

10th ETH Conference on Combustion Generated Nanoparticles

The Swiss Federal Office for the Environment is Patron of this Conference

Zurich, 21st - 23rd August 2006

Conference Venue: Zürich ETH Zentrum, Main Building, Room HG F1

Welcome-Party Sunday 7.00 pm – 10.00 pm

Conference Registration Monday 8.00 am

see www.nanoparticles.ethz.ch

Agenda of Presentations

Welcome and Introduction: Prof.Dr.K.Boulouchos **Monday 21st August - 09.00**

Session 1: Ongoing Programs on Clean Air, Health Effects and PMP

Chairman: M. Kasper **09.15 – 11.00**

Schneider J. / MPI Mainz, Germany **Keynote**
Latest Developments in the Chemistry of Nanoparticles

Andersson J. / Ricardo, UK
Update on the PMP Phase 3 Light-Duty Inter-Laboratory Correlation Exercise: Summer 06

Rubino L. / JRC, Italy
On-Board PM Measurements: Status of Regulatory Developments and Instrumentation Technology

Daley S. / CARB USA
Status of implementation of the risk reduction plan and the showcase project

COFFEE BREAK **11.00 - 11.30**

Session 2: Formation of Nanoparticles in Combustion

Chairman: K. Boulouchos **11.30 - 13.10**

Arnold F. / MPI Heidelberg, Germany
Volatile nanoparticle formation by modern diesel cars: New Insights from First Gaseous Sulphuric Acid Measurements

Kubo Sh. / Toyota Japan
In-cylinder Soot Nanoparticle Formation Mechanism

Kirchen P. / ETHZ Switzerland
Experimental and Numerical Investigations of the Particulate Formation and Oxidation Mechanisms in Common Rail Diesel Engines

Lappi M. / VTT Finland
Morphological characteristics of diesel emission particles from image analysis of electron microscopy images

Lind T. / PSI Switzerland
Formation of Fine and Ultrafine Particles during Waste Combustion

LUNCH **13.10 - 14.10**

Session 3: Particles in Ambient Air

Chairman: U. Baltensperger

14.10 - 15.50

Cziczo D.J. / ETHZ Switzerland

Combustion Aerosols, Clouds, and Climate

Prévôt A.S.H. / PSI Switzerland

The High PM10 Episode in Switzerland in January and February 2006

Scheer V. / Ford Germany

In situ Measurements of Chemical and Physical Parameters of Various Traffic related Particles under Cruise Conditions

Weimer S. / EMPA Switzerland

Investigations of Road Traffic Emissions in Southern Switzerland Using a Mobile Laboratory

Cozic J. / PSI Villigen Switzerland

*The Fate of Black Carbon in the Atmosphere: Rapid Removal by Wet Deposition after Aging***POSTER SESSION****and COFFEE BREAK****15.50 - 17.30****Session 4: Non-Diesel Nanoparticle Emissions**

Chairman: C.-D. Schegk

17.30 – 19.10

Etissa D. / EMPA Switzerland

Characterization of Particles Emitted from Modern 2-stroke Scooters by Electron Microscopy and Tandem DMA

Gautam M. / West Virginia University USA

Control of Nanoparticle and Toxic Emissions from Natural Gas-Fueled Transit Buses

Khalek I.A. / SWRI USA

Particle Size and Number Emissions from a Homogeneous Charge Compression Ignition Engine (HCCI)

Klippel N. / Verenum Switzerland

Particle Emissions from Residential Wood Combustion - Design and Operation Conditions Determine Health Impacts

Price Ph. / University of Oxford UK

*Particulate Emissions from a Gasoline Homogeneous Charge Compression Ignition Engine***APERO****and invited DINNER****19.30****Dinner-Speaker: Prof. Dr. Jan Czerwinski**

Tuesday 22nd August 2006**Session 5: Health Effects by Combustion Generated Particles**

Chairman: P. Gehr and J. Lemaire

08.00 – 08.30

Krug H. / ITG-Research Center Karlsruhe, Germany

Keynote*Ultrafine Dust and Nanoparticles: Hazard Identification in vitro***Session 5a: Health Effects by Combustion Generated Particles and Associated Gases**

Chairman: J. Lemaire

08.30 - 09.40

Schindler C., University of Basel, Switzerland

Short- and Long Term Effects of Nitrogen Dioxide on Mortality and Respiratory Health, with Emphasis on Results of APHEA and SAPALDIA Studies

Morin J.-P. / INSERM, France

From Particulates to NO2 as health concern triggers from Diesel engine emissions. A link with emission after-treatment strategies

Rothen-Rutishauser B. / UNIBE, Switzerland

*An Epithelial Airway Model to visualize Cellular Interplay after Nanoparticle Exposure***COFFEE BREAK****09.40 – 10.00****Session 5b: Health Effects Linked with Solid Part of Combustion Generated Particles**

Chairman: P. Gehr

10.00 - 11.00

Calderón-Garcidueñas, L. / University of Montana, USA

PM and the Central Nervous System; Brain Inflammation and Neuro-Degeneration in Exposed Children and Young Adults

Hoet, P. / University of Leuven, Belgium

Experimental studies on the pro-thrombotic effect of particles of particles

Jaspers, I. / University of North Carolina, USA

*Effect of Diesel Exhaust on Epithelial Cells; Potential Interactions with viral Infections***Panel Discussion on Health Effects****11.00 - 12.00**

moderated by J.Lemaire

LUNCH**12.00 - 13.00**

Session 6: Particle Emissions of Diesel-Engines

Chairman: Th. W. Lutz

13.00 – 14.20

Jayaratne R. / Queensland University Australia

Particle Number Emissions from a Large Fleet of Diesel and CNG Powered Buses

Kawano D. / NTSEL Japan

Effect of Biodiesel on PM Emission Characteristics of Modern Diesel Engine

Niemi S. / Turku Polytechnic, Finland

Effects of Injection Nozzles, Waste-Gate Turbocharger and Oxidation Catalyst on the Exhaust Particle Number and Size Distributions of an Off-Road Diesel Engine

Wollmann A. / CUTEC Germany

*A Modern Diesel Engine Operated with Pure Rapeseed Oil; Effects on the Emissions***POSTER SESSION****and COFFEE BREAK****14.20 – 16.00****Session 7a: Instrumentation, Calibration and Sampling (1)**

Chairman: O. Bischof

16.00 – 17.40

Braun A. / EMPA Switzerland

Impact of Ferrocene on the Structure of Diesel Exhaust Soot

Krämer L. / IAV Germany

Assessment of Particulate Measurement Techniques and Physico-chemical Soot Properties at Different Diesel Combustion Modes

Kasper M. / Matter Engineering Switzerland

Analysis of Nanoparticle Emission of a Euro 4 HDV with SMPS, PASS, ELPI and NanoMet

Goto Y. / NTSEL Japan

Comparison of Particle Measurements by Various Instruments

Fierz M. / FHNW Switzerland

*Selective Measurement of Solid Particles with the Diffusion Size Classifier***COFFEE BREAK****17.40 – 18.00****Session 7b: Instrumentation, Calibration and Sampling (2)**

Chairman: H. Burtscher

18.00 – 19.20

Niemelä V. / Tampere University, Finland

Electrical Tailpipe PM Sensor for Diesel Engine Emission Measurements

Ochoterena R.L. / Chalmers University of Technology

Determination of Soot Size and Concentration in Optically Dense Sprays by Optical Methods

Montajir Rahman / Horiba, Ann Arbor, USA

Performance of HORIBA-SPCS in the PMP LDD Inter-Laboratory Correlation Exercise

Zerrath A. / TSI Germany

Mobile Emission Measurements with Electrical Aerosol Detector

Wednesday 23rd 2006

Session 8a: Particle Reduction by Aftertreatment (1)	
Chairman: M. Mohr	08.30 – 10.20
Signer M. / <i>OEM - Technology for Particle Elimination</i>	Keynote
Zelenka, P. / Hyundai, Korea <i>Meeting EU 5 PM emission standards: Comparison of Different Particulate Traps</i>	
Sasaki S. / JARI Japan <i>Nanoparticle Characteristics with the Latest After-Treatment Systems on the Market - Urea SCR and DPNR System</i>	
Konstandopoulos A.G. / CERTH/CPERI Greece <i>Multi-instrumental Assessment of Various Filter Media in Diesel Exhaust under Transient conditions</i>	
Kittelson D.V. / University of Minnesota USA <i>Chemical and Physical Properties of Nucleation Mode Diesel Exhaust Particles Sampled Downstream of a Catalyzed Filtration System</i>	

COFFEE BREAK**10.20 – 10.50**

Session 8b: Particle Reduction by Aftertreatment (2)	
Chairman: A. Mayer	10.50 – 12.10
Pinturaud D. / Uni Orléans France <i>Experimental Study of Partial Regeneration</i>	
Seipenbusch M. / University Karlsruhe Germany <i>Catalytic Oxidation of Soot in Microscale Experiments</i>	
Hinot K. / DLR Germany <i>On the Effect of the Contact between Platinum and Soot Particles on the Catalytic Oxidation of Soot Deposits on a Diesel Particle Filter</i>	
Richards P. / Innospec UK <i>Metal Emissions Reduction Benefits without NO₂ Penalty</i>	

Closing Remarks by Prof.Dr.H.Burtscher**12.10****LUNCH****12.30 – 13.30**

Focus-Event (German Language):	
Feinstaub in urbaner Luft	13.30 – 15.30
Chairman: R. Wolff	
U.Baltensperger / PSI, Villigen: <i>Feinstaub in der urbanen Luft: Vorkommen, Eigenschaften und gesundheitliche Relevanz</i>	
H.J.Sommer / AWEL, Zürich: <i>Feinstaub im städtischen Alltag: Massnahmen und Erfolgskontrolle</i>	
K.Boulouchos / ETH, Zürich: <i>Verbrennungsgenerierte Nanopartikel - Minimierungspotenziale an der Quelle</i>	
A.Mayer, TTM: <i>Abgas-Nachbehandlung zur Minimierung von Feinstaubemissionen</i>	

Kaffee – Pause**15.30 – 16.00**

Podiumsdiskussion	16.00 - 17.00
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POSTERS

1.	Arnold F.	<i>Combustion Related Formation of Secondary Nano Particle Formation in the Atmosphere</i>
2.	Bertha A.	<i>Macromolecular Disperse System – Stabilizing Fuels containing Water</i>
3.	Braun A.	<i>Investigations on “Feinstaub” Carbonaceous Particulate Matter with C(1s) NEXAFS Spectroscopy</i>
4.	Braun A.	<i>The Application of Small Angle X-ray Scattering for the Study of Diesel Exhaust Particulate Matter</i>
5.	Büeler A.	<i>Reduction of NO₂-emissions from continuously regenerating particulate filters by NOxOPT technology</i>
6.	Bugarski A.	<i>Characterization of combustion generated nanometer and ultrafine aerosols emitted in work environment</i>
7.	Burtscher H.	<i>Cabin Filtration for Cars</i>
8.	Chuang Kai-Jen	<i>Characterization of ultrafine particles in mass rapid transit, train, and bus stations in Taipei</i>
9.	Czerwinski J.	<i>(Nano) Particles from 2-S Scooters: SOF / INSOF, improvements of aftertreatment, toxicity.</i>
10.	Davoodi Parisa	<i>Quality of Contact in Catalytic Soot Oxidation</i>
11.	Figoutz S.	<i>„Plasma Regeneration of Soot“ - possible without Secondary Emissions and Low Energy Consumption?</i>
12.	Fushimi A.	<i>Chemical Composition of Nanoparticles in Roadside Atmosphere in Japan</i>
13.	Gasperetti S.	<i>Multi-diagnostics Techniques for Nanoparticle Characterization in Premixed Gas Combustion</i>
14.	Geiser M.	<i>Role of macrophages in the clearance of ultrafine titanium dioxide particles from lungs</i>
15.	Gerhart Chr.	<i>GRIMM FAPES A Fast Measuring Aerosol Spectrometer as Reference System for the Size Range from 4 to 400 nm (Fast Automotive Emission Spectrometer)</i>
16.	Grass R.N.	<i>Preparation of Oxide, Salt, Metal and Carbon Nanoparticles in Flames: Safety Precautions for Everyday Work with Nanoparticles and Sustainable Product Development</i>
17.	Hagen D.	<i>Volatile Aerosol in Gas Turbine Emissions</i>
18.	Hauser H.	<i>Progress in OBD Measuring Procedures</i>
19.	Hayashi Shun-ichi	<i>PAHs Emission on-line Monitoring by Proto-Type Jet-REMPI-TOFMS</i>
20.	Heiden B.	<i>About the irregularities measured with the SMPS without reverse scanning mode</i>
21.	Horn H.G.	<i>The Traceable Calibration of Condensation Particle Counters</i>
22.	Hueglin Chr.	<i>Meteorologically Adjusted Long-Term Trends (1991 to 2004) of PM10 in Switzerland</i>
23.	Ikeda T. Yasunori Iwakiri	<i>JCAPII Cross Check Tests on High-speed Particle Sizing Instruments– JCAP Unregulated Material Working Group</i>

24.	Imhof D.	<i>The Potential of a Particle Filter Considering a Highly Frequented Road</i>
25.	Karlsson Hua Lu	<i>AVL MTC PMP Interlaboratory Correlation Exercise</i>
26.	Kasper M.	<i>Soot Generators for Filter Testing and Instrument Calibration - An Update</i>
27.	Kittelson D.V.	<i>The Role of Ionic Nucleation in the Formation of Nucleation Mode Particles Associated with Diesel Engine Exhaust</i>
28.	Klippel N.	<i>Particle Size Distribution in the Ambient Air during a Period of High PM10 Immissions</i>
29.	Kobayashi S.	<i>Measurements of Ultrafine Particles in the Roadside and Urban Atmospheres</i>
30.	Lall A.A.	<i>Online Measurement of Ultrafine Diesel Exhaust Emission Aggregate Number, Surface Area and Volume Distributions by Differential Mobility Analyzer Method of Idealized Aggregate</i>
31.	Landis M.	<i>Particulate Filters on Tractors</i>
32.	Lauer P.	<i>New findings on PM emission and composition for medium speed 4-stroke marine Diesel engines operating on Bio-Fuel</i>
33.	Li Cheng G.	<i>New High Performance DPF Development and Its Application</i>
34.	Limbach L.K.	<i>In Vitro Cytotoxicity of Oxide Nanoparticles: Comparison to Asbestos, Silica and the Effect of Particle Solubility</i>
35.	Lorenzo R.	<i>Single Particle Analysis of Welding Fume</i>
36.	Margari Ourania	<i>Quantitative Optical Measurements of Soot Evolution in Diesel Sprays in a Constant Volume Chamber with Different Fuel Composition</i>
37.	Meyer N.	<i>Volatile Properties of CNG and Diesel Bus Emissions Produced During Steady State and Transient Driving Modes</i>
38.	Ono-Ogasawara M.	<i>PAHs and EC in Nano-Size DEP Collected by DMA Sampler</i>
39.	Reavell K.	<i>A Standard Diesel Combustion Aerosol Generator for DPF Testing</i>
40.	Reuter K.	<i>Investigations on the Precipitation of Particles Charged by Thermionic Emission</i>
41.	Ristovski Z.	<i>Nanoparticle emissions from a fleet of CNG busses in transient and steady state operating conditions</i>
42.	Rojas Néstor Y.	<i>Particulate matter pollution in Bogotá: research opportunities and needs</i>
43.	Rothe D.	<i>Some Remarks about the Nucleation Mode in Diesel Exhaust</i>
44.	Samaras Z.	<i>The Effect of Driving Conditions and Aftertreatment Preconditioning on the Formation of Nucleation Mode Particles from Diesel Vehicles</i>
45.	Sattler M.	<i>measures in the Wood combustion process for particle emission reduction</i>
46.	Savi M.	<i>On-Line Deposition of Organic Aerosols onto Lung Cell Cultures: Morphological Analysis and Cell Responses</i>
47.	Schlatter J.	<i>Comparison of Grimm and TSI Condensation Particle Counter</i>
48.	Schlatter J.	<i>Comparison of Condensation Particle Counter (CPC) and Laser Particle Counter (LAPAZ)</i>

49.	Schmid O.	<i>Calculating Particle Deposition in Human Lungs for Particles of Unknown Shape: Implications for Soot Agglomerates</i>
50.	Schmidt M.	<i>Soot generation from 7.5 nm up to 200 nm</i>
51.	Setyan A.	<i>Assessment of Particulate Exposure and surface characteristics in association with Urinary Levels of Biomarkers of Oxidative Stress</i>
52.	Sommer R.	<i>Development and Performance Characteristics for Selective Particle Characterization of a New Compact L²SA-Sensor</i>
53.	Tavangar Saeed	<i>Synthesis of nanosize aluminum carbide powders by detonation of nanodiamond/graphite-nanoaluminum-explosive compounds</i>
54.	Uhrner U.	<i>Sensitivity of urban and rural Ammonium-Nitrate Particulate Matter to Precursor Emissions in Southern Germany</i>
55.	Ulrich A.	<i>Tracer doped lubrication oils: a new method to investigate the Influence on particle formation</i>
56.	Wahl C.	<i>Separation of Aircraft and Diesel-Truck Particle-Emissions A Contribution to Airport Air Quality Measurements</i>
57.	Vernooij M.	<i>Traffic Exhaust or Wood Smoke? Source Specification of Ambient Samples with C (1s) NEXAFS Spectroscopy</i>
58.	Yamada H.	<i>PAHs Formation from Benzene in a Laminar Flow Reactor</i>
59.	Zahoransky R.	<i>Diesel Engine Particle Emissions: Comparison of different Plant Oils</i>

Exhibitors

Booth No.	Company	Company Activities
60.	Biodrive	<i>Fuels and additives</i>
61.	Clean Diesel International	<i>DPF Manufacturer / Retrofit</i>
62.	ENWA	<i>DPF Manufacturer / Retrofit</i>
63.	Car Parts Kuhn	<i>DPF Manufacturer / Retrofit</i>
64.	Notox	<i>DPF Manufacturer / Retrofit</i>
65.	RP Systems	<i>DPF Manufacturer / Retrofit</i>
66.	Cambustion	<i>Particle Measuring Instruments</i>
67.	Dekati Ltd.	<i>Particle Measuring Instruments</i>
68.	Matter Engineering	<i>Particle Measuring Instruments</i>
69.	Dinex	<i>DPF Manufacturer / Retrofit</i>
70.	Baumot	<i>DPF Manufacturer / Retrofit</i>
71.	Geo2 Technologies	<i>DPF Manufacturer / Retrofit</i>
72.	Johnson Matthey	<i>DPF Manufacturer / Retrofit</i>
73.	HUSS Umwelttechnik	<i>DPF Manufacturer / Retrofit</i>
74.	Diesel Exhaust Systems	<i>DPF Manufacturer / Retrofit</i>
75.	airclean engineering	<i>DPF Manufacturer / Retrofit</i>
76.	Liqtech	<i>DPF Manufacturer / Retrofit</i>
77.	Palas	<i>Particle Measuring Instruments</i>
78.	Copley Scientific	<i>Particle Measuring Instruments</i>
79.	TSI	<i>Particle Measuring Instruments</i>
80.	Grimm Aerosol Technik	<i>Particle Measuring Instruments</i>
81.	AVL	<i>Particle Measuring Instruments</i>
82.	Hug Engineering	<i>DPF Manufacturer / Retrofit</i>
83.	Innospec	<i>DPF Manufacturer / Retrofit</i>

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ETH-Conference on Combustion Generated Nanoparticles 2006

- AKPF Arbeitskreis der Partikelfilter-Hersteller, Wien
- AWEL Amt für Abfall, Wasser, Energie und Luft, Kanton Zürich
- BAUMOT Baumot AG, Fehraltorf, Schweiz
- BAG Bundesamt für Gesundheit, Bern
- BFE Bundesamt für Energie, Bern
- BAFU Bundesamt für Umwelt, Bern
- CARB California Air Resources Board, CA, U.S.A.
- DEZA Direktion für Entwicklung und Zusammenarbeit, Bern
- DINEX DINEX A/S, Middelfart, Dänemark
- EV Erdöl-Vereinigung, Zürich
- GILLET Heinrich Gillet GmbH & Co.KG, Edenkoben, Deutschland
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- HUSS Huss Umwelttechnik GmbH, Nürnberg
- INNOSPEC INNOSPEC Limited, Herne, Deutschland
- IVECO IVECO Motorenforschung AG, Arbon, Schweiz
- JMC Johnson Matthey GmbH, Sulzbach/Taunus, Deutschland
- LIEBHERR Liebherr Machines Bulle S.A., Schweiz
- MANN+HUMMEL Mann&Hummel GmbH, Speyer, Deutschland
- ME Matter Engineering AG, Wohlen, Schweiz
- METAS Bundesamt für Metrologie und Akkreditierung, Bern-Wabern
- PSA PSA Peugeot Citroën, La Garenne-Colombes, France
- RHODIA Rhodia Electronics & Catalysis, La Rochelle, France
- SHELL Shell Deutschland, Hamburg
- SUVA Schweizerische Unfall-Versicherungsanstalt, Luzern
- TSI TSI GmbH, Particle Instruments, Aachen, Deutschland
