

## 8<sup>th</sup> ETH Conference on Combustion Generated Nanoparticles Zurich, 16<sup>th</sup> - 18<sup>th</sup> August 2004

Conference Venue: ETH Hönggerberg

### Agenda of Presentations

<b>Welcome and Introduction</b>	<b>Monday 16.August 2004 - 09.00</b>
K.Boulouchos / ETH –LAV	

<b>Session 1: Regulatory Activities</b>	
Chairman: H. Burtscher	09.10 – 11.00
St.Rodt / UBA <i>All new diesel cars from German manufacturers sold in Germany will have particle filters until 2008/2009.</i>	
A. Ayala / CARB <i>Particulate measurement research in California and the US</i>	
N. Thompson / CONCAWE <i>Overview of the results and conclusions of the EU "Particulates" project</i>	
J.Andersson / Ricardo <i>Progress in the GRPE Particulate Measurement Programme (PMP) – Summer 2004</i>	
Y. Shibata / JPEC (Japan Petroleum Energy Center) <i>The outline of JCAP II research activities</i>	
M. Delisle / SAEFL <i>New particle number limit value for diesel cars in Switzerland</i>	

<b>Organizational Remarks</b>
A.Mayer / TTM

**COFFEE BREAK** **11.00 – 11.30**

<b>Session 2: Formation of Nanoparticles in Combustion</b>	
Chairman: K. Boulouchos	11.30 – 12.50
E. Goos / DLR <i>Sooting premixed C<sub>2</sub>H<sub>2</sub> counter flow flames: measurements and calculations</i>	
L. Jing / Jing-CAST <i>Comparison of PAH in made by propane, gasoline and diesel using CAST</i>	
S. Kubo / Toyota-TCRDL <i>Chemical properties and formation mechanism of volatile nanoparticles from LDV</i>	
C.B. Lee / KATEC <i>Laser Induced 2-D In-cylinder soot measurements</i>	

**LUNCH** **12.50 – 14.00**

<b>Session 3: Particle Emissions of SI-Engines and Oil Combustion</b>	
Chairman: A. Bertola	14.00 – 15.40
J. Czerwinski / AFHB <i>Influences of oil, fuel &amp; catalyst on particle emissions of a DI 2-stroke scooter</i>	
M. Gautam / University West Virginia, <i>Particulate matter emissions from a catalyzed trap equipped CNG-fueled transit bus</i>	
Y. Goto / NTSEL <i>Fine particle emissions from a DI gasoline vehicle with NOx storage catalyst</i>	
R. Kägi / EMPA <i>Single particle analysis of nanoparticles from light oil combustion</i>	
U. Lehmann / EMPA <i>Particle characterization of modern SI and CI passenger cars at low ambient temperatures</i>	

**POSTER SESSION / COFFEE BREAK****15.40 – 17.00**

<b>Session 4: Particle Emissions of Diesel-Engines</b>	
Chairman: St. Kunte	17.00 – 18.40
C.A. Bertoglio / Cam Tecnology <i>Nanoparticulate emissions using Gecam fuel alone and in combination with different DPF</i>	
A.Bertola / ETHZ <i>On-line diagnostics and fast modelling of soot formation / oxidation in Diesel combustion</i>	
M. Claussen / CUTECH-Institut GmbH, TU Clausthal <i>Particle size resolved analysis of PAHs in Diesel soot</i>	
A.G. Konstandopoulos / CERTH/CPERI <i>Effective density and fractal-like dimension of soot particles</i>	
M. Stumpf / University Karlsruhe <i>Soot particle properties in combustion chamber and exhaust – steady and non-steady.</i>	

**APERRO and DINNER****19.00**

Welcoming remarks by Prof. Dr. David Kittelson

<b>Session 5: Health Effects by Combustion Generated Particles</b>	
Chairman: J. Lemaire	<b>Tuesday 17.August 2004 – 08.30</b>
J.-P.Morin / University of Rouen <i>Lung toxicity response due to NO<sub>2</sub>/NO<sub>x</sub> versus particulate matter in vitro and in vivo</i>	
G.Oberdörster / University of Rochester <i>The respiratory tract as a portal for inhaled nano-sized particles</i>	
P.Gehr / University of Berne <i>The fate of nanoparticles after deposition in the lung</i>	
V.Stone / Napier University <i>The effects of ultrafine or nanoparticles on lung cells</i>	
M. Edetsberger / Universität Wien <i>Detection of ultrafine particles in living cells</i>	

**COFFEE BREAK****10.10 – 10.40**

H.-E.Wichmann / GSF-Forschungszentrum für Umwelt und Gesundheit <i>Health risk due to nanoparticles – epidemiological knowledge</i>	
M.Kendall / University Uludag <i>Molecular adsorption at PM-surfaces</i>	
H.Schulz / GSF-Forschungszentrum für Umwelt und Gesundheit <i>Cardiovascular effects of nanoparticles</i>	
M.Gatti / University of Modena <i>Impact on health by nanoparticles created by high temperature explosions</i>	

**LUNCH****12.40 – 13.40**

<b>Mediengespräch</b>	<b>12.45 - 13.45</b>
(Media Information, in German)	

<b>Session 6: Sampling and Conditioning</b>	
Chairman: M. Kasper	<b>13.40 – 15.00</b>
R. Casati / Ford <i>Particle size distributions in diesel exhaust under ambient and laboratory dilution conditions</i>	
T. Kawai / NTSEL <i>Effect of thermal conditioning on nanoparticle measurement</i>	
S. Sasaki / JARI <i>Particle size distribution with partial flow diluter and nuclei mode during the transient cycles</i>	
D.Kittelson / University Minnesota <i>Evaporation of volatile aerosols</i>	

**POSTER SESSION / COFFEE BREAK****15.00 – 16.00**

<b>Session 7: Particle Sensors for Monitoring and OBD</b>	
Chairman: M. Mohr	16.00 – 17.20
W. Schindler / AVL <i>Notes on „soot“ measurement of Diesel engines</i>	
H.Burtscher / FH Aargau <i>Field monitoring of Diesel particulate emissions</i>	
G. Smallwood / NRC <i>Advances In high energy laser diagnostics (HELD) for the measurement of PM</i>	
G.Hauser / Uni.Dresden <i>Smoke particle sensor for on-board diagnoses and high sensitivity measurements</i>	

**COFFEE BREAK****17.20 – 17.40**

<b>Session 8: Calibration and Type Approval</b>	
Chairman: L. Jing	17.40 – 19.00
B. Osmondson, W. Liu. / TSI <i>Traceable calibration of CPC with respect to smallest particle size</i>	
M.Mohr / EMPA <i>Draft for the particle number measurement procedure for regulation purpose</i>	
S. Kunte / ETHZ <i>In-cylinder soot concentration and soot temperature measurements</i>	
E. Zervas / Renault <i>Exhaust gas particle number measurement - round robin test using ELPI</i>	

<b>Session 9: Size Resolved Measurement</b>	
Chairman: O. Bischof	<b>Wednesday 18.August 2004 - 08.30</b>
J. Olfert / University Cambridge <i>Modeling diffusion in an aerosol particle mass (APM) analyzer</i>	
J.B. Kassab / FH Offenburg <i>Sedimentation field flow fractionation for the characterization of soot particles</i>	
V. Niemelä / DEKATI <i>Measuring vehicle exhaust solid and volatile material with real-time mass monitor DMM-230</i>	
K. Takeuchi / RIKEN <i>A new dual-type DMA for the measurement of nanoparticles from engines</i>	

**COFFEE BREAK****09.50 – 10.20**

<b>Session 10: Diesel Engine Exhaust Gas Aftertreatment</b>	
Chairman: A. Mayer	<b>10.20 – 12.00</b>
A.D. Bugarski / University Pittsburgh <i>Characterization of diesel aerosols in underground metal mines</i>	
I.G. Lim / University Myong-Ji <i>Introduction of DPF S-Cube by volumetric filtration and active regeneration</i>	
P. Richards / OCTEL <i>DPF/FBC systems to reduce both PM and NO<sub>2</sub></i>	
Z. Stepien / Institute of Petroleum Processing Krakow <i>Evaluation methods for passive regeneration of particulate filters for the city bus</i>	

**LUNCH****12.00 – 13.00**

<b>Session 11: Particles in Ambient Air</b>	
Chairman: U. Baltensperger	<b>13.00 – 14.40</b>
F. Arnold / MPIK Heidelberg <i>New measurements of gaseous and ionic precursors of combustion generated particles</i>	
M. Rossi / EPFL <i>Interaction of H<sub>2</sub>O vapour with flame soot in the range 193-300K: the role of fuel sulfur</i>	
G. Schweiger / Ruhr-University <i>Detection and quantification of carbonaceous particles in ambient air</i>	
T. Takada / JPEC (Japan Petroleum Energy Center) <i>Roadside observations of chemical composition and size distribution of fine particles</i>	
E. Weingartner / PSI <i>Aging processes of soot particles in the atmosphere</i>	

**Closing Remarks by H.Burtscher**

## POSTERS

	Author	Affiliation	Subject
1.	Dörr H.	Uni Karlsruhe	<i>Particle mass spectrometry and laser diagnostics applied to iron oxide nanoparticle formation – a kinetic study</i>
2.	Ebnetter D.	UMTEC	<i>Behaviour of an electrically regenerated particulate filter system on a wheel loader</i>
3.	Edetsberger M	Uni Wien	<i>Detection of ultrafine particles in living cells</i>
4.	Forss A.M.	EMPA	<i>Desulfurization events of oxidation catalysts from light duty diesel vehicles identified by time-resolved SO<sub>2</sub> measurements with chemical ionization mass spectrometry</i>
5.	Gerhart Chr.	Grimm	<i>Concept of a fast Measuring Aerosol Spectrometer for the range from 4 to 400 nm (Grimm TR-DMPS 5.600)</i>
6.	Graham L.A.	Environnement Canada	<i>Chemical and physical characterization of particulate matter emissions from stationary combustion sources</i>
7.	Heiden B.	TU Graz	<i>Nanoparticle Formation as a Function of different Concentrations</i>
8.	Heller F.	ETHZ	<i>Magnetic quantification of road traffic pollution in atmospheric particulate matter</i>
9.	Hillemann	TU Dresden	<i>Applying SMPS to hot exhaust gases for the evaluation of diesel particle filters</i>
10.	Johnson T.	TSI	<i>Mobile Measurements Using an EEPS Spectrometer</i>
11.	Kasper M.	Matter Engineering	<i>CAST – Combustion Aerosol Standard: Principle and New Applications</i>
12.	Khalek I.	SWRI	<i>Solid and Total Exhaust Particle Mass, Size, and Number Emissions from a Diesel Powered Generator</i>
13.	Kittelson D.	Uni Minnesota	<i>Particle sensor for Diesel combustion monitoring</i>
14.	Kittelson D.	Uni Minnesota	<i>On-Road Exposure and Emission Measurements</i>
15.	Konstandopoulos A.G.	CERTH/CPERI	<i>Design and evaluation of a selective particle size sampler for continuous delivery of different size ranges of diesel exhaust particles for health effect studies</i>
16.	Lappi M.	VTT	<i>Particle sizing and number measurement with EEPS, ELPI, SMPS and CPC techniques</i>
17.	Lim I.G.	Uni Myong-Ji	<i>Introduction of DPF S-Cube by volumetric filtration and active regeneration</i>

18.	Messerer A.	Uni München	<i>New strategies for emission reduction of HD vehicles</i>
19.	Metz N.	BMW	<i>Nanoparticles from Combustion Processes In situ, in the ambient air and in the respiratory system</i>
20.	Pétermann J.L.	AFHB	<i>Particle Emissions of a TDI-Engine with different lube oils</i>
21.	Pétermann J.L.	AFHB	<i>Influences of Oil, Fuel &amp; Catalyst on Particle Emissions of a DI 2-Stroke Scooter</i>
22.	Ebener St.	CORNING	<i>Technologies for Emission Reduction of On-road HDV and Offroad-machines</i>
23.	Sandbach E.	AEA	<i>Preliminary Assessment of the Matter Engineering Rotating Disk Diluter Type MD19-2E</i>
24.	Schlatter J.	METAS	<i>A New Approach to a primary Standard for Particle Number Concentration</i>
25.	Schlatter J.	METAS	<i>Calibration Concepts for Particle Concentration Measurement at Vehicles – a Comparison</i>
26.	Schmatloch V.	EMPA	<i>Particle separator for small heating appliances: characterisation, field tests and future potential</i>
27.	Schraml St.	ESYTEC	<i>Performance of the LI<sup>2</sup>SA-Soot-Sensor for ultra-low concentration levels in comparison to conventional PM measurement methods</i>
28.	Sgro Lee Anne	Uni Napoli	<i>Combustion Generated Particles Below and Above 10 nm</i>
29.	Smallwood G.	NRC	<i>Application of Auto-compensating Laser-Induced Incandescence (AC-LII) to measure Particulate Emissions</i>
30.	Staffan Sjögren	PSI	<i>Equilibrium times for hygroscopic growth of submicrometer aerosol</i>
31.	Straehl P. Dr.	BUWAL	<i>Air Pollution and Cancer in Switzerland</i>
32.	Tikkanen J.	Dekati	<i>ELPI in the Automotive Market</i>
33.	Uhrner U.	Ift Leipzig	<i>Dilution and Transformation Processes of Particulate Emissions in a Car Exhaust Plume</i>
34.	Ulrich A.	EMPA	<i>Sampling and Analysis of Trace Elements Emitted by Diesel Vehicles</i>
35.	Van Ekeren J.	PSI / FHA	<i>Measurements at an alpine site with a new CCN counter</i>
36.	Wahl C. Dr.	DLR	<i>Nanoparticle Emissions of a small Piston Engine Powered Aircraft</i>
37.	Zervas E.	Renault	<i>Exhaust gas particle measurement: evaluation of an improved gravimetric method.</i>

## **Sponsors**

- AIRMEEX Vigneux, France
- AKPF Arbeitskreis der Partikelfilter Hersteller
- ARVIN MERITOR Hannover, Deutschland
- BAUMOT Fehralt Dorf, Schweiz
- BEKAERT Waregem, Belgien
- BFE Bundesamt für Energie, Bern, Schweiz
- BUWAL Bundesamt für Umwelt, Wald und Landschaft, Bern, Schweiz
- CORNING Corning Environment Technologies, Wiesbaden, Deutschland
- DEKATI Tampere, Finnland
- DINEX Middelfart, Dänemark
- ENGELHARD CTK Abgastechnik, Eltville, Deutschland
- EV Erdöl-Vereinigung, Zürich, Schweiz
- GILLET Heinrich Gillet GmbH & Co.KG, Edenkoben, Deutschland
- HJS Fahrzeugtechnik GmbH & Co, Menden, Deutschland
- HUG Hug Engineering SA, Rätterschen, Schweiz
- HUSS Huss Umwelttechnik GmbH, Nürnberg, Deutschland
- IVECO IVECO Motorenforschung AG, Arbon, Schweiz
- JM Johnson Matthey, Sulzbach/Taunus, Deutschland
- LIEBHERR Liebherr Machines, Bulle, Schweiz
- OCTEL Octel Deutschland GmbH, Herne, Deutschland
- PSA PSA Peugeot Citroën, La Garenne-Colombes, France
- SENSORS Sensors Europe GmbH, Ratingen, Deutschland
- SHELL Shell Switzerland, Baar, Schweiz
- TSI TSI GmbH, Particle Instruments, Aachen, Deutschland