10TH ANNUAL INTERNATIONAL PEMS VIRTUAL CONFERENCE
From the Laboratory to the Real World: Understanding Community Impacts

March 11th & 12th, 2021
Thank you for your interest in 10th Annual International Portable Emissions Measurement Systems (PEMS) Virtual Conference, presented by the University of California at Riverside (UCR) Bourns College of Engineering Center for Environmental Research and Technology (CE-CERT). For ten years, the PEMS International Conference has served a highly recognized forum that gathers top researchers from industry, government, and academia to discuss the evolving nature, application and significance of PEMS in emission and fuels research. Participants and presenters over the course of this conference have ranged in background bringing together individuals working with a broad range of measurement systems, including fully compliant regulatory PEMS (1065 Compliant PEMS) and small systems, which include everything from micro PEMS (µPEMS), nano PEMS (nPEMS), in-situ sensors, portable activity measuring systems (PAMS), to Real Emissions Assessment and Logging (REAL).

At this year’s conference we will explore the notion of From the Laboratory to the Real World: Understanding Community Impacts. The focus in 2021 will be on seeking answers to the most pressing questions in today's world pertaining to climate and health. Topics covered will include the latest developments in compliant and non-compliant PEMS; the benefits of PAMS and prediction of in-use emissions; and new developments for on-road measurements from an international perspective, such as Real Driving Emissions.

Thank you,

Kent Johnson, Ph.D.
Principal Investigator, Emissions and Fuels Research
UC Riverside CE-CERT
AGENDA DAY 1

9:00 AM
Opening Remarks and Keynote

**Matthew Barth**
Director and Professor, University of California, Riverside CE-CERT

Opening Remarks

**Sterling Imfeld**
Engine Testing Center at the National Vehicle and Fuel Emissions Laboratory, EPA

Keynote Presentation

10:00 AM
Exposure & Measurements

**Daisy Thomas**
3DATX

New Approaches to Periodic Technical Inspection (PTI) Vehicle Emission Tests

**Nick Molden**
Emissions Analytics, Ltd.

Vehicle Interior Air Quality, Pollution Exposure in the Cabin and the Opportunity for Standardized International Ratings Transport Energy / Emissions Research (TER)

**Sebastián Tolvett**
Metropolitan University of Technology, Chile

Evaluation of TDI Engine No Emissions in Chile Measured with PEMS

10:50 AM
Government Policy

**Tim Dallman**
International Council on Clean Transportation (ICCT)

Using Vehicle Remote Sensing Emissions Data to Inform Low-emission Transportation Policies and Actions

**William (Bill) Robertson**
California Air Resources Board (CARB)

Sensor Based Emissions: A Regulator Perspective On ‘REAL’ and Future Directions

**Kent Johnson**
University of California, Riverside CE-CERT

On-Board Sensing, Analysis, and Reporting (OSAR)

12:00 PM
Break

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AGENDA DAY 1

All times are in Pacific Time (PT)

Research & Development

1:00 PM

Kotaro Tanaka  
Ibaraki University, Japan  
Ammonia Measurement in Exhaust using SEMS and PEMS

Susumu (Mu) Sato  
Tokyo Institute of Technology  
The Real-world Emissions Prediction with Deep Learning Based on the SEMS Measurement Data

Robin Smit  
Transport Energy / Emission Research (TER)  
An Overview of Measuring and Modelling Real-world Vehicle Emissions in Australia

Imad Khalek  
Southwest Research Institute (SwRI)  
Laboratory Investigation of NOx/NH3 Sensors for Onboard Emissions Monitoring

2:05 PM

Panel Discussion

Kent Johnson  
University of California, Riverside, CE-CERT

Tim French  
Truck & Engine Manufacturers Association & Chicago Law Partners

Sterling Imfeld  
United States Environmental Protection Agency

William (Bill) Robertson  
California Air Resources Board (CARB)

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### AGENDA DAY 2

**All times are in Pacific Time (PT)**

#### Research & Development

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<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td><strong>Zissis Samaras</strong>&lt;br&gt;Aristotle University of Thessaloniki</td>
<td>Measuring Automotive Exhaust Particles Down to 10nm - &quot;DownToTen&quot; Project</td>
</tr>
<tr>
<td>9:00 AM</td>
<td><strong>Kay- Oliver Denkinger</strong>&lt;br&gt;CPK Automotive</td>
<td>NOx-Sensor for Emission - and Immission - Measurement</td>
</tr>
<tr>
<td>9:00 AM</td>
<td><strong>Ehsan Hosseini</strong>&lt;br&gt;California Air Resources Board (CARB)</td>
<td>Calculation of a GHG Emissions Rate for Transportation Network Companies in California</td>
</tr>
<tr>
<td>9:00 AM</td>
<td><strong>Karl Ropkins</strong>&lt;br&gt;University of Leeds</td>
<td>Progress: AQEval and Early Research Outputs</td>
</tr>
<tr>
<td>9:00 AM</td>
<td><strong>André Forcetto</strong>&lt;br&gt;Environmental Company of Sao Paulo State CETESB</td>
<td>Advances in Real Driving Emissions in Brazil</td>
</tr>
<tr>
<td>9:00 AM</td>
<td><strong>Phil Roberts</strong>&lt;br&gt;Horiba</td>
<td>RDE Plus - A Road to Rig Development Methodology for Whole Vehicle RDE Compliance</td>
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#### Sensing & Policy

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>10:40 AM</td>
<td><strong>Zissis Samaras</strong>&lt;br&gt;Aristotle University of Thessaloniki</td>
<td>On-board Monitoring with Advanced Exhaust Sensors</td>
</tr>
<tr>
<td>10:40 AM</td>
<td><strong>Yi Tan</strong>&lt;br&gt;California Air Resources Board</td>
<td>Assessing the Ability of On-board NOx Sensors to Reflect Full Cycle NOx Emissions</td>
</tr>
<tr>
<td>10:40 AM</td>
<td><strong>Cavan McCaffery</strong>&lt;br&gt;University of California, Riverside</td>
<td>PEMS testing studies at UC Riverside CE-CERT</td>
</tr>
<tr>
<td>10:40 AM</td>
<td><strong>Chris Ruehl</strong>&lt;br&gt;California Air Resources Board</td>
<td>Comparison of Early (model yr. 2010-11) and Later (2013-14) On-road Performance of Selective Catalytic Reduction (SCR) on Heavy-duty Engines</td>
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#### Closing Remarks

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<th>Time</th>
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<th>Topic</th>
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<tr>
<td>11:45 AM</td>
<td><strong>Kent Johnson</strong>&lt;br&gt;University of California, Riverside, CE-CERT</td>
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