

NEW OPTICAL REMOTE SENSING TECHNIQUES FOR AIR QUALITY COMPLIANCE AND AIR TOXICS DETECTION

DATE: July 29-31, 2002

LOCATION: Auditorium
USEPA Campus
109 T.W. Alexander Drive
Research Triangle Park, N.C. 27709

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AGENDA

MONDAY, JULY 29, 2002

- **13:00 - 14:00** *Objectives of workshop and round-table introductions*
 - Update regulators and homeland security officials of existing optical remote sensing technologies for air quality compliance and homeland security applications.
 - Identify areas where open path remote sensing may assist in emissions estimation, compliance demonstration, permitting, and homeland security issues.
 - Improve communications among regulators, homeland security officials and technologists to assist regulators and homeland security officials in developing effective rules and directing technologists toward areas of future research and development
- **14:00 – 17:00** *Session I: Existing and Potential Applications of Optical Sensing For Compliance Monitoring, Permitting, and Air Quality Planning*

Dr. Ram Hashmonay, ARCADIS, Chair

Dr. Hampden Kuhns, Desert Research Institute, Co-Chair

This session will include several presentations on gaseous emission, advanced fence-line and leak measurements using state-of-the-art ORS techniques. Presenters will address the development of EPA methods based on ORS and tomography approaches for the direct measurement of air emissions in various compliance and regulatory applications. Similar international activities will be reviewed, and new developments in gas leak detection and localization will also be presented.

Patrick Sullivan, Air Force Research Laboratory – Optical Remote Sensing Method to Determine Strength of Nonpoint Sources

Bruce Harris, US-EPA – Recent Method Development and Application Activities Using Open-path FTIR to Measure Emission Fluxes and Locate Fugitive Sources

Harold Schiff, Unisearch Associates - Open-Path Measurements Using Tunable Diode Laser and Ultraviolet Spectroscopy

Dr. Robert Kagann, Spectral Solutions - Infrared Active Open-Path Spectroscopy to Measure Chemical Agents and Hazardous Air Pollutants

Dr. John Otten, Kestrel Corporation - Ultra-Spectral FTIR Imager for Gaseous Plume Mapping

Scott Bisson, Sandia National Laboratory – IR Gas Sensing Technologies for Environmental and Compliance Monitoring Applications

François Carpentier, ATIS - A New Remote, Low Cost Hyper Spectral Imaging Device To Monitor in Real Time Hazardous Gas Plumes

TUESDAY, JULY 30, 2002

- **8:00 – 9:00** *Late Registration, Coffee, and Informal Discussions*
- **9:00 – 11:50** *Session II: Developments in Remote Particle Sensing Technology*

Dr. Hampden Kuhns, Desert Research Institute, Chair

Dr. Ram Hashmonay, ARCADIS, Co-Chair

This session will present results from existing studies in which remote sensing has been used to detect particle emissions and ambient concentrations. Talks will cover technologies including Light Detection and Ranging (LIDAR), Ultra-Violet Differential Optical Absorption Spectroscopy (DOAS), and Open Path Fourier Transform Infrared Spectroscopy (OP-FTIR). Speakers will be asked to indicate how particle-sensing methods can be expanded to different regulatory and detection applications.

Dr. Hans Moosmüller, Desert Research Institute - Lidar Detection of Particulate Matter: Overview and Application to Automotive Emissions

Dr. Ram Hashmonay, ARCADIS– Extinction Spectroscopy for Characterization of Particulate Matter Size and Concentration in Fugitive Plumes

Scott Higdon, ITT Industries – Development of Eye-safe Lidar Technology for Aerosol and Cloud Measurements

Dr. Arthur J. Sedlacek, III, Brookhaven National Laboratory – Plume Dimensioning and Volume Estimation Using Aerosol Lidar

John Stephens, Los Alamos National Laboratory - Results from Lidar Field Measurements of Experimental Open Detonations of Munitions

David O. Miller, NASA/GSFC - Overview of HARLIE Measurement Capabilities

11:50 – 13:00 *Lunch Break*

- **13:00 – 14:15 *Session III: Air Quality Compliance and Regulatory Issues Relating to Emissions Monitoring***

This session will include a panel composed of U.S. experts on air compliance issues and will focus on how ORS might help in the regulatory process—emphasizing saving money and time in the permitting processes. Panel participants will include environmental officials from EPA, DoD, State, and local pollution control agencies and will provide an insight on using ORS in a wide variety of regulatory organizations. Panel members will give short presentations on related topics of main interest to them and the entire panel will be asked to respond to a short list of challenging questions.

- **14:15-14:45 *Coffee Break***

- **14:45 – 16:00 *Session IV: Vision, Perspective and Trends for Homeland Security Relating to Air Monitoring***

This session will address specific airborne detection needs potentially useful to the broad topic of environmental security. Potentialities, gaps, and barriers to success will be discussed as well as organizational and communications linkages which could further ORS applicability for homeland security programs.

- **6:00 – 17:30 *Session V: Small Group Discussions and Summary of Findings***

Volunteers will separate into small (10-15 persons or so) break-out groups to quickly focus on solutions, gaps, and current status of programs. After discussing it for an hour, a representative from each team will give a 5-10 minute summary of findings. Possible group topics are: leak detections, fugitive particulates, emission measurement

for trading, open burning/detonation of explosives, monitoring of surrogates for homeland security.

18:30 - 21:00 *Dinner at suggested restaurant*

WEDNESDAY, JULY 31, 2002

- **8:00 – 8:30** *Coffee and Informal Discussions*
- **8:30 – 10:00** *Session VI: Technology Transfer Potentials and Bridge-Building:
A panel representing government, academia, and the private sector.*

This session will include a panel of a variety of experts and program managers giving short individual presentations with the entire group asked to discuss some specific issues of common interest. The emphasis of this session will focus on brainstorming for the future application of ORS for the release of hazardous air contaminants.

- **10:00 - 10:30** *Coffee Break*
- **10:30 – 12:00** *Session VII: Collaborations and Actions Needed: A panel
representing EPA, the military and academia to discuss general challenges and
action items.*

A cross section of workshop attendees will be represented on the panel. Their assignment will be to reinforce good ideas brought out during the workshop and discuss general challenges and future actions needed.

- **12:00 – 13:00** *Lunch Break*
- **13:00 – 15:00** *Instrument Demonstrations—Outside Location*