

18th ETH Conference on Combustion Generated Nanoparticles
The Swiss Federal Office for the Environment is Patron of this Conference
 Zurich, June 22nd – 25th, 2014

Conference Venue: Zürich ETH Zentrum, Main Building, HG E7
 Welcome-Party 22nd June, 7.00 pm Alumni Pavillon invited by VERT-Association
 Conference Registration Monday 23rd June 7.30 am
www.nanoparticles.ethz.ch



Agenda of Presentations

Monday June 23rd 2014

Welcome	09.00-09.20
Boulouchos K. / ETHZ Switzerland <i>Welcome</i>	
Barro Chr. / ETHZ, Switzerland <i>Housekeeping</i>	

Opening Address	09.20-09.30
Guzzella L. / Rector ETHZ, Switzerland	

Key-Lectures	09.30-10.20
Zellner R. / University of Duisburg-Essen, Germany <i>Strategies for Research and Policies to Reduce Health Effects From Fine Particles in Ambient Air</i>	
Mayer A. / TTM, Switzerland <i>Request for BAT-Level of All In-Use Engines – a New Challenge for the OEM</i>	

COFFEE BREAK **10.20 – 10.50**

Session 1: Fundamentals	10.50 – 12.10
Chair: Burtscher H.	
Arnold F. / Max Planck Institute, Germany <i>Combustion mediated Sulfate Nanoparticle Formation at the Tropopause:</i>	
Yamamoto K. / Nagoya University, Japan <i>Size Distribution and Oxidation Rate of Carbon Nanoparticles</i>	
Goudeli E. / ETHZ, Switzerland <i>Coagulation of Fractal-like Aerosols in the Transition Regime</i>	
Kook S. / University of New South Wales, Australia <i>In-Flame Soot Particles in an Automotive-Size Diesel Engine</i>	

LUNCH **12.10 – 13.10**

Session 2A: Combustion Engine Emissions	13.10 – 14.30
Chair: Lutz Th.	
Barro Chr. / ETHZ, Switzerland <i>Soot Reduction Mechanisms Using Post-Injections under Varying EGR Conditions</i>	
Rodriguez F. / Universidad Nacional de Colombia <i>Particle Number Measurements of a CNG Euro VI Bus Operating in Bogotá for Public Transport</i>	
Bielaczyc P. / BOSMAL Poland <i>Particulate Emissions from Passenger Cars with DISI Engines Tested at Sub-Zero Temperatures</i>	
Stettler M.E.J. / University of Cambridge UK <i>Nanoparticle Emissions from Heavy Duty Dual-Fuel Diesel and Natural Gas Engines</i>	

Short Break

Session 2B: Combustion Engine Emissions	14.40 – 16.00
Chair: Barro Chr.	
Vojtišek M. / Czech Technical University <i>Measurement of Particle Emissions from Small Engines During Real World Operation</i>	
Di Iorio S. / Istituto Motori CNR, Italy <i>Experimental Investigation of Ethanol-Gasoline Dual-Fuel on Particle Emissions of a Small Engine</i>	
Karjalainen P. / Tampere University, Finland <i>Exhaust Particles Formed During Engine Braking of GDI Vehicles</i>	
Khalek I.A. / SWRI, USA <i>Solid Particle Number and Size and Ash Emissions from Vehicles During Engine Start-Up</i>	

**COFFEE BREAK and
POSTER SESSION****16.00 – 17.20**

Session 2C: Combustion Engine Emissions	17.20 – 18.40
Chair: Czerwinski J.	
Kittelson D. / University of Minnesota, USA <i>Nanoparticle Emissions from a Second Generation Biofuel: DME</i>	
Brem B. / EMPA, Switzerland <i>Variability in non-Volatile Particulate Mass and Number Emissions of Aircraft Turbine Engines</i>	
Liati, A. / EMPA, Switzerland <i>Electron Microscopic Analysis of Metal-bearing Particle Emissions from Diesel Engines</i>	
Okamura K. / Toyota, Japan <i>Chemical Composition of the Size-Classified Nanoparticle Exhausted from Gasoline Vehicle</i>	

APERITIF offered by EXHIBITORS**18.40**

Tuesday June 24th, 2014

Session 3: Instrumentation	08.00 – 09.20
Chair: Bischof O.	
Hagen D. / Missouri University USA <i>PM Line Loss Correction without Direct Size Measurement</i>	
Hess A. / EMPA, Switzerland <i>On-Line SMPS-ICPMS Coupling for Simultaneous Analysis of Nanoparticles</i>	
Yamada H. / NTSEL, Japan <i>Measuring Particles Less than 23 nm Using PMP Methodology</i>	
Keller A. / FHNW, Switzerland <i>SOA - from Wood Burning Appliances in a Simplified Total Carbon Measurement</i>	

COFFEE BREAK**09.20 – 09.50**

Session 4 A: Ambient	09.50 – 11.10
Chair: Heeb N.	
Hosseini Vahid / Sharif University, Tehran <i>Tehran Air Pollution with Respect to Particles: Problem and Mitigating Solutions</i>	
Lohmann U. / ETHZ, Switzerland <i>Climate Effects of Black Carbon Aerosols</i>	
Leskinen A. / Finnish Meteorological Institute <i>Aging of Diesel Engine Exhaust, Pellet Boiler Exhaust and their Mixture</i>	
Meier R. / Swiss Tropical and Public Health Institute <i>Indoor and Outdoor Concentrations of Ultrafine Particles, $PM_{2.5}$, $PM_{absorbance}$ and NO_2</i>	

Short Break

Session 4 B: Ambient	11.20 – 12.20
Chair: Schegk C.-D.	
Müller M.D. / EMPA, Switzerland <i>Modelling Ultrafine Particle Number Concentration in Zurich with High Spatio-Temporal Resolution</i>	
Seipenbusch M. / TU Karlsruhe, Germany <i>Interdependence of Particle Number Conc. and $PM_{2.5}$ in Highly Polluted Urban Atmospheres</i>	
Zotter P. / PSI, Switzerland <i>^{14}C-based Source Apportionment of Carbonaceous Aerosols in Switzerland for 2008 – 2012</i>	

LUNCH**12.20 – 13.20**

Session 5 Aftertreatment	13.20 – 15.20
Chair: Mayer A.	
Deinlein R. / DINEX, Germany <i>Dual Layer Coated High Porous SiC for SCR Integration into DPF</i>	
Tartakovsky L. / Technion Israel <i>Analysis of Ultrafine Particle Emissions by In-Use Buses of Different Generation in Tel Aviv</i>	
Konstandopoulos A.G / CPERI/CERTH, Greece <i>Asymmetric and Variable Cell Geometry Diesel Particulate Filters</i>	
Kureti S. / University of Freiberg, Germany <i>Soot Oxidation on Manganese Oxide Catalysts in Diesel and Gasoline Exhaust Gas</i>	
Kato K. / NGK, Germany <i>Advanced Catalyzed Gasoline Particulate Filter to Fulfill Future Emission Targets</i>	
Pieber S.M. / PSI, Switzerland <i>Catalytic Reduction of VOCs from Wood Burning Emissions</i>	

**COFFEE BREAK and
POSTER VOTING SESSION**

15.20 – 16.40

Session 6 A: Health Effects	16.40 – 18.30
Chair: Gehr P.	
Von Garnier Chr. / Inselspital Bern, Switzerland <i>Health Effects of Nanoparticles in Susceptible Persons</i>	
Gerlofs-Nijland M. / RIVM, The Netherlands <i>Health Effects of Combustion Sources in Perspective</i>	
Amini H. / Kurdistan University of Medical Science, Iran <i>Estimating Spatial Variability of Ambient Particulate Matter Using Land-use Regression in Tehran</i>	
Weise F. / NMI, Reutlingen, Germany <i>Toxic Effects of Nanoparticles from Biomass Combustion</i>	
Violi A. / University of Michigan USA <i>How Chemical Composition of Nanoparticles Affects Interactions with Biological Systems</i>	
Mayer A. / TTM Switzerland <i>PN versus PM: which Metric for Emission Limits and Air Quality Limits</i>	

DINNER PARTY invited by Sponsors

19.00

Dinner Speaker: Künzli N.

Wednesday, June 25th, 2014

Session 6 B: Health Effects	08.00 – 09.50
Chair: Rothen-Rutishauser B.	
Geiser M. / University of Bern, Switzerland <i>Responses of Healthy and Diseased Airway Epithelia to Aged Aerosols from Wood Combustion</i>	
Heeb N. / EMPA, Switzerland <i>Catalysis – a Key Property of Diesel Particle Filters to Lower Emissions of Genotoxic Compounds</i>	
Steiner S. / Adolphe Merkle Institute, Fribourg, Switzerland <i>In-vitro Genotoxicity of Diesel Exhausts: Impact of Filtration and Catalysis</i>	
Zarcone M. / Leiden University Medical Center and TNO, The Netherlands <i>Development of an Innovative in Vitro Inhalation Model for Studying the Effects of Diesel Exhaust</i>	
Peters A. / Helmholtz Zentrum München, Germany <i>Health Effects of Ambient Ultrafine Particles – Do we know enough?</i>	

Poster Award Ceremony	09.50 – 10.10
Lutz Th.	

COFFEE BREAK**10.10 – 10.40**

Session 7: Legislation	10.40 – 12.20
Chair: D'Urbano G.	
Künzli N. / Swiss Tropical and Public Health Institute <i>New Proposal of Swiss FCAH on how to Regulate Ambient Particulate Matter (PM)</i>	
Leuenberger Chr. / LEUPRO, Switzerland <i>Legislation Towards Risk-based Ambient Air Quality Standards</i>	
Acevedo H. / Universidad Nacional de Colombia <i>Bogotá DPF Retrofit Program for the Public Transport Buses Operating at High Altitude</i>	
Van Ham J. / EFCA, Belgium <i>A Fraction-by-Fraction Approach for Particulate Matter</i>	
Nowak A., Andres H.P. / PTB, Germany and METAS, Switzerland <i>Measuring Soot Particles from Engines: Recommendations from EMRP-ENV02 Project in WP1</i>	

Lunch**12.20 – 13.20**

FOCUS-Event

Field Inspection of Vehicle Emissions with Particle Number-based Instrumentation

Focus Event Part 1: PN-PEMS for Vehicle Type Approval	13.30 – 14.30
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Chair: Leuenberger Chr.

Kasper M.
Introduction

Riccobono F. / JRC
How to Extend the Real Drive Emission Test Procedure to Particle Number

Cachón L. / Matter Aerosol AG, Switzerland
The Golden PEMS: Technical Aspects and Outlook

COFFEE BREAK

14.30 – 15.00

Focus Event Part 2 : Portable PN Instrumentation for Field Inspection	15.00 - 16.40
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Chair: Leuenberger Chr.

Krähenbühl S. / Federal Office for the Environment, Switzerland
New Instruments for PN-based Periodic Inspection: Results of a First Measurement Campaign

Andres H. / METAS, Switzerland
Field Measurement Instruments Ordinance: Calibration, Certification, Measurement Cycle

Horn H.-G. / TSI, USA.
Field Measurement, Technical Aspects of the First Generation PN Field Instrument

Fierz M. / FHNW, Switzerland
Towards Hand-Held DPF Inspection

Leuenberger Chr.
Conclusions

Concluding Remarks: Burtscher H.	16.45
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End of the 18th ETH-NPC

17.00

POSTERS

Poster Session 1: Fundamentals

1.	Bhowal Arup Jyoti	Heritage Inst. India	<i>Numerical Investigation of Radiation and Gravity Effect on Soot Formation in a Methane Air Diffusion Flame</i>
2.	Frenzel I.	TU Bergakademie Freiberg, Germany	<i>Study on the Influence of Ethanol on the Soot Formation in Premixed Ethylene Flames</i>
3.	Lee Jeonghoon	Korea University of Technology and Education	<i>Black Carbon and Elemental Carbon Concentrations of Spark-generated Carbon Particles</i>
4.	Lu Xingming	University of Brighton, UK	<i>Understanding the Effects of Precursor Loading Factors on the Morphology of Premixed Flame Synthesized Nanoparticles</i>
5.	Mandal Bijan Kumar	Indian Institute of Engineering Science and Technology, Shibpur	<i>Fuel Dilution and Air-Preheating Effect on Soot Formation in Diffusion Flame</i>
6.	Miller H.	George Washington University USA	<i>Extinction Measurements for Determination of Optical Band Gaps for Soot in Nitrogen-diluted, Ethylene/Air Non-premixed Flames</i>
7.	Olin Miska	Tampere University Finland	<i>Sulfur Driven Nucleation in Diesel Exhaust: Simulations of a Laboratory Sampling System</i>
8.	Rahinov I.	The Open University of Israel	<i>Diagnostics of Combustion Synthesis of Iron Oxide Nanoparticles: from Gas Phase Intermediates to Solid Particulates</i>
9.	Tregrossi A.	CNR Naples Italy	<i>Analysis of Large PAH as Components and Precursors of Nano/Ultrafine Carbon Particulate Matter</i>

Poster Session 2: Combustion Engine Emissions

10.	Badr R'Mili	University Lyon France	<i>Assessment of Particulate Matter Emission from Diesel Vehicles Equipped with DPF and from Gasoline Direct Injection (GDI) Vehicles Using Sampling by TEM Grid Filtration</i>
11.	Bonatesta F.	University of Oxford Brookes, UK	<i>Exploring the Correlation between Soot Number Density and Combustion Duration in a GDI Engine at Part-Load Conditions</i>
12.	Corbin J.C.	ETHZ Switzerland	<i>Mass Spectrometry of Wood-Combustion Soot: Positive Matrix Factorization and Refractory Oxygenated Species</i>
13.	Czerwinski J.	AFHB Switzerland	<i>Nanoparticle Research on Four Gasoline Cars</i>

14.	Durdina L.	EMPA Switzerland	<i>Improved Determination of Soot PM Emissions from Aircraft Turbine Engines Using Effective Density</i>
15.	Gualtieri M.	ENEA-UTTS Italy	<i>Modeling of the Environmental Benefits of a Post-Market Dual-Fuel Kit for Light and Heavy Duty Trucks</i>
16.	La Rocca A.	University Nottingham UK	<i>Nanoparticle Characteristics of Exhaust and Soot-in-Oil from Gasoline Direct Injection Automotive Engines</i>
17.	Miklánek L.	Czech Technical University	<i>Size Distribution of Particles from a Diesel Direct-Fired Heater</i>
18.	Mühlbauer W.	BERC Bayreuth Germany	<i>Influence of Different Diesel Fuels under Variation of Injection Pressure and Boost Pressure on Combustion and on Physico-Chemical Properties of Engine-out Soot Emissions</i>
19.	Pielecha J.	Poznan University Poland	<i>On-road Particle Emissions of Passenger Cars Using Portable Emission Measurement System</i>
20.	Soylu Seref	Sakarya University Turkey	<i>Examination of the Effects of Basic Vehicle and Engine Operating Parameters on Particle Number Emissions of a City Bus</i>
21.	Tartakovsky L.	Technion Haifa Israel	<i>Analysis of Ultrafine Particle Emissions by In-use Buses of Different Generations</i>
22.	Ubogu Emamode A.	University of Sheffield UK	<i>Evaluating The Effects of Effective Density Measurements on Particle Mass Emissions from a Gas Turbine</i>
23.	Wahl C.	DLR-VT	<i>Engine Emission Ground-Tests with Jet A-1 / Farnesane Blends</i>
24.	Yanagisawa Nobuhiro	ISUZU Japan	<i>On-line Measurement of Organic Compounds Adsorbed on Diesel Exhaust Particles by PTR-TOFMS</i>
25.	Zach J.	Fraunhofer Institut Germany	<i>Investigation of Potential Impacts on the Environment During Combustion of Nanomaterial Containing Waste</i>
26.	Zöllner Chr.	BERC Bayreuth Germany	<i>Influence of Engine Operating Parameters on PM Size, Structure and Reactivity</i>

Poster Session 3: Instrumentation

27.	Amanatidis St.	Aristotle University Greece	<i>Estimation of the Mean Particle Size by Sampling in Parallel with Two Pegasor Particle Sensors</i>
28.	Bémer D.	INRS France	<i>Determination of Airborne Nanoparticle Mass Concentration from Number Concentration Using their Effective Density - Application to ELPI Data</i>

29.	Jordan Gerkens A.	PTB Germany	<i>Evaluation of Measuring Methods for Particle Emission from Modern Diesel Vehicles in Periodic Emissions Control – Studies and Results</i>
30.	Karjalainen P.	Tampere University, Finland	<i>Performance Evaluation and Calibrations of two Commercial Exhaust Particle Counters During a Long Operation Window</i>
31.	Kuntze A.	PTB Germany	<i>Characterization of a PTB-Standard for Particle Number Concentration of Soot Particles</i>
32.	Silvis W.	AVL List Austria	<i>Aircraft Gas Turbine Non-Volatile Particle Mass and Number Emissions Measured with an AIR 6241 Compliant System</i>
33.	Lee Chun-beom	Korea Automotive Technology Inst.	<i>Multi-Purpose Novel Exhaust Gas Test Rig (High Temperature Exhaust Gas Simulator and Soot/SOF Generator)</i>
34.	Link O.	TESTO Germany	<i>The testo 380: New Portable Apparatus for Real-Time Gravimetric Measurement of Particulate Matter in the Sub-Micrometer Range</i>
35.	Okuda H.	Shimadzu Japan	<i>Development of a Novel Electro Mobility Analyzer Based on a New Classifying Principle and Applications for Nanoparticles from Different Types of Vehicles Under Various Conditions</i>
36.	Otsuki Yoshinori	HORIBA Germany	<i>Performance of Particle Counting System Utilizing a Commercially Available PMP System</i>
37.	Smallwood G.	National Research Council Canada	<i>Calibration of Black Carbon Real-Time Mass Instruments: Development and Status</i>
38.	Spielvogel J.	Palas Germany	<i>New Certified Optical System for Continuous Ambient Aerosol Monitoring</i>
39.	Stettler M.E.J.	University of Cambridge UK	<i>Aircraft Non-volatile Particle Emissions: Estimating Number from Mass</i>
40.	Tarik Mohamed	PSI, Switzerland	<i>Online Determination of Size Distribution and Elemental Composition of Nanoparticle Aerosols by a Scanning Mobility Particle Sizer Coupled to an Inductively Coupled Plasma Mass Spectrometry (SMPS-ICPMS)</i>
41.	Wang Xiaoliang	Desert Research Institute, USA	<i>A New Inversion Matrix to Improve Engine Exhaust Particle Sizer (EEPS) for Vehicle Emission Measurement</i>

Poster Session 4: Ambient Particle

42.	Krishna Kumar Nivedita	PSI, Switzerland	<i>Effects of Aging on the Optical Properties of Light-absorbing Carbon from Biomass-burning Emissions</i>
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43.	Lonati G.	Politecnico di Milano – DICA, Italy	<i>Ultrafine Particles Generation from Plasma Processing of Graphite</i>
44.	Patel K.S.	Ravishankar Shukla University, India	<i>Carbons and Persistent Organic Pollutants Distribution in Ambient Air of India</i>
45.	Ruprecht A.A.	Tobacco Control Unit; Fondazione IRCCS Istituto Nazionale dei Tumori; Milan, Italy	<i>Comparison between Particulate Matter Mass, Number of Particles, Ultrafine Particle and Black Carbon Emissions by Electronic and Normal Cigarettes in Real-Life Conditions</i>
46.	Ragetti, M.S.	University of Montréal, Canada	<i>Diesel Exposures in Port Workers in Montreal</i>
47.	Stolcpartova J.	Czech Technical University	<i>Locating Urban Hot-Spots with mobile On-line Size-resolved Nanoparticle Measurement</i>
48.	Tartakowski, L.	Technion, Institute of Technology, Haifa, Israel	<i>Effects of Cabin Filter on Ultrafine Particle Concentrations inside Passenger Cars</i>
49.	Uhrner U.	Graz University of Technology, Austria	<i>Inter-regional Air Quality Assessment – bridging the Gap between Regional and Kerbside PM</i>
50.	Väkevä M.	Airmodus, Finland	<i>1-3 nm Particles in Urban Air</i>

Poster Session 5: Aftertreatment

51.	Bugarski A.	NIOSH, Pittsburgh, USA	<i>Fuel Borne Catalysts and Aerosol Emissions Generated by Sinter Metal Filtration DPF System</i>
52.	Feulner M.	BERC Bayreuth	<i>How the Humidity of a DPF Effects the Microwave Based Soot Load Determination</i>
53.	Hohl Y.	LIEBHERR Switzerland	<i>Evaluation of Fuel Quality on New Coating Technology for Advanced Exhaust Gas Aftertreatment</i>
54.	Køcks M.	Danish Technological Institute	<i>Shipboard Characterization of a Particle Filter During Operation: Influence on Particle Number Concentration, Particle Size Distribution and Gas Emissions</i>
55.	Leblanc M.	IFP Energies nouvelles	<i>Characterization of Unregulated Gaseous and Particulate Emissions During Active Regenerations of Diesel Particulate Filters</i>
56.	Markowski J	Poznan University, Poland	<i>Influence of an Oxygen Additive to Jet Fuel on the Particle Emissions from a Small Turbine Engine</i>
57.	Nussbaumer Th.	VERENUM, Switzerland	<i>Monitoring of Electrostatic Precipitators in Automatic Biomass Combustion Plants</i>

58.	Taylor M.	EMINOX	<i>SCRT® Technology and Application. First Experiences with 3rd Generation SCRT® Systems</i>
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Poster Session 6: Health Effects

59.	Kutlar Joss M.	Swiss Tropical and Public Health Inst.	<i>LUDOK – Documentation Database on Air Pollution and Health Research</i>
60.	Topinka J.	University Prague, Czech Republic	<i>Toxicity of Size Segregated Aerosol in the Ambient from Heavily Polluted City of Ostrava, Czech Republic</i>

Poster Session 7: Legislation

61.	Multari A..	MAHA, Germany	<i>OBD vs. Tailpipe Testing - Future Test, Options for Emission Control Systems of Modern In-Use Vehicles</i>
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Instrument and Filter Exhibition

Company

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- TSI TSI GmbH, Particle Instruments, Aachen, Deutschland
- UGZ Umwelt- und Gesundheitsschutz der Stadt Zürich
- VERT VERT Association for Verification of Emission Reduction Technologies

