

28th ETH Nanoparticles Conference

June 16 - 19, 2025, ETH Zürich, Switzerland

28th ETH Nanoparticles Conference

<https://npc25.scg.ch>

The Nanoparticles Conference in 2025 is organized at the ETH Zürich as an on-site conference. The NPC serves as an interdisciplinary platform for expert discussion on all aspects of nanoparticles, freshly emitted from various sources, transformed in ambient air, distributed on local and global scale, on technical mitigation aspects, particle legislation, and impact of particles on health, environment, and climate. The conference brings together representatives from research, industry and legislation.

Focus Event: Tyre and Brake Wear Particles

With the introduction of Euro-7 vehicle legislation both, combustion-related and non-combustion emissions such as wear particles from brakes and tyres are regulated for the first time. These new regulations have started initiatives to minimize e.g. brake wear particles with filter technology or remove toxic metals, fibers and compounds from brake and tyre materials. In addition, toxicology and health effects of these neglected particles are studied now on large scale. All these aspects will be addressed in the 2025 focus event.

Health Session:

The session will provide new experimental and epidemiological results about health consequences of exposure to combustion and non-combustion particle

Program Overview

All indicated times are in CEST (GMT +2). *Convert CEST into any time zone.*

CEST	Mon, June 16, 2025	Tue, June 17, 2025	Wed, June 18, 2025	Thu, June 19, 2025	CEST
09.00h		Opening of the Conference Opening Talk: <i>Prof. B. Buchmann</i> Session 1: Aircraft, marine and other non-road sources Part A <i>Chair: Norbert Heeb, Empa</i>	Session 5: Aftertreatment Part 1 <i>Chair: Konstantina Vasilatou, METAS</i>	Session 9: Brake and tyre wear particles Part 1 <i>Chair: Danilo Engelmann, BFH, Biel</i>	09.00h
10.30h		Coffee break	Coffee break	Coffee break	10.30h
11.00h		Session 2: Aircraft, marine and other non-road sources Part B <i>Chair: Theo Rindlisbacher, Swiss Civil Aviation Authority, FOCA</i>	Session 6: Aftertreatment Part 2 <i>Chair: Laetitia Rubino, VERT Association</i>	Session 10: Brake and tyre wear particles Part 2 <i>Chair: Oliver Bischof, TSI</i>	11.00h
12.30h		Lunch break	Lunch break	Lunch break	12.30h
13.30h		Session 3 Poster Session A	Session 7 Poster Session B	Trojan Horse Award and Poster Award Ceremony <i>Chair: Oliver Bischof, TSI</i>	13.30h
14.00h				Focus Event «Brake and Tyre Wear Particles» (Part A) <i>Chair: Loretta Müller, Bern University Hospital</i>	14.00h
15.00h		Coffee break	Coffee break	Coffee break	15.00h
15.30h		Session 4: Nanoparticle formation/transformation & Instrumentation <i>Chair: Claudia Mohr, PSI/ETH Zurich</i>	Session 8: Health effects <i>Chair: Marloes Eeftens, Swiss TPH</i>	Focus Event «Brake and Tyre Wear Particles» (Part B) <i>Chair: Loretta Müller, Bern University Hospital</i>	15.30h
17.00h		Apéro		End of the conference	17.00h
18.00h					18.00h
19.00h	Welcome Party ETH Dozentenfoyer		Conference Dinner ETH Restaurant		19.00h

Program Tue, June 17, 2025

All indicated times are in CEST (GMT +2). [Convert CEST into any time zone.](#)

09.00 Welcome, Introduction and Conference Opening
Norbert Heeb, Empa and Co-Chair of NPC 2025

09.10 Opening Talk
Brigitte Buchmann, Empa Dübendorf
«Air Quality Research Shapes Environmental Policy»

09.40 **Session 1: Aircraft, marine and other non-road sources Part A**
Chair: Norbert Heeb, Empa

Marius Rohkamp, University of the Bundeswehr Munich
«Comparison of non-CO₂ Turbohaft Engine Emissions using Jet A-1, HEFA- and FT-SPK»

Fergus Lidstone-Lane, University of Manchester
«Determination of aircraft gas turbine nvPM charge state and its impact on sampling system losses»

10.30 Coffee Break

11.00 **Session 2: Aircraft, marine and other non-road sources Part B**
Chair: Theo Rindlisbacher, Swiss Civil Aviation Authority, FOCA

Sarah Tinorua, Paul Scherrer Institute
«Measurements of Ultrafine particles and chemical traces from aviation emissions near the Zürich airport»

Lukas Durdina, GreenLedResearch
«Gaseous and Non-Volatile Particulate Emissions from a Private Jet Using Fossil Jet A-1 and a 30% HEFA-SPK Blend»

Richard Miake-Lye, Aerodyne Research, Inc.
«Effects SAF use & Fuel composition on Volatile and non-Volatile PM aviation emissions»

David Kittelson, University of Minnesota
«A "2nd" (> 150 nm) Size Mode in Aircraft Gas Turbine Engine Exhaust»

12.30 Lunch Break

13.30 **Poster SessionI Part A**

15.00 Coffee Break

15.30 **Session 4: Nanoparticle formation/ transformation & Instrumentation**
Chair: Claudia Mohr, PSI/ETH Zurich

Mojtaba Bezaatpour, Tampere University
«Numerical Investigation of Fuel Injection Control on Aerosol Formation and Transport in Canyons and Open Areas»

Matti Rissanen, Tampere University
«Relating condensable reaction product formation with nanoparticle growth rates: Select monoterpene + NO₃ reactions under varying oxidizing conditions»

Alexander Grundlach-Graham, TOFWERK AG
«Real-time analysis of trace metals in air by microwave induced plasma time-of-flight mass spectrometry (mipTOF)»

Mohsen Kazemimanesh, National Physical Laboratory
«Performance and Uncertainty of Portable Emissions Measurement Systems (PEMS) in Laboratory and On-Road Tests for Improved Quantification of Vehicle Exhaust Particles»

Georgios Triantafyllopoulos, EMISIASA
«On-road PN and BC emission measurements of L-category vehicles»

17.00 Aperitif sponsored by exhibitors and End of Day 1

Program Wed, June 18, 2025

All indicated times are in CEST (GMT +2). [Convert CEST into any time zone.](#)

09.00 Session 5: Aftertreatment Part 1 Chair: Konstantina Vasilatou, METAS

Una Trivanovic, METAS

«Can existing periodic technical inspection instruments measure GDI engine emissions?»

Sven Kureti, TU Bergakademie Freiberg

«Catalytic oxidation of CO, VOC and PM in O₂-rich exhaust of small-scale fireplaces»

Mirjam Müller, DBFZ Deutsches Biomasseforschungszentrum gemeinnützige GmbH

«Influence of electrostatic precipitators at small-scale biomass combustion systems on particle number emissions and particle size distributions»

Heinz Burtscher, FH NW

«Reducing fleet emissions by periodical technical inspection»

Jonathan Andersson, Ricardo UK Limited

«DFT Brake and Tyre Programme Phase 2: Emissions of PN₁₀ and PM_{2.5} from brake systems during chassis dynamometer testing»

10.30 Coffee Break

11.00 Session 6: Aftertreatment Part 2 Chair: Laurretta Rubino, VERT Association

Laurretta Rubino, VERT Association

«The VERT GPF-Retrofit Program for Cleaner Urban Mobility: Nanoparticle Emissions Reduction via Filtration within the HORIZON Europe AeroSolfd Project»

Danilo Engelmann, Berner Fachhochschule

«AeroSolfd: Advancing Air Quality through Retrofitted Gasoline Particulate Filters – Insights from Laboratory and Real-World Evaluations»

Andreas Mayer, VERT

«Health Impact of Nanoparticles emitted by in-use Gasoline Engines reduced by GPF Retrofit Life Cycle Analysis and the resulting Benefit/Cost Ratio»

Norbert Heeb, Empa

«Next-generation gasoline particle filters: Impact on genotoxic compounds, assessment of risks for secondary poisoning»

Leonid Tartakovsky, Technion – Israel Institute of Technology

«In-use gasoline cars retrofit with a particle filter – Israeli experience»

12.30 Lunch Break

13.30 Poster Session Part B

15.00 Coffee Break

15.30 Session 8: Health effects Chair: Marloes Eeftens, Swiss TPH

Maximilian Schwarz, Helmholtz Munich

«Beyond current air quality standards: studies of ambient ultrafine air pollution and its effects on mortality and hospital admissions in Germany»

Doug Brugge

«Efficacy of HEPA air purifiers at reducing blood pressure for near highway residents»

Meike Jakobi, Heinrich Heine University Düsseldorf

«Associations between Short-Term Exposure to Ambient Ultrafine and Fine Particulate Matter and Biomarkers of Inflammation and Coagulation in Seniors in the German CorPuScula Study»

Gowsinth Gunasingam, Adolphe Merkle Institute

«Studying adverse effects of diesel exhaust particles on human intestine tissue in vitro»

Eric Lavigne, Health Canada

«Associations between PM_{2.5} components, brake and tyre wear markers, ultrafine particles, and childhood cancers in Canada»

19.00 Conference Dinner, Polyterasse

Program Thu, June 19, 2025

All indicated times are in CEST (GMT +2). [Convert CEST into any time zone.](#)

09.00 Session 9: Brake and tyre wear particles Part 1

Chair: Danilo Engelmann, BFH, Biel

Misja Steinmetz, TNO (NL)

«Heavy duty brake wear emissions: an on-road measurement campaign using a novel fully open sampling system»

Anssi Järvinen, VTT Technical Research Centre of Finland

«Effect of pad material and regenerative braking on brake wear emissions»

Bozhena Tsyupa, Politecnico di Milano/Brembo

«Beyond Emission Factors: Brembo's Protocol for Chemical and Toxicological Analysis of Brake Wear Particles»

Daniel Obando, University of Stuttgart

«Characterization of UFP Emissions at a Railway Brake Test Bench»

Carsten Neukirchen, University of the Bundeswehr Munich

«Physical and chemical characterization of brake and tyre wear measured on a custom-built combined dynamometer»

10.30 Coffee Break

11.00 Session 10: Brake and tyre wear particles Part 2

Chair: Oliver Bischof, TSI

Andreas Schwendimann, Swisens AG

«Analysis of Morphological and Chemical Properties of Tyre and Brake Wear Particles Using Real-Time Measurement Techniques»

Jens Wahlström, Lund University

«Advancing Tire and Road Wear Particles (TRWP) Measurements: Balancing Laboratory Conditions and Real-World Relevance»

Miriam Chacón-Mateos, DLR

«Enhancing the Testing Methodology for Measuring Tyre Particle Emissions»

Georgios Tsakonas, Aristotle University of Thessaloniki

«Approach for Measuring Volatile Tyre Particle Emissions »

Christoph Hüglin, EMPA

«Distribution of tire wear in the environment through atmospheric transport and deposition»

12.30 Lunch Break

13.30 Trojan Horse Award and Poster Award Ceremony

Chair: Oliver Bischof, TSI

14.00 Focus Event «Brake and tyre wear particles» Part A

Chair: Loretta Müller, Bern University Hospital

Organized by A. Mayer, TTM

Dr. Loretta Müller-Urech, Chair and Moderator

Opening

Prof. Barbara Rothen Rutishauser, University of Fribourg

«Health Impact of Inhalable Particles»

Alan James Bergmann, Swiss Center for Applied Ecotoxicology

«Aquatic Impact of Plastic Particles»

Nick Molden, Emission Analytics Ltd, CEO

«Chemistry and Physics of Tyre and Brake Wear»

15.00 Coffee Break

15.30 Focus Event «Brake and tyre wear particles» Part B
Chair: Loretta Müller, Bern University Hospital

Vincente Franc, EU-Commission; DG GROW.12
«EU-Legislation Metrology and Limit Values»

Heinz Bacher, BMW AG
«Technical Solutions: Brakes»

Frederic Biesse, Michelin
«Technical Solutions: Tyres»

17.00 End of the conference

Poster Session A, Tue, June 17, 2025

All indicated times are in CEST (GMT +2). [Convert CEST into any time zone.](#)

Session: Aircraft, marine and other non-road sources

- 1A **Tobias Schripp**, ZHAW School of Engineering
«Advancements in Aircraft Engine Measurement: The New SR Technics Test Cell Emission Monitoring System»
- 1B **Anni-Rosa Apilainen**, VTT Technical Research Centre of Finland Ltd
«Characterization and control of ash from diesel engine exhaust»
- 1C **Suneeti Mishra**, PSI Villigen
«Tracing Aviation Impacts on Air Quality: PM Chemical Composition and Source apportionment near Zürich airport»
- 1D **Fergus Lidstone-Lane**, University of Manchester
«Experimental investigation of ultrafine particle loss through flow splitters, flow fittings, and coiled tubes : typically used in aircraft nvPM sampling systems»
- 1E **Hiroyuki Yamada**, Tokyo Denki University
«Particle Emissions from Small Jet Engine fueled with SAF»

Session: Ambient air particles

- 2A **Asta Gregorič**, Aerosol d.o.o.
«Optimizing the Aethalometer source apportionment model through multi-site comparison»
- 2B **Ulku Şahin**, Istanbul University-Cerrahpaşa
«Particle Number Size Distribution in Istanbul Atmosphere»
- 2C **Saloni Vijay**, ETH Zurich
«Source Apportionment of Light-Absorbing Carbonaceous Aerosols in Blantyre, Malawi Using Locally Derived Absorption Ångström Exponent Values»

Session: Biomass-, biofuel- and synfuel combustion

- 3A **Abidemi Kuye**, University of Surrey, Staghill Reception, Guildford, Surrey
«Ultrafine particle Exposure from different heating stoves and Fuels in Homes: A Case Study in Guildford, United Kingdom»
- 3B **Louis Garin**, University of Namur & Stûv S.A.
«Development of perovskite-based catalyst for the elimination of pollutants such as VOC, CO and PM emitted by wood stoves»

Session: Emission and emission control of combustion engines (aftertreatment)

- 5A **Anssi Arffman**, Dekati Ltd.
«Aged emissions of passenger cars studied with an oxidation flow reactor (DOFR)»
- 5B **Michal Vojtisek-Lom**, Czech University of Life Sciences in Prague
«On-road measurement of all Euro 7 gaseous emissions from motorcycles using a rider-worn portable FTIR analyzer»
- 5C **Jan Czerwinski**, VERT Association
«GPF for Passenger Cars - VERT knowledge prior to AeroSolfd 2020»

Session: Health effects

- 8A **Jiun-Horng Tsai**, National Cheng Kung University
«Air Toxic Emissions And Potential Impacts from Industrial Complex And Port Operation in A Harbor City in Taiwan»
- 8B **Paul Sermon**, Brunel University
«Properties and Health Impact of Inhalable-Retainable Ultrafine Particles from Combustion (Exhaust-UFPs), Indoor Combustion (Indoor-UFPs) and Solar-thermally Aged Tire-Wear Particles (TWP-UFPs) »
- 8C **Samridhi Dwivedi**, Isabella Thoburn College
«PM_{2.5} Bound PAHs: Seasonal TEQ Analysis and ILCR Based Health Risk Profiling of a rapidly growing urban city»
- 8D **Heike Krüger**, nano-Control, International Foundation
«Memories of Asbestos: Health hazards due to Toner / Emissions from Laser printers and Copiers»
- 8E **Marie Bergmann**, Heinrich Heine University Düsseldorf
«Systematic review and meta-analysis on short-term concentrations of ambient ultrafine particles and natural, cardiovascular and respiratory mortality»

Session: Combustion-derived nanoparticles

- 11A **Wanja Thelin**, Linnaeus University
«CFD model for particle removal and heat recovery in centrifugal wet scrubber»
- 11B **Ruiwen He**, Adolphe Merkle Institute
«Detecting diesel exhaust particles in lung cells using lock-in thermography»
- 11C **Sara Valentini**, European Commission JRC
«Material Characterisation of vehicle-emitted fine and ultrafine particles»

Poster Session B, Wed, June 18, 2025

All indicated times are in CEST (GMT +2). **Convert CEST into any time zone.**

Session: Instrumentation

- 4B **Martin Fierz**, naneos particle solutions
«Diffusion-charging based sensors for ambient air quality measurements»
- 4C **Peter Schwanzer**, Scale MT GmbH
«Usage of porous filter and salt solutions for the generation of constant particle concentrations»
- 4D **Arti Bhatnagar**, Dayalbagh Educational Institute
«Synthesis and characterization of thin films for sensing Bioaerosols»
- 4E **Nikolaos Kousias**, Aristotle University of Thessaloniki
«Real-world implementation of an optoacoustic Black Carbon Sensor for Ship Emissions Measurement»
- 4F **Gerald Steiner/Wimmer**
«Urban Air Quality Monitoring with the AVL UltraFine Particle Monitor: Measurement Campaigns and Key Findings»

- 4G **V. Berger**, Catalytic Instruments GmbH
«Seeded Growth of Silver Nanoparticles by Heterogeneous Condensation in a Tandem Silver Particle Generator Setup»
- 4H **Yixin Zou**, Combustion Cambridge
«A Fast Wide Size Range Condensation Particle Counter»
- 4I **Patrick Weber**, Forschungszentrum Jülich GmbH
«Insights from over two years of using DMSO as working fluid in condensation particle counters»

Session: Brake and tyre wear, non-combustion emissions

- 9A **Vilhelm Malmborg**, Lund University
«ROS production of source-specific emissions from combustion, brake, tire and road wear»
- 9B **Hiroyuki Hagino**, JARI
«Real-time simultaneous measurement of carbon and trace metals in brake wear particles using ICP-TOFMS»
- 9C **Sara Bengtsdotter**, Lund University
«Characterization of brake wear particles: influence of pad material and braking conditions on particle charging state»
- 9D **Jussi Hoivala**, Tampere University
«Size-resolved Elemental Analysis of Brake Emissions from Popular Brake Linings»
- 9E **Agnese Magno**, Institute of Science and Technology for Sustainable Energy and Mobility (STEMS) - CNR
«Physico-chemical characterization of dust generated by a brake for light-duty vehicle applications»
- 9H **Peter Lienerth**, HORIBA Europe GmbH
«Basic evaluation of brake-emission correlation between chassis dynamometer and brake dynamometer»
- 9I **Alessandro Mancini**, Brembo NV
«Shedding (Synchrotron) Light on Speciation of Metals in Brakes Emissions: a XANES Investigation on Micro- and Nano- Particulates»
- 9J **Tawfiq Al-Wasif Ruiz**, CIEMAT
«Ultrafine Brake Wear Particles in Real-World Scenarios: Morphology and Composition»
- 9K **Ludwig Schubert**, AVL List GmbH
«Assessment of Airborne Emissions from Tire Wear: Insights into Ultrafine Particle Distribution»
- 9L **Paul Sermon**, Brunel University
«Solar-Thermal Aging of Tire-Wear Particles (TWP) Affecting Their Properties and Environmental-Health Impacts»
- 9M **Mara Leonardi**, Brembo NV presented by Alessandro Mancini, Brembo NV
«Reducing Brake Wear Emissions in Public Transport: Insights from the RE_BREATH Project»

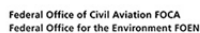
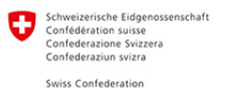
Session: Filtration of combustion and biogenic nanoparticles

- 12A **Kobi Kutsher**, Environmental Engineering, Ben-Gurion University of the Negev
«Particles Size Manipulation: Experimental and Numerical Study»

Session: Indoor particles and workplace aerosols

- 13A **Jan Czerwinski**, NCA and VERT SC
«Minimizing Indoor Infection Risk by Airborne Pathogens with Nanofiltration and Vertical Flow»
- 13B **Barbara Rothen-Rutishauser**, Adolphe Merkle Institute
«An Innovative Vertical Airflow System with Ceramic Filters for Reducing Airborne Pathogens in Healthcare Settings»

Sponsors, Supporters and Partners



Exhibitors



Contacts

President of the Organizing Committee

Dr. Norbert Heeb, Empa Dübendorf
T: +41 58 765 42 57
norbert.heeb@empa.ch

PD. Dr. Loretta Müller, DBMR University of Bern, Inselspital Bern
T: +41 31 632 76 42
loretta.mueller-urech@insel.ch

Contact for Sponsors only

Dr. Martin Stöckli, Inspire AG
stoeckli@inspire.ethz.ch

Honorary President (Past President)

Dr. Andreas Mayer, TTM
Phone: +41 56 469 64 14
ttm.a.mayer@bluewin.ch

Conference Secretariat

SCS Head Office
Haus der Akademien
Laupenstrasse 7
3008 Bern
info@scg.ch