

**16<sup>th</sup> ETH Conference on Combustion Generated Nanoparticles**  
**The Swiss Federal Office for the Environment is Patron of this Conference**  
 Zurich, June 24<sup>th</sup> – 27<sup>th</sup>, 2012

Conference Venue: Zürich ETH Zentrum, Main Building, HG E7  
 Welcome-Party 24<sup>th</sup> June, 7.00 pm Invited by VERT-Association Alumni Pavillon  
 Conference Registration Monday 25<sup>th</sup> June 7.30 am  
 see [www.nanoparticles.ethz.ch](http://www.nanoparticles.ethz.ch) / Phone: +41(44)633 9905 during the conference

## Agenda of Presentations



**Monday June 25<sup>th</sup> 2012**

<b>Welcome</b>	<b>09.00 – 09.20</b>
Boulouchos K. / ETH Zürich <i>Welcome</i>	
Kasper M. / Matter Aerosol AG, Switzerland <i>Housekeeping</i>	
<b>Opening</b>	<b>09.20 – 09.30</b>
Schiess M. / Swiss Federal Office for the Environment	
<b>Key-Lecture</b>	<b>09.30 – 10'00</b>
 Khalek I. / SWRI, San Antonio, USA <i>The Role of High Efficiency Exhaust Particle Filters in Engine Emission Reduction</i>	
<b>COFFEE BREAK</b>	<b>10.00-10.30</b>
<b>Session 1: Fundamentals</b>	<b>10.30 – 12.10</b>
Chair: A. Ulrich	
Arnold F. / Max Planck Institut Heidelberg, Germany <i>Ground-Level Fossil Fuel Combustion induces Nanoparticle Formation in Low Stratosphere</i>	
Leidenberger U. / University of Bayreuth, Germany <i>Influence of Diesel Engine Operating Parameters on Physicochemical Properties of Soot</i>	
Payne S. / University of Cambridge, UK <i>Study of Diesel Particulate Bridging Behaviour with SEM</i>	
Pratsinis S.E. / ETH, Zürich, Switzerland <i>The Structure of Agglomerates Consisting of Polydisperse Nanoparticles</i>	
Konstandopoulos, A. / CERT/CPERI, Greece <i>Micromechanics of Catalytic Soot Oxidation in Diesel Particle Filters</i>	

**LUNCH**

**12.10 – 13.00**

**Session 2a: Combustion Emissions**

**13.00 – 14.20**

Chair: Chr. Barro

Bielaczyc P. / BOSMAL, Poland

*Influence of Fuel Ethanol Content on PN and PM from Direct Injection Gasoline Engines*

Smallwood G. / NRC, Canada

*BC Emissions from Gasoline Engines Underestimated: Insights Gained from LII and SP2*

Chan Tak / Environment Canada

*Reducing Particulate Emissions for Future GDI Vehicles with a Gasoline Particulate Filter*

Jung H. / University of California, USA

*Comparison of PM and PN from a HD Diesel during On-Road and a Standard Testing Cycle*

**COFFEE BREAK and  
POSTER SESSION**

**14.20 – 15.20**

**Session 2b: Combustion Emissions**

**15.20 – 16.40**

Chair: Th. Lutz

Kireeva E. / University of Moscow, Russia

*Characterization of Diesel and Biodiesel Exhaust Particles for Nanotoxicity Studies*

Müller N. / EMPA, Switzerland

*Nanoparticles in Waste Incineration*

Bonsack P / West Virginia University, USA

*Concentration and Size Distribution of Nanoparticles with Fuels for Advanced Engines*

Vojtisek-Lom M. / University of Liberec, Czech Republic

*Consideration of Congested Urban Traffic in Exhaust Toxicity Assessment*

**COFFEE BREAK**

**16.40 – 17.10**

**Session 3 : Legislation**

**17.10 – 18.30**

Chair: M. Schiess

Steininger N. / European Commission, Brussels, Belgium

*Automotive Particle Emissions: Recent and Upcoming Regulatory Developments*

Mamakos A. / European Commission, Ispra, Italy

*Feasibility of Measuring the Number of sub-23 nm Non-Volatile Particles Following PMP*

Hagen D.E. / MST, USA

*Correlation Between Mean Size and Number- and Mass-Concentrations for Jet Engine Soot*

Vogt R./ Ford Research Center, Aachen , Germany

*PM and PN Emission Modelling: Projection of EURO-6 Impact until 2025*

**APERITIF offered by EXHIBITORS**

**18.30 – 19.30**

## Tuesday Juni 26<sup>th</sup>, 2012

### Session 4a: Instrumentation

08.00 – 09.40

Chair: O. Bischof

Barro Chr. / ETH, Zürich, Switzerland  
*Development and Validation of a Virtual Soot Sensor*

Gysel M. / PSI, Villigen, Switzerland  
*Strengths and Limitations of the Single Particle Soot Photometer (SP2)*

Beck H. / MAN, Nürnberg, Germany  
*Correlation between Pegasor Particle Sensor and Particle Number Counter*

Kittelson, D. / Uni Minneapolis, USA  
*Issues Associated with Solid Particle Measurements*

Keller A. / FHNW, Windisch, Switzerland  
*Measurement of SOA from Wood Burning with a Continuous Flow Photo-Oxidation Reactor*

### COFFEE BREAK

09.40 – 10.10

### Session 4b: Instrumentation

10.10 – 12.10

Chair: H. Burtscher

Lüönd F. / METAS, Bern, Switzerland  
*Aerosolization of Monodisperse Spherical Gold Particles as Aerosol Size Standards*

Shinohara M. / HORRIBA, Kyoto, Japan  
*Influence Factors of NaCl Particles on Calibration of Solid Particle Counting System*

Rongchai K. / University of Cambridge, UK  
*High Temperature Condensation Particle Counter*

Tritscher T. / TSI, Aachen, Germany  
*Introduction and Initial Field Data of a Novel, Portable Nanoparticle Sizing Instrument*

Lavy J. / IFPEN, Lyon, France  
*PM Sensor Development for Diesel Particulate Filter Failure on-board Diagnostic*

Multari A. / MAHA, Haldenwang, Germany  
*Emission Testing at Periodical Technical Inspection on Diesel Passenger Cars*

### LUNCH

12.10 – 13.00

**Session 5a: Health Effects**

**13.00 – 15.10**

Chair: B. Rothen-Rutishauser

Brunekreef B. / University of Utrecht, The Netherlands

*Health Effects of Airborne Ultrafine Particles: Observations from Epidemiology*

Katsouyanni K. / University of Athens, Greece

*Acute Human Health Effects: Epidemiologic Evidence for Relevance of Nanoparticles*

Schins R. / University of Düsseldorf, Germany

*Effects of Subchronic Inhalation Exposure to Diesel Engine Exhaust*

Probst-Hensch N. / Swiss Tropical and Public Health Institute, Basel, Switzerland

*Gene-Air Pollution Interaction and Beyond*

Clift M. / University of Fribourg, Switzerland

*Diesel Exhaust Particles and Human Health; Genotoxicity*

**COFFEE BREAK and  
POSTER SESSION**

**15.10 – 16.10**

**Session 6: Particle Filter Systems**

**16.10 – 18.30**

Chair: A. Mayer

Bhardwaj O.P. / University of Aachen, Germany

*Impact of Biomass-Derived Fuels on Soot Oxidation and DPF Regeneration Behaviour*

Heeb N. / EMPA Dübendorf, Switzerland

*Effects of a Combined DPF-deNO<sub>x</sub> System on Reactive Nitrogen Compounds Emissions*

Littera D.E. / University of West Virginia, USA

*Measurements of PM Emissions in a Dispersing Plume of Heavy-Duty Diesel Truck*

Wolff Th. / DINEX, Gefrees, Germany

*High Porous SiC for Future SCR-F Solutions*

Yamada H. / NTSEL Tokyo, Japan

*PM and PN Emission Histories from HD Vehicle with Periodical Regenerating DPF*

Karjalainen P. / Tampere University of Technology, Finland

*Particle Emission Reduction in a SI-DI Vehicle by Open Channel Filter*

Lauer P. / MAN Diesel & Turbo SE, Augsburg, Germany

*First DPF at a Medium Speed 4-Stroke Diesel Engine on Board of an Ocean Going Vessel*

**DINNER PARTY invited by Sponsors**

**19.00**

**TESTO Poster Award Ceremony**

**Dinner Speaker: Markus Kasper, Matter Aerosol Switzerland**

## Wednesday, Juni 27<sup>th</sup>, 2012

<b>Session 7: Ambient</b>	<b>08.00 – 09.40</b>
Chair: U. Baltensperger	
Angelucci G. / Ufficio Gestione Rifiuti, Bolzano, Italia <i>The Highway as Source of Ultra-Fine Particles in Ambient Air of the City of Bolzano</i>	
Lonati G. / DIIAR, Milano, Italy <i>Daily Patterns of Traffic-Generated Particles and Gaseous Pollutants in Milan, Italy</i>	
Prévôt A. / PSI, Villigen Switzerland <i>Primary Emissions and SOA Formation from Gasoline and Diesel Vehicles and Scooters</i>	
Ragettli M.S. / Swiss Tropical and Public Health Institute, Basel, Switzerland <i>Commute Exposure to Ultrafine Particle in the City of Basel</i>	
Richard A. / FHNW, Windisch, Switzerland <i>Mobile Measurements of PN and PM in 8 Swiss Cities with the MiniDiSC</i>	

### **COFFEE BREAK**

**09.40 – 10.10**

<b>Session 5b: Health Effects</b>	<b>10.10 – 12.30</b>
Chair: P. Gehr	
Oberdörster G. / University of Rochester, USA <i>Effects and Safety Evaluation of Nanoparticles</i>	
Perez L. / Swiss Tropical and Public Health Institute, Basel, Switzerland <i>The Burden of Near-Road Traffic Related Pollution</i>	
Steiner S. / University of Fribourg, Switzerland <i>Effect of a Diesel Particle Filter on Toxicity in Lung Cells in Vitro</i>	
Violi A. / University of Michigan, USA <i>Formation and Uptake of Environmental Nanoparticles</i>	
Walker K. / Health Effects Institute, Boston, USA <i>Ambient Ultrafine Particles and Health</i>	
Fong K. / VERENUM, Zürich, Switzerland <i>Health Effects of Wood Combustion Aerosols</i>	
Künzli N. / Swiss Tropical and Public Health Institute, Basel, Switzerland <i>Introduction to Focus Event</i>	

### **Lunch**

**12.30 – 13.30**

## Focus-Event

13.30 – 15.10

### How to Regulate Ambient Nanoparticles ?

Chair: P. Gehr

Künzli N. / Swiss Tropical and Public Health Institute, Basel, Switzerland

*Introduction: Regulating Ambient Nanoparticles ?*

Krzyzanowski M. / WHO, Bonn, Germany

*The WHO and EU Approach to Revise the EU Air Quality Policies*

Querol X. / Institute of Environmental Assessment and Water Research, Barcelona, Spain

*New Trends in Urban Air Quality Monitoring: Ultrafine Particles and Black Carbon*

Gehrig R. / EMPA Dübendorf, Switzerland

*Measurement Techniques for Fine Particles in Ambient Air*

Bruckmann P. / State Office for Environment, North Rhine Westphalia, Germany

*The Upcoming Revision of the European Air Quality Directives*

### COFFEE BREAK

15.10 – 15.40

### Discussion of Theses

15.40- 17.00

Moderation: P.Gehr

#### Panelists:

Baltensperger U. / PSI, Switzerland

Burtscher H. / FHNW, Switzerland

Bruckmann P. / State Office for Environment, North Rhine Westphalia, Germany

Cassee F. / RIVM The Netherlands

Costa D. / EPA USA.

Gehrig R. / EMPA Switzerland

Konstandopoulos A. / CERT/CPERI, Greece

Krzyzanowski M. / World Health Organization, Germany

Künzli N. / Swiss Tropical and Public Health Institute, Switzerland

Oberdörster G. / University of Rochester U.S.A.

Querol X. / Institute of Environmental Assessment and Water Research, Spain

Strähl P. / Swiss Federal Office for the Environment

### Adoption of Theses

17.00 – 17.30

M.Kasper

*Concluding Remarks: H.Burtscher*

**End of the 16. ETH-NPC**

**17.30**

## POSTERS

### Poster Session 1: Fundamentals

1.	<b>Bireswar P.</b>	<b>Uni Jadavpur India</b>	<i>A Spectroscopic Study of the Nano-Organic Carbon Particles from ISO-Octane Flame and Gasoline Engine</i>
2.	<b>Eggersdorfer M.</b>	<b>ETH Switzerland</b>	<i>Dynamics of Fractal-like Aerosols during Sintering</i>
3.	<b>Salem S.</b>	<b>Uni of Urmia Iran</b>	<i>Evaluation of Green and Blue Nano Cobalt Aluminate Spinel Synthesised by Combustion Method</i>
4.	<b>Phares D.</b>	<b>Uni Southern California, USA</b>	<i>Characterization of Cigarette Smoke Using Chemical Ionization Time-of-Flight Mass Spectrometry</i>
5.	<b>Buha J.</b>	<b>EMPA Switzerland</b>	<i>Emission Monitoring in the Production of SiC Nanoparticles by Induction Plasma Synthesis</i>
6.	<b>Gröhn A.</b>	<b>ETHZ Switzerland</b>	<i>Mass-Mobility Characterization of Flame-Made ZrO<sub>2</sub> Aerosols: the Primary Particle Diameter &amp; Aggregation</i>

### Poster Session 2: Combustion Emissions

7.	<b>Besch M.</b>	<b>Uni West Virginia USA</b>	<i>Real-World Particulate Emissions from a 2010 HD-Diesel Truck Driving Across the United States</i>
8.	<b>Czerwinski J.</b>	<b>AFHB, Biel Switzerland</b>	<i>Nanoparticles in the Exhaust Gas of a Chainsaw</i>
9.	<b>Czerwinski J.</b>	<b>AFHB, Biel Switzerland</b>	<i>Changes of Nanoparticles Size Distributions of 2-Stroke Scooters in Exhaust Gas and CVS-Tunnel</i>
10.	<b>Domínguez-Sáez A.</b>	<b>CIEMAT, Madrid Spain</b>	<i>Evolution of Particle Number and Size Distribution in a Diesel Engine at Different Operating Conditions</i>
11.	<b>Fenkl M.</b>	<b>Uni Liberec Czech Republic</b>	<i>On-road Measurement of Scooter Exhaust Emission</i>
12.	<b>Kireeva E.</b>	<b>Uni Moscow Russia</b>	<i>FTIR Spectroscopy of Diesel and Biofuel Particles in off-road Engine Exhaust</i>
13.	<b>Lappi M.</b>	<b>VTT Finland</b>	<i>Origin of Particle Emissions of a new IMO NO<sub>x</sub> Tier 2 Category Cruising Ship</i>

14.	<b>Leach F.</b>	<b>Uni Oxford England</b>	<i>The Effect of Fuel Volatility and Aromatic Content on Particulate Emissions</i>
15.	<b>Mühlbauer W.</b>	<b>Uni Bayreuth Germany</b>	<i>Investigations of Particles Emitted by a DI Gasoline Engine under Stationary and Transient Conditions</i>
16.	<b>Nakhawa H.</b>	<b>ARAI INDIA</b>	<i>Characterization of Nano Particle Emissions and it's Metrics for Diesel 3-Wheelers</i>
17.	<b>Pechout M.</b>	<b>Uni Liberec Czech Republic</b>	<i>Nanoparticle Emissions from Spark Ignition Engines Powered by n-Butanol Blends</i>
18.	<b>Soylu Seref</b>	<b>Uni Sakarya Turkey</b>	<i>Examining PN Emissions of a Hybrid City Bus under Real World Urban Driving Conditions</i>
19.	<b>Swanson J.</b>	<b>Uni Cambridge England</b>	<i>Size, Charge, and Volatility Characteristics of Particles Generated by a Full Scale Aeroengine Fuel Injector</i>
20.	<b>Tirler W.</b>	<b>Eco-Research Italy</b>	<i>The use of Methane-Hydrogen Mixtures in Buses</i>
21.	<b>Zardini A.</b>	<b>EU-Commission Ispra, Italy</b>	<i>Primary Emissions and SOA from a 2-stroke and a 4-Stroke Scooter with Standard and Alkylate Petrol</i>
22.	<b>Hugony F.</b>	<b>Innovhub-SSI Italy</b>	<i>Nanoparticles Size Distribution in Wood Combustion</i>

#### Poster Session 4: Instrumentation

23.	<b>Fierz M.</b>	<b>FHNW, Windisch Switzerland</b>	<i>A Miniaturized DC Sensor for Personal Exposure Monitoring</i>
24.	<b>Högström R.</b>	<b>MIKES Finland</b>	<i>A Novel Diesel Soot Particle Generator for Calibration Purposes</i>
25.	<b>Jurányi Z.</b>	<b>FHNW, Windisch Switzerland</b>	<i>Development of a Portable Instrument to Determine the Fractal Dimension from Angular Light Scattering</i>
26.	<b>Kraft M.</b>	<b>Uni Cambridge England</b>	<i>An Improved Methodology for Determining Threshold Sooting Indices from Smoke Point Lamps</i>
27.	<b>Nicolet A.</b>	<b>METAS, Switzerland</b>	<i>Nanoparticles Trajectories in an Electrostatic Precipitator: Simulation and Experimental Validation</i>
28.	<b>Rothe D.</b>	<b>MAN Truck and Bus, Germany</b>	<i>Particle Number Counting in Heavy Duty Diesel Exhaust: Routine or Still a Challenge ?</i>
29.	<b>Schlatter J.</b>	<b>METAS Switzerland</b>	<i>Automotive Combustion Particle Metrics: Metrological Implementation within EMRP</i>



30.	<b>Stettler M.</b>	<b>Uni Cambridge England</b>	<i>Evaluation of Uncertainties in Aircraft Engine Soot Emissions Derived from Engine Smoke Number</i>
31.	<b>Jordan-Gerkens A.</b>	<b>PTB Germany</b>	<i>Evaluation of Measuring Methods for Particle Emission from Diesel Vehicles in Periodic Control</i>
32.	<b>Nowak, A.</b>	<b>PTB Germany</b>	<i>Developing a National Standard for Measuring Mass Concentration and Opacity of Soot Particles</i>
33.	<b>Lauer P.</b>	<b>MAN Diesel &amp; Turbo Germany</b>	<i>Correlation of Black Carbon, Filter Smoke Number and Elemental Carbon at Large Marine Engines</i>
34.	<b>Hess A.</b>	<b>EMPA Switzerland</b>	<i>Analysis of Size Distribution and Elem. Composition of Nanoparticles Online Using SMPS and ICPMS</i>
35.	<b>Klein T.</b>	<b>PTB Germany</b>	<i>Generation and Traceable Electron-Microscopic Characterization of Monodisperse Aerosols.</i>
36.	<b>Bergmann A.</b>	<b>AVL Austria</b>	<i>Approaches to Reduce the Cross-Sensitivity in Photo-acoustic Soot Measuring</i>

#### Poster Session 5: Health

37.	<b>Karthikeyan S.</b>	<b>Health Canada Ottawa, Canada</b>	<i>In Vitro - In Vivo Comparison of the Toxicity of Diesel Emission Particles from Biodiesel Blends</i>
38.	<b>Künzi L.</b>	<b>Uni Bern Switzerland</b>	<i>Responses of Lung Cells after Realistic Exposure to Primary and Aged Carbonaceous Aerosols</i>
39.	<b>Okamura K.</b>	<b>Toyota Japan</b>	<i>The Oxidative Potential of Nanoparticles Exhausted from Automobiles</i>
40.	<b>Topinka J.</b>	<b>IEM AS CR Prague Czech Republic</b>	<i>Nanoparticles are not Major Carriers of Carcinogenic PAHs in the Size Segregated Aerosol</i>
41.	<b>Bastian S.</b>	<b>LfULG, Dresden Germany</b>	<i>UFIREG - A European Approach to define Health Impacts of Ultrafine Particles in Urban Ambient Air</i>
42.	<b>Gualtieri, M.</b>	<b>Uni. Milano Italy</b>	<i>Biological Effects of Organic Nanoparticles from Combustion</i>
43.	<b>Hesterberg, W.</b>	<b>Navistar Inc. Chicago, USA</b>	<i>Particulate Matter in New Technology Diesel Exhaust - Different from Traditional Diesel Exhaust</i>
44.	<b>Bunn, W.B.</b>	<b>Navistar Inc. Chicago, USA</b>	<i>A Critical Assessment of Studies on the Carcinogenic Potential of Diesel Exhaust</i>

### Poster Session 6: Particle Filter Systems

45.	<b>Koecks M.</b>	<b>DTI, Aarhus Denmark</b>	<i>Shipboard Characterization of a Wet Scrubber: PN-Concentration, Size and Chemistry</i>
46.	<b>Ruzal M.</b>	<b>Uni Ben-Gurion Israel</b>	<i>A New Agglomeration Methodology for Decreasing Combustion Generated Nanoparticle Emission</i>
47.	<b>Heuss, W.</b>	<b>NGK Europe Germany</b>	<i>The New Particle Filter Concept for Gasoline Engines</i>
48.	<b>Ulrich A.</b>	<b>EMPA Dübendorf Switzerland</b>	<i>Particle and Metal Emissions of Diesel and Gasoline Engines – are DPF/GPF an Appropriate Measure ?</i>

### Poster Session 7: Ambient

49.	<b>Chong U.</b>	<b>Uni Cambridge England</b>	<i>Particle Characterization in London Paddington Train Station</i>
50.	<b>Corradi E.</b>	<b>Uni Basel Switzerland</b>	<i>Correlation between Traffic-Related Ultrafine Particles, Noise and Traffic Flow in the City of Basel</i>
51.	<b>Invernizzi G.</b>	<b>AMAT, Milan Italy</b>	<i>The Black Carbon Monitoring Project of 'Area C', the new Milan City Center Traffic Restriction Zone</i>
52.	<b>Mertes P.</b>	<b>PSI, Villigen Switzerland</b>	<i>Determination of Peroxides and Brown Carbon in Primary and Secondary Organic Aerosol</i>
53.	<b>Schladitz A.</b>	<b>LfULG, Dresden Germany</b>	<i>UltraSchwarz – Ultrafine Particles and Health in the Ore Mountains in Germany and the Czech Republic</i>
54.	<b>Hüglin Ch.</b>	<b>EMPA Dübendorf Switzerland</b>	<i>Impact of Wood Burning Emissions on Carbonaceous Aerosols and PM in Alpine Region</i>
55.	<b>Patel K.</b>	<b>Uni Ravishankar Shukla, India</b>	<i>Black Carbon Emission and Climate Change in Central India</i>
56.	<b>Konstandopoulos, A.</b>	<b>CERTH/CPERI Greece</b>	<i>In-Cabin Nanoparticle Concentration Levels inside a Moving Cabine</i>
57.	<b>Schlatter J.</b>	<b>METAS Switzerland</b>	<i>New Swiss legislation on portable particle counters for construction machinery</i>

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- SÜDCHEMIE Süd-Chemie AG, Bruckmühl, Deutschland
- SUVA Schweizerische Unfallversicherungsanstalt, Luzern, Schweiz
- SWRI South West Research Institute, Sant Antonio, USA
- TEHAG TEHAG AG, Schlatt, Schweiz
- TENNECO Tenneco GmbH, Edenkoben, Deutschland
- TESTO Testo AG, Lenzkirch, Deutschland
- TSI TSI GmbH, Particle Instruments, Aachen, Deutschland
- UGZ Umwelt- und Gesundheitsschutz der Stadt Zürich
- VERT VERT Association for Verification of Emission Reduction Technologies

