

7th ETH Conference on Combustion Generated Nanoparticles Zurich, 18th - 20th August 2003

ETH-Zentrum (main building) HG F7

Final Agenda of Presentations

K.Boulouchos / Professor ETH -LAV <i>Welcome and Introduction</i>	09.00 - 09.15
A.Mayer / TTM <i>Conference Organization</i>	09.15 - 09.30

Session 1: Milestones and Status of Current International Research Projects Chairman: C.-D.Schegk	
18.8.2003	09.30 - 11.00
G.Bélot / PSA Peugeot Citroën <i>More than half a million ultra clean PSA Diesel vehicles with FAP in the field</i>	Keynote
Z.Samaras / Aristotle University / Thessaloniki <i>Overview of the EU DG TREN particulates project</i>	
A.G.Konstandopoulos / CERTH/CPERI, Thessaloniki <i>The Diesel exhaust aftertreatment (DEXA) cluster of the EU growth program</i>	
M.Dunne / DFT, London <i>The GRPE-Particulate Measurement Program PMP: Phase 2 conclusions and outlook</i>	

Coffee Break (Floor D)

11.00 - 11.30

Session 2: Formation of Nanoparticles Chairman: K. Boulouchos	
18.8.2003	11.30 - 12.50
F.Yu / Atmospheric Sciences Research Center ASRC, University of Albany <i>The combustion-generated volatile "nanodroplets": what controls their formation and concentration?</i>	
T.Kawai, Y.Goto, M.Odaka / National Traffic Safety and Environment Laboratory, Japan <i>Research on generation process of nanoparticles in Diesel engine exhaust pipe</i>	
U.Mathis / EMPA, Dübendorf <i>Effect of organic vapour in diesel exhaust on nanoparticle formation</i>	
H.Burtscher, U. Baltensperger, A. Kasper / FHA, Windisch <i>Monitoring adsorption and desorption of volatile material on combustion particles</i>	

Lunch (Mensa)

12.50 - 14.20

Session 3: Sampling and Conditioning		
Chairman: M. Kasper		
18.8.2003		14.20 – 16.20
H.Bergman, J.Ström / Royal Institute of Technology, Stockholm. <i>Laboratory tests of the rotating disc dilutor: theoretical and observed transfer efficiencies</i>		
Y.Goto, T.Kawai / National Traffic Safety and Environment Laboratory, Japan <i>Dilution process of fine particles by means of thermodiluter</i>		
E.Lamminen, J. Tikkanen, P.Mikkanen, J.Ojanen / DEKATI , Tampere <i>Sampling parameter effect on the particle size distribution during controlled dilution</i>		
D.Kittelson, M.Stenitzer / University of Minnesota, Minneapolis, Technische Universität Wien <i>A new catalytic stripper for removal of volatile particles</i>		
M.Fierz, H.Burtscher / FHA, Windisch <i>Separation of solid and volatile fraction by thermodesorption and hot dilution</i>		
I.A.Khalek / SWRI, San Antonio <i>New catalytic stripper system for the measurement of solid particle mass, number, and size emissions</i>		

Coffee Break and

16.20 – 18.00

Poster – Session: List of Posters at the end of this document

Session 4: Measurement and Instrumentation Part 1		
Chairman: H. Burtscher		
18.8.2003		18.00 -19.20
Ch.Gerhart / GRIMM, <i>Field experience with portable SMPS + C system</i>		
N.Metz / BMW, München <i>Criteria for health effects evaluation of diesel particulate matter</i>		
A.Konstandopoulos, E.Kladopoulou, P.Baltzopoulou, S.Skopa, N.Vlachos / CERTH, Thessaloniki <i>Real-time hardware and virtual soot sensors for on-board measurements of diesel particles</i>		
J.Keskinen, A.Virtanen, J.Ristimäki / Tampere University of Technology, Tampere <i>Real time measurement of the effective density and fractal dimension of diesel exhaust particles</i>		

DINNER (Mensa) invited by Sponsors

19.30

List of Sponsors see page 5

Session 5: Measurement and Instrumentation Part 2		
Chairman: U. Baltensperger		
19.8.2003		08.30 - 10.30
T.Johnson / TSI, Minneapolis <i>An engine exhaust particle sizer for transient emission particle measurements</i>		
T.Hands, St.Reavell, N.Collings, C.Nickolaus / CAMBUSTION, Cambridge <i>GDI measurements with a fast particulate spectrometer</i>		
St.Kunte, P.Obrecht, B.Ineichen, C.Cavalloni, D.Karst / ETHZ & KISTLER, Zürich <i>A new sensor for soot measurements inside combustion systems</i>		
A.Keller, A.Hunt, M.Loepfe, P.Nebiker, R.Pleisch, I.Shepherd, H.Burtscher / FHA, Windisch <i>Optical properties of fire-originated aerosols</i>		
M.Kasper / MATTER ENGINEERING, Wohlen <i>Number concentration of non-volatile particles – instrument design study acc. to PMP-conclusions</i>		
M.Mohr, U.Lehmann / EMPA, Dübendorf <i>PMP comparison study of particle measurement systems</i>		

Coffee Break

10.30 - 11.00

Session 6: Particle Emissions of SI-Engines		
Chairman: St. Kunte		
19.8.2003		11.00 - 12.40
G.Martini, P.Bonnel, A.Krasenbrink, G.De Santi / EU Joint Research Centre, Ispra <i>Particulate emissions from mopeds: effect of lubricant and fuel</i>		
J. Czerwinski, P. Comte / AFHB, Biel <i>Limited emissions and nanoparticulates of a scooter with TSDI</i>		
P.Bonnel, G.Martini, A.Krasenbrink, G.De Santi / EU Joint Research Centre, Ispra <i>Effect of motorcycle engine technology upon physical properties of nanoparticles</i>		
A.Kasper, H.Burtscher, D.Kittelton, W.Watts, U.Baltensperger / FHA, UOM, WÄRTSILÄ, PSI <i>Particle emissions from spark ignition engines</i>		
D.Kittelton, W.Watts, J.Johnson, J.Schauer / Universities of Minnesota and Wisconsin <i>Gasoline vehicle exhaust particle sampling study</i>		

Lunch (Sandwiches, Floor D)

12.40 - 13.30

Session 7: Particle Emissions of Diesel Engines and Wood Combustion		
Chairman: Th.Lutz		
19.8.2003		13.30 - 15.10
M.Gautam / West Verginia University <i>PM Emissions from Natural Gas and Catalyzed Trap-Equipped Heavy Duty Diesel Vehicles - Chemical Characteristics and Size Distribution</i>		
U.Kirchner, J.Schneider, N.Hock, S.Weimer, V.Scheer, R.Vogt / FORD, Aachen <i>Mass spectrometric analysis of nanoparticles from diesel exhaust</i>		
A.Bertola, U.Mathis, M.Mohr, K.Boulouchos / ETHZ and EMPA <i>Particulate emissions characterization and combustion analysis by using water-in-diesel-emulsions</i>		
M.Claussen, A.Wollmann / CUTEC, Clausthal-Zellerfeld <i>Particle size and composition measurements at modern engines and aftertreatment systems</i>		
M.Oser, T.Nussbaumer, P.Müller, M.Mohr, R.Figi / VERENUM, EMPA and MÜLLER <i>Particle formation in wood combustion and a new concept for a low-particle-furnace</i>		

Coffee Break

15.10 - 15.30

Session 8: Particles in Ambient Air and Effects on Climate		
Chairman: O. Bischof		
19.8.2003		15.30 - 17.20
A.Prévôt , S.Henne, J.Dommen, N.Bukowiecki , U.Baltensperger / PSI and Oekoscience, Chur <i>Aerosol size distribution and NO_x measurements during and after the Gotthard tunnel shutdown 2001</i>		
D.Imhof, U. Baltensperger, E. Weingartner, R. Gehrig, M. Hill, Villigen and EMPA , Dübendorf <i>In-field verification of PM emission factors of road traffic</i>		
M.Ketzel, P.Wählin, R.Berkowicz, F.Palmgren / NERI, Roskilde <i>Experimental and modeling studies of ultrafine particle concentrations in urban street and background</i>		
Z.Ristovski, G.Gramotnev / Queensland University of Technology, Brisbane <i>Evolution of particle size distribution near a busy road: observation of secondary particle formation</i>		
F.Akermann / AFU Uri Switzerland <i>Monitoring of particles and other pollutants in Swiss valleys under heavy trans-alpine-traffic emission burden</i>		
U.Baltensperger <i>Research on current and future effects of black carbon particles on climate – follow up</i>		

Coffee Break

17.20 - 17.40

Session 9: Diesel Engine Exhaust Gas Aftertreatment and New Emission Limits	
Chairman: A. Mayer	
19.8.2003	17.40 - 19.40
R.Caprotti, I.P.Field / INFINEUM, Abingdon <i>Novel additive for Diesel Particulate Filter applications</i>	
P.Richards, M.Vincent, W.Kalischewski / OCTEL <i>Additional NOx-benefits as a result of using FBC to aid DPF regeneration</i>	
C.Görsmann, A.Walker / JOHNSON MATTHEY, Royston <i>Catalytic coatings for diesel particulate filter regeneration</i>	
A.Messerer, D.Rothe, E.Jacob, C.Knab, U.Pöschl, R.Niessner / TU München, OBERLAND, MAN <i>Soot particle deposition and oxidation in novel catalyst structures</i>	
A.Schäfer-Sindlinger, C.-D.Vogt / NGK Europe, Kronberg <i>Recent trends of filter development for diesel particulate aftertreatment</i>	
M.Delisle / BUWAL, Bern <i>New emission limit philosophy based on total number of solid particles in the size range of 20-300 nm</i>	

DINNER (Mensa) invited by Sponsors

20.00

Sponsors

- ACP Kommission ACP der Schweizerischen Akademie der Naturwissenschaften
- AFU Luzern Amt für Umweltschutz des Kantons Luzern
- AKPF Arbeitskreis der Partikelfilter Hersteller
- AWEL Amt für Umweltschutz des Kantons Zürich
- BFE Bundesamt für Energie
- BP Britisch Petrol
- BUCK Technische Strickereiprodukte BUCK, Bondorf
- BUWAL Bundesamt für Umwelt, Wald und Landschaft
- CORNING Corning Environment Technologies
- ENGELHARD Engelhard Technologies Ltd.
- EV Erdöl-Vereinigung Schweiz
- GRIMM Grimm Aerosol Technik GmbH
- HJS Fahrzeugteile GmbH Menden
- IBIDEN Ibiden France S.A.S.
- LIEBHERR Liebherr Machines Bulle
- ME Matter Engineering
- OCTEL Octel Deutschland GmbH
- PSA Peugeot Swiss S.A.
- SHELL Shell Switzerland
- TSI TSI GmbH, Particle Instruments

Session 10: Workshop on Health Effects by Combustion Generated Particles

Experts of different disciplines of health effects research comment to the following 3 questions, which are decisive for future engine development as well as development of exhaust aftertreatment and emission metrology

- Priority on ultrafine number < 300 nm or mass PM_{2,5} or all particles ?
- Priority on solid or volatile or all particles ?
- Priority on elemental carbon or all substances emitted as particles ?

Concept and organization in cooperation with Dr.M.Constantini/HEI and Prof.P.Gehr/Berne

Chairman: J. Lemaire

20.8.2003

8.30 – 10.20

A.Peters, H.E.Wichmann / GSF, München
Health effects of fine and ultrafine particles in epidemiological studies

J.Heyder / GSF, München
Particle dosimetry

WD.Bennet, J.S.Brown, K.L.Zeman / Center for Env. Medicine, University of North Carolina
Ultrafine particle deposition and clearance in the healthy and obstructed lung

P.Gehr, M.Geiser, S.Schürch, B.Rothen, N.Kapp / University Bern
How ultrafine particles may interact with pulmonary cells

W.G.Kreyling / GSF, München
Translocation of ultrafine solid combustion particles into the vascular and the central nervous system

Coffee Break

10.50 – 12.20

K.Savela, S. Pahjola, FIOH Helsinki
Exposure to polycyclic aromatic hydrocarbons derived from vehicle air pollutants in work environment and bronchus epithelial cell line (BEAS-2B)

J.-P.Morin, S.Loriot, A.Bion, M.Fall, F.Gouriou, F.Dionnet / INSERM, Rouen and CERTAM
Methodologies for the valuation for cardiorespiratory impact of complex aerosols: application to combustion emission aerosols.

A.Duschl / University Salzburg
Diesel exhaust compounds affect regulatory mechanisms of the immune system

M.Costantini / Health Effects Institute, Boston
Epidem.and toxicol.studies with particular focus on the role of composition of UF-particles

Discussion - Conclusions

12.20 – 12.50

Posters

Ayala A.

R.Okamoto, N.Kado, M.Gebel, P.Rieger / CARB, Universities of Connecticut and California
CNG and Diesel transit bus emissions in review

Bosteels D.

R.A. Searles, J.D. Anderson, C.A.Jemma AECC and RICARDO
Particle emissions from a EU III HD Diesel engine with a catalyst-based Diesel particulate filter and a selective catalytic reduction system

Bukowiecki N.

J. Dommen, A. Prévôt, W. Weingartner, U. Baltensperger, PSI, Villigen
Nanoparticles in the Zurich-area. An assessment of the spatial and temporal distribution

Gautam M.

Wind tunnel studies on size distribution and concentration of PM emissions in the plume of a class-8-diesel truck - absence of nanoparticles

Gautam M.

Parametric studies on the formation of Diesel particulate matter

Gehrig R.

M. Hill, U. Baltensperger, E. Weingartner, D. Imhof, EMPA, Dübendorf, PSI, Villigen
In field verification of PM-emission factors of road traffic: combustion particles versus abrasion and resuspension particles

Gidhagen L.

Ch. Johansson, J. Langner, G. Olivares / SMHI and ITM
Monitoring and modelling of ultrafine particles in a street canyon in Stockholm, Sweden

Gibbs R.

T. Lanni, B. Frank, S. Tang, NYS/DEC Bureau of Mobile Sources, New York
Ultrafine Particulate emissions from CNG and Clean Diesel Buses

Jing L. / METAS

CAST soot generator for liquid fuel

Khalek I.

B. Cantrell, M. Spears, SWRI, San Antonio, US-EPA
Particulate matter mass measurements from a heavy duty Diesel engine using 2007 CVS PM sampling in parallel to QCM and TEOM

Khatchikian P. / BOSCH

Influence of injection pressure on particle size distribution and number concentration

Kostoglu M.

A. Konstandopoulos, CERTH/CPERI, Thessaloniki
Modelling of diesel particle size distributions with oxidative fragmentation and coagulation

Legerer F. / AKPF

AKPF (Arbeitskreis Partikelfilter / Association of Key People in Filtertechnology), a task force invaluable to DPF industry

Legerer F.

A. Mayer, AKPF, TTM
VERT-verification of particulate trap systems in Switzerland and efforts for worldwide harmonization

Legerer F. / AKPF

Conflicting Requirements in DPF-Design

Legerer F. / AKPF

Spectra and Correlation of Second Order for Automatic Control

Mayer A..

Th.Lutz, Chr. Lämmle, F.Legerer / TTM, ETH, EMPA
Intake throttling, a very effective tool for trap regeneration

Posters (continued)

Mayer A.

A.Hebert, J. Czerwinski, J.-L. Pétermann / TTM, CARB, AFHB
Particle emission of HD-2-stroke engines and reduction strategies for transit bus applications

Morin J.-P.

S.Loriot, F.Anselme, J.-P.Henry, F.Dionnet / INSERM and CHRU, Rouen and CERTAM, St.Etienne
Electrocardiographic changes during inhalation exposure to diluted Diesel engine emissions in a rat model or myocardial infarction (MI)

Nibbrich B.

A. Wiederkehr
Elimination of ultrafine particles by oxidation on Diesel catalysts

Niemelä V.

M. Moisio, U. Lehmann, DEKATI, Tampere
Mass monitor and fine particle sampler in vehicle PM emission measurements

Petzold A.

M. Schönlinner, E. Weingartner, DLR, Oberpfaffenhofen
Multi-angle absorption photometry - a new method for the measurement of aerosol light absorption and atmospheric black carbon

Rippe A. / CORNING Wiesbaden

Different technologies for reduction of emissions in commercial vehicles

Schlatter J. / METAS

Calibration of instruments for particle measurements - chain of traceability

Schlatter J. / METAS

Calibration of SMPS with particles from CAST

Schmatloch V. / EMPA Dübendorf

Particle Separator for Small Furnaces

Sommer R.

S. Schraml, A. Leipertz, University Erlangen Nürnberg, ESYTEC
Determination of soot primary particle size distribution with laser-induced incandescence soot analyser

Stein H.

J. Krahl, A. Munack, M. Dutz, O. Schröder, M. Specht, E. Capan
Particle Emissions with Diesel Fuel (DK) and Biodiesel (RME)

Tetsuya Yamashita / JCAP

Comparison of the measured values from the same emission source obtained by using various measurement instruments

Ulrich A.

A. Wichser, EMPA, Dübendorf
Determination of additive metals in fuel and emissions of diesel vehicles

Viereck V.

Carli St. / VW
Influence of compressed air quality on CAST performance

Wahl C.

M. Kapernaum, M. Aigner, DLR Stuttgart
Validation of soot measurement technique

Weingartner E.

U. Baltensperger, A. Hannemann, H. Saathoff, M. Schnaiter, PSI Villigen, FZK
Calibration of aethalometers with different soot aerosols

Wyser M.

A. Mayer, J. Czerwinski, BUWAL, TTM, AFHB
VERT - certified Particle Filter Systems

Posters (continued)

Zahoransky R.

E. Laile, S. Kerzenmacher, J. Kassab, D. Henneke, FHS Offenburg

On-line particle emission analysis on the CAST burner using LPME (Long Path Multiwave-length Extinction)

Zürcher M. / UMTEC, University of Applied Sciences Rapperswil

Operational experiences with particulate traps under real conditions