



Invitation/Programme

VDI/DECHEMA/GDCh Expert Forum

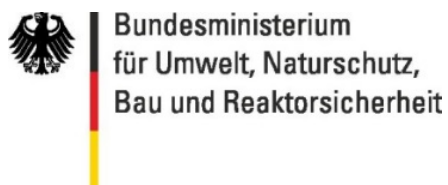
25/26 November 2015

DIN German Institute for Standardization, Berlin

Atmospheric Chemistry - Tropospheric Aerosols

The 2nd Expert Forum on Atmospheric Chemistry is organized by the Commission on Air Pollution Prevention of VDI and DIN - Standards Committee supported by

PROCESSNET
EINE INITIATIVE VON DECHEMA UND VDI-GVC



Foreword

While EU air quality policy has generally been quite successful and has resulted in significant reductions in concentrations of various harmful air pollutants, exceedances of limit values for fine particles are still encountered in many areas across the whole EU territory.

Aerosol particles are either directly emitted from natural and anthropogenic sources or secondarily formed in the atmosphere. Sea salt spray, dust storms, and volcanic eruptions belong to the natural sources of tropospheric aerosols. Typical anthropogenic sources are soot emissions from diesel engines as well as emissions from industrial and agricultural activities. Secondary aerosols form from gas-to-particle conversions of NH_3 , HNO_3 , H_2SO_4 and products of the atmospheric oxidation of low volatile organic compounds.

Evidence from epidemiological and toxicological studies suggests that tropospheric particulate matter has adverse health effects and induces respiratory or cardiovascular diseases at current exposure levels of many urban areas across Europe. To date, it is well-known that not only the particle mass concentration and their chemical composition determine the health effects of tropospheric aerosols, but that the particle number concentration, particle size and the particle surface concentration are equally relevant. Therefore, an advanced metric to assess the health effect of ambient particles - beyond the simple mass concentration - is needed in order to make reduction targets more effective.

Apart from their importance for air quality and health, tropospheric aerosols have also an effect on the Earth's radiation balance and thus on climate. Aerosol particles influence the radiation budget directly by scattering and absorbing incoming solar and terrestrial radiation. In addition, aerosol particles act as cloud condensation nuclei and thereby indirectly influence the Earth's radiation budget by altering cloud scattering processes. Overall, aerosols still represent one of the largest uncertainties in climate modelling.

This expert forum provides a framework for interdisciplinary scientific exchange and intends to promote international cooperation. It therefore addresses not only researchers but also programme managers and administrative stakeholders. The meeting focuses on the following topics:

Session 1: Particle formation and multiphase chemistry

New particle formation from gas-to-particle conversion contributes significantly to the global budget of cloud condensation nuclei. For instance, it is estimated that about 50 % of all cloud droplets are formed on aerosol particles that result from nucleation processes, i.e. from clustering of atmospheric trace gases. Typical lifetimes of tropospheric aerosol particles are in the order of several days. Within this time the aerosol particles are aging, i.e. they are transported away from the source region and undergo chemical and physical changes. This session concentrates on current research dealing with new particle formation and modification, the physico-chemical properties of aerosol particles and on heterogeneous and multiphase chemistry.

Session 2: Insight from recent field studies

Besides the investigation of the chemical composition and the microphysical properties of aerosols in laboratory and chamber studies, field campaigns constitute a complementary research approach. Field measurement campaigns are, e.g., designed to assess the influence of aerosol emission sources on air quality and to gain a more detailed understanding for the development of modelling tools for the prediction of air quality. Session 2 presents results from recent field studies, either performed at fixed measurement sites or from mobile measurement platforms.

Session 3: State of the art in regional dispersion modelling

An accurate description of particle emissions as well as their physico-chemical processing is important for modelling regional air quality, pollution prevention, environmental policy development and climate effect research. The accuracy of chemistry transport models for assessing air quality with regard to gas- and particle phase constituents depends on a variety of parameters like, e.g., type of the emission source, emission factors, temporal variability of the emission strength, and availability of high-resolution emission data. In some cases even the emission processes are not completely understood. This session emphasizes the current status and future research needs of advanced models for predicting multiphase atmospheric chemistry and concludes with corresponding regulatory implications.

Session 4: Health effects of urban particles and regulatory issues

To date, the health effects of the exposure of humans to airborne particulate matter are being assessed using the mass concentration based metrics PM₁₀ and PM_{2.5}. In some cases also ultrafine particles (UFP) are included. In Session 4 the evidences from recent epidemiological and toxicological health effect studies are reviewed and critically discussed in the context of current environmental policies. Moreover, the potential of an alternative and improved particle metrics including particle composition and specific biological effects on air quality standards in Europe will be discussed.

Speakers

Prof. Dr. Urs Baltensperger Dr. Matthias Beekmann	Paul Scherrer Institut, Villigen, CH Laboratoire Interuniversitaire des Systèmes Atmosphériques (LISA), Paris, FR
Claudio Belis Dr. Christian George	European Commission, JRC, Ispra, IT Institut de Recherches sur la Catalyse et L'environnement de Lyon (IRCELYON), FR
Dr. Dieter Gladtko	Landesamt für Natur, Umwelt und Verbraucherschutz (LANUV), Essen, DE
Dipl.-Met. Arno Graff Cristina Guerreiro Prof. Dr. Andreas Held Dr. Bryan Hellack	Umweltbundesamt, Dessau-Roßlau, DE Norsk Institutt for Luftforskning, Kjeller, NO Universität Bayreuth, DE
Prof. Dr. Barbara Hoffmann Prof. Dr. Thorsten Hoffmann Prof. Dr. Astrid Kiendler-Scharr Prof. Dr. Markku Kulmala Prof. Dr. Gordon McFiggans PD Dr. Thomas F. Mentel Dr. Thomas Reichert	Institut für Energie- und Umwelttechnik e.V., Duisburg, DE Leibniz-Institut für umweltmedizinische Forschung, Düsseldorf, DE Johannes Gutenberg Universität Mainz, DE Forschungszentrum Jülich GmbH, DE University of Helsinki, FI University of Manchester, UK Forschungszentrum Jülich GmbH, DE European Federation of Clean Air and Environmental Protection Associations (EFCA), Delfgauw, NL
Dr. Dominik van Pinxteren Dr. Bernhard Vogel Dipl.-Met. Marion Wichmann-Fiebig Prof. Dr. Armin Wisthaler Prof. Dr. Dr. h.c. Reinhard Zellner	Leibniz-Institut für Troposphärenforschung e.V., Leipzig, DE Karlsruhe Institute of Technology, DE Umweltbundesamt, Dessau-Roßlau, DE University of Oslo, NO Universität Duisburg-Essen, DE

Programme Committee

Dipl.-Ing. Annette Borowiak Prof. Dr. Hartmut Herrmann PD Dr. Thomas Kuhlbusch Dr. Sascha Nehr Prof. Dr. Peter Wiesen Prof. Dr. Dr. h.c. Reinhard Zellner	European Commission, JRC, Ispra, IT Leibniz-Institut für Troposphärenforschung e.V., Leipzig, DE Institut für Energie- und Umwelttechnik e.V., Duisburg, DE Verein Deutscher Ingenieure e.V., Düsseldorf, DE Bergische Universität Wuppertal, Wuppertal, DE Universität Duisburg-Essen, DE
--	---

Poster Contributions

The poster session will provide an opportunity to complement the programme of the oral presentations in an informal setting. The number of poster contributions is limited. Therefore we kindly ask you to submit the provisional title of your poster presentation as soon as possible. You will receive a notification of acceptance or non-acceptance within reasonable time.

Programme Atmospheric Chemistry - Tropospheric Aerosols

25/26 November 2015

DIN German Institute for Standardization, Berlin, Room 909

25 November 2015

09:30 Welcome and introduction

09:40 Fine particles: Sources, health effects and research needs
Reinhard Zellner, Universität Duisburg-Essen

Session 1: Particle formation and multiphase chemistry

Chairperson: Peter Wiesen

10:10 New particle formation: From molecular clustering to global climate and air quality
Markku Kulmala, University of Helsinki

10:40 Sources of secondary organic aerosols
Urs Baltensperger, Paul Scherrer Institut

11:00 Highly oxidized molecules and SOA formation
Thomas F. Mentel, Forschungszentrum Jülich GmbH

11:20 Coffee break

11:40 Chemistry of secondary organic aerosols
Thorsten Hoffmann, Johannes Gutenberg Universität Mainz

12:00 On-line chemical characterization of ambient submicron aerosol
Armin Wisthaler, University of Oslo

12:20 Heterogeneous photochemistry in the troposphere
Christian George, IRCELYON

12:40 Summary and discussion

13:00 Lunch

Session 2: Insight from recent field studies

Chairperson: Annette Borowiak

14:00 Levoglucosan isotopic composition as tracer for aerosol chemical age
Astrid Kiendler-Scharr, Forschungszentrum Jülich GmbH

14:20 Nitro-PAHs as tracer for diesel soot and secondary aerosols
Dieter Gladtko, Landesamt für Natur, Umwelt und Verbraucherschutz

14:40 Origin of urban and regional particulate matter pollution: Results from MEGAPOLI and CHARMEX
Matthias Beekmann, LISA

15:00 Coffee break

15:20 New particle formation and aerosol chemistry in a hypersaline environment
Andreas Held, Universität Bayreuth

15:40 Regional air quality in Leipzig: Results from a recent field campaign on aerosol characterization
Dominik van Pinxteren, TROPOS

16:00 Summary and discussion

16:30 Poster viewing and informal get-together

Programme Atmospheric Chemistry - Tropospheric Aerosols

25/ 26 November 2015

DIN German Institute for Standardization, Berlin, Room 909

26 November 2015

Session 3: State of the art in regional dispersion modelling

Chairperson: Hartmut Herrmann

- | | |
|--------------|--|
| 09:00 | Aspects of quality assurance in air quality modelling
Arno Graff, Umweltbundesamt |
| 09:40 | Atmospheric organic aerosols: Present knowledge and research needs
Thomas Reichert, EFCA |
| 10:00 | Mapping BaP concentrations and exposure in Europe combining measurement and CTM data
Cristina Guerreiro, Norsk Institutt for Luftforskning |
| 10:20 | Comparability of source apportionment models
Claudio Belis, European Commission, JRC |
| 10:40 | Regional coupled modelling of multiphase processes using WRF-Chem
Gordon McFiggans, University of Manchester |
| 11:00 | The need of online coupled aerosol processes in weather forecast models
Bernhard Vogel, Karlsruhe Institute of Technology |
| 11:20 | Summary and discussion |
| 11:40 | Coffee break |

Session 4: Health effects of urban particles and regulatory issues

Chairperson: Reinhard Zellner

- | | |
|--------------|--|
| 12:00 | What's new about airborne particles and health? Recent evidence from epidemiological studies
Barbara Hoffmann, Leibniz-Institut für umweltmedizinische Forschung |
| 12:20 | Oxidative potential: A further toxicological and epidemiological metric
Bryan Hellack, Institut für Energie- und Umwelttechnik e.V. |
| 12:40 | Summary and discussion |
| 12:50 | Consequences for future air quality policies: Recommendations and research needs
Marion Wichmann-Fiebig, Umweltbundesamt |
| 13:10 | Wrap-up and open discussion |
| 13:40 | End of Expert Forum |
-

Registration

Please use the online registration at: www.vdi.de/atmospheric-chemistry2015registration

Early registration (**not later than 16 November 2015**) is recommended since the number of participants is limited. Your registration will be confirmed as soon as possible. Your invoice will be sent separately.

The registration rates include lunch as well as coffee, tea and soft drinks during the breaks.

Category	Registration rate
Regular rate	300 €
Discounted rate (*)	200 €
Regular rate for poster presenters	250 €
Discounted rate for poster presenters (*)	150 €

* Discount applies for representatives of public authorities and universities.

Organization

Verein Deutscher Ingenieure e. V.

Kommission Reinhaltung der Luft im VDI und DIN – Normenausschuss KRdL

Postfach 10 11 39

40002 Düsseldorf (DE)

www.krdl.de

Further information:

Dr. Sascha Nehr
Phone: +49 211 6214-451
e-mail: nehr@vdi.de

Handan Helvacioğlu M.A.
Phone: +49 211 6214-252
e-mail: helvacioğlu@vdi.de

General Information

Venue

DIN Deutsches Institut für Normung e.V.

Burggrafenstraße 6

10787 Berlin (DE)

Room: 909

www.din.de

Accommodation nearby

Sylter Hof www.sylterhof-berlin.de

Motel One Berlin-Tiergarten www.motel-one.com

Hotel Reservation Service www.hrs.de

Travel Information

By car



www.google.de/maps

Please use public car parks like e.g. *Nürnberger Str. 5* or *Los-Angeles-Platz*

By train or bus



www.bahn.de (change to English version at the top of the site);

From Berlin Central Station (*Berlin Hauptbahnhof (Hbf)*) by city rail (*S-Bahn*) to *Zoologischer Garten* (direction *Westkreuz*), from there 10 min. walk or by bus 100 to *Bayreuther Straße*

By airplane



Airport Tegel: Bus 109 (30 min.) or bus X9 (20 min.) to *Bahnhof Zoologischer Garten*.

Airport Schönefeld: Airport-Express or *S-Bahn S9* changing at *Ostkreuz* to any train with direction *Westkreuz*, *Potsdam* or *Spandau*, getting off at *Bahnhof Zoologischer Garten*.