

# FINAL PROGRAM

## AIR QUALITY MEASUREMENT

METHODS AND TECHNOLOGY

MARCH 15-17, 2016

SHERATON CHAPEL HILL, CHAPEL HILL, NC



AIR & WASTE MANAGEMENT  
ASSOCIATION

<http://measurements.awma.org/>

# FINAL PROGRAM

## ABOUT THE CONFERENCE

This conference continues the A&WMA legacy of promoting current air quality measurement methods and data use. Academia, consultants, industry, government, and manufacturers won't want to miss the chance to hear the latest information on available technology, including new monitoring networks and regulations from industry and government experts, as well as citizen and community monitoring efforts. Air quality issues related to greenhouse gas measurements, ambient monitoring, fugitive and area source air measurements, quality assurance, and data uses in order to improve models, emission inventories, and policy decisions will also be addressed.

The conference provides a forum for current advances in measurement technology covering all aspects of air quality, including ambient air, indoor air, point sources, and area sources. Both laboratory and field studies will be covered. Participants include a full range of professionals from academe, industry, consultants, and government agencies. Concurrent sessions and vendor exhibits will add to the technical and networking aspects of the conference.

## GENERAL INFORMATION

### CONFERENCE LOCATION

#### **Sheraton Chapel Hill Hotel**

1 Europa Drive  
Chapel Hill, NC 27517

Phone: +1-919-969-2174

### REGISTRATION

To register, complete the registration option online or print the form at <http://measurements.awma.org> and return it with your payment to:

Registrar, Air & Waste Management Association  
One Gateway Center, 3rd Floor  
420 Fort Duquesne Boulevard  
Pittsburgh, PA 15222-1435 USA  
Fax: 412-232-3450

Your registration will not be processed without payment.

On site registration will be located in the hotel lobby and be open during the following hours:

Monday, March 14 2:00 p.m. - 5:00 p.m.  
Tuesday, March 15 7:30 a.m. - 5:00 p.m.  
Wednesday, March 16 7:30 a.m. - 4:30 p.m.  
Thursday, March 17 7:30 a.m. - 11:00 a.m.

### CONFERENCE PROCEEDINGS

Conference proceedings will be posted on the A&WMA website after the conference. Attendees will be notified via e-mail when the extended abstracts and presentations are available.

### CONTINUING EDUCATION CREDIT OPPORTUNITIES

Conference attendees may be eligible for continuing education credits. For more information, please contact Gloria Henning at +1-412-904-6021 or [glhenning@awma.org](mailto:glhenning@awma.org).

### PRESENTERS' BREAKFAST

Presenters and Session Chairs will meet for a complimentary continental breakfast on the day of their session involvement to review program details. Presenters should bring their presentations on a memory stick/USB to this meeting, as well as a brief biography.  
*Tuesday and Wednesday - Venetian Room*  
*Thursday - Paris Room*

### CONFERENCE COMMITTEE

#### **Conference Co-Chairs:**

R.K.M. Jayanty, *Research Triangle Institute (Emeritus)*  
Ray Merrill, *U.S. EPA*

#### **Technical Program Committee:**

Ricky Tropp, *Desert Research Institute*  
Eric Winegar, *Winegar Air Sciences*

### ABOUT THE AIR & WASTE MANAGEMENT ASSOCIATION

A&WMA is a not-for-profit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for technology exchange, professional development, networking, public education, and outreach to more than 5,000 environmental professionals in 65 countries. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society. For more information, please visit [www.awma.org](http://www.awma.org).

A&WMA Federal Tax ID #: 25-6048614

### AMERICANS WITH DISABILITIES ACT

The Air & Waste Management Association supports the Americans with Disabilities Act (ADA). Those attendees requiring specific equipment or services should contact Tracy Fedkoe, Conference & Events Planner, at [tfedkoe@awma.org](mailto:tfedkoe@awma.org) to make those needs known in advance. We will make every reasonable effort to accommodate them.

## EXHIBITION INFORMATION

Exhibitors will spend two days interfacing with attendees interested in learning more about ambient air monitoring, source methodology, particulate matter measurement methods, speciation, quality assurance, developments in VOC sampling, advances in instrumentation, technology evaluation, laboratory method development, and more.

**Location:** London, Vienna, and Brussels Rooms

**Exhibitor Move-in and Registration:** Monday, March 14, 2:00 p.m. - 5:00 p.m.

**Exhibition Hours:** Tuesday, March 15, 9:00 a.m. - 6:00 p.m. and Wednesday, March 16, 9:00 a.m. to 4:00 p.m.

## EXHIBITORS

### **2B Technologies, Inc.**

Booth 26  
2100 Central Avenue, Suite 105  
Boulder, CO 80301  
P: 303-273-0559  
F: 303-277-1812  
[www.twobtech.com](http://www.twobtech.com)

2B Technologies, Inc. is dedicated to the development and commercialization portable analytical instruments for atmospheric and environmental measurements. We specialize in miniaturized instruments for measurements of ozone in air and water as well as NOx(NO/NO2) in air.

### **Agilaire, LLC**

Booth 17  
2904 B Tazewell Pike STE A  
Knoxville, TN 37918  
P: 865-927-9440  
F: 865-927-9552  
[www.agilaire.com](http://www.agilaire.com)

Agilaire provides air monitoring data acquisition and management systems for over 80 state and local agencies and 12 tribes in the US. Its flagship products, AirVision and the 8832/872 data loggers form a complete solution for collecting data from field sensors, providing quality assurance, and meeting needs for both internal reporting and publishing information to USEPA and the public. Public information options include "plug and play" AgileWeb site, and the MyAQI mobile app.

### **American Ecotech**

Booth 1  
100 Elm Street, Factory D  
Warren, RI 02885  
P: 401-247-0100  
F: 401-537-9166  
[www.americaneotech.com](http://www.americaneotech.com)

American Ecotech specializes in the supply of state-of-the-art instruments measuring specific gases, aerosols, and particulate airborne matter, including gas analyzers to measure NOx, CO, SO2, CO2, NH3, H2S, NOy, and/or ozone. We supply digital dataloggers, and advanced remote maintenance software for automated field data validation and reporting.

### **Atmosfir Optics Ltd.**

Booth 5  
8801 Fast Park Drive, Suite 301  
Raleigh, NC 26717  
P: 919-747-8895  
[www.atmosfir.net](http://www.atmosfir.net)

Atmosfir is an innovative, advanced air monitoring Technology Company focused on providing our clients with the best air monitoring solutions. Atmosfir has unique intellectual properties and years of in-the-field experience. Our spectral and spatial data fusion algorithms all use the best available open path hardware, and innovative solutions to meet client needs.

### **Consolidated Analytical Systems (CAS)**

Booth 21  
201 South Miami Avenue  
Cleveland, OH 45002  
P: 513-542-1200  
F: 513-766-7988  
[www.cas-en.com](http://www.cas-en.com)

Consolidated Analytical Systems (CAS) provides expertise in the design, manufacturing, integration and support of Monitoring Systems for ambient air quality and industrial fence line applications. The CAS-manufactured Shelters and Enclosures are designed with LEED energy efficiency principles and instrument optimization in mind. CAS also offers a complete line of field deployable gas chromatographs for VOCs in ambient air.

### **Cooper Environmental Services, LLC**

Booth 25  
9403 SW Nimbus Avenue  
Beaverton, OR 97008  
P: 971-371-3049  
F: 503-624-2120  
[www.cooperenvironmental.com](http://www.cooperenvironmental.com)

Cooper Environmental broke into the equipment market with the world's first near real-time multi-metals CEMs and ambient instruments. Now we are raising the bar with our ADAPT analysis package for our ambient analyzer that effortlessly combines meteorological data with metals concentration data to help identify likely pollution sources.

# FINAL PROGRAM

## EXHIBITORS CON'T.

### **DR DAS LTD**

Booth 7  
194 Clouse Lane  
Granville, OH 43023  
P: 740-281-5820  
F: 740-522-6239  
www.dr-das.com

The pioneer in digital instrument interfaces, DR DAS delivers scalable data acquisition solutions. Gathering data from any device we deliver it to anyplace. Solutions scale from single sensor to global operations. Solutions support measurements, diagnostics, analysis and quality review plus management of network operations, QA, preventive maintenance and equipment inventory. Veteran owned.

### **Entech Instruments, Inc.**

Booth 16  
2207 Agate Court  
Simi Valley, CA 93065  
P: 805-527-5939  
F: 805-527-7913  
www.entechnst.com

Entech Instruments is proud to be a world leader in GC/MS inlet systems and sampling technologies for headspace and environmental air analysis. From ultra inert and tool free air and gas sampling canisters to laboratory sample prep automation, Entech is an A-Z solution provider.

### **Grimm Technologies Inc.**

Booth 19  
PO Box 6358  
Douglasville, GA 30154  
Ph: 770-577-0853  
F: 770-577-0955  
www.grimm-aerosol.com

Grimm Technologies manufacturers, sales and services a line of real time aerosol PM Environmental Dust Monitors. Instruments have the capabilities of providing EPA Certified FRM PM-2.5 as well as PM-10: PM-1; TSP and particle counts in 31 channels from 250nm -32000NM.

### **LI-COR Biosciences**

Booth 23  
4647 Superior Street  
Lincoln, NE 68504  
P: 402-467-3576  
F: 402-467-2819  
www.licor.com/env

LI-COR provides analytical solutions for remote, real-time gas measurements from your production facility or management site. Combining decades of experience, field-installable hardware - the new LI-7500RS and LI-7200RS CO<sub>2</sub>/H<sub>2</sub>O analyzers, and the LI-7700 Open Path CH<sub>4</sub> Analyzer, and secure web service software – FluxSuite, LI-COR provides innovative solutions for challenging applications.

### **Magee Scientific**

Booth 14  
1916a M L King Jr Way  
Berkeley, CA 94704  
P: 510-845-2801  
F: 510-845-7137  
www.mageescientific.com

Magee Scientific is the originator of the Aethalometer<sup>®</sup>, the most widely used instrument for real-time measurement of Black Carbon aerosols. Various models offer analysis at 7 optical wavelengths from UV to IR, with time resolutions to 1 second. The Optical Transmissometer measures the BC content of previously-collected filter samples.

### **Markes International, Inc.**

Booth 24  
11126-D Kenwood Road  
Cincinnati, OH 45242  
P: 866-483-5684  
F: 513-745-0741  
www.markes.com

Markes International is a specialist provider of technologies and expertise that enable chemists to meet analytical challenges in the sampling and detection of trace-level organic compounds. As a long-standing leader in analytical thermal desorption, Markes manufactures a comprehensive range of instrumentation, sampling equipment and consumables that enhance the capability of GC-MS. Markes has also gained recognition for its BenchTOF range of time-of-flight mass spectrometers for GC, award-winning Select-eV ion-source technology and associated software.

### **M&C TechGroup**

Booth 6  
6019 Olivias Park Drive; Suite G  
Ventura, CA 93003  
P: 805-654-6970  
F: 805-654-6971  
www.mc-techgroup.com

World Class manufacturer of Gas Sample Probes, Conditioners, Paramagnetic Oxygen Sensors, Hg Sorbent Trap Systems, and Automated Control Panels. Sample Probes and Conditioners are designed for Dilution and/or Straight Extractive Systems for hot/wet or dry source applications. M&C focuses on delivering solutions for a more reliable and trouble free system.

### **Met One Instruments Inc.**

Booth 22  
1600 NW Washington Blvd  
Grants Pass, OR 97526  
P: 541-471-7111  
www.metone.com

Met One Instruments Inc. is one of the leaders in research, development and manufacturing of instrumentation, data logging, environmental software and monitoring systems worldwide. Our customer service, including on-going after-sales support is the best in the industry, and all our products are made in the USA.

## EXHIBITORS CON'T.

### **Montrose Air Quality Services**

Booth 28  
1 Park Plaza, Suite 1000  
Irvine, CA 92614  
P: 949-988-3500  
F: 949-988-3514  
[www.montrose-env.com](http://www.montrose-env.com)

Montrose Air Quality Services is the nation's largest and most innovative provider of emissions testing and ambient monitoring services. Our team provides reliable and timely environmental data, gathered and presented using the highest technical and ethical standards, while helping our clients remain compliant with air regulatory issues.

### **Peak Laboratories, LLC**

Booth 10  
2330 Old Middlefield Way, Ste. 9  
Mountainview, CA 94043  
P: 650-691-1267  
F: 650-691-1047  
[www.peaklaboratories.com](http://www.peaklaboratories.com)

Peak Laboratories designs and manufactures fully integrated process GC's for continuous atmospheric monitoring of CO, GHGs, hydrogen, benzene, 1,3, butadiene and other trace atmospheric components. Peak is the only non-NDIR, EPA approved technology for CO monitoring. It is more cost effective than CRDS and more accurate than traditional NDIR methods.

### **Restek Corporation**

Booth 18  
110 Benner Circle  
Bellefonte, PA 16823  
P: 814-353-1300  
F: 814-353-1309  
[www.restek.com](http://www.restek.com)

LC & GC Columns & Accessories, Air Sampling, Sample Prep, and Reference Standards products.

### **RTI International**

Booth 2  
3040 E. Cornwallis Road  
Research Triangle Park, NC 27709  
[www.rti.org](http://www.rti.org)

RTI International is one of the world's leading research institutes, dedicated to improving the human condition by turning knowledge into practice. Our staff of more than 3,700 provides research and technical services to governments and businesses in more than 75 countries in the areas of health and pharmaceuticals, education and training, surveys and statistics, advanced technology, international development, economic and social policy, energy and the environment, and laboratory testing and chemical analysis. For more information, visit [www.rti.org](http://www.rti.org).

### **SGS Environment, Health & Safety**

Booth 11  
5500 Business Drive  
Wilmington, NC 28405  
P: 910-350-1903  
F: 910-350-1557  
[www.us.sgs.com/environment](http://www.us.sgs.com/environment)

SGS is the world's leading inspection, verification, testing and certification company. SGS is recognized as the global benchmark for quality and integrity. With more than 80,000 employees, SGS operates a network of over 1,650 offices and laboratories around the world.

### **Siemens Industry, Inc.**

Booth 4  
5980 West Sam Houston Pkwy North, Suite 500  
Houston, TX 77041  
P: 713-939-7400  
[www.usa.siemens.com/processanalytics](http://www.usa.siemens.com/processanalytics)

A leading supplier of Continuous Gas Analyzer measurement products and provides best in class product life cycle service and support such as 24 hour technical assistance, spare parts.

### **Sutron - Air Quality Division**

Booth 3  
2111 Sam Bass Road, Suite 800A  
Round Rock, TX 78681  
P: 512-238-9359  
F: 512-238-9357  
[www.sutron.com](http://www.sutron.com)

Sutron Air Quality Division (AQD) is an environmental company specializing in Air Quality monitoring systems to include EPA monitoring/reporting software, meteorological equipment, analyzers and calibrators.

### **Teledyne Advanced Pollution Instrumentation**

Booth 13  
9480 Carroll Park Drive  
San Diego, CA 92121  
P: 858-657-9800  
F: 858-657-9816  
[www.teledyne.com](http://www.teledyne.com)

Teledyne Advanced Pollution Instrumentation offers a complete line of Air Quality Monitoring instrumentation, which complies with the US Environmental Protection Administration, European Union, and other requirements for the measurement of ambient air quality. Utilizing proven measurement principles, we also offer instruments for Continuous Emissions Monitoring and a number of other applications.

# FINAL PROGRAM

## EXHIBITORS CON'T.

### **Thermo Fisher Scientific**

Booth 27  
27 Forge Parkway  
Franklin, MA 02038  
P: 407-758-2183  
www.thermoscientific.com

Thermo Fisher Scientific offers a full range of air quality instruments and services to meet the growing needs of the environmental market. We are committed to being the global leader in environmental monitoring applications where our market, knowledge, customer intimacy, application expertise, and instrument technology help our customers succeed in making the world a healthier, cleaner and safer place.

### **TISCH Environmental**

Booth 20  
145 South Miami Avenue  
Cleves, OH 45002  
P: 513-467-9000  
F: 513-467-9009  
www.tisch-env.com

Tisch Environmental is a family business founded to develop and manufacture air pollution monitoring instruments. The Tisch family have produced nearly half million device for the air pollution monitoring community over the past 60 years. TEI offers products for all criteria pollutants per US EPA measurement criteria.

### **Tricorntech Corporation**

Booth 12  
Building C, No. 18  
Siyuan Street, Zhongzheng Dist.  
Taipei City, Taiwan, 10087  
P: 886-2-2365-4711  
F: 886-2-2365-4701  
www.tricorntech.com

TRICORNTECH is a voc monitoring expert, offering a wide product ranges from high-tech portable instruments to online systems and comprehensive software. TRICORNTECH commits to providing integrated, cost-effective, and constructive solutions to assist valued customers solving problems. TRICORNTECH solutions make an excellent foundation for a proactive approach to maintenance, integrated in customers' normal maintenance activities. On Customers' request, TRICORNTECH puts together the monitoring equipment package best suited to your economic and technical requirements.

### **TSI Inc.**

Booth 15  
500 Cardigan Road  
Shoreview, MN 55126  
P: 800-874-2811  
F: 651-490-3824  
www.tsi.com

TSI, a world leader in particle measurements, offers a variety of aerosol monitors for real-time, direct-reading results. The new Environmental DustTrak™ measures PM1, PM2.5, respirable, PM10 and total PM size fractions, providing near-reference method quality data. In addition, TSI offers ultrafine particle monitors and next-generation lower cost PM2.5 sensors.

### **URG Corporation**

Booth 9  
116 S. Merrit Mill Rd  
Chapel Hill, NC 27516  
P: 919-942-2753  
F: 919-942-3522  
www.urgcorp.com

Ambient in Monitor (AIM): Continuous direct measurement of particles and gases (nitrate, sulfate, ammonium, nitric acid, ammonia and other gases/particles found in PM2.5). URG speciation monitors for PM10, 2.5, 1 include the Medium Volume Particulate Sampler and Annular Denuder System. Selection of Teflon coated cyclones and stainless steel cyclones for diesel emissions.

### **Wilbur Technical Services, LLC**

Booth 8  
P O Box 397 - 97 South Main Street  
Mont Vernon, NH 03057  
P: 603-880-7100  
F: 603-880-3157  
www.jjwillbur.com

Wilbur Technical Services, LLC provides state-of-the-art systems for ambient air, source testing, CEMS, perimeter monitoring and energy efficiency processes. We utilize highly accurate and reliable analyzer systems and local and/or cloud based data acquisition systems transmitting data over Internet and wireless platforms.

# THANK YOU TO OUR SPONSORS:

U.S. EPA Office of Research and Development - Air, Climate, Energy Research Program



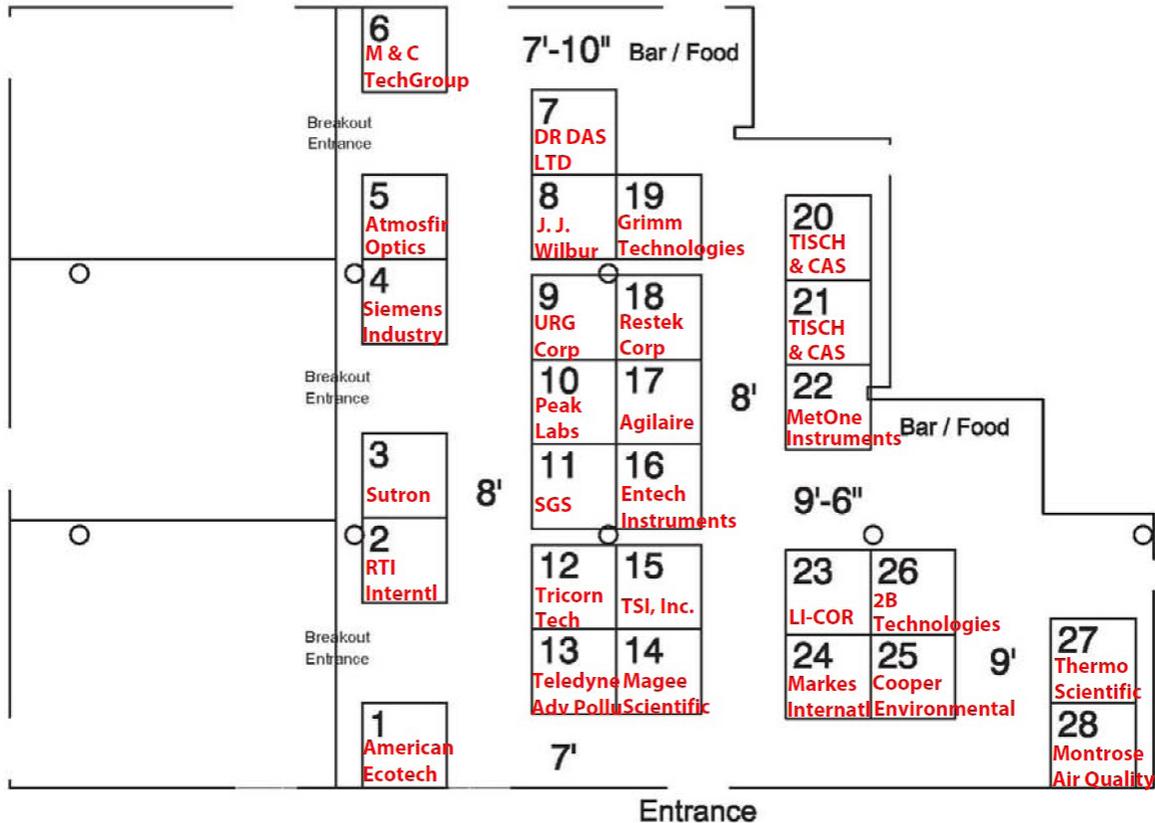
## Tabletop Sponsor

### Alicat Scientific

7641 N. Business Park Drive  
 Tuscon, AZ 85741  
 P: 888-290-6060  
 F: 520-290-0109  
 www.alicat.com

Portable volumetric and mass flow meters make it easy to calibrate the flow systems of ambient air samplers and process analyzers. See NIST-traceable, real-time readings of flow, pressure and temperature in any weather from Anchorage to Miami.

# EXHIBIT FLOOR PLAN - LONDON, VIENNA, BRUSSELS ROOMS



# FINAL PROGRAM

## TECHNICAL PROGRAM - Tuesday, March 15, 2016

**7:30 a.m. - 5:00 p.m.**  
Conference Registration  
Lobby

**7:30-8:30 a.m.**  
Presenters' Breakfast  
Venetian Room

**7:30-8:30 a.m.**  
Continental Breakfast  
Lobby

**8:30-8:55 a.m.**  
Conference Opening  
Amsterdam Room

**8:55-9:45 a.m.**  
Keynote Presentation  
Disruptive Innovation in Air Measurement Technology  
– Reality or Hype?  
*Gayle Hagler, Ph.D., Senior Environmental Engineer,  
US EPA Office of Research and Development*  
Amsterdam Room

**9:00 a.m. - 6:00 p.m.**  
Exhibition Viewing  
London, Vienna, Brussels Rooms

**9:45-10:15 a.m.**  
Coffee Service and Exhibition Viewing  
London, Vienna, Brussels Rooms

### Session 1A:

#### AIR TOXIC MEASUREMENTS

[concurrent with Sessions 2A and 3A]

**Co-Chairs:** *Dave Shelow, U.S. EPA/OAQPS; Julie Swift, Eastern Research Group*  
Amsterdam A

**10:15-10:40 a.m.**  
Control #2

Verifying Zero Air Sources in an Ambient Air Gaseous Measurement Network  
*Yousaf Hameed; Clark County Department of Air Quality, Las Vegas, NV*

**10:40-11:05 a.m.**  
Control #97

Canister Cleaning Practices and Blank VOC Concentrations  
*Jason S. Herrington, Gary Stidsen, Joe Konschnik, Steve Kozel; Restek Corporation, Bellefonte, PA*

**11:05-11:30 a.m.**  
Control #8

Qualification of Stainless Steel Canisters for the Measurement of Trace Levels of Volatile Organic Compounds in Air  
*Douglas J. Turner, Ian C. MacGregor; Battelle, Columbus, OH*

**11:30-11:55 a.m.**  
Control #15

Impact of Adopting the Method Detection Limit Method Update Rule on Reported Ambient Air Concentrations of Air Toxics  
*Douglas J. Turner, Ian C. MacGregor; Battelle, Columbus, OH*

### Session 2A:

#### PM SPECIATION

[concurrent with Sessions 1A and 3A]

**Co-Chairs:** *RKM Jayanty, RTI International; Prakash Doraiswamy, RTI International*  
Amsterdam B

**10:15-10:40 a.m.**  
Control #63

An Evaluation of Mass Absorption Efficiency for Optical Carbon Analysis on Teflon Filter Media  
*Paige Presler-Jur,<sup>1</sup> Prakash Doraiswamy,<sup>1</sup> Oki Hammond,<sup>1</sup> Neil Frank,<sup>2</sup> Joann Rice<sup>2</sup>; <sup>1</sup>RTI International, RTP, NC, <sup>2</sup>US EPA / OAQPS, RTP, NC*

**10:40-11:05 a.m.**  
Control #66

A Decade of Backscatter-Corrected Transmittance Measurements by the IMPROVE Network  
*Warren H. White, Krystyna Trzepla, Nicole P. Hyslop; Crocker Nuclear Laboratory, University of California, Davis, CA*

**11:05-11:30 a.m.**  
Control #6

Development of Single-Compound XRF Calibration Standards on PTFE Filters for Analysis of Aerosol Samples  
*Sinan Yatkin, Krystyna Trzepla, Warren White, Nicole Hyslop; Crocker Nuclear Laboratory, University of California, Davis, CA*

**11:30 - 11:55 a.m.**  
Control #5

Evaluating EDXRF Measurements of Atmospheric Aerosols with Multi-Elemental Reference Materials  
*Sinan Yatkin, Krystyna Trzepla, Warren White, Nicole Hyslop; Crocker Nuclear Laboratory, University of California, Davis, CA*

### Session 3A:

#### ADVANCED OPTICAL MONITORING

[concurrent with Sessions 1A and 2A]

**Co-Chairs:** *Eben Thoma, U.S. EPA/ORD; Jason Dewees, U.S. EPA*  
Amsterdam C

**10:15-10:40 a.m.**  
Control #45

Quantification of Fugitive Emissions from Large Refineries Using Optical Remote Sensing Methods  
*Laki Tisopoulos,<sup>1</sup> Andrea Polidori,<sup>1</sup> Olga Pikelnaya,<sup>1</sup> Johan Mellqvist,<sup>2</sup> Jerker Samuelsson,<sup>2</sup> Marianne Ericsson,<sup>2</sup> Rod Robinson,<sup>3</sup> Fabrizio Innocenti,<sup>3</sup> Ram Hashmonay,<sup>4</sup> Gilad Shpitzer<sup>1</sup>; <sup>1</sup>South Coast Air Quality Management District, Diamond Bar, CA, <sup>2</sup>FluxSense Inc., San Diego, CA, <sup>3</sup>National Physical Laboratory, Hampton Rd, Teddington, United Kingdom, <sup>4</sup>Atmosfir Optics Ltd., Ein Iron, Israel*

**10:40-11:05 a.m.**  
Control #46

Quantification of Emissions from Gas Stations, Urban Oil Wells, and Other Small Point Sources Using Optical Remote Sensing Methods  
*Andrea Polidori,<sup>1</sup> Laki Tisopoulos,<sup>1</sup> Olga Pikelnaya,<sup>1</sup> Johan Mellqvist,<sup>2</sup> Jerker Samuelsson,<sup>2</sup> Marianne Ericsson,<sup>2</sup> Rod Robinson,<sup>3</sup> Fabrizio Innocenti,<sup>3</sup> Timothy R. Minnich,<sup>4</sup> Robert L. Scotto,<sup>4</sup> Stephen H. Perry<sup>5</sup>; <sup>1</sup>South Coast Air Quality Management District, Diamond Bar, CA, <sup>2</sup>FluxSense Inc., San Diego, CA, <sup>3</sup>National Physical Laboratory, Teddington, United Kingdom, <sup>4</sup>Minnich and Scotto, Inc., Freehold, NJ, <sup>5</sup>Kassay Field Services, Inc., Mohrsville, PA*

**11:05-11:30 a.m.**  
Control #79

Using Solar Occultation Flux and Other Optical Remote Sensing Techniques to Fully Characterize and Quantify Fugitive Emissions  
*Johan Mellqvist,<sup>1</sup> Jerker Samuelsson,<sup>1</sup> Marianne Ericsson,<sup>1</sup> Laki Tisopoulos,<sup>2</sup> Andrea Polidori,<sup>2</sup> Olga Pikelnaya<sup>2</sup>; <sup>1</sup>FluxSense Inc., San Diego, CA, <sup>2</sup>South Coast Air Quality Management District, Diamond Bar, CA*

**11:30-11:55 a.m.**  
Control #82

The Measurement of Fugitive and Diffuse VOC and GHG Emissions Using Differential Absorption Lidar and the Validation Using a Controlled Release Facility  
*R. Robinson, F. Innocenti, J. Helmore, T. Gardiner, A. Finlayson, F. Few, A. Connor; National Physical Laboratory, Teddington, UK*

LUNCH FOR ALL SESSIONS  
12:00 p.m. – 1:30 p.m.  
Venetian Room

# TECHNICAL PROGRAM - Tuesday, March 15, 2016, Con't.

## Session 1B:

### AIR TOXICS FIELD STUDIES

[concurrent with Sessions 2B and 3B]

**Co-Chairs:** Dave Shelow, U.S. EPA/OAQPS; Julie Swift, Eastern Research Group

Amsterdam A

#### 1:30-1:55 p.m.

Control #19

The Analysis of Ozone Precursors by AutoGC: The Role of Calibration and Quality Control Strategies in Data Management for Fully Automated Thermal Desorption-GC-FID Systems

Carol J. Meyer; Orsat, LLC, Pasadena, TX

#### 1:55-2:20 p.m.

Control #14

Update on Work to Optimize U.S. EPA Method TO-11A for the Measurement of Carbonyls in Ambient Air

Ian C. MacGregor,<sup>1</sup> Elizabeth A. Hanft,<sup>1</sup> David M. Shelow,<sup>2</sup>; <sup>1</sup>Battelle, Columbus, OH, <sup>2</sup>U.S. EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC

#### 2:20-2:45 p.m.

Control #86

Application Study of a Novel Micro Gas Chromatography and PTR-TOF-MS for On-site Continuous Ambient VOCs Analysis at a Mega Petrochemical Plant

Wen-Tzu Liu,<sup>1</sup> Wei-Cheng Liao,<sup>2</sup> Jia-Lin Wang,<sup>2</sup> Yan-Horn Lin,<sup>1</sup> Li-Peng Wang,<sup>1</sup> Tsung-Kuan Chou<sup>1</sup>;

<sup>1</sup>TricornTech Corporation, Taipei City, Taiwan,

<sup>2</sup>Chemistry Department, National Central University, Taoyuan City, Taiwan

#### 2:45-3:10 p.m.

Control #51

Temporal Distribution of Light VOCs Levels in a Hospital Parking Garage

Ashraf Ramadan,<sup>1</sup> Mohamed F. Yassin,<sup>1</sup> Bashayer AlShammari<sup>2</sup>; <sup>1</sup>Environmental Pollution and Climate Program, Environment and Life Sciences Research Center, Kuwait Institute for Scientific Research, Safat, Kuwait, <sup>2</sup>College of Life Sciences, Kuwait University, Kuwait

## Session 2B:

### PM SPECIATION CON'T.

[concurrent with Sessions 1B and 3B]

**Co-Chairs:** RKM Jayanty, RTI International; Prakash Doraiswamy, RTI International

Amsterdam B

#### 1:30-1:55 p.m.

Control #101

On the MicroPEM as an Ambient Particulate Matter Sampler

Jonathan Thornburg,<sup>1</sup> Ryan Chartier,<sup>1</sup> Seung-Hyun Cho,<sup>1</sup> and J. Randall Newsome<sup>1</sup>; RTI International, Research Triangle Park, NC

#### 1:55-2:20 p.m.

Control #35

Comparison of Personal Exposure Monitor and Ambient Air Filter Analysis

Frank. X. Weber,<sup>1</sup> Chantel D. Sloan,<sup>2</sup> James D. Johnston<sup>2</sup>; <sup>1</sup>RTI International, Research Triangle Park, NC, <sup>2</sup>Brigham Young University, Provo, UT

#### 2:20-2:45 p.m.

Control #84

Drying-induced Evaporation of Summertime Organic Aerosols: Measurement and Regulatory Implications

Marwa M. H. El-Sayed, Dziedzorm Amenumey, Christopher J. Hennigan; Department of Chemical, Biochemical and Environmental Engineering, University of Maryland, Baltimore County, Baltimore, MD

REFRESHMENT BREAK AND EXHIBITION  
VIEWING FOR ALL SESSIONS  
3:10-3:40 p.m.

London, Vienna, Brussels Rooms

## Session 3B:

### ADVANCED OPTICAL MONITORING CON'T.

[concurrent with Sessions 1B and 2B]

**Co-Chairs:** Eben Thoma, U.S. EPA/ORD; Jason Dewees, U.S. EPA

Amsterdam C

#### 1:30-1:55 p.m.

Control #76

Continuous Fenceline Monitoring of Long Term Fugitive Emissions from Refineries Using Open Path FTIR Technique

Ram Hashmonay,<sup>1</sup> Gilad Shpitzer,<sup>1</sup> Robert Kagann,<sup>1</sup> Omri Hashmonay,<sup>1</sup> Laki Tisopulos,<sup>2</sup> Andrea Polidori,<sup>2</sup> Olga Pikelnaya<sup>2</sup>; <sup>1</sup>Atmosfir Optics Ltd., Ein Iron, Israel, <sup>2</sup>South Coast Air Quality Management District, Diamond Bar, CA

#### 1:55-2:20 p.m.

Control #61

Demonstration of a Comprehensive Fenceline Monitoring Network Using OP-FTIR

Matthew W. McCormick, Troy M. Boley, Ralph J. Brewer, Robert L. Spellicy, IMACC, LLC, Round Rock, TX

#### 2:20-2:45 p.m.

Control #31

Validation Testing of the Area-Source Technique Using EPA Method TO-16

Timothy R. Minnich,<sup>1</sup> Robert L. Scotto,<sup>1</sup> Stephen H. Perry,<sup>2</sup> Olga Pikelnaya,<sup>3</sup> Andrea Polidori,<sup>3</sup> Laki Tisopulos,<sup>3</sup> Susan Stuver,<sup>4</sup> Jesse Alonzo<sup>4</sup>; <sup>1</sup>Minnich and Scotto, Inc., Freehold, NJ, <sup>2</sup>Kassay Field Services, Inc., Mohrsville, PA, <sup>3</sup>South Coast Air Quality Management District, Diamond Bar, CA, <sup>4</sup>Texas A&M University, Institute of Renewable Natural Resources, San Antonio, TX

#### 2:45-3:10 p.m.

Control #12

Testing of Cerex Open-Path Ultraviolet Differential Optical Absorption Spectroscopy Systems for Fenceline Monitoring Applications

Eben D. Thoma,<sup>1</sup> Edgar Thomason,<sup>1</sup> Jason DeWees,<sup>2</sup> Parik Deshmukh,<sup>3</sup> Tom Wisniewski,<sup>4</sup> Scott McEwan,<sup>4</sup> Paul Johnson,<sup>4</sup> Dennis Sosna,<sup>5</sup> Hallie Weiss,<sup>5</sup> Carol Ann Gross-Davis,<sup>6</sup> Howard Schmidt<sup>6</sup>; <sup>1</sup>U.S. EPA, ORD, RTP, NC, <sup>2</sup>U.S. EPA, OAR, RTP, NC, <sup>3</sup>Jacobs Engineering Inc., RTP, NC, <sup>4</sup>Cerex Monitoring Solutions LLC, Atlanta, GA, <sup>5</sup>Philadelphia AMS, Philadelphia, PA, <sup>6</sup>U.S. EPA, Region 3, Philadelphia, PA

# FINAL PROGRAM

## TECHNICAL PROGRAM - Tuesday, March 15, 2016, Con't.

### Session 1C:

#### AIR TOXICS FIELD STUDIES CON'T.

[concurrent with Session 2C]

**Co-Chairs:** *Dave Shelow, U.S. EPA/OAQPS;*  
*Julie Swift, Eastern Research Group*

Amsterdam A & B

### Session 2C:

#### GREENHOUSE GAS/CRITERIA POLLUTANTS

[concurrent with Session 1C]

**Chair:** *Dennis Mikel, U.S. EPA*

Amsterdam C

#### 3:40-4:05 p.m.

Control #81

##### Technique for Re-locating an Air Quality Monitoring Site

*Hilary Hafner, Bryan M. Penfold; Sonoma Technology, Inc., Petaluma, CA*

#### 4:05-4:30 p.m.

Control #52

##### Evaluation of Ambient VOCs' Levels at a Power Station Using Remote Canister Sampling

*Ashraf Ramadan; Environmental Pollution and Climate Program, Environment and Life Sciences Research Center, Kuwait Institute for Scientific Research, Safat, Kuwait*

#### 4:30 - 4:55 p.m.

Control #40

##### Comprehensive Air Monitoring Across North Texas from 2014-2015

*Katie R. Sheline, Jenna C. Granstra, Brian A. Cochran, Scott T. Jenkins; AECOM, Austin, TX*

#### 3:40-4:05 p.m.

Control #57

##### Greenhouse Gas Measurement Handbook

*Dennis K. Mikel; EPA-OAQPS, Durham, NC*

#### 4:05-4:30 p.m.

Control #10

##### Using Automated Eddy-covariance Stations for Studying Landfill Methane Emissions

*George Burba<sup>1</sup> Dayle McDermitt,<sup>1</sup> Liukang Xu,<sup>1</sup> Jiahong Li,<sup>1</sup> R. Green,<sup>2</sup> J. Chanton,<sup>3</sup> Karla Welding<sup>4</sup>; <sup>1</sup>LI-COR Biosciences, Lincoln, NE, <sup>2</sup>Waste Management, Cincinnati, OH, <sup>3</sup>Department of Earth, Ocean & Atmospheric Science, Florida State University Tallahassee, FL, <sup>4</sup>Bluff Road Landfill, Lincoln, NE*

#### 4:30-4:55 p.m.

Control #90

##### Evaluation of the Influence of Non-conventional Sources of Air Emissions on the Measured Ambient Air Quality in North Texas

*Guo Quan Lim, Kuruvilla John; Department of Mechanical and Energy Engineering, University of North Texas, Denton, TX*

NETWORKING RECEPTION

Exhibit Hall

5:00-6:00 p.m.

London, Vienna, Brussels Rooms

# TECHNICAL PROGRAM - Wednesday, March 16, 2016

**7:30 a.m. – 4:30 p.m.**

Conference Registration and Continental Breakfast  
Lobby

**7:30-8:30 a.m.**

Presenters' Breakfast  
Venetian Room

**9:00 a.m. - 4:00 p.m.**

Exhibition Viewing  
London, Vienna, Brussels Rooms

## Session 4A:

### ADVANCED OPTICAL MONITORING CON'T.

[concurrent with Sessions 5A and 6A]

**Co-Chairs:** Eben Thoma, U.S. EPA/ORD; Jason Dewees, U.S. EPA

Amsterdam A

## Session 5A:

### PM MEASUREMENTS

[concurrent with Sessions 4A and 6A]

**Co-Chairs:** Ricky Tropp, Desert Research Institute; Praveen Srirama, Carlsbad Environmental Monitoring & Research Center

Amsterdam B

## Session 6A:

### AIR SENSOR MEASUREMENTS

[concurrent with Sessions 4A and 5A]

**Co-Chairs:** Kristen Benedict, U.S. EPA; Hilary Hafner, Sonoma Technology, Inc.; Ron Williams, U.S. EPA.

Amsterdam C

**8:30-8:55 a.m.**

Control #11

Quantifying Gas Cloud Emission Rates with the Rebellion Photonics Gas Cloud Imager

Robert T. Kester, Nathan Hagen, Srinivasan Rajaraman, Ryan P. Mallery; Rebellion Photonics, Inc., Houston TX

**8:55-9:20 a.m.**

Control #93

Methods to Determine Response Factors for Optical Gas Imaging

Yousheng Zeng, Jon Morris, Albert Sanders, Cory Zeng; Providence Photonics, LLC, Baton Rouge, LA

**9:20-9:45 a.m.**

Control #58

Passive Monitoring – A Guide to Sorbent Tube Sampling for EPA Method 325

Nicola M. Watson<sup>1</sup>; Caroline Widdowson<sup>2</sup>; <sup>1</sup>Markes International, Gold River, CA, <sup>2</sup>Markes International Ltd, Gwaun Elai Medi-Science Campus, Llantrisant, RCT, UK

**9:45 - 10:10 a.m.**

Control #18

FerroAlloy NESHAP, Digital Camera Opacity Technique, and US EPA ALT 082

Shawn Dolan; Virtual Technology, LLC, Rio Rico, AZ

**8:30-8:55 a.m.**

Control #9

Real-time Management of Aethalometer Networks

Matjaz Kobal,<sup>1</sup> Grega Razoršek,<sup>1</sup> Luka Drinovec,<sup>1</sup> Griša Močnik,<sup>1</sup> Anthony D.A. Hansen<sup>2</sup>; <sup>1</sup>Aerosol d.o.o., Kamniška 41, Ljubljana, Slovenia, <sup>2</sup>Magee Scientific Corp., Berkeley, CA

**8:55-9:20 a.m.**

Control #16

Recent IMPROVE Version 2 Sampler Enhancements

Joshua S. Grant, Jose W. Mojica, Christopher D. Wallis, Nicole P. Hyslop; Crocker Nuclear Laboratory, University of California, Davis, CA

**9:20-9:45 a.m.**

Control #59

Ultrafine Particle Measurements at Schools Next to a Freeway in Las Vegas and in the Greater Salt Lake City Area

Hilary Hafner, Steven G. Brown, Paul T. Roberts, Jennifer L. DeWinter, David L. Vaughn; Sonoma Technology, Inc., Petaluma, CA

**8:30-8:55 a.m.**

Control #28

Equivalence Testing of Sensor Based Air Quality Monitoring Systems

Geoff Henshaw, Nick Reid, Jonathan Taylor; Aeroqual Ltd, Auckland, New Zealand

**8:55-9:20 a.m.**

Control #42

Village Green Air Monitoring: Preliminary Results of the 2015 National Pilot Project in Partnership with State and Local Agencies

Esteban Herrera,<sup>1</sup> Gayle Hagler,<sup>2</sup> Ron W. Williams,<sup>3</sup> Ron Evans,<sup>4</sup> Kristen Benedict,<sup>4</sup> Lewis Weinstock,<sup>4</sup> Phil Dickerson,<sup>4</sup> Brad Johns,<sup>4</sup> John White,<sup>4</sup> Ann Brown,<sup>5</sup> Hallie Weiss,<sup>6</sup> Dennis Sosna,<sup>6</sup> Alison Riley,<sup>6</sup> Rama Seshu Tangirala,<sup>7</sup> Briyon Ford,<sup>7</sup> William Pace III,<sup>7</sup> Douglas Watson,<sup>8</sup> Rollin Sachs,<sup>9</sup> Kent Stafford,<sup>10</sup> Pat Sullivan,<sup>10</sup> Michele Chaffee,<sup>11</sup> Peter Babich<sup>11</sup>; <sup>1</sup>U.S. EPA, Office of Enforcement and Compliance Assurance, National Enforcement Investigations Center, Denver, CO, <sup>2</sup>U.S. EPA, National Risk Management Research Laboratory, Research Triangle Park, NC, <sup>3</sup>U.S. EPA, National Exposure Research Laboratory, Research Triangle Park, NC, <sup>4</sup>U.S. EPA, Office of Air and Radiation, RTP, NC, <sup>5</sup>U.S. EPA, Office of Research and Development, RTP, NC, <sup>6</sup>City of Philadelphia Department of Public Health, Philadelphia PA, <sup>7</sup>Department of Energy and Environment, Government of the District of Columbia, Washington, DC, <sup>8</sup>Kansas Department of Health and Environment, Topeka, KS, <sup>9</sup>Unified Government of Wyandotte County and Kansas City, Kansas City, KS, <sup>10</sup>Oklahoma Department of Environmental Quality, Oklahoma City, OK, <sup>11</sup>Connecticut Department of Energy and Environmental Protection, Windsor, CT

**9:20-9:45 a.m.**

Control #33

Performance Assessment of a Solar-powered Air Quality and Weather Station Placed on a School Rooftop in Hong Kong

Gayle Hagler,<sup>1</sup> Zhi Ning,<sup>2</sup> Nicky YF Lam,<sup>2</sup> Peter Louie,<sup>3</sup> Robert Sharpe,<sup>4</sup> Ronald Williams<sup>5</sup>; <sup>1</sup>United States Environmental Protection Agency, National Risk Management Research Laboratory, Research Triangle Park, NC, <sup>2</sup>City University of Hong Kong, Hong Kong SAR, China, <sup>3</sup>Hong Kong Environmental Protection Department, Hong Kong SAR, China, <sup>4</sup>ARCADIS, Greensboro, NC, <sup>5</sup>United States Environmental Protection Agency, National Exposure Research Laboratory, Research Triangle Park, NC

**9:45-10:10 a.m.**

Control #3

Sensor Messaging: Guidance for Interpretation of Short-Term Concentration Readings

Elizabeth Mannshardt, Kristen Benedict, Susan Stone, Michael Stewart; U.S. EPA - Office of Air Quality Planning and Standards, Research Triangle Park, NC

COFFEE SERVICE AND EXHIBITION  
VIEWING FOR ALL SESSIONS

**10:10-10:40 a.m.**

**London, Vienna, Brussels Rooms**

# FINAL PROGRAM

## TECHNICAL PROGRAM - Wednesday, March 16, 2016, Con't.

### Session 5B:

#### PM MEASUREMENTS CON'T.

[concurrent with Sessions 4B and 6B]

**Co-Chair:** *Ricky Tropp, Desert Research Institute; Praveen Srirama, Carlsbad Environmental Monitoring & Research Center*

Amsterdam B

#### 10:40-11:05 a.m.

Control #60

**Deployment of the Monitor for AeRosols and Gases in ambient air (MARGA) at a CASTNET Site in Beltsville, MD to Identify Potential Artifacts in Historic Filterpack Data**

*Greg Beachley, Gary Lear, Melissa Puchalski; US EPA Clean Air Markets Division, Washington, DC*

#### 11:05-11:30 a.m.

Control #64

**Use of a Multi-Wavelength Integrating Nephelometer to Determine Source Influences on Particle Concentration Measurements**

*Herbert Schloesser; American Ecotech L.C., Warren, RI*

#### 11:30-11:55 a.m.

##### POSTER PRESENTATION

Control #87

**Summary of US EPA Research Efforts Using the Monitor for AeRosols and Gases in Ambient Air (MARGA)**

*Greg Beachley,<sup>1</sup> John Walker,<sup>2</sup> Doris Chen,<sup>2</sup> Ashley Evanoski-Cole,<sup>3</sup> Ian Rumsey<sup>4</sup>; <sup>1</sup>US EPA Office of Air Programs, Washington, DC, <sup>2</sup>US EPA Office of Research and Development, Research Triangle Park, NC, <sup>3</sup>Colorado State University, Fort Collins, CO, <sup>4</sup>College of Charleston, Charleston, SC*

### Session 6B:

#### AIR SENSOR MEASUREMENTS CON'T.

[concurrent with Sessions 4B and 5B]

**Co-Chairs:** *Kristen Benedict, U.S. EPA; Hilary Hafner, Sonoma Technology, Inc.; Ron Williams, U.S. EPA.*

Amsterdam C

#### 10:40-11:05 a.m.

Control #29

**Application of Automated Statistics for Managing Low Cost Air Quality Networks**

*Georgia Miskell,<sup>1</sup> Jennifer A. Salmond,<sup>1</sup> Maryam Alavi-Shoshtari,<sup>1</sup> Mark Bart,<sup>2</sup> Bruce Ainslie,<sup>3</sup> Stuart Grange,<sup>1</sup> Ian G. McKendry,<sup>4</sup> Geoff S. Henshaw,<sup>5</sup> David E. Williams<sup>1</sup>; <sup>1</sup>University of Auckland, Auckland, New Zealand, <sup>2</sup>AirQuality Ltd, Auckland, New Zealand, <sup>3</sup>Environment Canada, Vancouver, BC, <sup>4</sup>University of British Columbia, Vancouver, BC, <sup>5</sup>Aeroqual Ltd, Auckland, New Zealand*

#### 11:05-11:30 a.m.

Control #4

**Low-cost Sensors for Monitoring Ammonia Concentrations in Naturally Ventilated Dairy Barns**

*Pius M. Ndegwa,<sup>1</sup> Xiang Wang,<sup>1</sup> George M. Neerackal,<sup>1</sup> Joseph H. Harrison,<sup>2</sup> Hungsoo Joo<sup>3</sup>; <sup>1</sup>Washington State University, Pullman, WA, <sup>2</sup>Washington State University, Pullman, WA, <sup>3</sup>Gwangju Institute of Sci. and Technol., Buk-gu, Gwangju, Republic of Korea*

#### 11:30-11:55 a.m.

Control #41

**A Field Assessment of the Interscan 4240 SO<sub>2</sub> Analyzer and the Thermo 43C SO<sub>2</sub> Analyzer**

*Jenna C. Granstra, Katie R. Sheline, Brian A. Cochran; AECOM, Austin, TX*

LUNCH FOR ALL SESSIONS

12:00 p.m. – 1:30 p.m.

Venetian Room

# TECHNICAL PROGRAM - Wednesday, March 16, 2016, Con't.

## Session 4C:

### NEAR ROAD MONITORING

[concurrent with Sessions 5C and 6C]

**Chair:** Neelson Watkins, U.S. EPA

Amsterdam A

## Session 5C:

### PM MEASUREMENTS CON'T.

[concurrent with Sessions 4C and 6C]

**Co-Chairs:** Ricky Tropp, Desert Research Institute;  
Praveen Srirama, Carlsbad Environmental Monitoring  
& Research Center

Amsterdam B

## Session 6C:

### AIR SENSOR MEASUREMENTS CON'T.

[concurrent with Sessions 4C and 5C]

**Co-Chairs:** Kristen Benedict, U.S. EPA; Hilary Hafner,  
Sonoma Technology, Inc.; Ron Williams, U.S. EPA.

Amsterdam C

#### 1:30-1:55 p.m.

Control #25

#### Monitoring and Modeling Carbon Dioxide Emission Near Roadway Using Fast Response Instruments

Sheng Xiang, Wenjuan Zhai, Dongqi Wen, Zhice Hu,  
Kenneth Noll; Department of Civil and Environmental  
Engineering, Illinois Institute of Technology, Chicago,  
IL

#### 1:55-2:20 p.m.

Control #26

#### Comparison of Measured and Predicted Ultrafine Particulate Concentration Using CALINE4 and AERMOD Models

Tongchuan Wei, Wenjuan Zhai, Dongqi Wen, Sheng  
Xiang, Zhice Hu, Kenneth E. Noll; Department of Civil,  
Architecture and Environmental Engineering, Illinois  
Institute of Technology, Chicago, IL

#### 2:20-2:45 p.m.

Control #50

#### Noise Pollution and Traffic Congestion around Petrol Station in Ibadan North Local Government Area, Ibadan, Nigeria

Olajide O. Ojo; Urban and Regional Planning  
Department, University of Ibadan, Ibadan, Nigeria

#### 1:30-1:55 p.m.

Control #21

#### Quantitative Compositional Analysis of Aerosols by Laser Induced Breakdown Spectroscopy (LIBS)

Curtis T. Laush; Geosyntec Consultants, Austin, TX

#### 1:55-2:20 p.m.

Control #71

#### Measurement of Particulate Matter Using Passive Samplers

Gary S. Casuccio,<sup>1</sup> Roger R. West,<sup>1</sup> Traci L. Lersch,<sup>1</sup>  
Beyhan Pekey,<sup>2</sup> Robert D. Willis<sup>3</sup>; <sup>1</sup>RJ Lee Group,  
Monroeville, PA, <sup>2</sup>Kocaeli University, Kocaeli, Turkey,  
<sup>3</sup>U.S. Environmental Protection Agency, Research  
Triangle Park, NC

#### 2:20-2:45 p.m.

Control #99

#### Measurement of Vehicle Ultrafine Particle Emission Near a Roadway Using Fast Response Instruments

Wenjuan Zhai, Dongqi Wen, Sheng Xiang, Zhice Hu,  
Kenneth E. Noll; Department of Civil, Architecture  
and Environmental Engineering, Illinois Institute of  
Technology, Chicago, IL

#### 1:30-1:55 p.m.

Control #67

#### A Low-Cost Sensor for Neighborhood Scale PM<sub>2.5</sub> Monitoring

David A. Gobeli, Peter Pomponi, Steven Wilson, Wes  
Perkins, Thomas Pottberg; Met One Instruments,  
Incorporated, Grants Pass, OR

#### 1:55-2:20 p.m.

Control #17

#### Citizen Science and Smart Phone Emissions Monitoring

Allison Dolan; Virtual Technology, LLC, Rio Rico, AZ

#### 2:20-2:45 p.m.

Control #27

#### Use of Small Unmanned Aerial Vehicles for Mobile Measurements of Air Quality and Meteorology

Robert A. Baxter, David H. Bush; Technical & Business  
Systems, Inc., Valencia, CA

REFRESHMENT BREAK AND  
EXHIBITION VIEWING FOR ALL SESSIONS  
2:45-3:40 p.m.

# FINAL PROGRAM

## TECHNICAL PROGRAM - Wednesday, March 16, 2016, Con't.

### Session 4D: NEAR ROAD MONITORING CON'T.

[concurrent with Session 5D]

**Chair:** Neelson Watkins, U.S. EPA  
Amsterdam A

#### 3:40-4:05 p.m.

Control #34

Field Evaluations of Newly Available "Interference-free" Monitors for Nitrogen Dioxide (NO<sub>2</sub>) and Ozone (O<sub>3</sub>) at Near-Road and Conventional NAAQS Compliance Sites

Will M. Ollison,<sup>1</sup> Alan R. Leston<sup>2</sup>; <sup>1</sup>American Petroleum Institute, Washington, DC, <sup>2</sup>AirQuality Research & Logistics, LLC, Lebanon, CT

#### 4:05-4:30 p.m.

POSTER PRESENTATION

Control #30

Use of High Resolution Mobile Monitoring Techniques to Assess Near-Road Air Quality Variability

Parikshit Deshmukh,<sup>1</sup> Richard Baldauf,<sup>2</sup> Vlad Isakov,<sup>3</sup> Sue Kimbrough,<sup>2</sup> Gayle Hagler<sup>2</sup>; <sup>1</sup>Jacobs Technologies, Durham, NC, <sup>2</sup>US EPA, National Risk Management Research Laboratory, Research Triangle Park, NC, <sup>3</sup>US EPA, National Exposure Research Laboratory, Research Triangle Park, NC

### Session 5D: OIL AND GAS MEASUREMENTS

[concurrent with Session 4D]

**Chair:** Jason Dewees, U.S. EPA  
Amsterdam B & C

#### 3:40-4:05 p.m.

Control #44

Mobile Platforms for Monitoring Air Emissions from Oil and Gas Activities

Long Fu,<sup>1</sup> Quamrul Huda,<sup>1</sup> Zheng Yang,<sup>1</sup> Longdong Zhang,<sup>2</sup> Zaher Hashisho<sup>2</sup>; <sup>1</sup>Alberta Environmental Monitoring, Evaluation and Reporting Agency, Edmonton, Alberta, Canada, <sup>2</sup>Department of Civil and Environmental Engineering, University of Alberta, Edmonton, Alberta, Canada

#### 4:05-4:30 p.m.

Control #92

Assessment of Pneumatic Controller Emission Measurements Using a High Volume Sampler at Oil and Natural Gas Production Pads in Utah

Michael Stovern,<sup>1</sup> Adam P. Eisele,<sup>1</sup> Eben D. Thoma<sup>2</sup>; <sup>1</sup>U.S. EPA Region 8, Denver, CO, <sup>2</sup>Office of Research and Development, National Risk Management Research Laboratory, U.S. EPA, RTP, NC

#### 4:30-4:55 p.m.

Control #43

Removal Bias Analysis for an Ambient Air Quality Monitoring Station in the Athabasca Oil Sands Region in Western Canada

Long Fu, Thompson Nunifu, Zheng Yang; Alberta Environmental Monitoring, Evaluation and Reporting Agency, Edmonton, Alberta, Canada

#### 4:55-5:20 p.m.

Control #95

Design and Deployment of a Mobile Monitoring Vehicle for the Real-Time Measurement of Indicator Gases and Aerosols

James D. Strain; AmbiLabs/American Ecotech, Port Alberni, British Columbia, Canada

# TECHNICAL PROGRAM - Thursday, March 17, 2016

**7:30-11:00 a.m.**  
Conference Registration  
Lobby

**7:30-8:30 a.m.**  
Presenters' Breakfast  
Paris Room

**7:30-8:30 a.m.**  
Continental Breakfast  
Lobby

## **Session 7A:** **VAPOR INTRUSION** [concurrent with Session 8A]

**Co-Chairs:** Robert Truesdale, RTI International;  
Christopher Lutes, CH2M Hill  
Amsterdam A

**8:30-8:55 a.m.**  
Control #20  
Real-Time FTIR Monitoring of Parts Per Trillion Level Vapor Intrusions and/or Molecular Contaminations  
Curtis T. Laush; Geosyntec Consultants, Austin, TX

**8:55-9:20 a.m.**  
Control #32  
The Effect of Air Exchange Rate (AER) on Vapor Intrusion Exposure Risks  
Rivka Reichman,<sup>1</sup> Kelly G. Pennell<sup>2</sup>; <sup>1</sup>Visiting scholar from Israel Institute for Biological Research, Ness-Ziona, Israel, in the Department of Civil Engineering, University of Kentucky, Lexington, KY, <sup>2</sup>Department of Civil Engineering, University of Kentucky, Lexington, KY

**9:20-9:45 a.m.**  
Control #37  
Fluid Mechanics of Soil Gas Entry and Fate Within Buildings As Applied to Indoor Soil Gas Measurements and Mitigation  
Gary E. Hodgden; The AARST Consortium on National Radon Standards, The American Association of Radon Scientists and Technologists (AARST), Fletcher, NC

**9:45-10:10 a.m.**  
Control #100  
The Use of the Waterloo Membrane Sampler for Long-Term Monitoring of VOC Vapors  
Todd McAlary,<sup>1</sup> Hester Groenevelt,<sup>1</sup> Paulina Biernacka,<sup>2</sup> Tadeusz Górecki<sup>2</sup>; <sup>1</sup>Geosyntec Consultants, Guelph, ON, Canada, <sup>2</sup>University of Waterloo, Waterloo, ON, Canada

## **Session 8A:** **SOURCE MEASUREMENTS** [concurrent with Session 7A]

**Co-Chairs:** Jeff Ryan, U.S. EPA; David Elam, TRC Solutions  
Amsterdam B

**8:30-8:55 a.m.**  
Control #65  
HCl Field Measurements Using Performance Specification 18 and Procedure 6 – Things to Consider  
Roberto Bosco, Peter G. Zemek; MKS Instruments, Inc., Methuen, MA

**8:55-9:20 a.m.**  
Control #77  
Development of Hydrogen-chloride Research Gas Mixtures Required for SI-traceable Measurements of Stack Gas Emissions  
Cassie Goodman, Lacey C. Brent, Lyn Gameson, Michael E. Kelley, Joseph T. Hodges; National Institute of Standards and Technology, Gaithersburg, MD

**9:20-9:45 a.m.**  
Control #22  
Continuous and Real-Time FTIR Monitoring of Sulfuric Acid and Other Components in Coal-Fired Power Plant Flue Gas  
Brian A. Adair; Geosyntec Consultants, Charlotte, NC

**9:45-10:10 a.m.**  
Control #98  
Use of Advanced Stack Testing Technologies to Support Dry Sorbent Injection Evaluation Studies  
Thomas Dunder; TRC Environmental, Raleigh, NC

COFFEE SERVICE FOR ALL SESSIONS  
**10:10-10:40 a.m.**  
Lobby

# FINAL PROGRAM

## TECHNICAL PROGRAM - Thursday, March 17, 2016, Con't.

### Session 7B:

#### VAPOR INTRUSION CON'T.

[concurrent with Session 8B]

**Co-Chairs:** Robert Truesdale, RTI International;  
Christopher Lutes, CH2M Hill  
Amsterdam A

#### 10:40-11:05 a.m.

Control #83

##### Development of a Real Time VOC Sensor

Robert S. Truesdale,<sup>1</sup> Li Han,<sup>1</sup> Chris Lutes<sup>2</sup>; <sup>1</sup>RTI International, RTP, NC,  
<sup>2</sup>CH2M HILL, Raleigh, NC

#### 11:05-11:30 a.m.

Control #38

##### Vacuum Strength Needs, Limitations and Whole Building Consideration When Applying ASD for Mitigating Soil Gas Entry

Gary E. Hodgden; The AARST Consortium on National Radon Standards,  
The American Association of Radon Scientists and Technologists (AARST),  
Fletcher, NC

### Session 8B:

#### SOURCE MEASUREMENTS CON'T.

[concurrent with Session 7B]

**Co-Chairs:** Jeff Ryan, U.S. EPA; David Elam, TRC Solutions  
Amsterdam B

#### 10:40-11:05 a.m.

Control #47

##### Quantification of Stack Emissions from Marine Vessels

Johan Mellqvist,<sup>1,2</sup> Jörg Beecken,<sup>1</sup> Johan Ekholm,<sup>1</sup> Jerker Samuelsson,<sup>2</sup>  
Marianne Ericsson,<sup>2</sup> Laki Tisopulos,<sup>3</sup> Andrea Polidori,<sup>3</sup> Olga Pikelnaya<sup>3</sup>;  
<sup>1</sup>Chalmers University of Technology, Gothenburg, Sweden, <sup>2</sup>FluxSense Inc.,  
San Diego, CA, <sup>3</sup>South Coast Air Quality Management District, Diamond  
Bar, CA

#### 11:05-11:30 a.m.

Control #1

##### Evaluation of an Outdoor Breeze Tunnel as Representative of Open Air Burn Pits for the Combustion of Solid Waste

Ian C. MacGregor,<sup>1</sup> Kenneth A. Cowen,<sup>2</sup> Elizabeth A. Hanft,<sup>1</sup> Brian A. Wong<sup>3</sup>;  
<sup>1</sup>Battelle, Columbus, OH, <sup>2</sup>Velocys, Plain City, OH, <sup>3</sup>Naval Medical Research  
Unit Dayton, Wright-Patterson AFB, OH

*Thank you for attending!*

*A satisfaction survey will be emailed to you  
after the conference. Please take a moment to  
complete it. Your feedback is important to us.*