Preliminary Program

Air Quality Measurement
Methods and Technology
November 14-16, 2023 • Durham, NC

Sponsored by:
**Conference Overview**

One of our most popular specialty conferences, the Air Quality Measurement Methods and Technology Conference provides extensive coverage of all aspects of air measurement methodologies, including associated quality assurance protocols and how to use and interpret data. Sessions will also focus on the assessment of key substances of concern for humans and the environment, including criteria pollutants, greenhouse gases, and air toxics.

**Conference Committee**

**Conference Co-Chairs:**
Ingrid George, US Environmental Protection Agency (EPA)
Ned Shappley, US EPA

**Technical Program Committee:**
Sara Head, Yorke Engineering
Ray Merrill, US EPA
Rick Osa, ERM
Eric Winegar, Sonoma Technology, Inc.

**Location**

Sheraton Imperial Hotel Raleigh-Durham Airport at Research Triangle Park
4700 Emperor Boulevard
Durham, NC 27703
Phone: 919-941-5050

**Registration**

Register online at [www.awma.org/measurements](http://www.awma.org/measurements) and save on fees if you register before the advance deadline of October 17. Your registration will not be processed without payment. Conference check-in and badge pickup will be held in the Imperial Foyer at The Sheraton Imperial Hotel during the following hours:

- **Tuesday, November 14**
  - 7:30 am - 5:00 pm
- **Wednesday, November 15**
  - 7:30 am - 5:00 pm
- **Thursday, November 16**
  - 7:30 am - 12:00 pm

**Refund Policy**

If written notice of cancellation is received on or before October 17, 2023 payment will be refunded, less a $100 cancellation fee. (Cancellation fees apply regardless of payment method). Substitutions may be made at any time; payment for any difference is due at the time of substitution. This refund policy applies to all occurrences, including weather-related events and other natural disasters. In the unlikely occurrence of event cancellation, the Association is not liable for any expenses incurred by the registrant other than the full refund of registration fee(s) paid.

**Presenters’ Meeting**

Presenters and Session Chairs will meet on the day of their session involvement in the room in which their session will be held to review program details. Presenters should bring their presentations on a memory stick/USB to this meeting, as well as a brief biography.

**Conference Proceedings**

Conference proceedings will be accessible to all full conference registrants for viewing and download for a limited time following the conference. Attendees will be notified by email when the presentations are available.

**Continuing Education Units**

Conference attendees may be eligible for continuing education credits and can apply to receive a Certificate of Participation for the sessions attended. For more information, please contact Gloria Henning at +1-412-904-6021 or ghlenning@awma.org.

**Special Accommodations**

The Air & Waste Management Association supports the Americans with Disabilities Act (ADA). Attendees requiring specific equipment, food, or services should contact Cindy Fontanesi at cfontanesi@awma.org to make those needs known in advance. A&WMA will make every reasonable effort to accommodate them.

**About the Air & Waste Management Association**

A&WMA is a non-profit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for technology exchange, professional development, networking opportunities, 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).

**Conference Events**

**EPA Facilities Tour**

*Monday, November 13, 1:00 pm – 4:00 pm ET*

*Cost: $45. Pre-registration required by October 17.*

This tour will highlight various unique laboratories and research that help support regulations and protect human health and the environment at EPA's campus in Research Triangle Park (RTP).

Government issued photo ID required to enter the facility. Closed-toe shoes and full-length pants required. Comfortable walking shoes are recommended.
As a VOC monitoring expert, TricornTech offers a wide product range from portable precision instruments to online systems and comprehensive air quality monitoring software applications. In addition to our superior gas analysis technology used for monitoring airborne molecular contamination (AMC) in semiconductor applications and volatile organic compounds (VOCs) in the surrounding environment, complete solutions for detecting LNAPL/DNAPL (light/dense non-aqueous phase liquid) contaminants are also available. We are committed in offering solutions and services to our clients which are critical in the achievement of their success. Please stop by our booth to find out more about how we can create the perfect monitoring package tailored to your specific budget and testing requirements. www.tricorntech.com

As the number and stringency of air, waste and environmental regulatory requirements increases, AECOM is working with our clients to strategize and implement compliance solutions using innovative approaches and advanced technology. With 85,000 employees in 150 countries, AECOM is at the forefront — tackling issues with strategic thinking and collaboration. www.aecom.com

ENMET manufactures a wide array of environmental and industrial health and safety monitoring instruments. Our new GC based products offer a new cost effective approach to benzene trace level detection (sub ppb) at the Fenceline and in the workplace with the ability to provide specific gas analysis in complex mixtures. www.enmet.com

Global Analyzer Systems Ltd. is the complete package CEMS provider. We ensure safe and sustainable air by bringing certainty to emissions measurement. We are customer-focused and committed to keeping industry compliant with regulations. Global provides a wide range of equipment and services related to air monitoring including: Multi-component CEMS; Data Acquisition and Control Systems (DAS); CEMS Online Reporting Services; On-site services; Quality Assurance Plans; Annual Evaluations; Regulatory Compliance Support; Documentation and Training; DataStream Reporting Software; and Mobile CEMS. www.gasl.ca

Spectrum Environmental Solutions is a technology leader in optical analytical techniques. We provide customized solutions using Fourier Transform Infrared (FTIR) spectroscopy, ultraviolet (UV), tunable diode laser (TDL), and quantum cascade laser (QCL) devices. Our solutions are always customized to the client’s unique issues and challenges. Optical measurements provide dynamic, near real-time insight into plant operations. We deliver FTIR analytical devices in both open path and extractive configurations. Our environmental consulting services include world class expertise in the areas of industrial flares and hazardous waste combustion. We have specific experience and proven technology in providing real-time emissions monitoring solutions for fence line monitoring networks. www.spectrumenvsoln.com

Tisch Environmental is a family business founded to develop and manufacture air pollution monitoring instruments. The Tisch family has produced nearly half a million devices for the air pollution monitoring community over the last 60 years. TEI is looking into the future needs of today’s air monitoring professionals. www.tisch-env.com

As a VOC monitoring expert, TricormTech offers a wide product range from portable precision instruments to online systems and comprehensive air quality monitoring software applications. In addition to our superior gas analysis technology used for monitoring airborne molecular contamination (AMC) in semiconductor applications and volatile organic compounds (VOCs) in the surrounding environment, complete solutions for detecting LNAPL/DNAPL (light/dense non-aqueous phase liquid) contaminants are also available. We are committed in offering solutions and services to our clients which are critical in the achievement of their success. Please stop by our booth to find out more about how we can create the perfect monitoring package tailored to your specific budget and testing requirements. www.tricormtech.com

Teledyne API designs and builds a complete line of precision air quality monitoring instrumentation at its headquarters and factory in San Diego, California. These instruments utilize proven measurement principles and comply with the U.S. Environmental Protection Agency, European Union and other requirements for ambient air quality monitoring, continuous emissions monitoring, and a number of other applications. www.teledyne-api.com
### Technical Program – Tuesday, November 14

#### Session 1A: GHG Monitoring – Landfills  
[concurrent with Sessions 1B and 1C]  
Imperial 123

**Chairs:** Roger Green, WM, and Eben Thoma, US EPA

<table>
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<tr>
<th>Time</th>
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| 10:15 am – 10:40 am | ME21 Validating the Effectiveness of Drone Based Methane Surface Emission Monitoring in Municipal Solid Waste Using EPA Approved ALT-150  
David Barron, Sniffer Robotics |
| 10:40 am – 11:05 am | ME37 An Examination of Temporal and Spatial Variations in Methane Emissions from Landfills  
Ali Lashgari, Ryan Brush, Project Canary, PBC |
| 11:05 am – 11:30 am | ME81 Field-deployable Sensor Networks, Rovers and Flux Chambers; Exploring the Utility of Low-cost Air Sensors in Quantifying Surface Methane Concentrations, Hotspot Detection and Surface Emissions at Landfills  
Evon Coffey, Helena Pliszka, Michael Hannigan, University of Colorado Boulder, Boulder, CO; Roger Green, Amy Bannister, Amanda Duchesne, WM |

#### Session 1B: Advances in Open-path Optical Remote Sensing  
[concurrent with Sessions 1A and 1C]  
Empire ABC

**Chairs:** Jason DeWees and Jeff Ryan, US EPA

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<th>Time</th>
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| 10:15 am – 10:40 am | ME23 Next Generation of BTEX Monitoring Inside Refineries: UCLA’s Optical Tent  
Jochen Stutz, Fedele Colosimo, Sol Cooperdock, University of California Los Angeles, Los Angeles, CA; Olga Pikelnaya, Andrea Poldor, South Coast Air Quality Management District, Diamond Bar, CA |
| 10:40 am – 11:05 am | ME38 Technical Evaluation of an Innovative Open-path Hydrogen Sulfide Air Monitoring System  
Donald Gamiles, Argos Scientific, Inc., WA; Eric Stevenson, Argos Scientific, Inc., CA; Cliff Gordon, M&C TechGroup North America, CA; Pawel Kluczynski, AirOptic, Poznan, Poland |
| 11:05 am – 11:30 am | ME103 Using Mobile Optical Remote Sensing for Emission Estimates of Air Pollutants from Stationary Sources: Need for Standard Method Development  
Olga Pikelnaya, Jack Porter, Catalina Tsai, Andrea Poldor, South Coast Air Quality Management District, Diamond Bar, CA; Johan Mellqvist, Jerker Samuelsson, Marianne Ericsson, Flusense Inc., San Diego, CA |

#### Session 1C: Particulate Matter  
[concurrent with Sessions 1A and 1B]  
Auditorium

**Chairs:** Tim Hanley and Karoline Barkjohn, US EPA

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<th>Time</th>
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| 10:15 am – 10:40 am | ME89 Gravimetric Validation and Spatial Variability of PM10 and Heavy Metals in Two US Fenceline Communities as Part of the HAP-Map Study  
Peter DeCarlo, Mina Tehrani, Shivang Agarwal, Amira Yassine, Edward Fortner, Benjamin Werden, Ellis Robinson, Ana Rule, Kirsten Koehler, Johns Hopkins University |
| 10:40 am – 11:05 am | ME92 A Field Comparison of PM10 Measurements Between the DustTrak II 8530, Gravimetric Methods and Tapered Element Oscillating Microbalance (TEOM 1405)  
Hank Dickey, Maarten D. Schreuder, Johannes T. Yimam, Brian M. Schmid, Formation Environmental, LLC, Sacramento, CA |
| 11:05 am – 11:30 am | ME120 Morphology and Halogenated Polycyclic Aromatic Hydrocarbons in fine Particulate matter in Mumbai, India  
Jasman Masih, Lorraine Tellis, Sachin Gupta, Wilson College, Mumbai, India; Harison Masih, Jacob Institute of Biotechnology and Bioengineering, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, Uttar Pradesh, India |

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**12:00 pm – 1:00 pm**  
Lunch for all sessions  
Empire DE
Session 2A: GHG Monitoring – Landfills
[concurrent with Sessions 2B and 2C]
Imperial 123

Chairs: Eben Thoma, US EPA, and Roger Green, WM

1:00 pm – 1:25 pm
ME119 Understanding and Reducing Fugitive Landfill Emissions Using Combined Well Performance and Methane Air Monitoring
Melinda Sims, Peter Quigley, Chris Makselon, LoCI Controls, Inc., Wareham, MA; Eben D. Thoma, Megan MacDonald, Wyatt Champion, Susan Thorneue, US EPA Office of Research and Development (ORD), RTP, NC; Max Krause, US EPA ORD, Cincinnati, OH

1:25 pm – 1:50 pm
ME75 Providing Accessible Data on Landfill Methane Emissions Using Airborne and Satellite Remote Sensing
Tia Scarpelli, Carbon Mapper, Pasadena, CA; Alana Ayasse, University of Arizona, Tucson, AZ; Dan Cusworth, Carbon Mapper and University of Arizona; Riley Duren, University of Arizona, Carbon Mapper, and NASA Jet Propulsion Laboratory, Pasadena, CA; Eben Thoma, Max J. Krause, Daniel Heins, Susan Thornloe, US EPA

1:50 pm – 2:15 pm
ME133 Large Scale Landfill Emission Measurement Across Canada: Measurement Methods
David Risk, Afshan Khaleghi, Evelise Bourlon, Rebecca Martino, Jordan Stuart, St. Francis Xavier University, Antigonish, Canada

2:15 pm – 2:40 pm
ME105 Application of a Novel Airborne LiDAR Measurement to Quantify Landfill Methane Emissions and Leak Locations
Madjid Delkash, Delkash Consulting; Grant Aivazian, Michael Thrope, Bridger Photonics, Inc.; Paul Imhoff, University of Delaware; Ramin Yazdani, University of California Davis

Session 2B: Advances in Optical Gas Imaging
[concurrent with Sessions 2A and 2C]
Empire ABC

Chairs: Gerri Garwood, US EPA, and Tracey Footer, ERG

1:00 pm – 1:25 pm
ME26 An Alternative Annex to Appendix K – Development of Compound Specific Response for OGI Cameras
Ram Hashmonay, Opal

1:25 pm – 1:50 pm
ME39 Next Generation Image-based Quantification
Ryo Minegishi, Pawel Lichtarski, Motohiro Asano, Takashi Morimoto, Konica Minolta Sensing Americas

1:50 pm – 2:15 pm
ME93 Partially Single-Blind Controlled Release Assessment of the Performance of Quantitative Optical Gas Imaging (OQGI) Instrument
Chiemzie Ilonze, Clay Bell, Daniel Zimmerle, Colorado State University, Fort Collins, CO; Jiayang (Lyra) Wang, Arvind P. Ravikumar, University of Texas at Austin, Austin, TX

2:15 pm – 2:40 pm
ME104 Gas Detection and Quantification Methodology Using an Innovative Infrared Hyperspectral Gas Cloud Imaging System
Quan Shen, Junchuan Shi, Aaron Araujo, Robert Kester, Honeywell Process Solutions, Houston, TX

Session 2C: Community Monitoring
[concurrent with Sessions 2A and 2B]
Auditorium

Chairs: Corey Mocka and Rachelle Duvall, US EPA

1:00 pm – 1:25 pm
ME06 Inverse Modeling of Formaldehyde Based on MOOSE Measurements
Eduardo Olaguer, Michigan Department of Environment, Great Lakes, and Energy (EGLE)

1:25 pm – 1:50 pm
ME24 Community Monitoring Hexavalent Chromium – The City of Paramount
Randall Baxter, Trinity Consultants

1:50 pm – 2:15 pm
ME58 Hyper Local Community Monitoring With an Integrated Mobile Platform in Sacramento, CA
Justin Coughlin, Abhilash Vijayan, Eric Winegar, Steve Brown, Hilary Hafner, Nathan Pavlovic, Charles Scarborough, Sonoma Technology, Inc., Petaluma, CA; Nick Spada, University of California at Davis, Davis, CA; Janice Lam Snyder, Levi Ford, David Yang, Katherine Chin, Sacramento Metropolitan Air Quality Management District, Sacramento, CA; Anthony Miller, Aurelie Marcotte, Entanglement Technologies, Inc., San Bruno, CA

2:15 pm – 2:40 pm
ME65 Exploring Ways to Communicate Mobile Air Toxics Data to Communities
Jason C. Schroder, Derek Price, Ashley Collier-Oxandale, Natalie Smith, Ezra Levin, Rudra Pokhrel, Colorado Department of Public Health and Environment

2:40 pm – 3:10 pm
Networking Break, Exhibition Viewing, and Poster Viewing
Imperial 4567 & Foyer
PRELIMINARY PROGRAM

Technical Program – Tuesday, November 14, con’t.

Session 3A: GHG Monitoring – Landfills
[concurrent with Sessions 3B and 3C]
Imperial 123

Chairs: Ali Lashgari, Project Canary, PBC, and Bryan Staley, Environmental Research & Education Foundation

3:10 pm – 3:35 pm
ME85 Measurements of Fugitive Emissions of Methane Using Modified SOF
Johan Mellqvist, Jerker Samuelsson, John Johansson, Brian Offerle, FluxSense Inc, Huntington Beach, CA; Pontus Andersso, FluxSense Inc and South Coast Air Quality Management District, Diamond Bar, CA

3:35 pm – 4:00 pm
ME07 Gaussian Plume Inverse Modeling of Methane Emissions from Landfills
Eduardo Olaguer, Michigan Department of Environment, Great Lakes, and Energy (EGLE)

4:00 pm – 4:25 pm
ME132 A Controlled Release Experiment For Investigating Methane Measurement Performance at Landfills
David Risk, Colin Vibert, Elise Canning, Pylyp Buntov, Yuriy Dudak, St. Francis Xavier University, Antigonish, Canada

4:25 pm – 4:50 pm
ME56 Advances in Data-driven Design of Tracer Dispersion CFD Models for the Purpose of Urban-scale Evolution and Quantification of GHG Emissions
Jorge Guerra, Nathan Eichenlaub, Project Canary, PBC

Session 3B: Remote Sensing of Flares and Stacks
[concurrent with Sessions 3A and 3C]
Imperial ABC

Chairs: Tracey Footer, ERG, and Gerri Garwood, US EPA

3:10 pm – 3:35 pm
ME29 Hyperspectral Thermal Infrared Imaging of Fugitive Methane Emissions from Flare Stacks
Mark L. Norman, Telops, Inc., Quebec City, Canada

3:35 pm – 4:00 pm
ME69 Precision and Accuracy of the VISR Lite Method for Flare Monitoring
Yousheng Zeng, Jon Morris, Providence Photonics, LLC, Baton Rouge, LA; Tracey Footer, Eastern Research Group, Inc.

4:00 pm – 4:25 pm
ME79 Measurements of Methane, Soot, and NOx from Flares Subjected to Crosswind
Alexis D. Tanner, Milad Mohammadi, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada; Brian M. Crosland, CanmetENERGY Ottawa, Ottawa, ON, Canada; Gregory A. Kopp, Western University, London, ON, Canada

4:25 pm – 4:50 pm
ME87 Evaluation of the Potential Accuracy of a UAV-Based Methodology for Flare Combustion Efficiency
Simon A. Festa-Bianchet, Milad Mohammadi, Alexis D. Tanner, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada; Gregory A. Kopp, Western University, London, ON, Canada

Session 3C: Community Monitoring
[concurrent with Sessions 3A and 3B]
Auditorium

Chairs: Andrea Clements and Corey Mocka, US EPA

3:10 pm – 3:35 pm
ME90 Combining Fixed Site and Mobile Measurements of VOCs, Metals, and PMs to Quantify Community Exosure and Risk: Results from the HAP-MAP
Peter DeCarlo, Ellis Robinson, Mina Tehrani, Roger Sheu, Carolyn Gigot, Andrea Chiger, Megan Claflin, Ed Fortner, Manjula Canagaratna, Conner Daube, Ben Werden, Rob Roscioli, Jordan Krehmer, Scott Van Bramer, Ana Rule, Kirsten Koehler, Tara Yacovitch, Thomas Burke, Keeve Nachman, Johns Hopkins University

3:35 pm – 4:00 pm
ME71 Evaluation of the Impact Large Scale Pollution Source on a Nearby Public School in an Environmental Justice Community
Hailey Gebhart, Cary Secrest, Argos Scientific, Inc., WA; Michael Lopes-Serrao, Parkrose School District, OR; Jessica Kleiss, Lewis and Clark College, OR; Melsa Crosby, Parkrose Argay Opportunity Coalition, OR

4:00 pm – 4:25 pm
ME99 Overview of an Innovative Community Air Monitoring Program in the SF Bay Area
Marilyn Bardet, Kathy Kerridge, Nancy Lund, David Lindsay, Benicia Community Air Monitoring Program, Benicia, CA

4:25 pm – 4:50 pm
ME49 Overview of the Porter Ranch Community Air Monitoring Project
Tarryn Jubelin, Donald Gamiles, Argos Scientific, Inc., CA; Jochen Stutz, Fedele Colosimo, University of California, Los Angeles, CA; Patty Glueck, Aliso Mom’s Alliance, CA; Olga Pikelnaya, Yifan Yu, Andrea Polidori, South Coast Air Quality Management District, CA

5:00 pm – 6:00 pm
Networking Reception in the Exhibit Hall
Imperial 4567 & Foyer

Explore our exhibits, learn about their services, and make connections with all conference attendees!
Technical Program – Wednesday, November 15

7:30 am – 5:00 pm
Conference Registration
Imperial Foyer

7:30 am – 8:30 am
Continental Breakfast and Presenters’ Meeting
Imperial 4567 and Session Rooms

7:30 am – 3:30 pm
Conference Registration
Imperial Foyer

Session 4A: Oil and Gas Studies
[concurrent with Sessions 4B and 4C]
Imperial 123

Chairs: Melissa Weitz, US EPA, and Ali Lashgari, Project Canary, PBC

8:30 am – 8:55 am
ME88 A National-Scale Measurement-Based Oil and Gas Methane Census
Matthew R. Johnson, Bradley M. Conrad, David R. Tyner, Carleton University, Ottawa, ON, Canada

8:55 am – 9:20 am
ME40 Methane Emissions from Abandoned Oil and Gas Wells in Colorado
Anna Hodshire, Stuart N. Riddick, Mercy Mbua, Arthur Santos, Ethan Emmerson, Fancy Cheptonui, Cade Houlihan, Younki Cho, Wendy Hartzell, Dan Zimmerle, Colorado State University, Fort Collins, CO

9:20 am – 9:45 am
ME19 Evaluating Natural Gas Emissions from Upstream Oil and Gas Facilities in West Virginia using Next Generation Measurement Methods
Tracey L. Footer, Eastern Research Group, Inc., Cottonwood Heights, UT; Eben Thoma, US EPA, RTP, NC; Derek Johnson, Nigel Clark, West Virginia University, Morgantown, WV; Scott Herndon, Conner Daube, Aerodyne, Billerica, MA

9:45 am – 10:10 am
ME22 Methane Venting from Production Storage Tanks: Temporal Variability and Implications for Measurement
Simon A. Festa-Bianchet, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada

Session 4B: Advances in Stationary Source Method
[concurrent with Sessions 4A and 4C]
Empire ABC

Chairs: Ray Merrill and Jeff Ryan, US EPA

8:30 am – 8:55 am
ME52 Non-nulling Protocols for Fast, Accurate, 3-D Velocity Measurements in Stacks
A. Johnson, I. Shinder, J. Filla, J. Boyd, M. Moldover National Institute of Standards and Technology; M. Gentry, Airflow Sciences Corporation

8:55 am – 9:20 am
ME123 Characteristics of Condensable Particulate Formation in the EPA Method 202 Sampling Train

9:20 am – 9:45 am
ME20 Updates on an Analytical Method for Detecting Per- and Polyfluorooalkyl Substances (PFAS) from Stationary Source Air Emissions – Other Test Method 45 (OTM-45)

9:45 am – 10:10 am
ME36 Per- and Polyfluorinated Alkyl Substances (PFAS) Detected in Source Samples Using Thermal Desorption-Gas Chromatography/Mass Spectrometry
M. Ariel Geer Wallace, Stephen Jackson, US EPA ORD, RTP, NC; William Preston, CSS Inc., Durham, NC; Laura Miles, Hannah Calder, Stephen Davises, Markes International, Bridgend, Wales, UK

Session 4C: Emissions from Agriculture
[concurrent with Sessions 4A and 4B]
Auditorium

Chairs: Ian Rumsey and John Walker, US EPA

8:30 am – 8:55 am
Rana Genedy, Jactone Ogejo, Virginia Tech

8:55 am – 9:20 am
ME134 Ammonia Concentrations and Modelled Dry Deposition Across the Snake River Valley

9:20 am – 9:45 am
ME74 Interaction Between Increased Animal Welfare and Emissions from Pig Houses
Michael Jørgen Hansen, Pablo Garcia Perez, Lise Bonne Guldberg, Anders Feilberg, Aarhus University; Vivi Aarestrup Moustsen, SEGES Innovation P/S; Yolande Seddon, University of Saskatchewan

9:45 am – 10:10 am
ME106 Insights on Methane Emission from Pig Manure Management by Combining Emission Measurement and Modeling
Sasha D. Hafner, Frederik R. Dalby, Michael J. Hansen, Aarhus University, Aarhus, Denmark
Technical Program – Wednesday, November 15, con’t.

Session 5A: GHG Monitoring – ONG
[concurrent with Sessions 5B and 5C]
Imperial 123

**Chairs:** Chiemezie Illonze, Colorado State University, and Melissa Weitz, US EPA

**10:40 am – 11:05 am**

ME76 Development and Testing of the Sensit FMD Methane Sensor and Progress Towards Collaborative NGEM Methods
Jason Gu, Jacob Melby, Sensit Technologies, Inc., Valparaiso, IN; Wyatt Champion, Megan MacDonald, Eben Thoma, US EPA ORD, RTP, NC

**11:05 am – 11:30 am**

ME12 Finding & Quantifying Fugitive Emitters with Novel Quantum Lidar Gas Imaging
Aaron Van Pelt, QLM Technology Ltd.; Andrew Speck

**11:30 am – 11:55 am**

ME34 Probabilities of Detection for Aerial Survey of Oil and Gas Setor Methane Emissions
Michael J. Thorpe, Dominic Altamura, Cameron Dudiak, Bridger Photonics, Inc., Bozeman, MT; Bradley M. Conrad, David R. Tyner, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada

**11:55 am – 12:20 pm**

ME63 Laser Analyzers for Quantitative Measurement of Greenhouse Gas Emissions
Hamish Adam, Boreal Laser Inc, Edmonton, Canada

Session 5B: Fenceline and Near-source Studies
[concurrent with Sessions 5A and 5C]
Empire ABC

**Chairs:** David Berkowitz and Ray Merrill, US EPA

**10:40 am – 11:05 am**

ME04 Utilization of Broadband Cavity Ring-down Spectroscopy for Mobile Leak Detection in the Port of Rotterdam
Hugo Bison, DCMR Rijnmond Environmental Service, Schiedam, The Netherlands; Aurelie Marcotte, Anthony Miller, Entanglement Technologies, Inc., San Bruno, CA

**11:05 am – 11:30 am**

ME122 Advances in Long Path FTIR Monitoring for Ethylene Oxide
Troy M. Boley, Spectrum Environmental Solutions LLC, Austin, TX

**11:30 am – 11:55 am**

Wyatt M. Champion, Megan MacDonald, Ingrid George, Eben Thoma, US EPA ORD, RTP, NC; Jacob D. Carpenter, Ryan Brown, Daniel Garver, US EPA Region 4, Atlanta, GA; Brittany Thomas, Jacobs Technology Inc., Tullahoma, TN

**11:55 am – 12:20 pm**

ME45 Demonstration of a Novel Odor Identification System using Remotely Operated Canister Samplers (ROCS) with an Odor Reporting Tool in Rubbertown
Ingrid George, Rachelle Duvall, William Mitchell, Lillian Alston, US EPA ORD, RTP, NC; Nina Warren, Oak Ridge Associated Universities, Oak Ridge, TN; Garrett Wiley, Matthew Collins, Jacobs Technology, Inc., RTP, NC; Sheryl Good, EPA Region 4, Atlanta, GA; Billy DeWitt, Michelle King, Louisville Metro Air Pollution Control District, Louisville, KY; Catherine Seppanen, University of North Carolina at Chapel Hill, Chapel Hill, NC

Session 5C: Emissions from Agriculture
[concurrent with Sessions 5A and 5B]
Auditorium

**Chairs:** John Walker and Ian Rumsey, US EPA

**10:40 am – 11:05 am**

ME27 Slurry Funnels with Partial Pit Ventilation and Frequent Flushing as a Strategy to Mitigate Emissions from Sow Farms
Pablo Garcia, Anders Fellberg, Lise B. Guldberg, Michael J. Hansen, Aarhus University, Aarhus, Denmark

**11:05 am – 11:30 am**

ME137 Engineered Windbreak Wall Can Reduce Odor and Ammonia Emissions from Livestock Barns
Sanjay Shah, Richard Goforth, Jonas Asbill, Praveen Kolar, North Carolina State University, Raleigh, NC

**11:30 am – 11:55 am**

ME94 Significant Underestimation of Broiler House Emission Rates with Static Chamber-Based Methods
Huan Chen, Clemson University, SC; Changyoon Jeong, Louisiana State University Agricultural Center, Bossier City, LA; Kyoung S. Ro, USDA Agricultural Research Service, SC

**11:55 am – 12:20 pm**

ME18 Ammonia and Ammonium Concentrations and Deposition in the Near Fields of Poultry Production Facilities
Sam Cherotich, Suraya Akter, Lingjuan Wang-Li, Lingying Zhao, Kenneth Anderson, John Classen, Wei Shi, North Carolina State University, Raleigh, NC

12:20 pm – 1:30 pm
**Featured Presentation and Lunch**
Empire DE

**A Historical Perspective on Black Carbon Aerosols**
Dr. Tony Hansen, President, Magee Scientific Co.; Lawrence Berkeley National Lab (retired)
### Session 6A: GHG Monitoring – ONG
[concurrent with Sessions 6B and 6C]
Imperial 123

**Chairs:** Mercy Mbua, Colorado State University, and Paul Van Rooy, US EPA

1:30 pm – 1:55 pm
**ME73** Quantifying Emissions from a Small Oil Sands Demonstration Pit Lake using OP-FTIR Measurements coupled with Vertical Radial Plume Mapping
Youssef Taha, Ignacio Gallardo, Ahmad Kia, Randy Rudolph, AECOM

1:55 pm – 2:20 pm
**ME83** A Data-Driven Algorithm for Optimizing Continuous Monitoring Point-Sensor Placement on Oil and Gas Sites
Meng Jia, Troy Sorensen, Dorit Hammerling, Colorado School of Mines

2:20 pm – 2:45 pm
**ME95** Assessing the Progress of the Performance of Continuous Emission Monitoring Solutions Under a Single-Blind Controlled Testing Protocol
Chiemezie Ilonze, Ethan Emerson, Daniel Zimmerle, Aidan Duggan, Colorado State University, Fort Collins, CO

2:45 pm – 3:10 pm
**ME102** Detection, Localization and Quantification of Methane Emissions on Oil and Gas Sites Using Point in Space Continuous Monitoring Systems
Dorit Hammerling, William Daniels, Meng Jia, Colorado School of Mines

### Session 6B: NGEM for Ethylene Oxide
[concurrent with Sessions 6A and 6C]
Empire ABC

**Chairs:** Megan Macdonald and David Berkowitz, US EPA

1:30 pm – 1:55 pm
**ME30** Ethylene Oxide (EtO) Field Ambient Method Evaluation (FAME)

1:55 pm – 2:20 pm
**ME86** Performance Evaluations of CRDS-Based Ethylene Oxide Monitoring Systems for Workplace and CEMS Applications

2:20 pm – 2:45 pm
**ME117** Mobile and Multipoint Process Unit Monitoring of Ethylene Oxide Emissions at a Chemical Facility in EPA Region 7

2:45 pm – 3:10 pm
**ME126** Ethylene Oxide Measurements Near a Chemical Facility in Verona, Missouri: Interim Results
Alex Edwards, Andy Hawkins, US EPA Region 7 Air and Radiation Division; Adam Zachary, US EPA Region 7 Laboratory Services and Applied Science Division; Mike Davis, US EPA Region 7 Office of Intergovernmental Affairs; Eben Thoma, Ingrid George, Ali Gitipour, Megan MacDonald, US EPA ORD

### Session 6C: Air Toxics/VOC Ambient
[concurrent with Sessions 6A and 6B]
Auditorium

**Chairs:** Doris Chen, US EPA, and Randy Bower, ERG

1:30 pm – 1:55 pm
**ME136** Determination of Ethylene Oxide at Ultra-Trace Concentrations in Ambient Air Using EPA Method TO-15A: Optimization of VOC Preconcentrator and GC/MS Analytical Method Parameters
Tamira Cousett Karen Oliver, Andrew Whitehill, US EPA ORD, RTP; Carlton Witherspoon, Jacobs Technology, Inc., Tullahoma, TN

1:55 pm – 2:20 pm
**ME107** A Cryogen Free TO15 Preconcentrator with Reduced Air Background for Measuring Ethylene Oxide at Low Part Per Trillion Levels
Daniel B Cardin, Tom X Robinson, Daniel J Cardin, John Quintana, Entech Instruments, Simi Valley, CA

2:20 pm – 2:45 pm
**ME32** Incorporating Ethylene Oxide Into TO-15a. Discussion on the Development of the Analytical Method and Efforts to Achieve the Lowest Possible Detection Limit
Ericka Hackmeister, Markes International Inc, Sacramento, CA; Hannah Calder, Laura Miles, Markes International Ltd, Brigend, UK

2:45 pm – 3:10 pm
**ME129** Method TO-15 – Overcoming the Difficulties of Implementing TO-15A in Ambient Air Laboratories
Mitchell Howell, Kyle Rasmus, Julie L. Swift, Donna Tedder, Eastern Research Group, Inc., Morrisville, NC
<table>
<thead>
<tr>
<th>Session 7A: GHG Monitoring – ONG</th>
<th>Session 7B: Fugitive and Fenceline NGEM</th>
<th>Session 7C: Air Toxics/VOC Ambient</th>
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### Technical Program – Wednesday, November 15, con’t.

**3:40 pm – 4:05 pm**
ME03 Examining Advancements in Semiconducting Methane Sensors: Reducing Moisture Interference in Stationary Methane Emissions Detection Units
Michael Krenek, Field Geo Services, Inc.

**4:05 pm – 4:30 pm**
ME05 Comparing Mox and Laser Spectroscopy Technology in Point Sensor Networks for Continuous Monitoring of Methane Emissions
Javier Bilbao, Sensirion Connected Solutions, Switzerland

**4:30 pm – 4:55 pm**
ME46 A New Instrument for Ambient Atmospheric Methane Measurement
Matt Walbran, David Bones, Anna Farquhar, Geoff Henshaw, Aeroqual

**4:55 pm – 5:20 pm**
ME70 Utilizing Multiple Air Detection Methods for Effective Leak Detection and Repair at Refineries
Eliko Angel, Amir Sagi, Bazan Oil Refiners, Haifa, Israel; Mark Wicking Baird, Argos Scientific Africa Inc., Cape Town, South Africa

**3:40 pm – 4:05 pm**
ME15 Towards Application-based Automated Processing of Fenceline Sensor Data
Megan MacDonald, Eben Thoma, Wyatt Champion, Ingrid George, US EPA ORD, RTP, NC

**4:05 pm – 4:30 pm**
ME33 Strategies for Geospatial Mobile Monitoring with the DART
Alexia Scott, ERG, Morrisville, NC

**4:30 pm – 4:55 pm**
ME84 Continuous Community Monitoring of Air Quality Around Major Refineries in Los Angeles Area Using Mobile extractive FTIR and DOAS
Jerker Samuelsson, Johan Mellqvist, Antony Babore, Daniel Ruiz, FluxSense Inc, Huntington Beach, CA; Olga Pikelnaya, South Coast Air Quality Management District, Diamond Bar, CA

**4:55 pm – 5:20 pm**
ME124 Update on Diffusive Sampling of Volatile Organic Compounds on CarbopackTM X and CarbographTM STD
Andrew R. Whitehill, Tamira Cousett, Karen Oliver, US EPA ORD, RTP, NC

**4:05 pm – 4:30 pm**
ME110 Optimizing EPA Method 325 by Performing Secondary Trapping of TD Tube Recovered Compound Inside of the GCMS Oven
Daniel B Cardin, Daniel J Cardin, Tom Robinson, Weier Hao, John Quintana, Entech Instruments, Simi Valley, CA

**4:30 pm – 4:55 pm**
ME118 Highly Resolved Formaldehyde Measurements in Suburban Outdoor and Indoor Air: Long-term Monitoring of Concentrations and Emission Rates Suitable for Model Validations
Karsten Baumann, Jonathan Bent, Jan Woźniak, Juan Carlos Guerrero, Kai Skog, Chris Rella, Joel Avrunin, Picarro Inc., Santa Clara, CA

**4:55 pm – 5:20 pm**
ME77 Using Automated Gas Chromatography for Continuous Monitoring of Ambient Air Toxics in Communities
Yifan Yu, Catalina Tsai, Olga Pikelnaya, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA; Tsung-Kuan A. Chou, Tirah Wu, Douglas Chen, Tricorntech Corporation, San Jose, CA
### Session 8A: Advances in Underground NG Leak Detection
[concurrent with Sessions 8B and 8C]

**Imperial 123**

**Chairs:** Hannah Halliday, US EPA, and Ram Hashmonay, Opgal

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<tr>
<th>Time</th>
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| 8:30 am – 8:55 am | ME09 Methane Emissions Quantification using Advanced Mobile Leak Detection and EQ Platforms  
Alnoor Ebrahim, John D. Drumheller, Southern Cross/Sparus Holdings, Norcross, GA |
| 8:55 am – 9:20 am | ME41 Using Controlled Subsurface Releases to Investigate the Effect of Leak Variation on Above-ground Natural Gas Detection  
Mercy Mbua, Stuart N. Riddick, Fancy Cheptonui, Cade Houlihan, Younki Cho, Daniel J. Zimmerle, Colorado State University, Fort Collins, CO; Shanru Tian, The University of Texas, Arlington, TX; Kathleen M. Smits, South Methodist University, Dallas, TX |
| 9:20 am – 9:45 am | ME43 Drastically Reduce Methane Emissions: Accelerate the Detection and Repair of Large Sources  
Robby Vaughn, Picarro, Santa Clara, CA |
| 9:45 am – 10:10 am | ME98 Modeling Approach to Quantify a Below Ground Pipeline Leak Using Aboveground Instruments  
Fancy Cheptonui, Stuart N. Riddick, Dan Zimmerle, Colorado State University, Fort Collins, CO |

### Session 8B: Advancement in EtO Measurements
[concurrent with Sessions 8A and 8C]

**Empire ABC**

**Chairs:** Ali Gitipour and Nealson Watkins, US EPA

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<th>Time</th>
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| 8:30 am – 8:55 am | ME57 Cavity Ring-Down Spectroscopy Method Validation and OTM Development  
Josh Childers, Clean Air Engineering, Inc., Pittsburgh, PA |
| 8:55 am – 9:20 am | ME97 OE-FTIR Field Data  
Olivia Madamba, Kelly McPartland, Thermo Fisher Scientific, East Windsor, CT |
| 9:20 am – 9:45 am | ME115 Speciated Volatile Organic Compound and Ethylene Oxide Emissions from Residential Wood and Pellet Stove Appliances  
| 9:45 am – 10:10 am | ME59 Review of Ethylene Oxide Monitoring and Measurements with AROMA-ETO  
Anthony Miller, Jake Margolis, Aurelie Marcotte, Michael Armen, Entanglement Technologies, Inc., San Bruno, CA |

### Session 8C: Mobile Source Emissions
[concurrent with Sessions 8A and 8B]

**Auditorium**

**Chairs:** Eric Winegar, Sonoma Technology, Inc., and Joe Martin, US EPA

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| 8:30 am – 8:55 am | ME48 Personal Exposure to Particle Number Concentration in Various Transport Modes During Rush Hour Along a Fixed Route in Delhi  
Akash Kumar Singh, Dudun Mehta, Arun Srivastava, Jawaharlal Nehru University, New Delhi |
| 8:55 am – 9:20 am | ME61 Variability of Light-duty Vehicle Emissions in Utah County  
Darrell Sonntag, Amber Allen, Brigham Young University |
| 9:20 am – 9:45 am | ME121 Desorption and Quantification of 6PPD and 6PPD-quinone from Tire Wear Particulate on Quartz Fiber Filters  
Joseph Martin, US EPA ORD |
| 9:45 am – 10:10 am | ME116 Unreported VOC Emissions from Road Transport Including from Electric Vehicles  
Leslie Silva, Nathan Hoppens, Syft Technologies, Los Angeles, CA; Samuel Cliff, Ally Lewis, Marvin Shaw, James Lee, Stephen Andrews, Jim Hopkins, Ruth Purvis, Amber Yeoman, University of York, York, UK; Michael Flynn, University of Manchester, Manchester, UK |
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<td><strong>Technical Program – Thursday, November 16, con’t.</strong></td>
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<td>ME44 Industrial GHG Emissions Monitoring from In-situ Methane and CO2 Concentration Measurements On-board an Unmanned Aircraft Vehicle Ludovic Donnat, Catherine Juéry, Olivier Ventre, Florent Pineau, Abel Maunoury, Nicolas Galas, Laura Chaussinand, Rachel Levi, Theo Hirth, Caroline Castano Uribe, Nicolas Huet, Total Energies OneTech, France; Lilian Joly, Jean-Louis Bonne, Nicolas Dumelié, Jérémie Burgalat, Nicolas Chauvin, Julien Cousin, Thomas Decarpenterie, Reims University</td>
<td>ME64 A Deep Dive into Next Generation BTEX Ambient Air Monitors Jason C. Schroder, Pamela Rickly, Derek Price, Heather McIntyre, Jon Kinney, Colorado Department of Public Health and Environment</td>
<td>ME01 An Improved Approach to Analysis of Air Quality Data David R. Weise, USDA Forest Service, Riverside, CA; Javier Palarea-Albaladejo, University of Girona, Girona, Catalonia, Spain</td>
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<td>ME82 Drone Based Measurements of Emissions of CH4 in Industrial Applications Johan Mellqvist, Vladimir Conde, Chalmers University of Technology, Gothenburg, Sweden; Sumedh Bhandokar, Samuel Brohede, Pontus Andersson, Brian Offe, Jerker Samuelsson, FluxSense AB, Gothenburg, Sweden</td>
<td>ME96 Using a Spatial Canister Network to Determine Source Contributions and Local Emission Rates of Methane and Volatile Organic Compounds Jeffrey L. Collett, Jr., Emily Lachenmayer, Weixin Zhang, I-Ting Ku, Da Pan, Yong Zhou, Colorado State University, Fort Collins, CO; Brent Buck, Morgan Frazier, Aje Analytics, Fort Collins, CO</td>
<td>ME25 A Remote Calibration Methodology for Urban Air Sensor Networks Lena F Weissert, Geoff S Henshaw, David E Williams, Aeroqual</td>
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<td><strong>11:55 am – 12:20 pm</strong></td>
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<td>ME17 Site Level Continuous Emission Monitoring Based on Optical Gas Imaging Ram Hashmonay, Opgal</td>
<td>ME08 Estimating Local-scale Impacts of Air Pollution Sources Using High Time Resolution Measurement Data Janet Burke, US EPA ORD, Durham, NC; Ronald Henry, University of Southern California (retired), Los Angeles, CA; Will Wetherell, Missouri Department of Natural Resources, Jefferson City, MO; Katherine Haile, US EPA Region 5, Chicago, IL; Charles Scarborough, Crystal McClure, Sonoma Technology, Petaluma, CA; Tim Hanley, Neelson Watkins, US EPA OAR, Durham, NC</td>
<td>ME80 Performance Evaluation of VOCs and PM 2.5 Low Cost Sensors in Harris County, TX Loredana Suciu, Bradley Flowers, AECOM Technical Services Inc., Houston, TX</td>
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<td>CONFERENCE ADJOURNS 12:20 pm</td>
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Technical Posters

ME02 What’s In Your Air
Brian Whitley, WH Consulting, LLC

ME10 Method TO-15A: When Is This the Appropriate Analytical Method?
Chris Johnson, Pace Analytical

ME11 Advanced Mobile Monitoring Platform
Paul Wehnert, Heath Consultants

J.P. Etheridge, Encino Environmental Services, Katy, TX

ME16 A Low-Cost Sensor Platform for Mobile Methane Measurements
Jonathan Silberstein, University of Colorado at Boulder, Boulder, CO

ME28 Proactive Emission Monitoring in Petrochemical Industries: An Expanded Application Case for the Extended Use of PAMS
Chung-Laing Tai, Jen-Shuo Hsieh, Tsang-Chin Chen, EPA, Executive Yuan, Taiwan; Chi-Pei Li, Yen-Ting Lu, Tzu-Hao Kuo, Sinotech Engineering Services, Ltd., Taipei, Taiwan

ME31 Characterization of Ambient Hazardous Air Pollutant and Control from Gas Stations
Yung-Chen Yao, Shih-Ru Tsai, Industrial Technology Research Institute, Taiwan, ROC; Chung-Liang Tai, Environment Protection Administration, Executive Yuan, Taiwan, ROC; Wen-Tzu Liu, Chung Yuan Christian University, Taoyuan, Taiwan, ROC

ME35 High-Resolution Mobile Community Air Monitoring in Disadvantaged Communities Across New York State
Joseph Marto, Dominic Moronta, Gavin Lemley, Amanda Teora, New York State Department of Environmental Conservation, Albany, NY

ME51 A Pilot Study of Hazardous Air Pollutants (HAPs) Network for Next Generation Emission Measurement (NGEM) in Taiwan
Hung-Po Hsu, Yen-Chun Chen, Pin-Fei Hsieh, Environmental Protection Administration, Executive Yuan, Taipei, Taiwan; Shi-Yan Li, Neng-Huei Lin, Chieh-Heng Wang, National Central University, Taoyuan, Taiwan; Jia-Lin Wang, National Central University and Chinese Environmental Analytical Society, Taoyuan, Taiwan; Wen-Tzu Liu, Chinese Environmental Analytical Society and Chung Yuan Christian University, Taoyuan, Taiwan

ME53 Simple, Novel High-Precision Cavity Ringdown Spectroscopy for Air Monitoring of CO₂ and CH₄
James N. Hodges, Rebecca Livingston, Brian M. Siller, Process Insights, Horsham, PA

ME68 Monitoring Flare Visible Emissions – Smoke Index vs. EPA Method 9 and Method 22
Jon Morris, Yousheng Zeng, Providence Photonics, LLC, Baton Rouge, LA

ME72 Near-Source Safety and Health Risks of Oil and Gas Super Emitters

ME78 Defensible Emissions Measurement Methods Are Required to Support Plugging and Abandonment of Orphaned Oil and Gas Wells
David L. Elam, Jr., TRC Environmental Corporation; David Stewart, Greenfield Environmental Solutions

ME91 A Multi-disciplinary Approach to Estimate the Temporal and Spatial Emissions of Fugitive Dust from Desert Area Sources
Maarten D. Schreuder, Johannes T. Yimam, Brian M. Schmid, Hank Dickey, Formation Environmental LLC, Sacramento, CA; Jessica Humes, Imperial Irrigation District, Imperial, CA

ME111 Reliable Long-Term Sampling into Vacuum Sampling Canisters
Daniel B. Cardin, John Quintana, Entech Instruments, Simi Valley CA

ME112 Advanced Quantification of Methane Emissions Using UAV Curtain Flux Method and Comparison with Flux Chamber Method
Ramin Yazdani, Sajjad Karimi, University of California at Davis; Paul Imhoff, University of Delaware; Madjid Delkash, Delkash Consulting; Mint Kunkel, Michael Thorpe, Bridger Photonics, Inc.; Eladio Knipping, Stephanie Shaw, EPRI

ME127 Advanced Leak Measurement In Reducing Emissions and Marketing Natural Gas
Ankur Kadakia, Iconic Air

ME130 Towards UAV-based Monitoring Approach for Landfills Operation and Maintenance
Peng (Patrick) Sun, Syed Zohaib Hassan, Jiannan Chen, Debra Reinhart, University of Central Florida, Orlando, FL

ME131 Use and Modifications to the Ambient Ion Monitor for Use in Source Characterization in Agricultural Environments
Philip J. Silva, USDA-ARS, Bowling Green, KY

Posters will be on display in the Imperial Foyer to view during networking breaks throughout the conference!
2B Technologies
www.twobtech.com

2B Technologies is dedicated to the development and commercialization of new analytical instruments for atmospheric and environmental measurements. We specialize in miniaturized instruments for measurements of ozone (O3), nitric oxide (NO), nitrogen dioxide (NO2), mercury (Hg), black carbon, PM2.5, and other chemical species in air. Our AQSync Air Quality Monitoring Station is a compact air monitoring solution utilizing a combination of FEM ozone and NO2 measurements with proven near reference grade techniques for measuring CO and PM. The AQSync also provides measurements of NO, CO2, temperature, pressure, relative humidity, wind speed, and wind direction while having the ability to upload data directly to the cloud.

ABB
www.new.abb.com/oil-and-gas/services

ABB Measurement & Analytics group is a global company known for its advanced leak detection systems, including HoverGuard™, a drone-based solution for detecting, mapping and quantifying methane and natural gas leaks. These ABB solutions, which leverage and build on more than two decades of experience providing the highest performance methane analyzers available, produce comprehensive digital reports and maps that summarize the results after each survey. This proven laser-based measurement technology can now be applied to all industries to localize methane leaks and quantify their size.

Aerosol Magee Scientific
www.aerosolmageesci.com

Aerosol Magee Scientific is a leading developer and manufacturer of instrumentation for air quality research and measurement, and a leading organization focusing on research of black carbon and other carbonaceous aerosols and their impact on climate change and human health. It has developed the Aethalometer® AE33, the most widely used instrument globally for real-time monitoring of Black Carbon, the second most important climate forcing agent and the most important indicator of the adverse health effects.

Alliance Technical Group, LLC
www.alliancetechnicalgroup.com

Alliance Technical Group (Alliance), headquartered in Decatur, AL, is an environmental testing, data, and analytics company helping our customers achieve their environmental goals. With more than 950 specialists located in over 38 offices nationwide, Alliance is the strategic and trusted partner recognized as the premier technical solution provider for compliance and risk reduction. Alliance addresses our customers' needs with eight service lines—Stack Testing, Leak Detection & Repair (LDAR), Continuous Emission Monitoring Systems (CEMS), Analytical and Laboratory Services, Ambient Air Monitoring, Software, Combustion, and Environmental Consulting—providing solutions that push the boundaries in environmental compliance.

Ambilabs
www.amlabs.com

Ambilabs specializes in supplying innovative ambient air monitoring technology solutions. Our experienced staff provide instrumentation, systems and solutions for obtaining valid, accurate, and precise air quality data. We directly supply, install, and train on a broad range of gas and particulate monitoring instrumentation for our customers in Canada, USA, and the Caribbean. Please visit our booth to discuss the latest “Airpointer” which is an EPA FEM & FRM designated air monitoring “station in a suitcase”, and also the new AqMesh suite of pollutant monitoring sensors packaged together into a tiny pod that is no larger than a football. Ask about our latest “2WIN” high-precision particulate/haze/visibility monitoring sensor solution.

Argos Scientific, Inc.
www.argos-sci.com

Argos Scientific Inc. is an international company that designs and operates fence-line systems, ambient air monitoring networks and data management systems for industry, communities, and government entities. Our expertise lies in offering comprehensive solutions to assess and monitor air quality, ensuring compliance with environmental regulations as well as determining and reducing community impact. With our advanced technology and extensive experience, Argos Scientific Inc. is a trusted partner for those seeking reliable air quality monitoring services by providing high quality defensible data.

Distran USA Corp
www.distran.swiss

With regional offices located in the US, Distran is a global manufacturer of Ultrasound Imaging Cameras. Ultrasonic imaging cameras detect leaks of any type of gases: hydrogen, nitrogen, compressed air, methane, steam, vacuum leaks, and more. Based on the combination of an integrated microphone array with an optical camera, the Distran Ultrasonic Cameras capture ultrasounds and show the accurate locations of the leaks. This technology can not only locate leaks but also quantify the severity of a gas leak within seconds. The real-time leak rate quantification displays on the camera and allows users to make informed decisions regarding their leak detection and repairs (LDAR).

DR DAS LTD
www.dr-das.com

DR DAS LTD is the pioneer in digital data collection. Learn about innovative data acquisition and control solutions for air quality, emissions and property line monitoring. Envidas Ultimate DAS, EnviataARM and public information products (Websites, Kiosks, Telephony, Mobile Apps) will be on display. Learn why 40+ agencies rely on DRDAS.

ECO PHYSICS, INC.
www.ecophysics-us.com

Formed in 1995 as the US distributor for ECO PHYSICS AG of Switzerland, we offer Chemiluminescence NOx, Ammonia, and Paramagnetic O2 analyzers that display measurements for regulatory compliance. All our analyzers have onboard computers for almost unlimited data storage. We are the leading supplier for combustion and atmospheric research. Heated sample inlet systems for measurement of hot, wet gases and dual inlet analyzers for simultaneous measurement of two separate sample sources are also available. New analyzers are FTIR and TDL analyzers from ETG Resources. Accurate at any concentration, contact us for a quote today!
ENMET LLC
www.enmet.com

ENMET manufactures a wide array of environmental and industrial health and safety monitoring instruments. Our new GC-based products offer a new cost-effective approach to benzene trace level detection (sub ppb) at the fence line and in the workplace with the ability to provide specific gas analysis in complex mixtures.

Entanglement Technologies, Inc.
www.entanglementtech.com

Entanglement Technologies is a chemical technology and engineering solutions manufacturer focused on designing intelligent analyzers which increase the accessibility and actionability of chemical data on our surroundings. Our flagship instrumentation platform, AROMA-VOC, is a thermal desorption, high-performance broadband cavity ringdown spectrometer (TD-CRDS) which provides part-per-trillion (pptv) detection limits on hazardous air pollutants such as BTEX, 1,3-butadiene, ethylene oxide, TCE, H2S and HCN in ambient air and other complex matrices in the field or from any vehicle. No buildout or expert operator is required. The high stability of the CRDS core facilitates operations for long-term, automated fixed-site deployments in remote locations without sacrificing data-quality or throughput. Visit the booth to learn more or contact us at info@entanglementtech.com.

Entech Instruments, Inc.
www.entechinst.com

Entech Instruments is a leading developer and manufacturer of analytical instrumentation that supports professionals around the world in Environmental Air Monitoring, Soil & Water Testing, Industrial Hygiene, Food Safety, Flavor & Aroma R&D, Material Emissions Testing, Forensic Investigation, and Clinical Analysis. We specialize in the creation of inert air and gas sample collection equipment, chemical extraction and preconcentration technology, as well as GC/MS sample preparation and introduction technologies.

Enthalpy Analytical
www.enthalpy.com

Enthalpy Analytical, LLC (“Enthalpy”) has been providing reliable, routine, and specialty testing of air, stack, drinking water, groundwater, waste water, storm-water, soil, sludge and hazardous waste for over 50 years. Ever-growing, with a network of laboratories and service centers across the United States, Enthalpy is well positioned to exceed expectations on any type of analytical program.

Global Analyzer Systems
www.gasl.ca

Global Analyzer Systems Ltd. is the complete package CEMS provider. We ensure safe and sustainable air by bringing certainty to emissions measurement. We are customer-focused and committed to keeping industry compliant with regulations. Global provides a wide range of equipment and services related to air monitoring including: Multi-component CEMS; Data Acquisition and Control Systems (DAS); CEMS Online Reporting Services; On-site services; Quality Assurance Plans; Annual Evaluations; Regulatory Compliance Support; Documentation and Training; DataStream Reporting Software; and Mobile CEMS.

Heath Consultants
www.heathus.com

Since 1933, Heath has been a field service provider, manufacturer and distributor of innovative products of advanced leak detection products specifically designed for the identification and quantification of greenhouse gas emissions (GHG), including the Intrinsically Safe RMLD-CS™, the next generation of Hi-Flow Samplers and Discover AMLD™ for mobile survey. Heath’s products and services are designed to meet the upstream, midstream and downstream markets. Our services include walking and mobile leak surveys, greenhouse gas emissions programs and underground utility locating.

KASSAY RAM2000 Spectrometers
www.kassay.com

KASSAY is the exclusive supplier of the RAM2000TM (Remote Air Monitor) systems used for fence line monitoring of gas vapors in real-time. RAM2000TM open path spectrometers have patented technology developed in partnership with the US government and accredited by domestic and foreign agencies.

Met One Instruments, Inc.
www.metone.com

Met One Instruments Inc. provides reliable, affordable, precision instrumentation for monitoring ambient & indoor air quality and controlled environments. We also have a full Meteorological line of precision instrumentation. We engineer and manufacture products from our facilities located in Oregon, New York, and Maryland. Our customer service, including ongoing after-the-sale service support, is the best in the industry. All our products are made in the USA. We are an ISO9001:2015 certified company.

Nikira Labs
www.nikiralabs.com

Nikira Labs is an innovator in the areas of air quality high-performance gas sensing, natural gas emissions and leak detection, and the semiconductor FAB trace gas analysis. “Quality scientific measurements anywhere, anyone” is our mission to become an indispensable partner for a healthier environment.

Nutech Instruments, Inc.
www.nutechinst.com

Nutech Instruments a World leading supplier of Air VOC testing products headquarters in Dallas, Texas USA. Some of our products are: Preconcentrators (LN2 8910 and LN2 free 6600), Auto Samplers 3610, Direct loop injection 3606, Dynamic and Static Diluters 2203, Canister Clean Systems 2104,2108, Fence Line Systems (TVOC, PAMS, Full Range, Complete Shelters) 6300,6500, 6600,6700, Automatic air sampling timers 2701, 2703, Multifunctional Automatic Air Sampling System 2600ST, Carry-on Automatic Multifunctional Sampling System 2600GT Portable TVOC analyzer 3000, Custom Designs to meet your unique requirements. We also run a full-service air VOC testing laboratory. Contact us for more information at: kevin@nutechins.com
Opgal Optronic Industries
www.opgal.com

With 40 years of experience in the field of electro-optics, Opgal is a global producer of ground-breaking industrial thermal imaging cameras for various applications in the oil & gas industry. Opgal’s technology gives the ability to see beyond the visible to test, measure, and inspect large areas and identify hidden problems fast, saving valuable resources and increasing productivity across a multitude of industrial applications. Our industrial product line includes a range of Optical Gas Imaging solutions for finding fugitive emissions gas leaks, and gas quantification software. Enabling companies to increase productivity while reducing emissions.

Orsat
www.orsat.com

Since 1994, Orsat has customized the installation and maintenance of hardware and software to produce a robust application for continuous unattended field measurement of VOCs in ambient air for Photochemical Assessment Monitoring Stations (PAMS). Orsat’s services encompass all aspects of site operation and quality control from deployment to operator training.

Picarro
www.picarro.com

Picarro is a leading provider of solutions to measure greenhouse gas (GHG) concentrations, criteria pollutants and hazardous air pollutants (HAPs) in many industrial and research applications. Picarro analyzers and systems are simple to deploy and operate, they deliver parts-per-trillion (ppt) sensitivity in real-time, and are designed for continuous monitoring with minimal maintenance. Visit our Air Quality and Ethylene Oxide Resource Centers to learn more about how our products are used to address indoor and outdoor air quality measurement needs.

SENSIT Technologies
www.gasleaksensors.com

SENSIT Technologies’ products protect life, property, and the environment from hazardous gases. SENSIT’s product line includes handheld and portable detection equipment for methane, VOCs, and air quality. Recent product releases include FMD (fixed-point methane detector), SPOD (VOC emission monitor), RAMP (air quality platform), and Gas-Trac® LZ (remote laser methane detectors). All include dashboards and remote data analytic tools. Part of the Halma group of life-saving technology companies, SENSIT Technologies is headquartered in Valparaiso, Indiana.

Sonoma Technology, Inc.
www.sonomatech.com

Sonoma Technology, Inc. (STI) is an employee-owned firm that delivers innovative, science- and technology-based solutions for our clients’ environmental needs worldwide. Our services include air quality research, atmospheric measurements, air quality and smoke forecasting, atmospheric modeling and analysis, instrumentation and data system development, software development, decision support systems, and outreach.

Spectrum Environmental Solutions
www.spectrumenvsoln.com

Spectrum Environmental Solutions is a technology leader in optical analytical techniques. We provide customized solutions using Fourier Transform Infrared (FTIR) spectroscopy, ultraviolet (UV), tunable diode laser (TDL), and quantum cascade laser (QCL) devices. Our solutions are always customized to the client’s unique issues and challenges. Optical measurements provide dynamic, near real-time insight into plant operations. We deliver FTIR analytical devices in both open path and extractive configurations. Our environmental consulting services include world class expertise in the areas of industrial flares and hazardous waste combustion. We have specific experience and proven technology in providing real-time emissions monitoring solutions for fence line monitoring networks.

Syft Technologies
www.syft.com

Syft Technologies is a New Zealand company that designs and manufactures Selected Ion Flow Tube-Mass Spectrometry (SIFT-MS) based trace gas-analysis tools. SIFT-MS is a technique that enables the quantitation of multiple volatile compounds simultaneously, from whole air samples, down to sub-ppbv levels, in near-real time. Syft instruments are sold into a wide range of applications throughout the world, including semiconductor industry solutions for online monitoring of airborne molecular contaminants (AMCs) in the cleanroom, bulk gases, and fence line emissions. We recently introduced the ability to monitor acid gases and other inorganics with the same tool (and analytical technique) used for volatile organic compound monitoring. Our goal is to provide near-real time monitoring of all cleanroom relevant AMCs to sub-pptv levels in the near future.

Teledyne API
www.teledyne-api.com

Teledyne API designs and builds a complete line of precision air quality monitoring instrumentation at its headquarters and factory in San Diego, California. These instruments utilize proven measurement principles and comply with the U.S. Environmental Protection Agency, European Union and other requirements for ambient air quality monitoring, continuous emissions monitoring, and a number of other applications.

Terra Applied Systems
www.tasysllc.com

The TAS mission is to be a premier bridge between manufacturers and end users of emerging and maturing technologies providing applications and integrated systems.

Tisch Environmental, Inc.
www.tisch-env.com

Tisch Environmental is a family business founded to develop and manufacture air pollution monitoring instruments. The Tisch family has produced nearly half a million devices for the air pollution monitoring community over the last 60 years. TIEI is looking into the future needs of today’s air monitoring professionals.
TricornTech
www.tricorntech.com

As a VOC monitoring expert, TricornTech offers a wide product range from portable precision instruments to online systems and comprehensive air quality monitoring software applications. In addition to our superior gas analysis technology used for monitoring airborne molecular contamination (AMC) in semiconductor applications and volatile organic compounds (VOCs) in the surrounding environment, complete solutions for detecting LNAPL/DNAPL (light/dense non-aqueous phase liquid) contaminants are also available. We are committed in offering solutions and services to our clients which are critical in the achievement of their success. Please stop by our booth to find out more about how we can create the perfect monitoring package tailored to your specific budget and testing requirements.

Trinity Consultants
www.trinityconsultants.com

Founded in 1974, Trinity Consultants helps organizations overcome complex, mission-critical challenges in EHS, engineering, and science through expertise in consulting, technology, training, and staffing. We support clients in geographies worldwide and across a broad range of sectors including industrial, energy, manufacturing, mining, life sciences, and commercial/institutional.

URG Corporation
www.urgcorp.com

URG is helping to ensure the air we breathe is the best it can be by creating the Ambient Ion Monitor (AIM) for the time-resolved, direct measurement of gas (hydrogen chloride, nitric acid, nitrous acid, sulfur dioxide, ammonia) and artifact-free particulate matter (nitrate, sulfate, nitrite, phosphate, chloride ammonium, sodium, calcium, potassium, magnesium) air pollutants. We specialize in Teflon-coated cyclones with various cut-points and flow rates, and stainless steel cyclones for diesel emissions.

Wilbur Technical Services, LLC
www.jjwilbur.com

The J.J. Wilbur Company and Wilbur Technical Services provide instrumentation and analytical solutions for environmental monitoring applications to a variety of clients with a focus on state-of-the art ambient air monitoring solutions. Recent work includes several mobile monitoring systems custom designed and built for real-time collection of various pollutants using the latest instruments and technology available. The company currently has fourteen employees with offices in Mont Vernon NH, Farmington CT, and Raleigh NC.

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