

21. ETH Conference on Combustion Generated Nanoparticles

Organization: Verein zur Durchführung der ETH-Nanopartikel-Konferenz - CHE-456.865.592
The Swiss Federal Office for the Environment FOEN is Patron of this Conference

Zurich, June 19th – 22nd 2017

Conference Venue: Zürich ETH Zentrum, Main Building, HG E7

Welcome-Party June 19th, 7.00 pm - Faculty Restaurant on top of the ETH Main Building

Conference Registration opens Tuesday June 20th, 7.30 am
www.nanoparticles.ethz.ch

Agenda of Presentations

Tuesday June 20th 2017

Welcome	09.00-09.20
Burtscher Heinz / FHNW, Switzerland <i>Welcome</i>	
Barro Christophe / ETH Zürich, Switzerland <i>Housekeeping</i>	
Opening Address	09.20-09.30
D'Urbano Giovanni / FOEN, Switzerland	
Key Lecture	09.30-10.00
Kadijk Gerrit / TNO, NL <i>High Emission Risks with Highly Effective Emission Control Technology</i>	
COFFEE BREAK	10.00-10.30
Session 1: Ambient Air	10.30 – 12.10
Chair: Hüglin Christoph	
Eeftens Marloes / Swiss Tropical and Public Health Institute <i>Characterizing Real-time Vertical Air Pollution Gradients in an Urban Environment</i>	
Paulson Suzanne / UCLA, US <i>Cross-Intersection Profiles of Ultrafine Particles in Different Built Environments: Implications for Pedestrian Exposure and Bus Transit Stops</i>	
Schripp Tobias / German Aerospace Center, Germany <i>Ambient Ultra-fine Particle Concentration Monitoring During a "Fine dust alert" Event in Stuttgart Focusing on High Size and Time Resolution</i>	
Irwin Martin / Combustion, UK <i>A New Method to Obtain the Black Carbon Mixing State of Biomass and Combustion Aerosols</i>	
Mylläri Fanni / Tampere University of Technology, Finland <i>Total Particle Number Concentration and Particle Size Distribution of Nanoparticles from Real-scale Pulverized Solid Fuel Combustion</i>	

LUNCH**12.10 – 13.20**

Session 2: Fundamentals	13.20 – 14.20
Chair: Burtscher Heinz	
Konstandopoulos Athanasios / CPERI/CERTH, Greece <i>On the Soot Particle Size Distribution Evolution During Oxidative Fragmentation</i>	
Kelesidis Giorgios / ETH Zürich, Switzerland <i>Mobility Size and Effective Density of Soot Nanoparticles</i>	
Arnold Frank / MPI, Germany <i>Nucleation-Particle Formation in Modern Diesel Vehicle Exhaust via Acid-Base Reactions</i>	

Session 3: Aircraft and Airports	14.20 – 15.20
Chair: Rindlisbacher Theo	
Durdina Lukas / EMPA, Switzerland <i>Assessment of Particle Pollution from Jetliners: From Smoke Visibility to Nanoparticle Counting</i>	
Anderson Bruce / NASA, USA <i>Effects of Fuel Composition on Aircraft Particle Emissions: Results from NASA Ground and Airborne Experiments</i>	
Sioutas Constantinos / University Southern California, USA <i>Comparison of Aircraft Emissions from Los Angeles International Airport to Urban Vehicle Traffic Emissions and its Impact on Air Quality in Los Angeles</i>	

COFFEE BREAK**POSTER SESSION: Posters of the Topics 1 ÷ 4****15.20 – 16.30**

Session 4: Non-Road Sources	16.30 – 17.30
Chair: Schegk Claus-Detlef	
Eibl Sebastian / Wehrwissensch. Institut für Werk- und Betriebsstoffe, Germany <i>Formation of Respirable Carbon Fiber Fragments in Carbon Composite Fires</i>	
Jensen Thomas Nørregaard / Danish Technological Institute <i>Characterization of Particle Emissions from Candles</i>	
Køcks Morten / Danish Technological Institute <i>Shipboard Characterization of a Combined Particle Filter and NOx-reducing Technology: Influence on Particle Number Concentration, Particle Size Distribution and Gas Emissions</i>	

APERITIF offered by the EXHIBITORS**from 17.30**

Wednesday, June 21st, 2017

Session 5A: Emission Control of Diesel and Gasoline Engines	08.30 – 09.50
Chair: Czerwinski Jan	
Andersson Jon / RICARDO, UK <i>PN Measurements above & below 23nm</i>	
Barro Christophe / ETHZ, Switzerland <i>Combustion and Emissions Investigations Using OME and Stoichiometric Operation in a Compression Ignition Engine</i>	
Khalek Imad A. / SWRI, USA <i>Particle Number and Ash Emissions from a Heavy Duty Natural Gas and Diesel w/DPF Engines</i>	
Muñoz Maria / EMPA, Switzerland <i>Are GDI Vehicle Exhausts Genotoxic like Non-treated Diesel Exhausts?</i>	

COFFEE BREAK

POSTER SESSION: Posters of the Topics 5 ÷ 7	09.50 – 11.00
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Session 5B: Emission Control of Diesel and Gasoline Engines	11.00 – 12.00
Chair: Barro Christophe	
Czerwinski Jan / AFHB, Switzerland <i>Nanoparticle Emissions of GDI Car with Increased Lube Oil Consumption, Potentials of GPF</i>	
Pieber Simone M. / Paul Scherrer Institut, Switzerland <i>Gas Phase Composition and Secondary Organic Aerosol Formation from Gasoline Direct Injection Vehicles Investigated in Batch and Flow Reactors</i>	
Vojtisek-Lom Michal / Czech Technical University Prague <i>On-road Measurement of Emissions of Reactive Nitrogen Compounds and Greenhouse Gases from Euro 6 Diesel and Natural Gas Vans Using an On-board FTIR</i>	

LUNCH**12.00 – 13.00**

Session 6A: Health Session	13.00 – 14.30
Chair: Gehr Peter	
Künzli Nino / Swiss Tropical and Public Health Institute	Key-Lecture
<i>Ultrafine Particles and Health: Reviewing the Evidence in the Current Policy Context</i>	
Brugge Doug / Tufts University, USA <i>Traffic-related UFP and Cardiovascular Health: Findings from a community-based study in Boston, MA</i>	
Jarvis Ian / King's College, London, UK <i>Genotoxic and Inflammatory Responses of Human Bronchial Epithelial Cells to Diesel and Bio-diesel Exhaust</i>	
Nikitina Liudmila / Medical University, Graz, Austria <i>Nanotoxicology of Human Placenta: Evaluation of Suitable Model for Environmental Toxicity</i>	

Session 7A: Particle Filters	14.30 – 15.50
Chair: Lutz Thomas	
Kureti Sven / University of Freiberg, Germany <i>Soot Oxidation on Manganese Oxide Catalysts in Gasoline Exhaust</i>	
Coplin Nick / ORBITAL Australia <i>Wall-flow Type DPF System to Replace Existing Wet Element Filter Systems Used in Typical LHDs in Underground Coal Operations</i>	
Hosseini Vahid / Sharif University, Iran <i>New-fit Sulfur Tolerant DPF Solution to Meet Iran's New Emission Legislation</i>	
Sappok Alexander / CTS, USA <i>In-Use Particulate Filter State of Health Monitoring: Prognostics and Diagnostics Using Radio Frequency Sensing</i>	

COFFEE BREAK	
POSTER SESSION: Posters of the Topics 8 ÷ 10	15.50 – 17.00

Session 7B: Particle Filters	17.00 – 18.00
Chair: Mayer Andreas	
Wang Yajun / Chinese Research Academy <i>Real World Particle Number Reduction Evaluation under Shenzhen DPF Retrofit Program in China</i>	
Yamamoto Kazuhiro / Nagoya University, Japan <i>Effect of Soot Size on Particle Filtration and Soot Cake Formation in Diesel Particulate Filter</i>	
Jokiniemi Jorma / University of Eastern Finland <i>Novel Electrical Charging Condensing Heat Exchanger for Efficient Particle Emission Reduction and Heat Recovery in Small Boilers</i>	

Aperitif	18.00
DINNER PARTY invited by Sponsors	19.00
Dinner Speaker: Scheck C.-D.	

Thursday, June 22nd, 2017

Session 8: Particle Metrology and Instrumentation	08.30 – 10.10
Chair: Bischof Oliver	
Migliorini Francesca / CNR-ICMATE, Italy <i>Can Black Carbon be defined by the Absorption Properties of Laser-heated Combustion Generated Nanoparticles?</i>	
Keller Alejandro / FHNW, Switzerland <i>FATCAT: New Characterization Method for Particulate Emissions from Wood Burning Appliances</i>	
Khan M. Yusuf / Cummins, USA <i>Comparison of Full Flow Dilution, Partial Flow Dilution, and Raw Exhaust Particle Number Measurements</i>	
Kittelson David / University Minnesota USA <i>Diesel and Gas Turbine Nanoparticle Density Distribution Measurements</i>	
Terres Alexander / BMW Group, Germany <i>Inter-laboratory Comparison of Calibration Aerosols for Engine Exhaust Condensation Particle Counters</i>	

Poster Award Ceremony	10.10 – 10.30
Bischof Oliver	

Troyan Horse Award Ceremony	10.30 – 10.40
Schiltknecht Jacques	

COFFEE BREAK **10.40 – 11.00**

Session 6B: Health Session	11.00 – 12.30
Chair: Rothen-Rutishauser Barbara	
Zimmermann Ralf / JMSC Uni Rostock and Helmholtz-Zentrum München	Key Lecture
<i>Biological effects of emissions from ship diesel, gasoline car-engines and wood combustion: Multi-omics characterization of aerosol-exposed lung cells and chemical profiles of the emissions.</i>	
Baltzopoulou Penelope / APTL/CPERI/CERTH, Greece <i>Cross Evaluating the Effects of a Cerium-Based Diesel Fuel Additive on Exhaust Toxicity with in vitro Air-Liquid Interface Cell Exposure Systems of Different Flow Patterns</i>	
Sorrentino Rosalinda / University of Salerno, Italy <i>Oxidized Ultrafine Particles Induce the Activation of the Inflammasome in Human Peripheral Blood Mononuclear Cells Obtained from Chronic Obstructive Pulmonary Disease Patients.</i>	
Lawrence Alfred / Isabella Thoburn College, India <i>Indoor Air Quality Assessment and Health Impact with Respect to Household Conditions in Urban and Rural Lucknow Houses</i>	

Lunch **12.30 – 13.30**

FOCUS EVENT: Will Diesel Technology Survive?

Introduction and Chair

13.30 – 13.50

Heeb Norbert, EMPA, Switzerland

Blue Technology not green enough: Nitrogen Chemistry of Current On-road DeNO_x-Technologies

Section I: Impact of Current Diesel Technologies

13.50 - 15.10

Alt Gian-Marco	AWEL	<i>Remote Sensing of Diesel and Petrol NO_x Emissions during a Decade</i>
Williams Rod	CONCAWE	<i>Effect of Fuel Properties on Particulate Emissions from Euro4, 5 and 6 Passenger Cars</i>
Hüglin Christoph	EMPA	<i>Effects of traffic related abatement policies on Swiss air quality trends</i>
Bauer Christian	SCCER	<i>The environmental performance of current and future passenger vehicles: Life cycle assessment based on a novel scenario analysis framework</i>

COFFEE BREAK

15.10 – 15.40

Section II: The Future of Diesel Technologies

15.40 – 16.40

Baar Roland	TU Berlin	<i>Diesel, Petrol or Electricity for Future Road Traffic</i>
Stenzel Karsten	WTZ	<i>The green marine engine – A dream or reality?</i>
Kadijk Gerrit	TNO	<i>Investigation into a Periodic Technical Inspection (PTI) test method of Diesel Particulate Filters in light-duty diesel vehicles</i>

Goodbye: Barro, Christophe

End of the 21st ETH-NPC

16.50

POSTERS

Poster Session 1: Ambient Air

1.	Abramesco Viktoria	Technion Israel	A comparative Analysis of Ultrafine Particles air Pollution inside Diesel-Propelled Passenger Trains and Intercity Buses
2.	Afroughi Mohammad Javad	University of Alberta	Tehran UFP Study: Spatial and Temporal Distribution
3.	Arhami Mohammad	Sharif University	Carbonaceous, Organic and Toxic Metals Components of Particles and Their Seasonal Trends in Tehran, Iran
4.	Babu Praveen	Indian Institute of Technology Delhi	Assessment of Respirable Suspended Particulate Matters in an Underground Metro Station Platform in Delhi City, India.
5.	Booker Douglas	NAQTS	Quantifying Solid and Total Particle Number Concentrations from An Array of Vehicles Using the "Plume Chaser Method"
6.	Friebel Franz	ETHZ	CCN-Activation of Soot Particles after Long Term Exposure to Atmospherically Relevant Ozone Concentrations
7.	Lohe Saurabh	IIT Bombay, Mumbai, India	Lung-Deposited Surface Area, Number, Black Carbon and Mass Concentration of PM _{2.5} from Different Kerbside Measurements

Poster Session 2: Fundamentals

8.	Basht Thapa Gunjan	Kathmandu University, Dhulikhel, Nepal	Fast and Efficient Removal of Arsenic through Supercritical Carbon Dioxide Assisted Modified Magnetic Nanoparticles
9.	Ciajolo Anna	istituto ricerche sulla combustione, CNR	Integrated Approach for the Structural Analysis and Sizing of Flame-formed Organic Carbon and Ultrafine Carbon Particles
10.	Contreras Barbosa Yadert	Universidad de los Andes, Bogota	Variation of Number of Particles Distribution by Temperature Effects in an Exhaust of a two-stroke Engine in a High Altitude City
11.	Davis Justin	University Washington	Growth Mechanism for Soot Primary Particles in Recirculating Hydrocarbon Flame

12.	Kelesidis Georgios A.	ETHZ	Optical Properties of Nascent and Mature Soot Aggregates Growing by Agglomeration & Surface Growth
13.	Kelesidis Georgios A.	ETHZ	Agglomerate Structure and Size Distribution in the Transition Regime: The Effect of Primary Particle Polydispersity
14.	Park Wonah	Korea Institute of Machinery and Materials	Effects of Oxygenated Fuels on Soot from Diesel Spray
15.	Shaygani Afshin	Sharif University	Quasi-Smoluchowski Equation and Deposition of Macro-Nano Particles onto a Surface
16.	Sermon Paul	Brunel University	Carbonaceous Combustion-Generated Nanoparticles (PM0.1)
17.	Varghese Gelu	Brighton University	Investigation of the Characteristics of Nanoparticles Emissions from the Small Diesel Engine

Poster Session 3: Aircraft and Airport

18.	Brem Benjamin	EMPA	Variability in Non-volatile Particulate Matter Emissions of Aero Gas Turbines; Engine Deterioration
19.	Durdina Lukas	EMPA	Correlations of Nonvolatile Particulate Matter Mass and Number Emissions and Particle Size with Smoke Number Determined for Commercial Aircraft Jet Engines
20.	Elser Miriam	EMPA	Optical Properties of Black Carbon Particles in Aircraft Engine Exhaust
21.	Moore Richard	NASA	Engine Particle Emission Indices for Aircraft Taking Off at Los Angeles International Airport
22.	Teoh Roger	Imperial College London	Aircraft Black Carbon Particle Number Emissions – New Predictive Method & Uncertainty Analysis
23.	Whitefield Philip	Missouri University	Plume Processing of Soot Aerosol in a Jet Engine Exhaust

Poster Session 4: Non-Road Sources

24.	Jensen Thomas Nørregaard	Danish Technological Institute, Aarhus, Denmark	Characterization of particle emissions from candles
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25.	Køcks Morten	Danish Technological Institute, Aarhus, Denmark	Shipboard characterization of a combined particle filter and SCR system: Influence on particle number concentration, particle size distribution and gas emissions
26.	Kuittinen Niina	Tampere University of Technology	Number and Characteristics of Particles Emitted from a Marine Engine Using Different Fuels
27.	Pratte Pascal	Philip Morris International	Solid Particle Investigations in the Mainstream of 3R4F Reference Cigarettes, and the Tobacco Heating System THS2.2 and Commercial Cigarettes
28.	Setyan Ari	EMPA	Dynamic Properties of Exhaled e-Cigarette Aerosol vs. Conventional Cigarette Smoke
29.	Vojtisek-Lom Michal	Czech Technical University in Prague & Technical University of Liberec	On-track Measurements of Exhaust Emissions from Diesel Motorized Car and Locomotives During Line-haul passenger Service
30.	Zardini Alessandro	European Commission	Exhaust Emissions from Small Utility Engines: Effect of Different Fuels and Lube Oils

Poster Session 5: Emission Control of Diesel and Gasoline Engines

31.	Bagheri Mehdi	Technical University of Berlin	Simultaneous Application of Exhaust Gas Recirculation and non-constant Injection Rates to reduce NOx and Soot Emissions in Diesel Engines
32.	Bleicker Dirk	CARIT Automotive GmbH & Co. KG	Increased Exhaust Aftertreatment Availability and Efficiency by User Friendly Data Logging and Communication
33.	Brough Robert	University of Nottingham	Structure Analysis of Primary Carbon Nanoparticles from a Modern Turbo-charged Direct-injection Gasoline Engine
34.	Cha Junepyo	Korea National University of Transportation	Evaluation of Real Driving Emissions Characteristics with Light Duty Vehicles on Domestic Sales
35.	Czerwinski Jan	AFHB	Nanoparticle Emissions from Gasoline Cars DI & MPI
36.	Keller Alejandro	University of Applied Sciences Northwestern	High Time-resolved SOA-formation Potential of Emissions from GDI engines

37.	Kim Kangjin	University Korea	Size-resolved Nanoparticle and Hazardous Air Pollutants (HAPs) Emissions Characteristics with Low-, Medium-, and High-proportion of Ethanol Contents Fuels from a Direct Injection Spark Ignition (DISI) Vehicle
38.	Koczak Justin	University of Michigan	Morphology and Nanostructure of Size-Selected Ultrafine Particles Emitted by a Gasoline Direct Injection Engine
39.	Muñoz Maria	EMPA	Effect of two Oxygenated Fuels on Genotoxic Emissions of GDI Vehicles
40.	Oles Jan Piotr	University of Nottingham	Evaluating Performance on Uncoated GPF in Real World Driving Using Experimental Results and CFD Modelling
41.	Padmanaban Vishnu	University West Virginia	Characterization of Particle Number (PN) Emissions from Modern Gasoline Vehicle during High Transient Vehicle Activity
42.	Rubino Laretta	GM Europe / Opel	GPF Durability Study at two Different Exhaust Locations for two Identical Vehicles: Effect of Soot and Ash accumulation over Lifetime

Poster Session 6: Health Impact

43.	Bhardawaj Avdesh	Indian Institute of Technology Delhi	A Study of Fine and Ultrafine Particle Exposure, Dietary Habits and Link to Cardiovascular Diseases among Volunteer Subjects in Delhi
44.	Bisig Christoph	Adolphe Merkle Institute	An in vitro Exposure Method to Assess Adverse Effects of Ambient Air Using Human Lung Cells
45.	Lonati Giovanni	Politecnico di Milano	Toxicity of Biomass Combustion Generated Ultrafine Particles: Evidence from Stack-sampled and Airborne UFPs
46.	Topinka Jan	Institute of Experimental Medicine CAS, Czech Republic	Genotoxic Potential of Particulate Emissions from Residential Solid Fuel Boilers: The Effect of Technology, Fuel, and Operation Output

Poster Session 7: Particle Filters

47.	Iojoiu Eduard Emil	Volvo Group Trucks Technology	Biofuel Impact on Diesel Engine After-treatment: Deactivation Mechanisms and Soot Reactivity
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48.	Lintis Laura	Institut de Radioprotection et de Sûreté Nucléaire	Water Sorption Phenomenon on Solid Particles Emitted during a Fire: Identification of the Influencing Physico-chemical Parameters
49.	Schlickum Volker	Berliner Senatsbehörde	Defects by DPF
50.	Zöllner Christian	LTTT, Bayreuth	Comparison of Loading and Regeneration Behavior of Uncoated, Coated and Aged Diesel Particulate Filters

Poster Session 8: Particle Metrology and Chemical Characterization

51.	Aakko-Saksa Päivi	VTT Finland	Analysing Elemental Carbon from Ship Particulate Matter: Artefacts and Possible Solutions
52.	Gerkens Stefan	TESTO	Systematic Study on the Robustness of a Diffusion Size Classifier Sensor for Nanoparticle Characterisation
53.	Haffner-Staton Ephraim	University of Nottingham	Optimisation of 3D-TEM Methods for High-throughput Flame-generated Soot Nanoparticles Analysis
54.	Höfert Norbert	VDI Düsseldorf	An Approach to a Harmonized Method for Monitoring the Particle Number Size Distribution of Ultrafine Particles in Ambient Air
55.	Ko Jinyoung	University Korea	Impact of Catalytic Stripper (CS) on the Characteristics of Particle Number (PN) Emissions from a GDI Vehicle over the World-harmonized light-duty Vehicle Test Cycle (WLTC)
56.	Okamura Kazumasa	Toyota	Investigation of the Simplified Measurement Technique of the Secondary Aerosols Formed from Gaseous Emissions of Vehicle Exhaust.
57.	Rönkkö Topi	Tampere University	Nanoparticles in natural gas engine exhaust
58.	Paulson Suzanne	Department of Atmospheric and Oceanic Sciences, UCLA	HULIS Enhancement of Hydroxyl Radical Formation from Fe(II): Kinetics of Fulvic Acid-Fe(II) Complexes in the Presence of Lung Anti-Oxidants
59.	Shaygani Afshin	Sharif University	Bayesian Inference Applied to a CFD-generated Database for Calibration of Electrical Mobility Spectrometer (EMS) and Size Distribution Measurements of Particles

60.	Shingler Taylor	National Aeronautics and Space Administration - Langley	Black Carbon Shootout: Instrument Intercomparison
61.	Šperka Jiří	Czech Metrology Institute, Brno	3D Printed Module for Air Flow Control of PPD42 Particle Sensor
62.	Stanciu Stefan G.	University Bucharest	Characterization of Nanostructured Materials, Biological Specimens, and their Interaction by means of Correlative Optical Imaging in the Far-field and Near-field Regimes
63.	Svedberg Mika	Airmodus	Fast Size Distribution Measurement for < 10 nm Plasma Generated Particles
64.	Yamada Hiroyuki	Tokyo Denki University	Sub-10 nm Particles Observation Using PMP Methodology -Down from Ten-
65.	Zerrath Axel	TSI	Design Criteria and Early Stage Development of the Next Generation of Butanol CPC's

Poster Session 9: Legislation and Enforcement

66.	Bainschab Markus	University Graz	Extending Particle Number Limits to below 23 nm: First Results of the H2020 DownToTen Project
67.	Fierz Martin	Naneos Particle Solutions	Simple periodic DPF inspection with a handheld device
68.	Press-Kristensen Kåre	Danish Ecological Council	Taxation of Residential Burning
69.	Reinoso Aliosha	GEASUR	Santiago de Chile Experience with Respect to Inspection and Maintenance Using Particle Number Measurement

Poster Session 10: Biomass Combustion and Biofuels

70.	Berhardt Alexander	IZES	Field Tests of an Electrostatic Precipitator in Different Small Scaled Biomass Boilers: Chemical and Physical Properties of Different Ash Fractions
71.	Bhattu Deepika	PSI	Gas and Particle Phase Emissions from Residential Wood Combustion

72.	Holubcik Michal	University of Zilina, Slovakia	Particulate Matter Production of Small Heat Source Depending on the Bark Content in Wood Pellets
73.	Jokiniemi Jorma	University of Eastern Finland	Study of High-temperature Oxidation of Wood Combustion Particles Using Tandem Differential Mobility Analysis
74.	Singh Ankur	Indian Institute of Technology Delhi	Understanding the Current Usage Pattern of Residential Biomass Fuel and its Implications in Northern Indian Region
75.	Sulovcova Katarina	University of Zilina, Slovakia	Geometrical Optimization of the Flue Gas Path with Regard to Particulate Matter Reduction
76.	Zotter Peter	Bioenergy Research, Lucerne	Primary and Secondary Particle and Gas Phase Emissions from nine State-of-the-art Wood Combustion Devices

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