23. 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 17th – 20th, 2019

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

Welcome-Party Monday June 17th, 7.00 pm –
Faculty Restaurant on top of the ETH main building

Conference Registration opens Tuesday June 18th, 7.30 am
www.nanoparticles.ethz.ch

Agenda of Presentations

Tuesday June 18th 2019

Welcome	**09.00-09.10**
Burtscher Heinz / FHNW, Switzerland *Welcome*	
Opening Address	**09.10 - 09.20**
Bona Gian-Luca Prof. Dr. / CEO EMPA Dübendorf, Switzerland *Greetings*	
Housekeeping	**09.20 - 09.30**
Barro Christophe / ETH Zürich & Vir2sense, Switzerland *Housekeeping*	
Key Lecture	**09.30 - 10.00**
Lienemann Wolfgang Prof. Dr. theol. / University Berne, Switzerland *Environmental Ethics in the High Risk Society*	

COFFEE BREAK ***10.00 - 10.30***

Session 1: Emission control of diesel and gasoline vehicles **Chair: Schegk** Claus-Detlef	**10.30 – 12.10**
Barro Christophe / ETH Zürich, Switzerland *A Virtual Gasoline Particle Sensor for Direct Injection Spark Ignition Engines*	
Engelmann Danilo / AFHB BHF Bern, Switzerland *Phlegmatisation of a Combustion Engine for Reduction of Particle Transient Emissions*	
Abedi Asl Hamid Reza / Sharif University Tehran, Iran *Investigation of Non-volatile Nanoparticle Emission of Diesel-Natural Gas RCCI Combustion*	
Shukla Pravesh Chandra / Indian Institute of Technology, Bhilai, India *Influence of Exhaust Gas Recirculation, Fuel Rail Pressure and Inlet Air Temperature on the Particle Number Emission from a Compression Ignition Engine Fueled with Hydro-treated Vegetable Oil*	
Thawko Andy / Technion Haifa, Israel *Particle Emissions of Direct Injection IC Engine Fed with a Hydrogen-rich Gaseous Fuel*	

LUNCH ***12.10 - 13.10***

Session 2: Aircraft and Airports **13.10 – 14.40** **Chair: Hüglin** Christoph
Rindlisbacher Theo / BAZL Switzerland *The First Global Regulatory Limits for Aircraft Engine Particle Mass and Number Emissions*
Schripp Tobias, DLR Germany *"Real Driving Emission" Measurements at Frankfurt Airport*
Fushimi Akihiro / National Institute for Environmental Studies, Japan *Jet Engine Lubrication Oil as Major Component of Aircraft Exhaust Nanoparticles*
Habre Rima / University of Southern California, USA *Short-Term Effects of Airport-Associated Ultrafine Particle Exposure on Lung Function and Inflammation in Adults with Asthma*

COFFEE BREAK

POSTER SESSION: *Posters of the sessions 1-7* ***14.40 – 16.20***

Session 3: Wood-, Coal-, Soot combustion and Fundamentals **16.20 – 18.00** **Chair: D'Urbano** Giovanni
Korzeniewska Anna / AGH University Krakow, Poland *Emission of Heavy Metals and Solid Particles from Domestic Wood Combustion Processes*
Hartmann Ingo / DBFZ Deutsches Biomasseforschungszentrum gemeinnützige GmbH, Germany *Measurement and Reducing Particulate Number Emission at Single Room Wood Log Stoves*
Kelesidis Georgios A. / ETH Zürich, Switzerland *Internal and External Soot Oxidation*
Friebel Franz / ETH Zürich, Switzerland *Cloud Droplet Activity of Soot Particles after Long-term Exposure to Ozone and α-Pinene*
Kittelson David / University of Minnesota, USA *Particle Effective Density Measurements: Alternative Approaches*

APERITIF offered by the EXHIBITORS ***18.00***

Wednesday, June 19th, 2019

Session 4: Metrology sub 23 nm	**08.30 – 09.50**
Chair: Burtscher Heinz	
Andersson Jon / RICARDO, Shoreham, UK *Update on Sub-23nm Exhaust Particle Number Emissions Using the DownToTen Sampling and Measurement Systems*	
Rüggeberg Tobias / FHNW – ISE, Windisch, Switzerland *Measuring Combustion Emissions down to 10 nm with DC-sensors*	
Kreutziger Philipp / HORIBA, Germany *The PEMs4Nano Project: Measuring Engine Emissions below 23 nm*	
Zinola Stéphane / IFP, Lyon, France *SUREAL-23 Project : Measurement of sub-23 nm Particles on Gasoline Direct Injection Engine under Various Conditions.*	

COFFEE BREAK	
POSTER SESSION: *Posters of the sessions 8 + 9*	***09.50 – 10.40***

Session 5: Particle metrology	**10.40 – 12.20**
Chair: Bischof Oliver	
Bertò Michele / Paul Scherrer Institut, Würenlingen, Switzerland *Evaluation of Black Carbon Measurements Performances of the New Single Particle Soot Photometer - Extended Range (SP2-XR)*	
Duca Dumitru / University of Lille, France *A Novel Methodology for the Analysis of the Particulate/gas Phase Partitioning in Combustion Emissions*	
Keller Alejandro / FHNW, Windisch, Switzerland *Stand-alone System for Reliable Determination of Carbonaceous Aerosol*	
Khalek Imad / Southwest Research Institute, San Antonio, USA *State of Spark-Plug Sized Exhaust Sensors for Real World Emissions Monitoring*	
Cifuentes Luis / Pontificia Universidad de Chile, Santiago, Chile *A Methodological Proposal to Estimate Emissions Deterioration in Real-world driving Conditions, on Gasoline Passenger Cars Fleet in Santiago de Chile*	

LUNCH ***12.20 – 13.20***

An Open Word	**13.20 – 13.40**
Künzli Nino / Swiss Tropical and Public Health Institute Basel, Switzerland *Bringing Science back to Clean Air Policy Making - a Response to Fakes Celebrated by (a Few) Media in Germany*	

Session 6A – Health Effects of ultrafine particles **Chair: Rothen-Rutishauser** Barbara	**13.40 – 15.10**
Probst-Hensch Nicole / Swiss TPH, University of Basel, Switzerland *Ultrafine Particles and Health - the Urban Exposome Perspective*	Keynote 1
Weichenthal Scott / McGill University, Montreal Canada *Emerging Health Impacts of Within-City Spatial Variations in Ambient Ultrafine Particles and Deep Learning for Environmental Exposure Assessment*	Keynote 2
Zaira Leni / University of Bern, Switzerland *The Role of Laboratory-generated Soot Particles in Respiratory Health Impairment*	
Bisig Christoph / Helmholtz Zentrum München, Germany *A Step towards Standardization of Air-Liquid Interface Exposures Using a Model Diesel Aerosol*	

COFFEE BREAK	
POSTER SESSION: *Posters of the sessions 10 - 14*	***15.10 – 16.40***

Session 6B – Respiratory and non-respiratory effects due to nanoparticles **Chair: Müller** Loretta	**16.40 – 18.10**
Cavelti-Weder Claudia / University of Basel, Switzerland *Air Pollution-induced Diabetes is Mediated via Macrophages in the Gut*	Keynote 1
Lademann Jürgen / Klinik für Dermatologie, Venerologie und Allergologie, Charité Berlin, Germany *Decontamination of the Skin from Environmental Pollutants*	Keynote 2
Dijkhoff Irini / University of Fribourg, Switzerland *Simulating the Impact of Diesel Exhaust Particles on Human Skin Using a 3D in Vitro Epidermal Model*	
Kooter Ingeborg / TNO, The Netherlands *A Role for in Vitro Inhalation Studies in the Evaluation of the Toxicity of Emissions from Combustion Processes*	

Aperitif	***18.10***
DINNER PARTY invited by Sponsors Speaker: **Dr. Imad A. Khalek** / SWRI San Antonio, USA	***19.00***

Thursday, June 20th, 2019

Session 7: New Periodic Technical Inspection NPTI **08.30 – 10.10** **Chair: Lutz** Thomas
Burtscher Heinz / FHNW / Windisch, Switzerland *The Need for a Periodic Inspection of Vehicle Emissions*
Kadijk Gerrit / TNO, Delft, The Netherlands *Update Dutch PTI DPF Test procedure and Deterioration of Older Gasoline Vehicles*
Mayer Andreas / TTM, Niederrohrdorf, Switzerland *Periodic Emission Inspection of SCR-equipped Cars and Trucks*
Rönkkö Topi / Tampere University, Finland *Feasibility of Diffusion Chargers for Particle Emission Measurement in Periodical Inspection*
De Meyer Philippe / GOCA, Belgium *New Fine Particle Emission Measurement for the Assessment of the Quality of the Particulate Filter During the Periodic Inspection of Diesel Vehicles*

***Poster Award* Ceremony** **10.10 - 10.20** **Bischof** Oliver

***Trojan Horse Award* Ceremony** **10.20 - 10.30** **Schiltknecht** Jacques

COFFEE BREAK ***10.30 – 11.00***

Session 8: Particle Filters and deNox technologies **11.00 – 12.20** **Chair: Mayer** Andreas
Czerwinski Jan / AFHB, Biel, Switzerland *PN Emissions of Passengers Cars – Potential of GPF's*
Køcks Morten / Danish Technological Institute, Aarhus, Denmark *Retrofitting a Danish Inland Ferry with DPF: Reduction in Particle Emissions, Noise, and Implication on the Ambient Environment*
Maggiore Maurizio / EU Commission, DG Research and Innovation, Brussels, Belgium *Retrofits: An Effective Stopgap Solution for Current and Future Air Quality Problems? The Results of the EU Prize for the Cleanest Engine Retrofit*
Yamamoto Kazuhiro / Nagoya University, Japan *Evaluation of Pressure Drop during Filtration of Gasoline Particulate Filter*

LUNCH ***12.20 - 13.20***

FOCUS-Event: Not just Diesel-Soot → Detox all Combustion Engines **13.30 – 16.20**
Introduction and Chair: Mayer Andreas

Section I: ***13.30 – 14.40***

Czerwinski Jan / AFHB, Biel, Switzerland *Physical Properties of Particles are Co-responsible for Toxic Effects*
Heeb Norbert / EMPA, Dübendorf, Switzerland *Adsorbate Chemistry of Combustion Generated Nanoparticles from Diesel and Gasoline Engines*
Rothen-Rutishauser Barbara / University of Fribourg, Switzerland *Point of View of a Biologist on Combustion Engine Exhaust –* *Current Knowledge of Adverse Effects and Underlying Cellular Mechanisms*

COFFEE BREAK ***14.40 – 15.10***

Section II: ***15.10 – 16.20***

Hüglin Christoph / EMPA Dübendorf, Switzerland *Regulations for Vehicle Emissions and Ambient Air Quality – Is there a Need for Harmonization?*
Hensel Volker / VERT, Heidelberg, Germany *Fleet – Upgrade, an Absolute Must to Clean Urban Air*
Mayer Andreas / TTM, Niederrohrdorf, Switzerland *Emission Reduction Measures Recommended for „Post Euro 6“*

Closing remarks: Prof. Dr. Boulouchos Konstantinos

End of the 23rd ETH-NPC ***16.30***

Save the date:

24th ETH-Conference on Combustion Generated Nanoparticles:

22nd to 25th June, 2020 at ETH, Zürich

POSTERS

Poster-Session 1: Emission control of diesel and gasoline vehicles

1.	**Casanova** Jesús	INSIA Madrid	Experience Using a Diffusion Charging Particle Counter in a Euro V Diesel City Bus in Madrid. Influence of the Transient Conditions on PN Emission Factors.
2.	**Cho** Jaeho	Korea University	Comparative Study on Regulated Emissions and Size-resolved Particle Emissions from Light-duty Truck Equipped with Common Rail Direct Injection (CRDI) Diesel and Turbocharged LPG Direct Injection (T-LPDi) Engine under Various Vehicle Test Conditions.
3.	**Duca** Dumitru	University of Lille	Size-selective Sampling and Chemical Characterization of Ultra-fine Particulate Matter Emitted by a Direct Injection Single Cylinder Gasoline Engine
4.	**Koch** Sergej	KIT Karlsruhe	Reactivity of Particles from Gasoline Direct Injection Engine
5.	**Morales** Betancourt Ricardo	Universidad de los Andes, Colombia	Ultra-fine Particles Emission Factors for the BRT Fleet in Bogota: A Base-line for the Evaluation of a Fleet Renewal Project
6.	**Nakamura** Kazuki	AVL Japan	Solid Particle Number Emissions of Gasoline Direct Injection Vehicles from CVS Versus Raw Exhaust Sampling
7.	**Sharma** Nikhil	Chalmers	Particle Size Distribution and Semi-Volatile Components from Gasoline and Oxygenated Fuels
8.	**Wozniak** Marek	Lodz University Poland	The Effect of TiO2 Amount in Engine Oil on Composition of Carbon Deposits and the Friction Coefficient in the Contact Zone between them and Valve Head Material
9.	**Yu Young** Soo	Korea National University of Transportation	Emissions Characteristics for Data Analysis Methods of Light-duty Diesel Vehicle on Real Driving Emissions Test

Poster-Session 2: Aircraft + Airports

10.	**Anet** Julien	ZHAW	Do Unregulated Aircraft Engines Really Emit much Higher Non-volatile PM Mass and Number than Regulated Ones?
11.	**Fleuti** Emanuel	Zürich Airport	Ultrafine Particle Measurements at Zurich Airport
12.	**Murtonen** Timo	VTT Finland	Non-volatile Particle Number Emissions from Light- and Heavy-duty Vehicles and Marine Engines

13.	**Netkueakul** Woranan	EMPA/ETH	Characterization of Aerosol Released from the Combustion of Nanoparticle-Containing Materials
14.	**Saitoh** Katsumi	ESAR Japan	Characteristics of Chemical Composition for Ultrafine Particle Collected at Narita International Airport
15.	**Simon** Matthew	University of Boston	Using Machine Learning to Investigate Ultrafine Particle Emissions from Arriving Aircraft at Near-Airport and Background Sites

Poster-Session 3: Biomass combustion

16.	**Barrios** Carmen	CIEMAT	Influence of the Use of Oxygenated Additives on the Particle Emissions of a Euro 3 Urban Bus from the Current Fleet in the City of Seville
17.	**Marczak** Marta	AGH University of Science and Technology, Krakow, Poland	The Influence of Boiler Type, Hg and As Content in Combusted Coal on the Content of these Elements in Chimney Soot as a Source of Air Pollution

Poster Session 4: Metrology of sub 23 nm particles

18.	**Vanhanen** Joonas	AIRMODUS	High Number Concentration of Non-volatile Sub-3nm Aerosol Particles Emitted by Gasoline Direct Injection Engine

Poster Session 5: Particle metrology and chemical characterization

19.	**Corbin** Joel	National Research Council Canada	Detection of Tar Brown Carbon with the Single Particle Soot Photometer (SP2)
20.	**Jeong** Jun Woo	Korea National University of Transportation	A Correlation Analysis of between PEMS and SEMS According to Develop SEMS Device
21.	**Kammerer** Matteo	Robert Bosch	A Compact and Mobile Optical Particle Counting Sensor Based on Continuous Wave Laser-induced Incandescence
22.	**Khan** M. Yusuf	Cummins	Evaluation of Horiba PN-PEMS against PMP Based PN Systems for Heavy Duty Diesel Engines
23.	**Lowther** Scott	Lancaster University	Low Cost PM Sensors; are they Suitable for Measuring Subtle Particle Variations in Ambient or Indoor Air?
24.	**Pacura** Wiktor	AGH University of Science and Technology	Gasoline Exhaust Filtration as a Valid Method of Obtaining Particulate Matter for Further Analysis.

25.	**Sakurai** Hiromu	AIST	Accuracy of Particle Size Distribution and Number Concentration Measured by the Engine Exhaust Particle Sizer (EEPS) Spectrometer for Particles in the Size Range from 6 nm to 300 nm
26.	**Visser** Bradley	FHNW	Investigation of the Effects of Humidity and Volatile Coatings on the Photothermal Interferometry Signal

Poster Session 6: Health effects

27.	**Cheng** Tsun-Jen	National Taiwan University	Respiratory Mutagenicity and Inflammation Induced by Size-segregation Ambient Particles in Mice: Do ultrafine particles cause greater toxicity?
28.	**Decrue** Fabienne	University Children's Hospital Basel	Exposure to Moderate Air Pollution and Associations with Lung Function at School-age: A Birth Cohort Study
29.	**Karg** Erwin W.	Helmholtz Zentrum München	Why Detoxing All Combustion Engines? A Computer Model Approach to Regional Lung Deposition
30.	**Mayer** Andreas	TTM	Particle Surface to Characterize Biologic Activity - but which One ?
31.	**Streibel** Thorsten	University of Rostock	Implications of Photochemical Ageing for Source Apportionment and Health Effects of Wood Combustion Aerosol
32.	**Vasilatou** Konstantina	METAS	Metrology for Mitigating Adverse Health Effects from Airborne Particulate Pollutants: The EMPIR AeroTox Project
33.	**Vojtisek** Lom Michal	Czech Academy of Sciences, Prague	Portable Exhaust Toxicity System Concept: Compact Air-liquid Interface Exposure System for Dynamic Engine Operation

Poster Session 7: New Periodic Technical Inspection NPTI

34.	**Booker** David	SENSORS	Development of a Portable Particle Number Field Calibration Methodology / Instrument for the Anticipated EU PN Periodic Technical Inspection Regulations
35.	**Czerwinski** Jan	AFHB	Considerations of Periodical Technical Inspection of Vehicles with deNOx Systems
36.	**Multari** Antonio	MAHA	Emission Testing under Load for Pollutants e.g. NOx and PN
37.	**Pucher** Ernst	TU Wien	Validation of a Universal Short-Test Procedure for PN and NOx by RDE Measurements

38.	**Spielvogel** Jürgen	TSI	Measurement of Ultrafine Particle Emissions from Passenger Cars
39.	**Vojtisek** Lom Michal	Czech Academy of Sciences, Prague	Detection of Nanoparticles in Workplace Using Inexpensive Instrument Based on Ionization-type Smoke Detector

Poster Session 8: Particle Filter and deNOx Technologies

40.	**He** Weidong	ETH Zürich	The Filtration Performance of Electret PTFE Filter during Soot Particles Loading and Reusability
41.	**Hu** Zhiyuan	Tongji University, China	Effect of Temperature on Oxidation Reactivity and Nanostructure of Particulate Matter from a China Ⅵ GDI Vehicle
42.	**Jensen** Thomas Nørregaard and **Koust** Stig	Danish Technological Institute	Real-time Measurements of Cost-efficient Filter Solutions for Small Construction Machines
43.	**Kureti** Sven	University of Freiberg	Soot Oxidation on Manganese Oxide Catalysts in Gasoline Exhaust
44.	**La Rocca** Antonio	University of Nottingham	Copper Leaching from the Fuel Line of a HPCR DI Diesel Engines and its Effect on Combustion Characteristics and Particulate Emissions
45.	**Schwanzer** Peter	OTH Regensburg	Oxidation Kinetics Determination of GDI Engine Soot by a Radio-Frequency Sensor
46.	**Walter** Stefanie	University Bayreuth	Simulative Modelling of the Location Dependent Soot Distribution in Gasoline Particle Filters and their Influence to the Soot Mass Determination by Radio Frequency and Differential Pressure Sensors

Poster-Session 9: Ambient Air

47.	**Bémer** Denis	INRS	Measurement of Ultrafine Particles during Repair Works in Railway Tunnels
48.	**Jain** Srishti	CSIR Laboratory	Seasonal Variability of PM2.5 Composition and its Sources over Delhi, India
49.	**Lawrence** Alfred	Isabella Thoburn College India	Exposure of Heavy Metals and Poly Aromatic Hydrocarbons in Indoor Environment: Assessing health Impacts in Lucknow
50.	**Lintusaari** Henna	Tampere University, Finland	Non-volatile Sub-23 nm Particle Concentrations in a Busy Street Canyon

51.	**Lonati** Giovanni	Politecnico di Milano	Black Carbon Concentration Levels along Pedestrian Routes in Milan
52.	**Mahrt** Fabian	ETH Zürich	The Impact of Cloud Processing on the Ice Nucleation Abilities of Soot Particles at Cirrus Temperatures
53.	**Mayer** Andreas	TTM	PM Ambient Must be Specified by EC like PM Tailpipe by PN
54.	**Molden** Nick	Emissions Analytics	Comparative Ratings of Vehicles for Ultrafine Particle Exposure in the Cabin
55.	**Phairuang** Worradorn	Prince of Songkla University, Thailand	Ambient Nano-aerosol and Carbon Components in Thailand
56.	**Press-Kristensen** Kaare	Danish Ecological Council	Indoor Air Pollution with Ultrafine Particles from Stoves
57.	**Sioutas** Constantinos	University Southern, California	Impact of Emissions from Fossil Fuel and Biomass Burning on Ambient Concentrations of Black Carbon (BC) in the Milan Metropolitan Area

Poster Session 10: Enforcement and post-Euro-6-legislation

58.	**Goel** Vikas	CSIR-National Physical Lab	Effect of Road Space Rationing Policy on PM Characteristics: A case study over Delhi
59.	**Mayer** Andreas	TTM	White Spots on the Emission Reduction Roadmap

Poster Session 11: Environmental impact and global warming

60.	**Helmers** Eckard	University Trier	Power and Mass Growth of Popular Cars since 1980 and Resulting Efficiency Losses

Poster Session 12: Nanoparticles formation and transformation

61.	**Corbin** Joel	National Research Council Canada	Characterization of the Argonaut Miniature Inverted Soot Generator with Various Fuel Mixtures
62.	**Ess** Michaela	METAS	Optical and Morphological Characterization of "miniCAST 5201 BC"-soot

63.	**Keller** Alejandro	FHNW	The Synthetic Carbonaceous Atmospheric Aerosol (SCAA) Generator: Towards the Creation of an Atmospheric Aerosol Standard
64.	**Saturno** Jorge	Physikalisch-Technische Bundesanstalt	Comparison of Different Soot Generators: Towards a Standard Reference Material for Aerosol Absorption
65.	**Szramowiat-Sala** Katarzyna	AGH University, Krakow	The Effect of Fuel Applied on the Chemical Composition of PM Generated in Combustion Processes – the Preliminary Case Study

Poster Session 13: Secondary emissions

66.	**Karavalakis** Georgios	University of California	Effects of Ethanol and Aromatic Levels on Primary Emissions and Secondary Organic Aerosol (SOA) Formation from GDI Vehicles

Poster Session 14: Fundamentals

67.	**Abegg** Sebastian	ETH Zürich	Highly Sensitive NO2 Detector for Selective Air Pollution Monitoring
68.	**Bennett** Anthony	KAUST, Saudi Arabia	Thermophoretic Sampling of a Pressurized Non-premixed Ethylene/nitrogen Laminar Co-flow Flame
69.	**Guo** Yi	Queensland University of Technology / Australia	Diesel Soot Thermal Decomposition Investigation Based on Chemical Structure
70.	**Kelesidis** Georgios A	ETH Zürich	Impact of Organic Carbon on Soot Light Absorption
71.	**Kelesidis** Georgios A.	ETH Zürich	Impact of Humidity on Silica Nanoparticle Agglomerate Structure and Size Distribution
72.	**Kholgy** Reza	ETH Zürich	Soot Optical Properties in Premixed Flames
73.	**Kholgy** Reza	ETH Zürich	Simplified Coagulation Dynamics of Agglomerates at Self-Preservation
74.	**Baden** Ane Kristine	Danish Techn. Institute	Production of Fine-tuned Nano-catalysts for Exhaust Emission Treatment: The Potential of Supercritical Flow Synthesis
75.	**Li** Zepeng	KAUST, Saudi Arabia	A Theoretical Study of PAHs Growth by Phenylacetylene Addition
76.	**Liu** Peng	KAUST, Saudi Arabia	Soot Nucleation Triggered by PAH with Vinyl Radical Substitution

77.	**Mahamuni** Gaurav	University of Washington-Seattle	Fluorescence Spectroscopy Based Sensing of Combustion Generated Particulate Matter
78.	**Šperka** Jiri	Czech Metrology Institute	Characterization of Collected Aerosol Carbonaceous Particles Using Atomic Force Microscopy
79.	**Wendelspiess** Stephan	ETH Zürich	Evolution of Surface Fractal Dimension during Coagulation and Surface Growth with a Monodisperse Population Balance Model
80.	**Weber** Ines	ETH Zürich	Highly Selective Formaldehyde Detection with Zeolite Membranes for Indoor Air Quality Monitoring
81.	**Ciajolo** Anna	CNR	The Common Thread Between Fuel, Hydrocarbon, Soot Structure and its Oxidation Reactivity
82.	**Schriefl** Mario **Reinisch** Tristan	AVL Ditest	Calibration of a particle number sensor for PTI measurements based on pulsed-mode diffusion charging
83.	**Di Iorio** Silvana	Istituto Motori	Understanding of Sub-23 nm Particle Emissions from PFI/DI SI Engines Fueled with Gasoline, Ethanol and Blend
84.	**Zijlstra** Burcu	Stat Peel AG	Sensing Solution for Airborne Carbon Nanotube and Carbon Black Exposure based on Raman Spectroscopy
85.	**Polacik** Jan	Biomass combustion	Experimental Investigation of Concentration and Size Distribution of Fine Combustion Particles Emitted by Boiler under Various Operation Conditions Small Biomass
86.	**Baltzopoulou** Penelope	CERTH / CPERI / APTL, Greece	Investigation of the correlation between a prototype Advanced Halfmini DMA and a commercial SMPS for combustion-generated solid sub-23 nm particles measurement
87.	**Payne *Simon***	Cambustion	Multi-Instrument Characterization of Particulate Emissions from a Gasoline Direction Injection Engine: Investigation of Size, Volatility and Density
88.	**Ligterink** N.E **Kadijk** Gerrit	TNO	Smart Emission Measurement System (SEMS) for real-world driving emissions monitoring

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Instrument and Filter Exhibition 2019

Manufacturers of Measurement Instrumentation	**Floor**	**Booth**
AEROSOL Co., Ljubljana, SL	E	11
CAMBUSTION Ltd., Cambridge, UK	E	14
DEKATI Ltd., Kangasala FI	E	18
CATALYTIC INSTRUMENTS, Rosenheim, DE	E	15
JING AG, Zollikofen CH	E	12
NANEOS PARTICLE SOLUTIONS GmbH, Windisch CH	E	16
NGK SPARK PLUG Co.Ltd, Nagoya, JP	E	13
PALAS GmbH, Karlruhe DE	E	10
PREMIER DIAGNOSTICS Ltd., Banbury UK	E	17
TSI GmbH, Aachen DE	E	19
AVL DiTEST, Graz AU	D	7

Manufacturer of Emission Control Technology		
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HJS, Menden DE	D	4
PURItech, Hohentengen, DE	D	8
VERT, Niederweningen, CH	D	9

New Health Research Approaches		
UNIVERSITY BERNE Direct Aerosol Air/Liquid Interface Cell Exposure System	D	5
UNIVERSITY FHNW Micro Smog Chamber with Total Carbon Measurement System	D	6

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BAZL	Bundesamt für Zivilluftfahrt, Bern, Schweiz
BECO	Kanton Bern, Schweiz
BFE	Bundesamt für Energie, Bern, Schweiz
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CORNING	Corning GmbH, Wiesbaden, Deutschland
ESYTEC	esytec AG, Schweiz
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INSPIRE	Inspire, Zürich, Schweiz
KREBSLIGA	Krebsliga, Bern, Schweiz
LAV	Labor für Aerothermochemistry der ETH Zürich, Schweiz
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LUNGE ZÜRICH	Lunge Zürich, Schweiz
MAHA	MAHA Maschinenbeu Haldenwang GmbH & Co.KG, Deutschland
METAS	Bundesamt für Metrologie und Akkreditierung, Bern-Wabern, Schweiz
NANEOS	Naneos Particle Solutions, Windisch, Schweiz
NGK	NGK Europe GmbH, Kronberg i.T. Deutschland
PALAS	Palas GmbH, Karlsruhe, Deutschland
SCHILTKNECHT	Dr. med. Jacques Schiltknecht, Luzern
SUVA	Schweizerische Unfallversicherungsanstalt, Luzern, Schweiz
SWRI	South West Research Institute
TEHAG	TEHAG AG, Schlatt, Schweiz
TESTO	Testo AG, Lenzkirch, Deutschland
TSI	TSI GmbH, Particle Instruments, Aachen, Deutschland
VERT	VERT Association for Verification of Emission Reduction Technologies