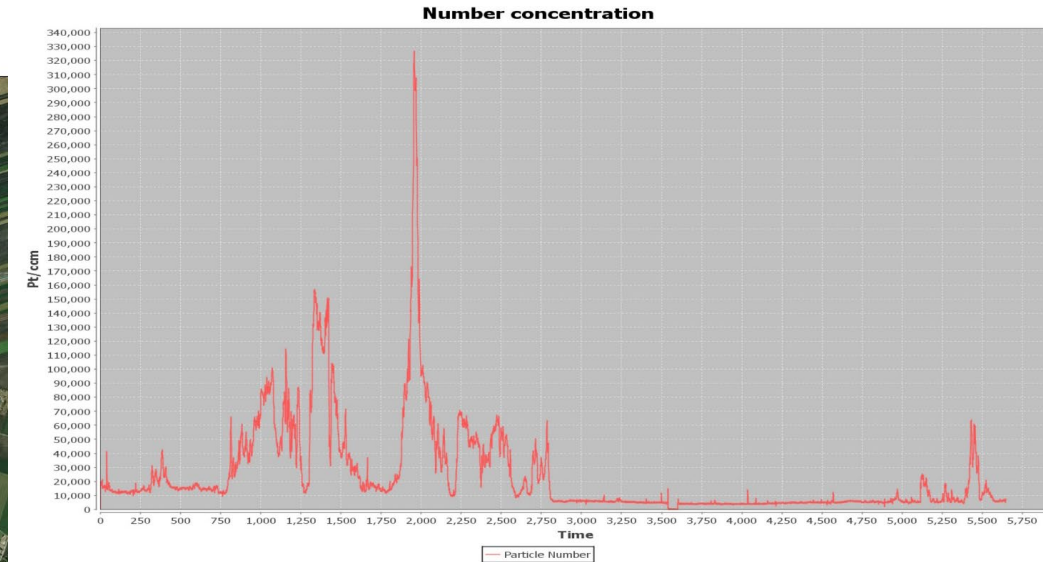
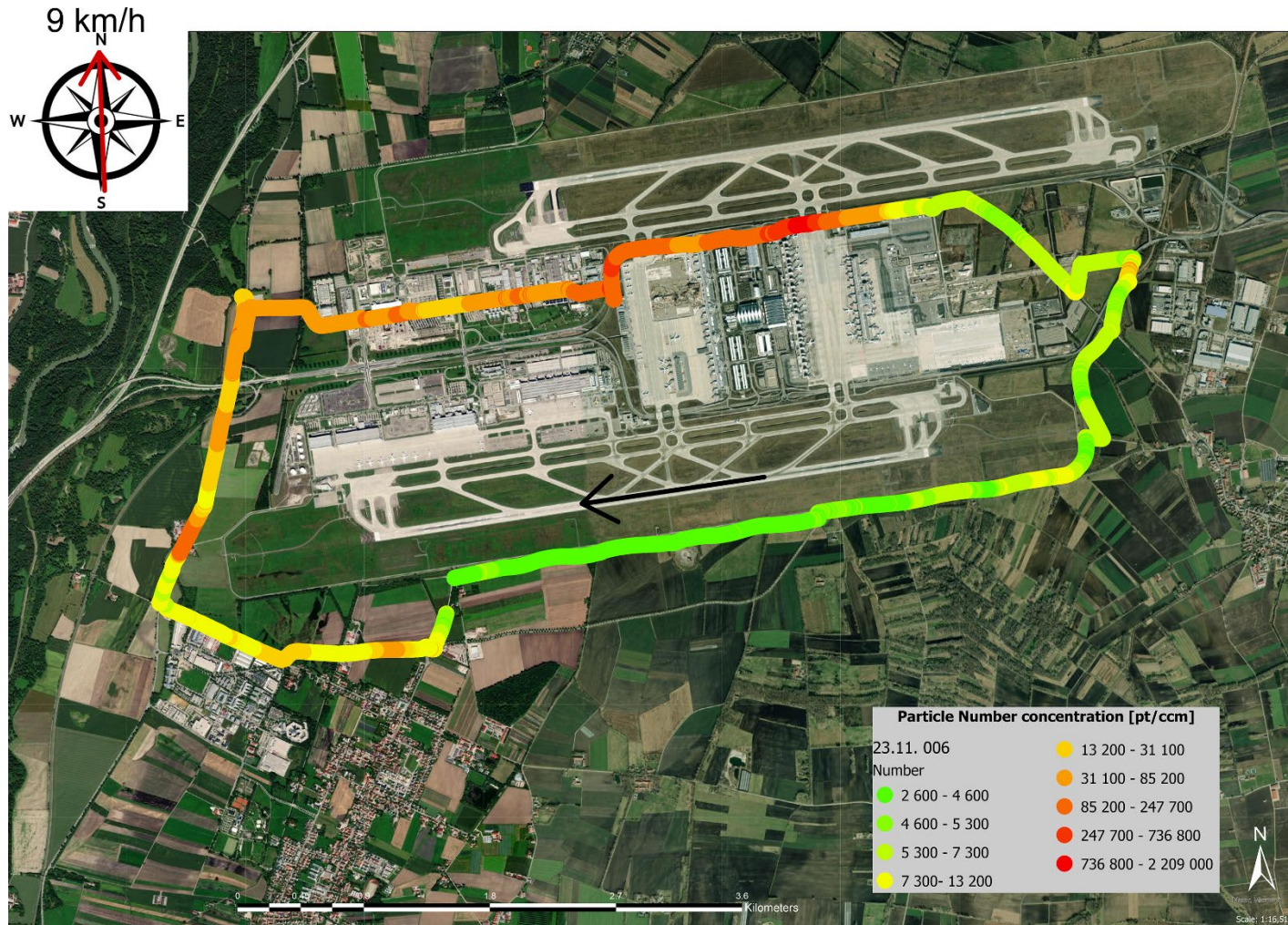
Brake & Tyre Wear

- Road: LM vs. NAO
- Subway

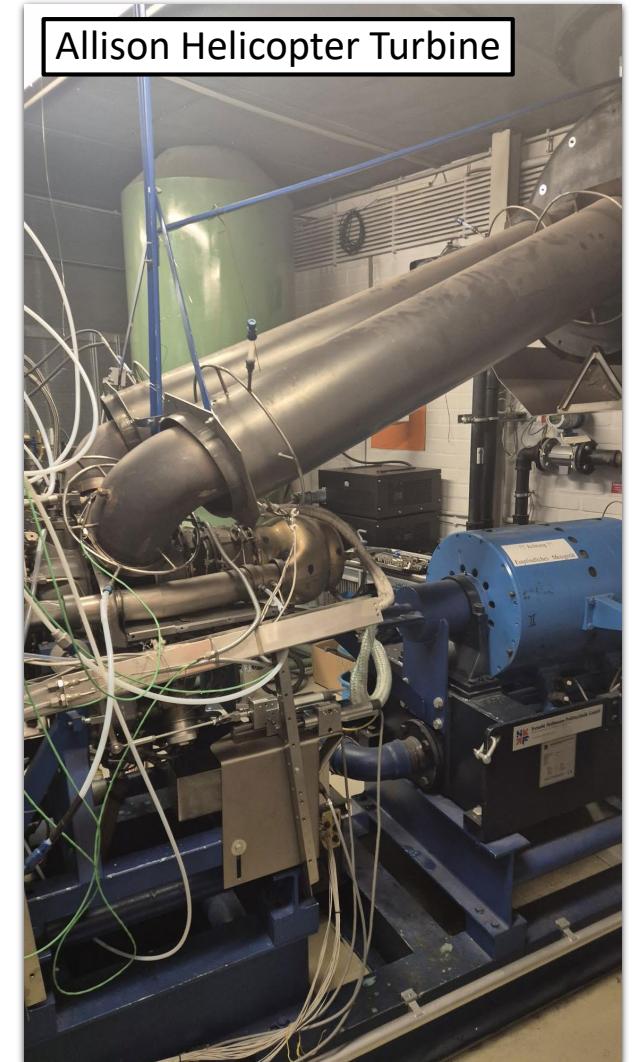
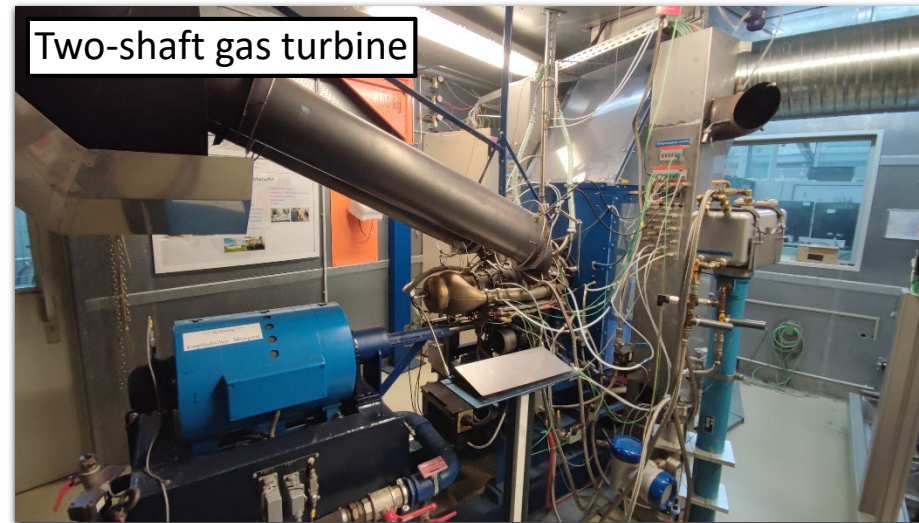
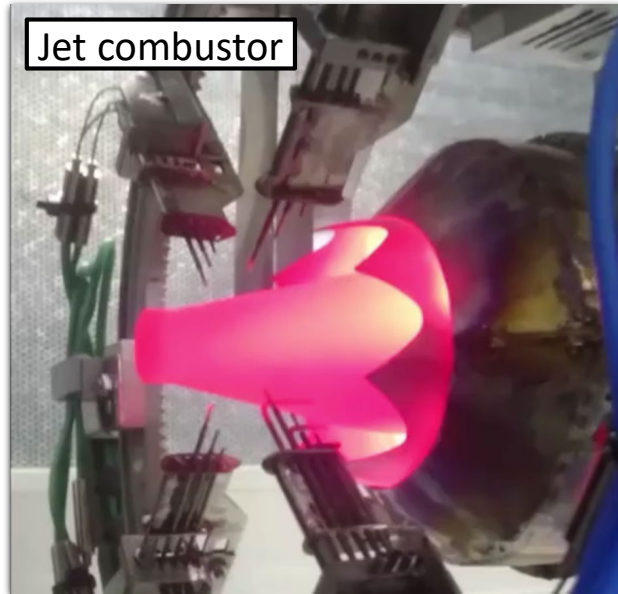
Emission, Immission & Exposure

- City & Road
- PEMS & on-board
- pristine environments e.g. Zugspitze, Spitsbergen

Air Quality at Airport



Ageing of (Sustainable) Aircraft Fuels, SAF



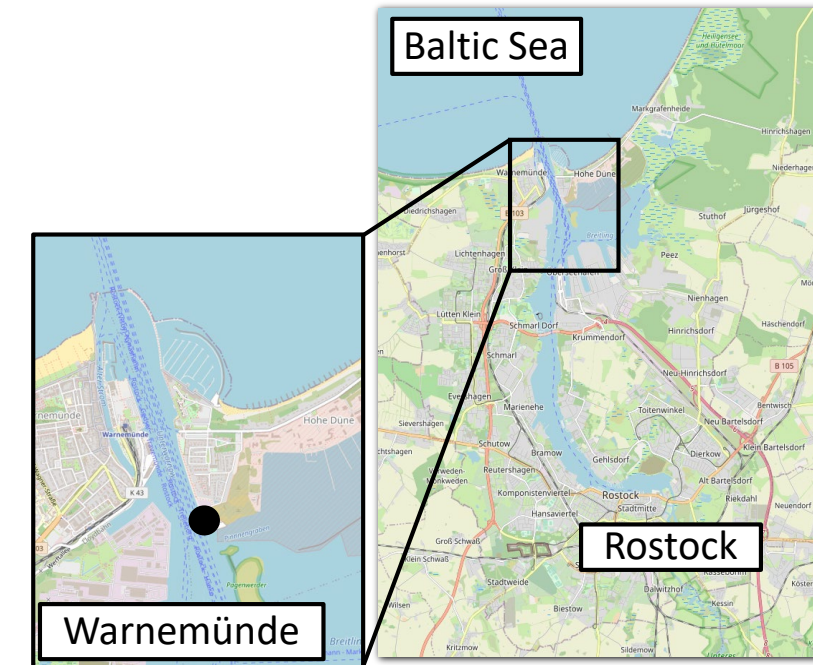
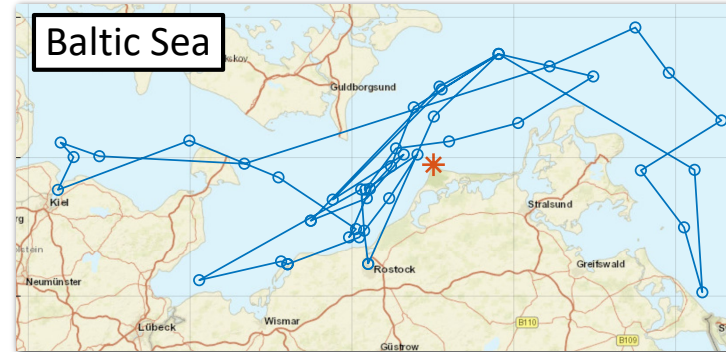
Hartikainen et al: Atmospheric Chemistry and Physics, 25, 2025

Rabl et al.: Proceedings ASME Turbo Expo, GT2025-152708, 2025

Rohkamp et al.: Aerosol Science and Technology, 59, 2025

Rohkamp et al., Journal of Eng. for Gas Turbines and Power, 146, 2024

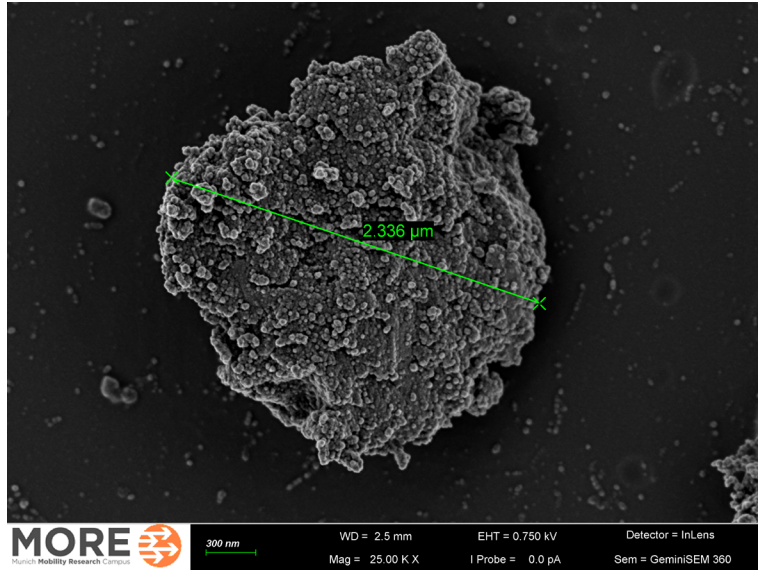
Environmental Impact of Marine Fuels & Scrubbers



Bendl et al: Environmental Research, 260, 2024

Jeong et al.: Environmental International, 198, 2025

Saraji-Bozorgzad et al.: Science of the Total Environment, 999, 2025

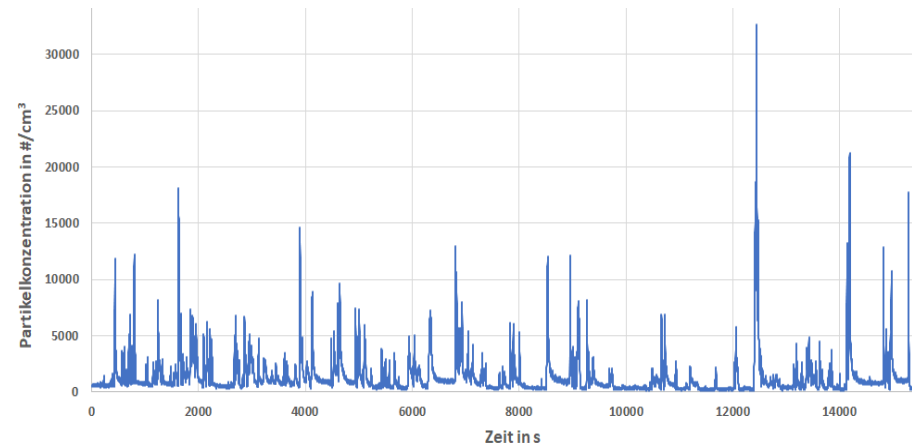
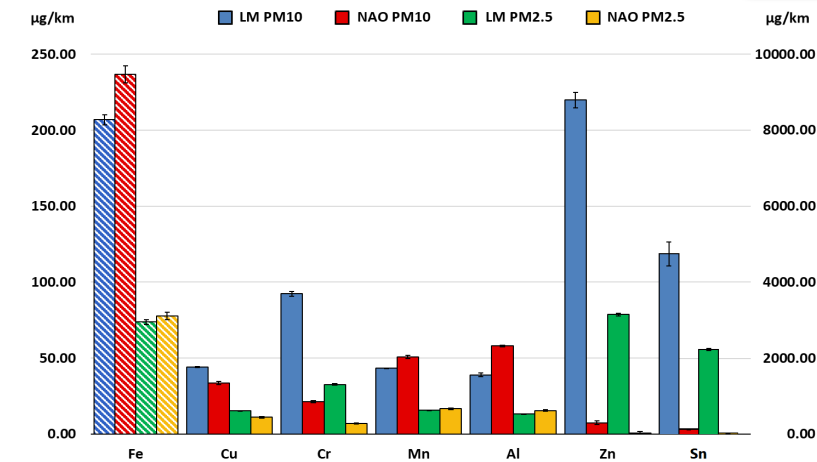
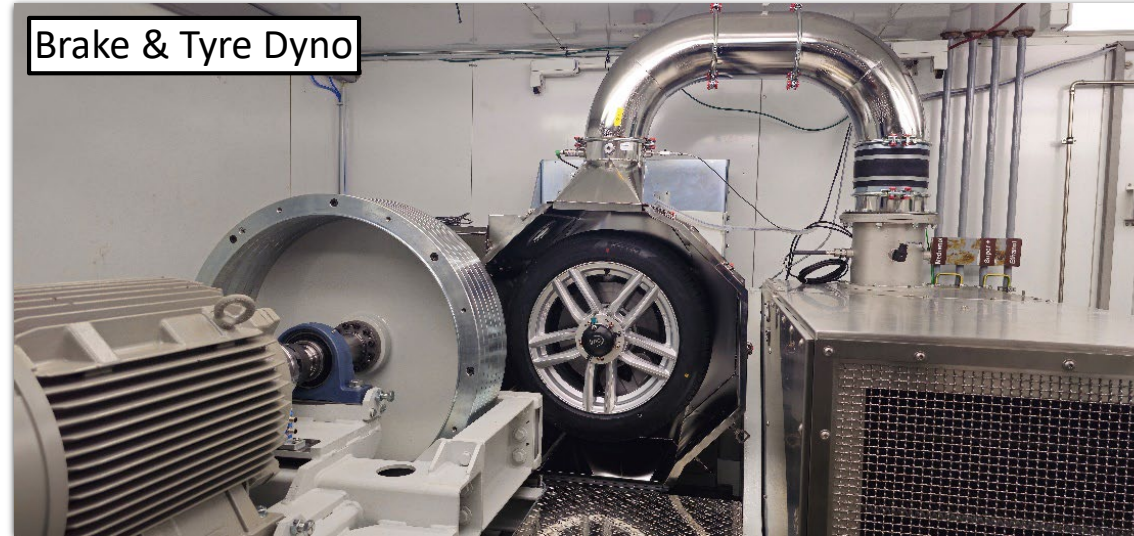
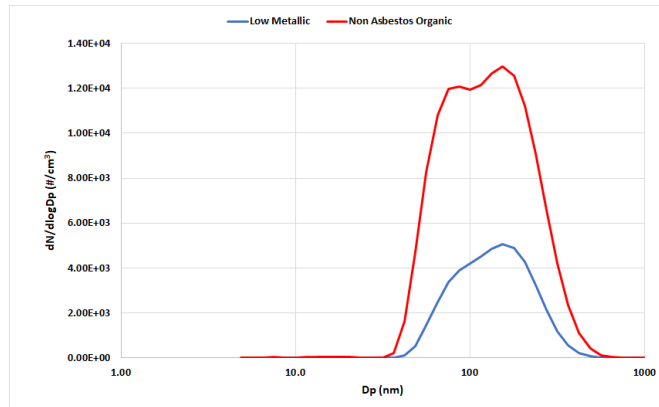


PM ₁₀ [µg/m ³]	7 - 9 am	12 - 2 pm	4 - 6 pm
Neuperlach Süd (U - Underground)	6.9	5.9	15.4
Michaelibad (U - Underground)	42.1	12.6	25.0
Ostbahnhof (U - Underground)	100.1	55.9	94.6
Odeonsplatz (U - Underground)	89.1	53.9	83.2
HBF (U - Underground)	93.4	58.1	100.7
HBF (S - Overground)	15.9	38.0	73.5

Bendl et al: Atmospheric Environment, 308, 2023

Neukirchen et al.: Science of the Total Environment, 915, 2023

Brake & Tyre Wear Particles



Neukirchen et al.: Journal of Hazardous Materials, 482, 2025

ULtrafine particles from TRansportation – Health Assessment of Sources

Grant Agreement No. 955390



HelmholtzZentrum münchen
German Research Center for Environmental Health



der Bundeswehr
Universität München

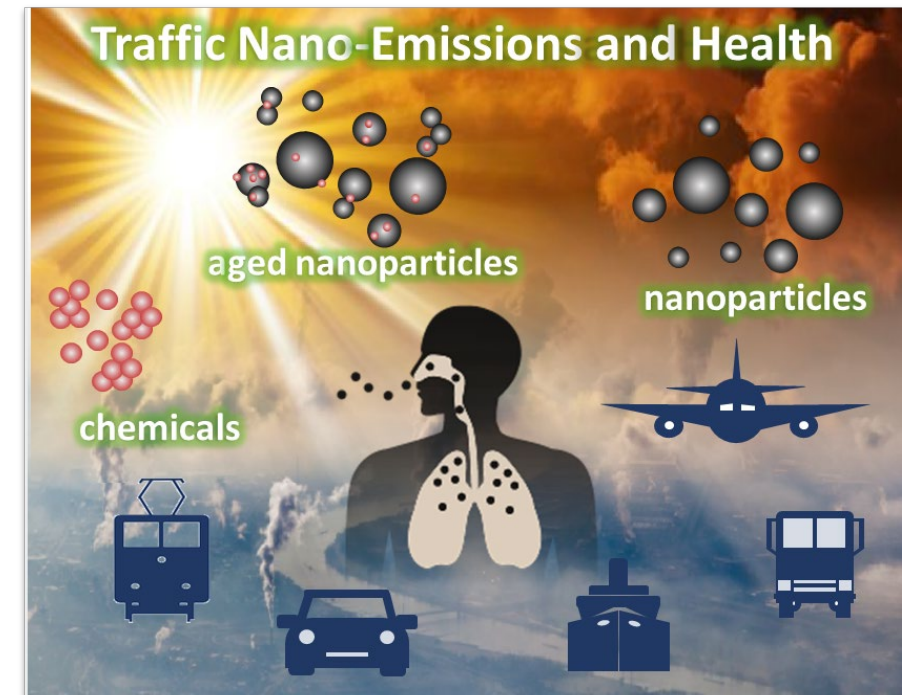


Universität
Rostock

Finnish institute for
health and welfare

- Ultrafine Particles (UFP) from different transport modes & fuels
- combustion: aircraft, ship, light/heavy duty
- non-combustion: brakes, catenary (trains)
- Atmospheric Ageing
- Health effects by animal testing & Air-Liquid-Interface (ALI) studies

→ Hazard Ranking



Thank you for your Attention!

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