

***2018 PEMS Conference***  
***March 22-23, 2018***  
***Speaker Biographies***



**Marc C. Besch**

West Virginia University

Marc Besch is a research assistant professor at West Virginia University's Center for Alternative Fuels, Engines and Emissions (CAFEE) and has received a Ph.D. in Mechanical Engineering from West Virginia University. He has earned his B.Sc. in Automotive Engineering from Berne University of Applied Sciences, Switzerland. Marc has accumulated 12 years of experience in emissions measurement, performance and research work, spanning from engine and chassis dynamometer to on-road measurements using state-of-the-art gaseous and particle phase emissions measurement systems. His research focuses on in-use emissions measurement, advanced exhaust after-treatment systems and modeling as well as Diesel combustion nanoparticles formation and morphology. More recently his research included the use and evaluation of low-cost miniature gas sensors for spatial improvement of ambient air quality monitoring networks and monitoring of real-world vehicle emissions rates and on-board diagnostics.



**Douglas Booker**  
NAQTS

Douglas, a University College London graduate, launched NAQTS with the intention of making high-quality air pollution monitoring technology available to everyone, in order to: raise general public awareness of the health issues associated with indoor air pollution, assist the public in improving their indoor air quality, and provide scientific data for policy advancement. Douglas specialises in the development of air quality monitors, integrating the latest developments in low-cost sensor technologies with other regulatory grade measurement techniques.

Driven by the pursuit of social justice, Douglas is also currently enrolled in a part-time PhD at Lancaster University investigating indoor-outdoor air pollution and environmental justice: air pollution does not stop at the front door, and it is often the most vulnerable populations that are disproportionately exposed to higher concentrations.



**Harry Bradley**  
Cambustion

Harry Bradley graduated from University of Surrey in 2014 with a BEng in Mechanical Engineering. He then went on to study Mechatronics at Southampton, specialising in Unmanned Aerial Vehicles for his Masters before settling in Cambridge to work with Cambustion, where he has been for the past two and a half years. He is involved in technical support and marketing of fast response gas analyzers. More recently, he has been developing these fast response gas analyzers for on-board measurement, co-authoring technical papers of the technique and marketing the products to the developing Real Driving Emissions market.



Carl Desouza  
King's College London

Carl Desouza is a PhD student at King's College London. His current work is to characterise non-road mobile machinery emissions through portable emissions testing & develop an emissions inventory. His interest in emissions progressed during his Master's degree from Germany, while carrying out his thesis at Fraunhofer Institute, to optimise the use of bio-fuels in a combined heat and power unit. Before this, Carl completed his Bachelor of Automotive Engineering from India, where he co-authored a paper on bio-lubricants for spark ignition engines. Carl was also a professional figure skater, and enjoys playing football in his spare time.



Andre Forcetto  
University of Sao Paulo

Andre Forcetto is currently working on a project that is developing a portable emissions measurement system for flexfuel vehicles. It includes multidisciplinary research to develop an on-board system to measure vehicular pollutants of flexfuel cars and motorcycles.

He works for the Environmental Company of Sao Paulo State – CETESB and is collaborating with the Brazilian Technical Normative Institute (ABNT).

Andre has his Masters in Public Health-Sound Pollution and his Doctorate in Meteorology-Air

Pollution from the University de São Paulo, USP, Sao Paulo, Brazil.



**Timothy A. French**

EMA General Council

Keynote Speaker

Timothy A. French serves as General Counsel for the Truck and Engine Manufacturers Association (“EMA”). Tim has earned a national reputation for his experience in matters arising under the Clean Air Act and related state and local air quality statutes and regulations. He has represented EMA for more than 20 years in rulemakings before the U.S. EPA and the California Air Resources Board. He also has litigated Clean Air Act and related state law issues before the U.S. Supreme Court, the D.C. Circuit Court of Appeals, the Ninth Circuit Court of Appeals and several other federal and state courts, and has successfully advocated a number of significant preemption claims.

Tim has testified before legislative bodies and has served on several advisory committees relating to the development and implementation of air quality standards and controls. He also has defended numerous claims asserted under California's Proposition 65 consumer warning statute, including acting as special counsel in litigation that resulted in the first defense verdict ever under that law.

Tim earned his J.D. from Northwestern University School of Law in 1985. In 1982, he graduated with an A.B., cum laude, from Harvard University.

Tim was admitted to the Illinois bar in 1985. He is admitted to practice before the U.S. District Court for the Northern District of Illinois (trial bar), the U.S. Supreme Court and the U.S. Court of Appeals for the Seventh Circuit, D.C. Circuit, Fifth Circuit and Ninth Circuit.



Chris Frey

North Carolina State University

Chris Frey is the Glenn Futrell Distinguished University Professor of environmental engineering at North Carolina State University. He has used PEMS since 1999 for a wide variety of study objectives pertaining to light and heavy duty onroad vehicles and to a wide variety of nonroad vehicles. He is the featured speaker for the 2018 Critical Review of the Air & Waste Management Association this coming June on the topic of trends in onroad vehicle energy use and emissions. He has a PhD in Engineering and Public Policy from Carnegie Mellon University.



Carl R. Fulper

Chemical Engineer, PEMS Coordinator  
US Environmental Protection Agency

Over twenty-five years of research and testing experience in gathering mobile emissions data for EPA's models and regulations. He is an expert on designing and managing test programs for on-highway vehicles and non-road equipment for both laboratory and "real-world" environments. He has been designing and developing new tools and methodologies, including Portable Emission Measurement Systems (PEMS), Portable Activity Measurement Systems (PAMS) and Remote Sensing Devices (RSD), to better understand "real-world" activity and emission data.

Currently, he is the PEMS Coordinator for the Assessment and Standards Division. He also has used Cooperative Research and Development Agreements (CRADAs) to create partnerships with other organizations to support their test programs to gather "local" activity and emission data.

This position allows him to help both EPA and the public to better design test programs to gather data for testing vehicles and engines under “real-world” conditions.



**Shun Fukami**

R&D PEMS Product Manager

Shun Fukami received an M.S in engineering from Osaka Prefecture University in 2010, the same year he joined HORIBA, Ltd. At that time, he worked as a technical engineer for OBS-2000, the predecessor the current OBS-ONE series. He was involved in the development of the new HORIBA on-board system, and currently serves as the technical evaluating leader of the OBS-ONE series at the company's head office in Kyoto. For three years, Mr. Fukami lived in Germany and worked at HORIBA Europe GmbH as PEMS technical adviser in Europe, the current global center of RDE activity.



**Tao Huai**

California Air Resources Board

Dr. Tao Huai is chief of the Freight Emissions Testing and Research Branch in the Monitoring and Laboratory Division at the California Air Resources Board. Over the past thirteen years, Tao has overseen the development of regulations requiring lower global-warming potential automotive refrigerants, conducted research studies assessing the effectiveness of light- and heavy- duty vehicle advanced emission control technologies, and supported adoption of the ultralow particulate matter standards for the Advanced Clean Car Regulation. Tao is currently leading the comprehensive and unified emissions testing and research program for heavy-duty trucks and other freight related sources to support ARB’s mobile source regulatory programs and

sustainable freight strategies.

Tao earned a Bachelor of Science degree in Thermal Engineering and a Master of Science degree in Management Science and Engineering from Beijing's Tsinghua University, followed by a Ph.D. in Chemical and Environmental Engineering from the University of California, Riverside. In addition to co-authoring more than 30 research publications related to light- and heavy-duty vehicle emissions, Tao is also an Adjunct Assistant Professor in the Department of Environmental Health Sciences at the University of California, Los Angeles.



**Kent Johnson**

Associate Researcher, University of California, Riverside  
PEMS Conference Host

Dr. Johnson joined CE-CERT's research faculty in 2009 after serving on the Center's staff as Principal Development Engineer and manager of the Mobile Emissions Laboratory (MEL). He received his Ph.D. in Chemical and Environmental Engineering from UC Riverside where his doctoral research focused on the impact of real world emissions on ambient air quality.

During his career, Dr. Johnson has created a comprehensive program for the evaluation of portable emissions monitoring systems (PEMS) that has had impacts at both the national and international levels. He manages research programs that have annual budgets of approximately \$2,000,000. These programs involve emissions from all mobile sources under real world conditions (heavy and light duty vehicles, marine, locomotive, and many others). He also manages research programs that include the operation of specialized equipment such as chassis and engine dynamometers and various advanced measurement methods. Recently Dr. Johnson performed engine research on a marine two stroke engine which utilized residual fuel oils from ocean going vessels. This research will advance our understanding of black carbon measurement, where factors of ten differences have been reported. He actively publishes and has over 40 publications.

He received his BS Degree in Mechanical Engineering from California Polytechnic, San Luis Obispo in 1992 and his MS Degree in Electrical Engineering Controls from California Polytechnic, Pomona

in 2001.



**Tanzila Khan**

North Carolina State University

Tanzila Khan is a PhD student at North Carolina State University in the Department of Civil, Construction and Environmental Engineering. Her specialization area is Environmental Engineering. Her PhD research is focused on “Mesoscale and Microscale Evaluation of Vehicle Fuel Use and Emissions.” Tanzila earned Bachelor and Masters in Civil Engineering with specialization in Transportation Engineering from Bangladesh University of Engineering & Technology. Her major research interests include: measurement and modeling of real-world vehicle energy use and emissions; air pollution; air-quality; clean vehicle-fuel technology; environmental impacts of transportation; and economic analysis of transportation and environmental policy intervention.



**Imad A. Khalek**

Southwest Research Institute

Dr. Khalek has a strong area of expertise in engine emissions research and development, with a solid educational background and experience in the area of ultrafine and nanoparticle emissions research. He is the founder of the Nanoparticle Laboratory at SwRI. He has led numerous industry and government projects in the area of diesel, gasoline, natural gas, alternative fuels, and aftertreatment emissions R&D. He has developed instrumentation for total and solid particle measurements, droplet evaporation and characterization, and real time ash measurement from

engine exhaust. Dr. Khalek manages the Particle Science & Technology section at SwRI. He has over 60 publications and presentations in the public domain. He has given numerous presentations and invited talks at various conferences and meetings worldwide. He organizes the SAE session on Particle Emissions from Combustion Sources. He is also an Associate Editor of the SAE Journal of Engines.

Dr. Khalek's current focus is on particle emissions from gasoline direct injection engines, modern natural gas engines, modern diesel engines, and hand-held two-stroke engines. This includes fuel and oil and aftertreatment effects. He is also active in the area of particle instrumentation development and characterization, spark-plug-sized exhaust particle sensors, and jet and bunker fuel combustion R&D and their effects on particle emissions.



Anuj Kumar  
Air Liquide, USA

Anuj Kumar is a Senior Research Scientist at Delaware Research & Technology Center (DRTC), Air Liquide, USA. Dr Kumar received his Master degree from Pant Nagar Agriculture University in India. He went on to earn his PhD in Environmental Chemistry and Technology from the Institute of Chemical Technology in Czech Republic. Prior to Air Liquide, he held the position of Group Manager at New Mexico State University where he led projects for site and environmental monitoring. He focused his research on air quality, particularly volatile organic compound emissions and ozone formation potential during his work as a Postdoc Fellow with the University of California at Davis, CA.

Dr. Kumar is currently leading a variety of Air Liquide's R&D projects, most commonly associated with emission analysis and regulations.



Huan Liu  
Tsinghua University

Huan Liu is an associate professor in Tsinghua University. Her research interest is mobile source emission control and impacts. She got Bachelor and Ph.D. degree in Tsinghua University in 2004 and 2009, and she served as postdoctoral in CE-CERT, University of California, Riverside and researcher in ISSRC (International Sustainable System Research Center). Dr. Liu Chaired several national projects, including National Nature Science Funds project, 973 project and etc. She has published more than 40 papers which has been cited 800+ times, in many high level journals, such as Nature Climate Change, Environ. Sci. Technol. and Atmos. Chem. Phys. The H-index is 18. She has wrote 7 books or book chapters in Chinese or English. She also holds 11 patents, 6 software copyrights. Meanwhile, she was awarded the “Beijing Nova”, “National outstanding young talents of ocean study”, “First Prize for Science and Technology Progress Award of Ministry of Education”, “Second Prize for Science and Technology Progress Award of Ministry of Environmental Protection”, “Excellent Environmental Science and Technology Worker of China Environmental Association”, and “Science and Technology Award for Chinese Youth of China Environmental Association”.



Stephanie Maalouf  
CARB

Stephanie Maalouf attended California Polytechnic University, Pomona and received her Bachelors of Science in Biology. She has been with Air Resources Board for 10 years and has started her career at ARB in charge of off-road retrofit demonstration projects. As PEMS evolved, she transitioned into being in charge of Portable Emissions Measurement testing projects for light duty vehicles in Southern California headquarters.



Dave Miller

Dave has been an entrepreneur his whole life.

Machines, vehicles, and inventions of all sorts fascinate him, as does the ability to identify and create new ideas and develop them into new solutions and products. In fact, that is the reason companies like 3DATX Corporation and cognoGEN!X, Inc. were founded.

Some of his other recent Intellectual Property (IP) related projects have been in the Transportation sector, which he has been a part of for over 20 years. Dave is the founder and CEO of 3DATX Corporation, which creates & designs solutions for emissions and energy-related transportation challenges by finding ways to exponentially improve the data acquisition process required for decision-making. In addition to a cutting-edge, proprietary big data solution, 3DATX has also recently developed and patented an integrated Portable Emissions Measurement System (iPEMS) known as the parSYNC® - designed to reduce the cost-per-test of PM/PN data, significantly compress turnaround time, while increasing both system & equipment reliability.

Dave is a part of the NYSERDA Entrepreneur-In-Residence (EIR) program, as well as a Senior Research Specialist at Texas A&M (TTI). He co-founded Clean Air Technologies International (CATI) in 1999. CATI was the first company to manufacture a commercially available PEMS and develop related testing and verification standards. CATI also pioneered most of the testing methods and techniques now widely adopted and currently used in the field and was the first company (2001) to successfully test off-road, non-road, marine, and locomotive vehicles using a PEMS, as well as testing (with CARB) 42 randomly selected HDD on-road vehicles in 2.5 days (2002). CATI also successfully tested diesel cranes 40 stories in the air at the NYC World Trade Center site - WTC #7 (2004).

Dave is also a co-inventor on multiple patents/patents-pending.



**Nick Molden**

Emissions Analytics

Nick founded Emissions Analytics in 2011 in order to understand real-world fuel economy and emissions from vehicles. The concept was to find a way to characterize vehicles in a relatively short test, and be able to conduct a large number of comparable tests.

The solution was to use Portable Emissions Measurement Systems to source real on-road raw data efficiently across many vehicles. This database is now a platform for analysing and modelling this data, from which is created the EQUA Index, which is used and published in the UK, across Europe and the USA. In addition, Emissions Analytics conducts extensive custom testing programmes of heavy and light duty commercial and off-road vehicles.

Nick is a specialist in data analytics, particularly in the automotive market, through his prior work at Oxford Indices Ltd, a data specialist, United Business plc and Haymarket Media Group.

He is a graduate of the University of Oxford, with an MA in Philosophy, Politics and Economics.



**William Porter**

University of California, Riverside

Dr. Porter is a professor in the Department of Environmental Sciences at the University of

California, Riverside. His research interests currently focus on the use of regional and global chemical transport models to examine the causes and consequences of air pollution, especially in terms of human health impacts.



**Nikhil Rastogi**

North Carolina State University

Nikhil Rastogi is a PhD student in Department of Civil Construction and Environmental Engineering at North Carolina State University. He is working under the advisory of Dr. Chris Frey. His work includes measurement and modeling of real-world fuel-use and emissions of light-duty vehicles and locomotives.



**Karl Ropkins**

Senior Research Fellow, Transport Studies, Faculty of Environment, University of Leeds, UK

Karl is an applied analytical chemist with interests in pollutant source apportionment and environmental impact assessment. Karl has held posts in commercial consultancy and academia (currently University of Leeds; previously Wye College, Imperial College and Birmingham University). His research focuses on the measurement, characterization and quantification of transport-related emissions and the relationship between emissions and real-world impacts. He is lead developer of the open source R package 'pems.utils', and a member (Hon Sec) of the Royal Society of Chemistry Chemometrics Special Interest Group Committee. He is currently UK

partner on the parSYNC Research Program developing smaller, lighter lower energy consumption PEMS systems, and working on the UK Department for Transport funded evaluation of HEAT's Vehicle Emissions Remote Sensing System (VERSS) technology EDAR.



Matthew Spears

Truck & Engine Manufacturers Association

Mr. Spears is now the Director of Global Regulatory Activities at the Truck & Engine Manufacturers Association (EMA). EMA represents the manufacturers of commercial trucks and engines used in a wide variety of applications including on-highway trucks, farm and construction equipment, lawn and garden equipment, marine vessels, locomotives, and stationary applications. EMA provides a forum for manufacturers to address issues concerning environmental and safety standards, product performance, test procedures, fuels and lubricants, research and science, and public policy.

Mr. Spears joined EMA in September 2017, after spending nearly 20 years at the U.S. Environmental Protection Agency's Office of Transportation and Air Quality (OTAQ). As OTAQ's Center Director for heavy-duty on-highway and non-road rulemaking development, Mr. Spears helped lead some of EPA's significant rulemaking activities. Most recently Mr. Spears managed the development and finalization of the Heavy-Duty Phase 2 GHG and fuel efficiency standards. In the past Mr. Spears held leadership positions at the International Civil Aviation Organization and at the International Maritime Organization, where he worked to set new standards to improve GHG, NOx and PM emissions from aircraft and ocean going ships. In previous work, Matt also focused on improving emissions test procedures, which have been essential for manufacturers to demonstrate compliance with today's most stringent standards.

Matt's other work experience includes over two years at sea & on the Great Lakes as a licensed watch-standing engineer on steam and diesel-powered merchant ships. Mr. Spears also achieved the rank of Lieutenant during his 12 years in the U.S. Naval Reserve.

Yi Tan

Air Resources Board

I got my Ph.D. from Rutgers University in 2010. I am currently an Air Resources Engineer in Research Division at California Air Resources Board. My current research focuses on understanding tailpipe emissions from mobile sources. I previously studied the photochemistry leading to secondary organic aerosol formation and the spatial pattern of air toxics in urban areas.



Steve Trevitz

Volvo Group Trucks Technology

Received BS (1982) and MS (1984) degrees in Mechanical Engineering from The Pennsylvania State University. Graduate work involved testing diesel fuels derived from coal and shale including biological assays of the particulate matter soluble organic fraction. Has worked entire career since 1985 at the Volvo Group Trucks Technology (formerly Mack Trucks, Inc.) engine development and manufacturing facility in Hagerstown, MD. Initially involved with engine technology and controls development. Patent holder for internal EGR technology used on Mack and Volvo engines. More recent experience has been in the development and coordination of in-use emissions testing.



Xin Wang

## Beijing Institute of Technology

Dr. Xin Wang is a postdoc working at National Laboratory of Automotive Performance & Emission Test, Beijing Institute of Technology, where he received his Ph.D. Dr. Xin Wang is primarily engaged to the research work of engine emission control technology and alternative fuel application.



Roland Wanker

AVL M.O.V.E

- Studies in Chemical Engineering at the Technical University of Graz, PhD in the field of „Exhaust Aftertreatment“ in 1999
- 2000-2003: AVL, Development Engineer for AVL Fire
- 2003-2008: AVL, Head of Development for AVL Boost
- 2008-2013: AVL, Head of Development for In-Vehicle Measurement Systems
- 2013-today: AVL, Global Business Segment Manager for AVL M.O.V.E - In-Vehicle Measurement Systems



Leta Woo

Senior Materials Scientist at Emisense

Leta Woo is a Senior Materials Scientist at Emisense and a visiting scientist at the Georgia Tech Research Institute. She received a B.S. from Georgia Tech and a Ph.D. from Northwestern

University, both in Materials Science and Engineering. Leta was then a postdoctoral researcher at the University of Pennsylvania working primarily as a guest scientist at Lawrence Livermore National Laboratory in the areas of solid-oxide electrolyzers/fuel cells and electrochemical gas sensors; she later joined the Chemical Sciences Division at Lawrence Livermore National Laboratory as a staff scientist. Leta has been with Emisense since 2014.



Weichang Yuan

North Carolina State University

Weichang Yuan is a research assistant in Dr. Chris Frey's group at North Carolina State University since August 2016. Prior to joining NCSU, he got his master degree in Environmental Sciences at National Tsinghua University in Taiwan in 2016. He got his bachelor in Environmental Engineering at Tianjin University in mainland China in 2014. He also has worked as a research assistant in the Future Industries Institute at University of South Australia in 2014. Weichang's current research is on measurements and modelling of emissions and energy consumption of trains and light-duty vehicles.



Shaojun Zhang

Atkinson Postdoctoral Fellow, Cornell University

Dr. Shaojun Zhang is a postdoctoral fellow at Cornell University, sponsored by the Atkinson Center for a Sustainable Future (ACSF). He currently works with Prof. Max Zhang on transportation energy and air quality related researches. His research areas include developing advanced measurement methods and data-driven decision support systems to improve emissions mitigation and upgrade air quality, particularly for traffic-populated cities in China. He

received his Ph.D. in environmental engineering in 2014 and his B.S. in environmental engineering in 2009, both from Tsinghua University, China. Prior to joining Cornell University, he was a postdoctoral associate in University of Michigan sponsored by the Ford Motor Company to utilize mobility data to improve the sustainability of road transportation.