

European Federation of Clean Air
and Environmental Protection
Associations (EFCA)
International Symposium

Ultrafine Particles – Air Quality and Climate

Brussels, Belgium
July 3 and 4, 2024

Program



KIT | Karlsruhe Institute of Technology

Karlsruhe Institute of Technology (KIT) pools its three core tasks of research, higher education, and innovation in a mission. The KIT Climate and Environment Center develops strategies and technologies to secure the natural bases of life.
www.kit.edu



EFCA | The European Federation of Clean Air and Environmental Protection Associations

aims at encouraging professional activity in Europe while working at the interface between science and (European) policy on environmental problems.
www.efca.net



GUS | Gesellschaft für Umweltsimulation e.V.

(Society for Environmental Engineering). It is the organization of people, institutions and companies who work in environmental engineering and testing. Since 1969, GUS supports the development of environmental engineering on a non profit basis.
www.gus-ev.de



CEES | The Confederation of European Environmental Engineering Societies

is the umbrella organisation of national technical societies for environmental engineering and testing. CEES promotes technical advisory boards, seminars and conferences with the support of national member societies.
www.cees.org

Ultrafine particles (UFP), the nano fraction of airborne particulate matter, are recognised as a major health risk factor in the WHO Guidance, considered to cause serious environmental effects and have a significant climate impact. The most important emission sector is transport of all kinds through direct particle emissions from vehicles, ships and aircraft engines but also by producing volatile organic pollutants which are converted in the atmosphere through photochemical reactions.

UFPs health effects are constantly demonstrated at all scales through indoor and ambient exposure. A further interest in UFPs results from their specific role in atmospheric processes such as cloud formation and precipitation and in climate. In particular, UFPs contribute to the Short-Lived Climate Pollutants (SLCPs), in particular black carbon (BC) and organic aerosols. The relation between UFP and human health and that of UFP and climate are both areas of active research and cross-links between these fields are more and more found nowadays.

EFCA is committed to promote a “**ONE-ATMOSPHERE**” approach to the framing of air/climate protection policies and to the standard/metric of UFPs in cooperation with international organizations. Therefore, the subtitle of the symposium series: “**air quality and climate**” reflects this constant development. However, the present policies to decrease exposure to particulate matter make use of the mass-based metrics PM10 and PM2.5, which do not properly represent all risks for human health. EFCA is therefore in favour of the development of a fraction-by-fraction approach on particulate matter, both with respect to size and chemical composition including Black Carbon particles as an additional metric in the Air Quality Directive.

The organizers trust that EFCA’s 9th Ultrafine Particles Symposium 2024 will again feature the most recent scientific progress in the field and so contribute to policy-relevant developments which improve the dialogue with policymakers in Europe and in the UNECE region. EFCA and KIT, together with GUS and CEES are pleased to organize this event again. We cordially invite all experts to contribute actively and hope to see you again at the State representation of Baden-Württemberg in Brussels in July, 2024.

Thomas Leisner | Chairman

PROGRAM

WEDNESDAY, 3 JULY | ROOM KARLSRUHE, STUTT GART, MANNHEIM

10:00 – 10:30

Opening

10:30 – 11:10

Keynote Session

11:10 – 12:30

Session A – UFP Sources I

Lunch

FOYER/PATIO

13:30 – 14:50

Session B – UFP Sources II

14:50 – 16:10

Session C – Urban UFP & Methods

Coffee Break

FOYER

16:30 – 17:10

Keynote Session

17:10 – 18:30

Session D – Health I

18:30 – 19:30

Poster Session E & Buffet

FOYER/PATIO

THURSDAY, 4 JULY | ROOM KARLSRUHE, STUTT GART, MANNHEIM

09:00 – 09:40

Keynote Session

09:40 – 11:20

Session F – Health II

Coffee Break

FOYER

11:40 – 12:20

Session G – Policies

Lunch

FOYER/PATIO

13:20 – 14:00

Keynote Session

Coffee Break

FOYER

14:20 – 15:50

Panel Discussion

Wednesday, 3 July

Opening

10:00 Greetings and Impulse Statement
by Jutta Paulus (MEP)

Keynote – Session

10:30 – 11:10 | Room Karlsruhe, Stuttgart, Mannheim
Session Chair: Thomas Leisner

10:30 **New particle formation in the upper
troposphere and its role for climate**
Joachim Curtius
University of Frankfurt, Germany

Session A – UFP Sources I

11:10 – 12:30 | Room Karlsruhe, Stuttgart, Mannheim
Session Chair: Thomas Reichert

11:10 A.1
**Particulate Filters for Combustion Engines
to Mitigate Global Warming. Estimating the
Effects of a Highly Efficient but Underutilized
Tool**
Laurette Rubino
VERT, Switzerland

11:30 A.2
**Shortcomes in ultrafine particle measurement
and source attribution, a review**
Wolfgang Junkermann
Karlsruhe Institute of Technology, Germany

11:50 A.3
**Development of a European-wide UFP map
based on mobile monitoring**
Youchen Shen
Utrecht University, Netherlands

12:10 A.4
**Characterisation of Ultrafine Non-Exhaust
Emissions**
Manuel Löber
German Aerospace Center (DLR), Germany

12:30 Lunch

Session B – UFP Sources II

13:30 – 14:50 | Room Karlsruhe, Stuttgart, Mannheim

Session Chair: Andreas Meyer

13:30 B.1

Nanoparticles in ambient air of residential areas: sources and mitigation potential

Peter Bächler

Karlsruhe Institute of Technology, Germany

13:50 B.2

Organic pollution bound to PM1 particle matter in indoor air

Ivana Jakovljević

Institute for Medical Research and Occupational Health, Croatia

14:10 B.3

Identification of aviation unique emission tracers by combining aerosol- and gas measurements

Sarah M. Tinorua

Paul Scherrer Institute, Switzerland

14:30 B.4

State of knowledge Importance of precursor substances for the formation of UFP

Nicola Toenges Schuller

AVISO GmbH, Germany

Session C – Urban UFP & Methods

14:50 – 16:10 | Room Karlsruhe, Stuttgart, Mannheim

Session Chair: Harald Saathoff

14:50 C.1

Quantifying the contributions of NPF and traffic emissions on urban UFP concentrations

Pauli Paasonen

University of Helsinki, Finland

15:10 C.2

Numerical Simulation of Fibre Dose in an Air-Liquid-Interface Exposure System

Sonja Mülhopt

Karlsruhe Institute of Technology, Germany

15:30 C.3

Enhancing fine PM emissions assessment from urban traffic through bottom-up approach: case study for the city of Milan

Giovanni Lonati

Politecnico di Milano, Italy

15:50 C.4

Volatility, state of mixing and solid ultrafine aerosol particles in the urban atmosphere

Konstantinos Eleftheriadis

National Centre of Scientific Research

"Demokritos", Greece

16:10 Coffee Break

Keynote – Session

16:30 – 17:10 | Room Karlsruhe, Stuttgart, Mannheim

Session Chair: Thomas Leisner

16:30 **Inhaled carbonaceous ultrafine particles (tbc)**

Tim Nawrot
University Hasselt, Belgium

Session D – Health I

17:10 – 18:30 | Room Karlsruhe, Stuttgart, Mannheim

Session Chair: Flemming Cassee

17:10 D.1

Particle number concentrations (PNC) and health effects in the Bavarian centres of the German National Cohort (NAKO): Augsburg and Regensburg

Josef Cyrus
Ludwig-Maximilians-Universität München &
Helmholtz Munich, Germany

17:30 D.2

The toxicology and functional impact of ultrafine particles on the respiratory mucosa evaluated in a primary cell based air-liquid interface model

Till Meyer
University Hospital Würzburg, Germany

17:50 D.3

Long-term exposure to ultrafine particles and lung cancer mortality and incidence

Femke Bouma
Utrecht University, The Netherlands

18:10 D.4

Beyond the Runway: Respiratory health effects of ultrafine particles from aviation in children

Esther S. Lenssen
Utrecht University, The Netherlands

Poster Session E & Buffet

18:30 – 19:30 | Room Karlsruhe, Stuttgart, Mannheim

E.1

Environmental damage - Nicotine balance of cigarettes (tobacco burners) when smoking

Peter Eyerer
Fraunhofer Institute for Chemical Technology ICT,
Germany

E.2

Understanding the drivers of differences in PAH compositions of PM1 and PM10 – a machine learning study in Zagreb, Croatia

Nikolina Račić
Institute for Medical Research and Occupational
Health, Ksaverska cesta 2, Zagreb, Croatia

E.3

Source Identification Measurements of UFP Immission Next to an Italian Harbor

Volker Ziegler
Palas GmbH Germany

E.4

Relation between anhydrosugars and organic carbon in the PM1 particle fraction

Suzana Sopčić
Institute for Medical Research and Occupational
Health, Zagreb, Croatia

E.5

Composition and sources of aerosol particles in three central European cities Karlsruhe, Stuttgart, and Munich

Harald Saathoff
Institute of Meteorology and Climate Research, KIT,
Karlsruhe, Germany

E.6

Particulate Matter Emissions of the aeronautics manufacturing sector based on global market data and its potential derivation

Thomas Reichert
Fraunhofer Institute for Chemical Technology (ICT),
Pfinztal, Germany

E.7

Meteoric Smoke Particles in the Mesopause – the only long-lived sub-nanometer particles in the atmosphere

Thomas Leisner
Institute of Meteorology and Climate Research, KIT,
Karlsruhe, Germany

E.8

Spatial and size distributions of ultrafine particles in the port and city of Rotterdam, Netherlands

Juliane L. Fry
Meteorology and Air Quality Group,
Wageningen University, Netherlands

Pallas GmbH



Envicontrol –
environmental technologies



Cambustion



TSI GmbH



Thursday, 4 July

Keynote – Session

09:00 – 09:40 | Room Karlsruhe, Stuttgart, Mannheim
Session Chair: Thomas Leisner

09:00 **Short- and long-term effects of ultrafine particles**

Annette Peters
Helmholtz Munich, Germany

Session F – Health II

09:40 – 11:20 | Room Karlsruhe, Stuttgart, Mannheim
Session Chair: Sonja Mülhopt
Karlsruhe Institute of Technology, Germany

09:40 F.1

Early life exposure to ultrafine particles from air pollution affects proximal tubular epithelial cells development and resilience

Alessandra Tammaro
University of Amsterdam, The Netherlands

10:00 F.2

Neurodevelopmental impact of early-life ultrafine carbon nanoparticles exposure in mice

Kenneth Vanbrabant
Hasselt University, Belgium

10:20 F.3

Effects of inhaled carbon nanoparticles on the mouse lung

Roel Schins
IUF – Leibniz Research Institute for Environmental
Medicine, Germany

10:40 F.4

**Transgenerational susceptibility to asthma:
Impact of maternal exposure to airborne
ultrafine particles during pregnancy in mice**

Djamal Achour
University Lille, CHU Lille, France

11:00 F.5

**Air pollution-derived ultrafine particles induce
neurological disorders in BALB/c mice and
differentiated human dopaminergic neuronal
LUHMES cells**

Emma Theerens
University Lille, CHU Lille, France

11:20 Coffee Break

Session G – Policies

11:40 – 12:20 | Room Karlsruhe, Stuttgart, Mannheim

Session Chair: Karl-Friedrich Ziegahn

11:40 G. 1

**Will new legal regime integrate action for
cleaner air and climate protection, including
focus on ultrafine particles (UFP)**

Andrzej Jagusiewicz
European Federation of Clean Air and Environmental
Protection Associations (EFCA), Poland

12:00 G.2

**Expansion of UFP measuring capabilities
in the Netherlands to improve models and
emission inventories**

Anneke Batenburg
National Institute for Public Health and the
Environment (RIVM),
The Netherlands

12:20 Lunch

Keynote – Session

13:20 – 14:00 | Room Karlsruhe, Stuttgart, Mannheim

Session Chair: Thomas Leisner

13:20 **Revision of EU Clean Air rules**

Lucia Bernal Saukkonen
EC Brussels, Belgium

14:00 Coffee

Panel Discussion

14:20 – 15:50 | Room Karlsruhe, Stuttgart, Mannheim

Session Chair: Flemming Cassee

14:20 **The way forward: interactive session with
audience and panel**

Flemming Cassee

Symposium Chairman

Thomas Leisner

Institute for Meteorology and Climate Research,
Karlsruhe Institute of Technology, KIT, Germany

Organizing Committee

Sabine Aref

Gesellschaft für Umweltsimulation (GUS)

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Thomas Reichert

Fraunhofer ICT, EFCA and CEEES

Harald Saathoff

Karlsruhe Institute of Technology (KIT)

Proceedings

Presentations and Posters will be published electronically
after the Symposium.

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Abdurrahman Bayram, TUNCAP, Turkey
Giulio D'Emilia, CEEES, Italy
Giuseppe Fumarola, COSRIA/ATI, Italy
Ranka Godec, CAPPa, Croatia
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Venue

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Baden-Württemberg to the EU
Rue Belliard 60-62
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Baden-Württemberg

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