Michigan-Cambridge Research Initiative Announces the Second Air Quality Workshop and Panel Discussion

Emerging Sensor Technologies and Data Analytics for Air Quality Monitoring

Held Virtually via Zoom July 28-29, 2021 10:00 AM – 2:30 PM EDT

This is a free event. Advance registration is required. See wims2.org.
Registration closes 12:00 noon, US Eastern Daylight Time, July 26, 2021.

The World Health Organization reports that "the combined effects of ambient (outdoor) and household air pollution cause an estimated seven million premature deaths every year, largely as a result of increased mortality from stroke, heart disease, chronic obstructive pulmonary disease, lung cancer and acute respiratory infections." The primary sources of air pollution are dominated by anthropogenic actions including road emissions, industrial emissions, home heating, and construction sources.

Further, the National Institute of Health estimates that airborne pathogens (such as fungi, viruses, and bacteria) carried in bioaerosols, are estimated to be responsible for approximately 5 to 34% of indoor particulate matter air pollution. These bioaerosols can be associated with certain human diseases, such as pneumonia, influenza, measles, asthma, allergies, gastrointestinal illness, and SARS Covid-19.

The workshop will examine how new sensors, software, and practice can better address many of these global air pollution problems. For example, new, low-cost sensor networks can provide previously unfeasible real-time monitoring of toxic sites, and new mathematical models calculate inferred downstream values from upstream measurements. In addition, new biosensors, specifically designed to monitor SARS Covid-19 signatures, and others designed to measure airborne pathogen toxicity will be discussed.

The event is being organized by the University of Michigan in Ann Arbor and the University of Cambridge in the UK. It will be an update to the first event held in 2019 and will again include academic researchers, plus state and regional regulators, and executives and scientists from industry. A panel discussion will follow the formal presentations. Initial speakers and topics are listed below.

"Carbon Nanotube Active Filters for Viral Aerosol Disruption"
Adam Boies, Reader, Energy Group, Department of Engineering, University of Cambridge

"From Air Quality Sensors to Data Analysis: Joining Up Our Air Quality Community"
John Saffell, Technical Director, Alphasense Ltd

"Development and Deployment of an Online Instrument to Quantify Aerosol Toxicity"
Markus Kalberer, Professor, University of Basel

"Personalised Assessment of Respiratory Health Impacts of Exposure to Air Pollution"
D K Arvind, Professor, University of Edinburgh

"Inverse Modeling Methods for Interpreting Real Time Ambient Air Measurements: An Update"
Jay Olaguer, Assistant Division Director, Michigan Department of Environment, Great Lakes, and Energy (EGLE)

"Air Quality Sensors Applied: From Predicting Wildfires to Improving Public Health"
Joseph R. Stetter, President, Chief Technology Officer, Chairman of the Board, KWJ Engineering, Inc., President and Managing Partner – Spec Sensors, LLC

"Applying Emerging Sensor Technology: An Update"
Marta A. Fuoco, Physical Scientist, U.S. Environmental Protection Agency, Region 5, Air & Radiation Division

"Environmental Bio-sensing Approaches in the DARPA SIGMA+ and SenSARS Programs"
Mark Wrobel, Program Manager, Defense Sciences Office (DSO), DARPA

"Identifying Source of Air Pollution at Fine Spatial Scales"
Tammy Thompson, Senior Air Quality Specialist, Environmental Defense Fund

"Advances in FBAR-based Gas Sensors for IAQ Monitoring Applications"
Mario de Miguel Ramos, CEO, Cofounder and Director, Sorex Sensors, Ltd.

"Progressive Cellular Architecture in Microscale Gas Chromatography for Broad Chemical Analyses"
Yutao Qin, Assistant Research Scientist, EECS Department, University of Michigan

"Vision-Based Air Pollution Measurement"
Robert Dick, Associate Professor, EECS Department, University of Michigan

Additional speakers to be announced.

Workshop Chairs:
Yogesh Gianchandani, Univ. of Michigan
Ashwin Seshia. Univ. of Cambridge

Workshop Coordinators:
Larry Tuttle and Trasa Burkhardt

Point of Contact: trasab@umich.edu

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