

Laser Applications to Chemical, Security and Environmental Analysis (LACSEA)

Topical Meeting and Tabletop Exhibit Collocated with

[Biomedical Optics \(BIOMED\)](#)
[Digital Holography and Three-Dimensional Imaging \(DH\)](#)

March 17-20, 2008

[Hilton St. Petersburg Bayfront](#)
St. Petersburg, Florida, USA

[Postdeadline Submissions Deadline](#): February 19, 2008 at 12:00 p.m. EST (17.00 GMT)

[Hotel Reservation Deadline](#): February 12, 2008

[Pre-Registration Deadline](#): February 21, 2008



Spring Optics and Photonics Congress

Join your colleagues March 16-20 in St. Petersburg, Florida!

Collocated Topical Meetings

[Biomedical Optics \(BIOMED\)](#)

[Digital Holography and Three-Dimensional Imaging \(DH\)](#)

[Laser Applications of Chemical, Security and Environmental Analysis \(LACSEA\)](#)

Dates and Location	Important Deadlines
March 16-20, 2008	Postdeadline Submissions Deadline: February 19, 2008 at 12:00 p.m. EST (17.00 GMT)
Hilton St. Petersburg Bayfront	Hotel Reservation Deadline: February 12, 2008
St. Petersburg, Florida, USA	Pre-Registration Deadline: February 21, 2008

To find out more about how to exhibit at one of these meetings, please contact Anne Jones at 202.416.1942 or email ajones@osa.org. [Reserve](#) your exhibit space today!

Exhibitors

[Advanced Research Technology](#)

[Biophotonics International](#)

[Boston Electronics](#)

[Coherent](#)

[Continuum](#)

[Femtolasers](#)

[Hamamatsu](#)

[ISSI](#)

[Lattice](#)

[MicronOptics](#)

[Nanoplus](#)

[NovaWave](#)

[Ocean Optics](#)

[Oxxius](#)

[Photo-Sonics](#)

[PicoQuant GmbH](#)

[Spectra-Physics – A Division of Newport Corporation](#)

[Swamp Optics](#)

[Time-Bandwidth Products](#)

Topics to be Discussed

BIOMED Topics

- Methods for Diffuse Optical Imaging and Tomography
- Methods for Optical Spectroscopy and Spectroscopic Imaging
- Optical Coherence Tomography
- Optical Microscopy Techniques
- Photonic Biomedical Nanotechnology
- Optics in Neuroscience
- Optics in Diagnostics and Clinical Translation

DH Topics

- Digital holography theory and systems
- Diffractive optics
- Optical data storage
- Phase unwrapping and phase retrieval
- Computer generated holograms
- Spatial light modulators for holography
- Incoherent digital holography
- Holographic optical elements
- 2D and 3D pattern recognition
- Optical correlators
- Three-dimensional imaging and

- Optics in Molecular and Small Animal Imaging
- Optical Therapeutics

LACSEA Topics

- Laser-analytical Systems
- New Optical and Photonic Sources
- Laser-analytical Optics
- Prediction and Theoretical Treatment of UV, VIS, NIR, MIR and THz Spectra
- Application of Laser-analytical Systems to chemical, biophysical and biochemical analysis, homeland security and environmental measurements in industry as well as basic research.

- processing
- Three-dimensional display
- Stereo-matching and stereoscopic cameras
- 2D-3D content conversion
- Shape and deformation measurement
- Polarization analysis
- Holographic imaging and microscopy
- Holographic nanofabrication methods
- Holographic optical micro-manipulation

About Optics and Photonics Congresses

OSA created [Optics and Photonics Congresses](#), clusters of new and established **topical meetings** in order to bring together leaders among communities within optics.

Corporate Sponsors



About Laser Applications to Chemical, Security and Environmental Analysis (LACSEA)

This interdisciplinary meeting will focus on recent advances in analytical laser spectroscopy, i.e. on the development of new laser-analytical principles but also on new components, systems and new applications.

Contemporary scientific topics will be highlighted in areas such as

- New laser, optical, and spectroscopic science for analytical sensing
- New fundamental spectro-analytical principles and techniques including:
Nonlinear and ultra fast spectroscopy, analytical use of optical frequency combs and others
- New laser light sources, optical components and detectors for analytical systems from the VUV, UV, to the FIR and THz spectral range
- Improved data retrieval techniques in laser spectroscopic analysis
- New laser analytical instrumentation including:
Optical and micro-optical laser-based systems for chemical analysis and monitoring
Laser analytical lab-on-chip systems
Distributed laser optical sensor networks
- Innovative analytical applications of optical methods

The meeting also highlights the latest developments in the application of laser-analytical methods in fields such as

- Combustion
- Atmospheric measurements and environmental issues
- Biochemical/biophysical and medical applications of laser techniques
- Security applications of laser-based analytical methods
- Other new analytical applications using light matter interactions

Meeting Topics To Be Considered:

- Laser-analytical Systems
- New Optical and Photonic Sources
- Laser-analytical Optics
- Prediction and Theoretical Treatment of UV, VIS, NIR, MIR and THz Spectra
- Application of Laser-analytical Systems to chemical, biophysical and biochemical analysis, homeland security and environmental measurements in industry as well as basic research.

LACSEA Program Committee

General Chairs

Andreas Dreizler, *Technical Univ. Darmstadt, Germany*
Alan Fried, *Natl. Ctr. for Atmospheric Res., USA*
James Gord, *Air Force Res. Lab, USA*

Program Chairs

Volker Ebert, *Univ. of Heidelberg, Germany*
Dennis Killinger, *Univ. of South Florida, USA*
Tom Settersten, *Sandia Natl. Labs, USA*

Committee Members

René Beigang, *Technical Univ. Kaiserslautern, Germany*
Jay D. Eversole, *NRL, USA*
Terry R. Meyer, *Iowa State Univ., USA*
J. Houston Miller, *George Washington Univ., USA*
Andrzej W. Miziolek, *ARL, USA*
Daniel B. Oh, *Southwest Sciences, Inc., USA*
C. Russell Philbrick, *Penn State Univ., USA*
Rick E. Russo, *Lawrence Berkeley National Lab, USA*
Albert A. Ruth, *Univ. College Cork, Ireland*
Scott T. Sanders, *Univ. of Wisconsin-Madison, USA*
Markus Sauer, *Bielefeld Univ., Germany*
Wolfgang Schade, *Technical Univ. Clausthal, Germany*
Markus Sigrist, *ETH Zürich, Switzerland*
Jagdish Singh, *Mississippi State Univ., USA*
Frank K. Tittel, *Rice Univ., USA*
Dwight Woolard, *US Army Res. Office, USA*

LACSEA Invited Speakers

LMA3, Spectroscopic Archives and Transmission Codes for the Atmosphere and Their Application to Laser Sensing; *Laurence S. Rothman; Harvard-Smithsonian Ctr. for Astrophysics, USA.*

LMB2, Shining Infrared Light on Isotope Ratio Measurements: From Earthbound to the Atmospheric; *Erik Kerstel; Univ. of Groningen, Netherlands.*

LMC1, Advances in Tunable Solid-State Lasers and Nonlinear Optics for Analytical Sensors; *Peter F. Moulton; Q-Peak Inc., USA.*

LTuA3, Fiber-Based Laser Systems for Spectroscopic Trace-Gas Detection; *Dahv A. V. Kliner, Jeffrey P. Koplw, Roger L. Farrow, Paul E. Schrader, Sean W. Moore, Thomas A. Reichardt, Alexandra A. Hoops, Thomas J. Kulp, Karla M. Armstrong, Ricky L. Sommers, Paul Schultz, Lew Goldberg, Jean-Philippe Fève; Sandia Natl. Labs, USA.*

LTuB4, Linking Molecular- and Atomic-Frequency Standards with Cavity Ring-Down Spectroscopy; *Joseph T. Hodges¹, Piotr Maslowski², David J. Robichaud³, M. Okumura³, Charles E. Miller⁴, L. R. Brown⁴; ¹Natl. Inst. of Standards and Technology, USA, ²Inst. Fizyki, Univ. Mekołaja Kopernika, Poland, ³Div. of Chemistry and Chemical Engineering, Caltech, USA, ⁴JPL, Caltech, USA.*

LTuC1, Application of Terahertz Spectroscopy in Security, Chemistry and Microscopy; *P. Y. Han¹, J. Chen¹, H. W. Zhao¹, B. Schulkin¹, Y. Q. Chen¹, G. Bastiaans², J. Warrender³, Xi Cheng Zhang¹; ¹Rensselaer Polytechnic Inst., USA, ²Intelligent Optical System Inc., USA, ³Army Benet Labs, USA.*

LWA1, Fs-CARS for High-Bandwidth, Collision-Free Temperature Measurements; *Sukesh Roy¹, Paul J. Kinnius², Robert P. Lucht², James R. Gord³; ¹Innovative Scientific Solutions Inc., USA, ²Purdue Univ., USA, ³AFRL, USA.*

LWB1, Micro-Invasive LIF Diagnostics in Engines; *Frank Zimmermann¹, Christopher Gessenhardt¹, René Reichle², Christof Pruss², Christof Schulz¹; ¹Univ. of Duisburg-Essen, Germany, ²ITO, Univ. of Stuttgart, Germany.*

LWC1, Designs and Applications of Hyperspectral Light Sources; *Scott T. Sanders; Univ. of Wisconsin at Madison, USA.*

LThA1, Applications of Raman and Surface-Enhanced Raman Spectroscopy (SERS) to Bacterial Identification; *Steven Christesen¹, Jason Guicheteau¹, Darren Emge¹, Leanne Argue¹, Ashish Tripathi², Rabih Jabbour²; ¹US Army Edgewood Chemical Biological Ctr., USA, ²Science Applications Intl. Corp., USA.*

LThB1, Standoff Raman Hyperspectral Imaging Detection of Explosives; *Patrick J. Treado, Matthew P. Nelson, Robert Schweitzer, Charles Gardner, Rachel Wentworth; ChemImage Corp., USA.*

LThC1, Recent Progress in LIBS-Based Technologies for Security Applications; *Andrzej Miziolek, F. C. DeLucia, C. A. Munson, J. L. Gottfried; ARL, USA.*

Agenda of Sessions

	Grand Bay Ballroom North	Grand Bay Ballroom South	Harborview	Williams/Demens Room
Saturday, March 15, 2008				
4:00 p.m.– 6:00 p.m.	Registration (in Main Lobby)			
Sunday, March 16, 2008				
6:30 a.m.– 6:30 p.m.	Registration (at Conference Registration Desk)			
7:50 a.m.– 8:00 a.m.	BIOMED Opening Remarks			
8:00 a.m.– 10:00 a.m.	BSuA • Nanoparticle Probes for Molecular Imaging	BSuB • Optical Imaging of Breast Cancer		
10:00 a.m.– 10:30 a.m.	Coffee Break (St. Petersburg Ballroom)			
10:00 a.m.– 4:00 p.m.	Exhibits Open (St. Petersburg Ballroom)			
10:30 a.m.– 12:30 p.m.	BSuC • Methods for Diffuse Optical Imaging	BSuD • Optical Techniques in the Clinic		
12:30 p.m.– 1:30 p.m.	Lunch Break			
1:30 p.m.– 3:30 p.m.	BSuE • BIOMED Poster Session I (Foyer)			
3:30 p.m.– 4:00 p.m.	Coffee Break (St. Petersburg Ballroom)			
4:00 p.m.– 6:30 p.m.	BSuF • Plenary I: Workshop on Contrast for <i>in vivo</i> Imaging			
Monday, March 17, 2008				
7:00 a.m.– 6:00 p.m.	Registration (at Conference Registration Desk)			
7:30 a.m.– 10:00 a.m.	BMA • Plenary II: Strategies for Functional Imaging and Diagnostics			
7:50 a.m.– 8:00 a.m.			DH Opening Remarks	LACSEA Opening Remarks
8:00 a.m.– 10:00 a.m.			DMA • 3-D Imaging I	LMA • Atmospheric Spectroscopy and NIR Laser-Based Sensing
10:00 a.m.– 10:30 a.m.	Coffee Break (St. Petersburg Ballroom)			
10:00 a.m.– 4:00 p.m.	Exhibits Open (St. Petersburg Ballroom)			
10:30 a.m.– 12:30 p.m.	BMB • OCT and Ophthalmic Applications	BMC • Reconstruction Methods for Diffuse Optical Tomography	DMB • 3-D Imaging II	LMB • MIR Laser-Based Trace Gas Sensing
12:30 p.m.– 1:30 p.m.	Lunch Break			
1:30 p.m.– 3:30 p.m.	BMD • BIOMED Poster Session II (Foyer)		DMC • Digital/Electronic Holography	LMC • New Laser Materials and OPG/OPO/OPA Systems
3:30 p.m.– 4:00 p.m.	Coffee Break (St. Petersburg Ballroom)			
4:00 p.m.– 6:00 p.m.	BME • <i>In vivo</i> Imaging for Neuroscience	BMF • Advances in Microscopy		
4:00 p.m.– 6:00 p.m.	JMA • Joint DH and LACSEA Poster Session (Foyer)			
6:30 p.m.– 8:00 p.m.	Conference Reception (St. Petersburg Ballroom)			

Key to Shading	
DH Sessions	
LACSEA Sessions	
BIOMED Sessions	No Shading

	Grand Bay Ballroom North	Grand Bay Ballroom South	Harborview	Williams/Demens Room
Tuesday, March 18, 2008				
7:00 a.m.– 6:00 p.m.	Registration (at Conference Registration Desk)			
7:30 a.m.– 10:00 a.m.	BTuA • Plenary III: Imaging and Diagnostics in Tissue			
8:00 a.m.– 10:00 a.m.			DTuA • Integral Photography and Imaging: 3-D Systems	LTuA • Tunable Laser Sources and Trace Gas Sensing
10:00 a.m.– 10:30 a.m.	Coffee Break (St. Petersburg Ballroom)			
10:00 a.m.– 4:00 p.m.	Exhibits Open (St. Petersburg Ballroom)			
10:30 a.m.– 12:30 p.m.	BTuB • Methods in Microendoscopy	BTuC • Light for Therapeutics and Diagnostics	DTuB • Digital Holographic Microscopy	LTuB • Cavity Spectroscopy and Innovative Techniques
12:30 p.m.– 1:30 p.m.	Lunch Break			
1:30 p.m.– 3:30 p.m.	BTuD • Optical Cancer Diagnostics	BTuE • Functional Neural Imaging	DTuC • Digital Holography and Holographic Microscopy (until 3:15)	LTuC • THz and Novel Imaging Techniques
3:30 p.m.– 4:00 p.m.	Coffee Break (St. Petersburg Ballroom)			
4:00 p.m.– 6:00 p.m.	BTuF • BIOMED Poster Session III (Foyer)			LTuD • Postdeadline Papers
Wednesday, March 19, 2008				
7:00 a.m.– 6:00 p.m.	Registration (at Conference Registration Desk)			
7:30 a.m.– 10:00 a.m.	BWA • Plenary IV: Molecular Imaging and Therapeutics			
8:00 a.m.– 10:00 a.m.			DWA • 3-D Displays and Systems	LWA • Coherent Anti-Stokes Raman Spectroscopy
10:00 a.m.– 10:30 a.m.	Coffee Break (St. Petersburg Ballroom)			
10:00 a.m.– 4:00 p.m.	Exhibits Open (St. Petersburg Ballroom)			
10:30 a.m.– 12:30 p.m.	BWB • Optical Therapeutics	BWC • Techniques for Functional Neural Imaging	DWB • Holographic Interferometry, Modulators, Filters, and Materials	LWB • Combustion Imaging
12:30 p.m.– 12:40 p.m.			DH Closing Remarks	
12:30 p.m.– 1:30 p.m.	Lunch Break			
1:30 p.m.– 3:30 p.m.	BWD • Methods for Spectroscopy and Microscopy	BWE • Molecular Imaging Using Fluorescence		LWC • New Spectroscopic Approaches for Combustion Diagnostics
3:30 p.m.– 4:00 p.m.	Coffee Break (St. Petersburg Ballroom)			
4:00 p.m.– 6:00 p.m.	BWF • Optical Coherence Tomography: Novel Techniques and Functional Imaging	BWG • Instrumentation and Techniques for Tissue Imaging		
6:00 p.m.– 6:10 p.m.	BIOMED Closing Remarks			
Thursday, March 20, 2008				
7:30 a.m.– 3:30 p.m.	Registration (at Conference Registration Desk)			
8:00 a.m.– 10:00 a.m.				LThA • Biothreat Detection
10:00 a.m.– 10:30 a.m.	Coffee Break (Foyer)			
10:30 a.m.– 12:30 p.m.				LThB • Explosives Detection and Imaging
12:30 p.m.– 1:30 p.m.	Lunch Break			
1:30 p.m.– 3:30 p.m.				LThC • LIBS and Explosives Detection
3:30 p.m.– 3:40 p.m.				LACSEA Closing Remarks

Laser Applications of Chemical, Security and Environmental Analysis (LACSEA) Abstracts

• Monday, March 17, 2008 •

Conference Registration

7:00 a.m.–6:00 p.m.

Registration Open

Williams/Demens Room

7:50 a.m.–8:00 a.m.

LACSEA Opening Remarks

LMA • Atmospheric Spectroscopy and NIR Laser-Based Sensing

Williams/Demens Room

8:00 a.m.–10:00 a.m.

LMA • Atmospheric Spectroscopy and NIR Laser-Based Sensing

Daniel B. Oh; Southwest Sciences, Inc., USA, Presider

LMA1 • 8:00 a.m.

Diode Laser-Based Sensor for High Precision

Measurements of Ambient CO₂, *David M. Sonnenfroh, Krishnan Parameswaran, Mark Allen; Physical Sciences Inc., USA*. We report on the development of a high precision sensor for monitoring ambient CO₂. Our TDL ICOS absorption spectrometer operates at 2 μm and achieves a precision of 1:3000 for the CO₂ mixing ratio.

LMA2 • 8:20 a.m.

Calibration Free Measurement of Atmospheric Methane Background via Tunable Diode Laser Absorption Spectroscopy at 1.6 μm, *Christian Lauer, Dieter Weber, Steven Wagner, Volker Ebert; Inst. of Physical Chemistry, Univ. of Heidelberg, Germany*. At measurements of the atmospheric methane background with in an open path herriott cell, we achieved an optical resolution of $2.3 \cdot 10^{-5}$ OD_e (3σ), respectively 9 ppb CH₄ (3σ) resolution of concentration.

LMA3 • 8:40 a.m.

Invited

Spectroscopic Archives and Transmission Codes for the Atmosphere and Their Application to Laser Sensing,

Laurence S. Rothman; Harvard-Smithsonian Ctr. for Astrophysics, USA. The HITRAN molecular spectroscopic database, and its high-temperature analog, HITEMP, are described. These databases provide the molecular absorption spectroscopic parameters in the gas phase that are required for simulation of high-resolution applications.

LMA4 • 9:20 a.m.

Laser Sounder for Global Measurement of CO₂

Concentrations in the Troposphere from Space, *James B. Abshire¹, Haris Riris¹, Graham Allan², Xiaoli Sun¹, S. Randy Kawa¹, Jianping Mao³, Mark Stephen¹, Emily Wilson¹, Michael A. Krainak¹; ¹NASA Goddard Space Flight Ctr., USA, ²Sigma Space Inc., USA, ³RSIS Inc., USA*. We report progress in assessing the feasibility of a new satellite-based laser-sounding instrument to measure CO₂ concentrations in the lower troposphere from space.

LMA5 • 9:40 a.m.

Trace Ethylene Detection by Means of QEPAS in Near-Infrared Spectral Region, *Anatoliy A. Kosterev¹, Frank K. Tittel¹, Stephane Schilt²; ¹Rice Univ., USA, ²IR Microsystems SA, Switzerland*.

Quartz enhanced photoacoustic spectroscopy (QEPAS) was applied to detection of trace ethylene (C₂H₄) in nitrogen at atmospheric pressure. An absorption peak at 6177.15 cm⁻¹ was accessed using a fiber coupled DFB diode laser.

St. Petersburg Ballroom

10:00 a.m.–10:30 a.m.

Coffee Break

St. Petersburg Ballroom

10:00 a.m.–4:00 p.m.

Exhibits Open

LMB • MIR Laser-Based Trace Gas Sensing
--

Williams/Demens Room

10:30 a.m.–12:30 p.m.

LMB • MIR Laser-Based Trace Gas Sensing

Volker Ebert; Univ. of Heidelberg, Germany, Presider

LMB1 • 10:30 a.m.

2.7-μm DFB Diode Laser Spectrometer for Sensitive Spatially Resolved H₂O Vapor Detection, *Karl Wunderle, Steven Wagner, Volker Ebert; Inst. of Physical Chemistry, Univ. of Heidelberg, Germany*. A new 2.7-μm laser spectrometer was designed and characterized with regard to static/dynamic tuning properties and used for first spatially resolved measurements on heterogeneous distributed H₂O vapor concentration fields.

LMB2 • 10:50 a.m.

Invited

Shining Infrared Light on Isotope Ratio Measurements:

From Earthbound to the Atmospheric, *Erik Kerstel; Univ. of Groningen, Netherlands*. We discuss the use of infrared laser-based spectrometers for measuring isotope ratios in small molecules of environmental interest, in applications ranging from laboratory-based studies in biomedicine to airborne water vapor studies in the upper troposphere.

LMB3 • 11:30 a.m.

Faraday Modulation Spectroscopy of Nitric Oxide at 5.33 μm with an External Cavity Quantum Cascade Laser, Gerard Wysocki, Rafal Lewicki, Jim Doty, Robert F. Curl, Frank K. Tittel; Rice Univ., USA. The selection of the specific molecular transition is of great importance to achieve best sensitivity with Faraday rotation spectroscopy. Application of broadly-tunable external-cavity quantum cascade laser allowed targeting the optimum NO-Q(3/2) transition at 1875.8 cm^{-1} .

LMB4 • 11:50 a.m.

Quantum Cascade Laser-Based Sensor Platform for Ammonia Detection in Exhaled Human Breath, Yury A. Bakhirkin¹, Anatoliy A. Kosterev¹, Gerard Wysocki¹, Frank K. Tittel¹, Terence H. Risby², John D. Bruno³; ¹Rice Univ., USA, ²Johns Hopkins Univ., USA, ³Maxion Technologies Inc., USA. An ammonia sensor for clinical breath analysis based on a CW mid-infrared quantum cascade laser and quartz-enhanced photoacoustic spectroscopy with a detection sensitivity of 20 ppbv (1σ) with a 0.3 s time resolution is reported.

LMB5 • 12:10 p.m.

Ethane Spectroscopy for Breath Analysis Using a Mid-Infrared Interband Cascade Laser, Krishnan R. Parameswaran¹, Philip A. Mulhall¹, David I. Rosen¹, Mark G. Allen¹, Terence H. Risby²; ¹Physical Sciences Inc., USA, ²Johns Hopkins Univ., USA. Online measurements of ethane in breath will enable non-invasive monitoring of oxidative stress status. We present a simple, compact system using off-axis ICOS for breath measurements of a smoker.

12:30 p.m.–1:30 p.m.

Lunch Break

LMC • New Laser Materials and OPG/OPO/OPA Systems

Williams/Demens Room

1:30 p.m.–3:30 p.m.

LMC • New Laser Materials and OPG/OPO/OPA Systems

Dennis K. Killinger; Univ. of South Florida, USA, Presider

LMC1 • 1:30 p.m.

Invited

Advances in Tunable Solid-State Lasers and Nonlinear Optics for Analytical Sensors, Peter F. Moulton; Q-Peak Inc., USA. We discuss several classes of tunable solid state lasers, based on Yb-doped crystals, Tm-doped fibers and Cr:ZnSe crystals, and patterned semiconductor nonlinear materials, all of which show promise for applications to analytic sensors.

LMC2 • 2:10 p.m.

Long-Term Frequency-Stable Operation of a Single Frequency CW OPO without Active Locking, Angus J. Henderson, Ryan Stafford, Paul Hoffman; Aculight Corp., USA. Frequency stability of <400MHz without discontinuous jumps over a period of 30 hours has been demonstrated in a high-power, fiber laser-pumped, single frequency CW OPO operating at 3 microns wavelength without active frequency locking.

LMC3 • 2:30 p.m.

Development of a Compact, Narrow-Linewidth, Tunable Ultraviolet Laser Source for Detection of Hg^0 , Alexandra A. Hoops, Thomas A. Reichardt, Paul Schulz, Roger L. Farrow, Ray P. Bambha, Randal L. Schmitt, Dahn A. V. Kliner; Sandia Natl. Labs, USA. A portable laser for real-time, stand-off detection of Hg^0 emissions from coal-fired power plants is developed and characterized. The pulse energy of the 254-nm laser is 1.8 μJ , which will enable sub-ppb detection of Hg^0 .

LMC4 • 2:50 p.m.

Development of an Injection-Seeded Optical Parametric Generator System with Pulsed Dye Amplification for High-Resolution Laser Spectroscopy, Aizaz H. Bhuiyan, Daniel R. Richardson, Joseph W. Reneker, Sameer V. Naik, Robert P. Lucht; Purdue Univ., USA. We discuss the development and describe the characteristics of a laser system composed of an injection-seeded optical parametric generator coupled with pulsed dye amplifiers.

LMC5 • 3:10 p.m.

Mid-Infrared OPO for High Resolution Measurements of Trace Gases in the Mars Atmosphere, Anthony W. Yu¹, Kenji Numata¹, Haris Riris¹, James B. Abshire¹, Graham R. Allan², Xiaoli Sun¹, Michael A. Krainak¹; ¹NASA Goddard Space Flight Ctr., USA, ²Sigma Space Corp., USA. We will present a lidar instrument operating in the mid-infrared to measure trace gases in the Martian atmosphere. The lidar instrument is based on a tunable OPO pumped by a master oscillator fiber amplifier.

St. Petersburg Ballroom

3:30 p.m.–4:00 p.m.

Coffee Break

JMA • Joint DH and LACSEA Poster Session

Foyer

4:00 p.m.–6:00 p.m.

JMA • Joint DH and LACSEA Poster Session

Posters JMA1–JMA16 are listed in the DH abstract section of the program.

JMA17

Tomographic Imaging Based on Hyperspectral Absorption Spectroscopy, *Lin Ma; Clemson Univ., USA*. An inversion method is developed to exploit the increased spectral information content enabled by recent advancement in laser technologies. This method should lay the groundwork for the expanded use of hyperspectral lasers in imaging measurements.

JMA18

Moved to LTuA4

JMA19

Oxygen Spectroscopy Laser Sounding Instrument for Remote Sensing of Atmospheric Pressure, *Mark A. Stephen¹, Jian-ping Mao², James B. Abshire¹, Xiaoli Sun¹, S. Randy Kawa¹, Michael A. Krainak¹; ¹NASA Goddard Space Flight Ctr., USA, ²RSIS Inc., USA*. We report on progress of a laser sounding instrument using the pressure broadening of spectroscopic absorption lines of the diatomic oxygen A-band to deduce atmospheric pressure and a pulsed, frequency-doubled, fiber laser transmitter.

JMA20

Advances in Eye-Safe Atmospheric Volume Imaging Lidar, *Scott M. Spuler, Bruce Morley, Shane D. Mayor; Natl. Ctr. for Atmospheric Res., USA*. A multi-dimensional lidar, well suited for urban surveillance and aerosol plume monitoring, has been developed and is operational. The paper discusses research and development efforts to extend the instrument capabilities toward quantitative measurements of aerosol.

JMA21

Multiple Wavelength Mid-Infrared DFG Source Using Engineered QPM Zn:LiNbO₃ Waveguide, *Masaki Asobe¹, Osamu Tadanaga¹, Tsutomu Yanagawa¹, Takeshi Umeki¹, Yoshiki Nishida²; ¹NTT Photonics Labs, NTT Corp., Japan, ²NTT Electronics Corp., Japan*. We report recent progress on a mid-IR DFG source. A novel design enables us to generate unequally spaced multiple wavelengths. A Zn:LiNbO₃ waveguide made with direct bonded technology enables stable high power output operation.

JMA22

Laser-Induced Breakdown Spectroscopy for Measurement of Fuel/Oxygen Mixing in Combustion, *Matthew Dackman, James W. L. Lewis, Ying-Ling Chen, Christian G. Parigger; Univ. of Tennessee Space Inst., USA*. We present time-resolved laser-induced breakdown spectroscopy (LIBS) measurements of C:O and equivalence ratios in atmospheric and higher pressure methane/oxygen flames. Near-UV and visible transitions for carbon and oxygen lines are compared.

JMA23

Laser Ignition and Laser Induced Breakdown Spectroscopy in Engines Using Hollow Core Fiber Delivery, *Sachin Joshi¹, Azer P. Yalin¹, Cosmin Dumitrescu², Semih Olcmen², Paul Puzinauskas²; ¹Colorado State Univ., USA, ²Univ. of Alabama, USA*. We describe the use of hollow core optical fibers to deliver laser sparks. The sparks are used to ignite engines and to enable air-to-fuel measurements by laser induced breakdown spectroscopy.

JMA24

Atmospheric Transmission and LIDAR Modeling of LIBS and Raman Remote Sensing of Distant Compounds, *Denis Plutov, Dennis K. Killinger; Univ. of South Florida, USA*. Long range stand-off Raman and LIBS lidar signal simulations have been carried out using the HITRAN atmospheric transmission database, modified Hitran-PC program and a modified lidar equation.

JMA25

Michelson Interferometry Applied on Corrosion Processes Monitoring, *D. Mayorga-Cruz, Oscar Sarmiento-Martinez, J. Uruchurtu-Chavarin; Univ. Autónoma del Estado de Morelos, Mexico*. In this work metal corrosion monitoring by Michelson interferometry and electrochemical polarization curves is presented. Recent advances obtained by interferometrical methods, performed as a complementary technique to those of conventional electrochemistry are highlighted here.

JMA26

Optical Waveguide Lightmode Spectroscopy (OWLS) Immunosensors for Environmental Monitoring, *Andras Székács¹, Inna Levkovets¹, Nóra Adányi², István Szendró³; ¹Plant Protection Inst., Hungarian Acad. of Sciences, Hungary, ²Central Food Res. Inst., Hungary, ³MicroVacuum Ltd., Hungary*. OWLS immunosensors were developed for detection of trifluralin, zearalenone and vitellogenin. By covalent immobilization, each component of the antibody-antigen complex was immobilized on the sensor surface, allowing non-competitive or competitive detection of the analytes.

JMA27

Laser-Induced Breakdown Spectroscopy with 10.6-Micron Laser Radiation, Christian G. Parigger¹, James O. Hornkohl¹, László Nemes²; ¹Univ. of Tennessee Space Inst., USA, ²Chemical Res. Ctr. of the Hungarian Acad. of Sciences, Hungary. Transient laser plasma is generated using 10.6-micron radiation from a CO₂ laser. Selected atomic and molecular emission spectra are recorded and discussed including atomic carbon, hydrogen and molecular CN and C₂ Swan bands.

JMA28

Destruction of Bacterial-Spore-Laden Aqueous Aerosols in Shock-Heated Flows, Petros Lappas¹, Daniel R. Haylett¹, Jason M. Porter¹, David F. Davidson¹, Jay B. Jeffries¹, Ronald K. Hanson¹, Leslie A. Hokoma², Kristien E. Mortelmans²; ¹Stanford Univ., USA, ²SRI Intl., USA. Interaction between shock-waves and aqueous aerosol laden with BT spores is studied in a novel shock tube facility. Wavelength-multiplexed laser extinction provides a real-time aerosol monitor. Viability of shock-heated spores is determined by plating techniques.

JMA29

Tuning Fork Based Resonant Detection Schemes for Electro-Magnetic Radiation, Andreas Pohlkötter¹, Ulrike Willer^{1,2}, Christoph Bauer², Tobias Schossig², Mario Mordmüller², Wolfgang Schade^{1,2}; ¹Inst. für Physik und Physikalische Technologien, Technische Univ. Clausthal, Germany, ²Laser Application Ctr., Technische Univ. Clausthal, Germany. QEPAS utilizes resonant excitation of a tuning fork by focusing a modulated laser beam between its prongs. By focusing onto one prong, a new compact detector for THz, MIR and VIS-radiation can be set up.

JMA30

Laser-Induced Breakdown Spectroscopy and Related Stand-off Detection Technologies, Santiago Palanco, Martin Richardson; Univ. of Central Florida, USA. The state-of-the-art of laser-induced breakdown spectroscopy is presented highlighting current problems for the analysis/detection of organic compounds at remote locations as well as possible workarounds and hyphenation with other analytical techniques.

JMA31

Paper Withdrawn

JMA32

Application of Laser Induced Fluorescence Spectroscopy (LIFS) for Bio Oil Analysis and Monitoring, Markandey M. Tripathi¹, Fang-Yu Yueh¹, Jagdish P. Singh¹, El Barbary Hassan², Philip Steele², Leonard Ingram²; ¹Inst. for Clean Energy Technology, Mississippi State Univ., USA, ²Dept. of Forest Products, Mississippi State Univ., USA. Interest in Bio-oils as a renewable energy source is growing at rapid pace. In the present work, we have explored the feasibility of applying Laser Induced Fluorescence (LIF) for bio oil analysis and monitoring.

JMA33

Complications to Optical Measurements Using a Laser with an Unstable Resonator: A Case Study on Laser-Induced Incandescence of Soot, Hope A. Michelsen, Mark A. Dansson, Matthew Boisselle, Mark A. Linne; Sandia Natl. Labs, USA. Temporal behavior of pulses from a Nd:YAG with an unstable resonator can vary radially across the beam. Pulses are earlier and longer at the beam center. This behavior has a dramatic effect on time-sensitive experiments.

JMA34

Laser- and UV-LED-Induced Fluorescence Detection of Drinking Water and Water-Dissolved Organics, Anna V. Sharikova, Dennis K. Killinger; Univ. of South Florida, USA. We have developed a deep-UV laser-induced fluorescence system for fluorescence detection of water-dissolved organic species. Deep-UV LEDs also were used as the excitation source. These systems have been employed for real-time monitoring of drinking water.

JMA35

Tissue Scaffolding Diagnostics with Femtosecond Laser Radiation, Christian G. Parigger¹, Robert Splinter^{2,3}, Paolina J. Pike⁴; ¹Univ. of Tennessee Space Inst., USA, ²Univ. of North Carolina at Charlotte, USA, ³Spectranetics Corp., USA, ⁴Middle Tennessee State Univ., USA. Elastic and dimensional properties of selected synthetic tissue materials are investigated using short, pulsed laser radiation. Materials constants are inferred for nondestructive diagnostics based on mechanical and optical characteristics.

JMA36

Measurements of Gas Species and the ¹³CO₂/¹²CO₂ Isotope Ratio in a Wood-Based Combustion Emission by Laser Absorption Spectroscopy, Julien Cousin, Weidong Chen, Marc Fourmentin, Eric Fertein; Lab de Physicochimie de l'Atmosphère, Univ. du Littoral Côte d'Opale, France. We report on the application of a field-deployable instrument based on Telecoms-grade laser to simultaneous measurements of multiple species (H₂O, CO, CO₂, CH₄, C₂H₂) and the ¹³CO₂/¹²CO₂ isotope ratio in a wood-based combustion.

JMA37

Moved to LMA4

JMA38

Study of Biodiesel Combustion Using Laser Spectroscopy, Kemal Efe Eseller¹, Fang-Yu Yueh¹, Jagdish P. Singh¹, Kalyan Srinivasan²; ¹Inst. for Clean Energy Technology, Mississippi State Univ., USA, ²Dept. of Mechanical Engineering, Mississippi State Univ., USA. Laser Induced Incandescence has been used to provide non-intrusive quantitative measurement of soot of biodiesel combustion. In this work we also evaluated Laser Induced Breakdown Spectroscopy to measure the equivalence ratio of a biodiesel flame.

JMA39

Paper Withdrawn

JMA40

Methane Measurements with Interband Cascade Lasers, Chris Hovde¹, Daniel B. Oh¹, Mark A. Zondlo¹, Chul Soo Kim², Mijin Kim², William Bewley², Chadwick L. Canedy², Igor Vurgaftman², Jerry R. Meyer², S. Gregory Jones², Titania A. R. Schmidt², Kenneth M. Suzuki²; ¹Southwest Sciences, USA, ²NRL, USA. An inter-band cascade (IC) laser is evaluated for applications to methane isotope ratio measurements. The laser tunes over spectral features of both carbon isotopes with high output power, single mode operation and good sensitivity.

JMA41

Insensitivity of Electronic-Resonance-Enhanced Coherent Anti-Stokes Raman Scattering (ERE-CARS) to Electronic Quenching, Anil K. Patnaik¹, Sukesh Roy¹, Robert P. Lucht², James R. Gord³; ¹Innovative Scientific Solutions Inc., USA, ²Purdue Univ., USA, ³AFRL, USA. The insensitivity of ERE-CARS signal to collisional quenching is investigated. It is observed that the strong laser pulse helps in keeping both the excited-state population and the ground-state coherence reasonably high, even with significant quenching.

JMA42

Time-Resolved Laser Raman Diagnostics and Multiscalar Measurements in Turbulent Combustion at Elevated Pressures: Toward Combustion Code Validation, Jun Kojima¹, Quang-Viet Nguyen²; ¹Ohio Aerospace Inst., USA, ²NASA Glenn Res. Ctr., USA. The paper reports the first quantitative single-shot multiscalar data measured in a turbulent high-pressure, lean direct injection type research burner operating on CH₄-air using pulsed-laser linear Raman diagnostics.

JMA43

Detection of Benzene Vapor at the ppb-Level Using a Difference-Frequency Generation-Based Laser Instrument Operating in the 3- μ m Region, Julien Cousin¹, Weidong Chen¹, Damien Bigour¹, Samir Kassi², Daniele Romanini²; ¹Lab de Physicochimie de l'Atmosphère, Univ. du Littoral Côte d'Opale, France, ²Lab de Spectrométrie Physique, Univ. J. Fourier de Grenoble, France. Concentration measurements of benzene vapor have been performed with a minimum detectable concentration of 155 ppb (3 σ) by using a compact laser instrument based on difference frequency generation in the 3-3.6 μ m spectral region.

JMA44

Nonlinear Magneto-Optical Rotation for Sensitive Measurement of Magnetic Fields, Chris Hovde¹, Victor M. Acosta², Eric Corsini², James M. Higbie², Micah P. Ledbetter², Dmitry Budker²; ¹Southwest Sciences, USA, ²Univ. of California, USA. Using nonlinear atomic spectroscopy with diode lasers, scalar magnetic fields can be measured with high precision. With either nulling coils or modulation coils, the precise scalar measurement can be used to determine vector fields.

JMA45

Time Resolved Spectroscopy Measurements of Graphite Ablation with Nd:YAG Laser Radiation, Christian G.

Parigger¹, James O. Hornkohl¹, Laszlo Nemes²; ¹Univ. of Tennessee Space Inst., USA, ²Chemical Res. Ctr. of the Hungarian Acad. of Sciences, Hungary. Graphite ablation experiments are reported using unfocused 532-nm frequency-doubled and 355-nm frequency-tripled Nd:YAG laser radiation. Time resolved emission spectra of C₂ Swan bands and C₃ Swings bands features near 400-nm are recorded and investigated.

St. Petersburg Ballroom

6:30 p.m.–8:00 p.m.

Conference Reception

NOTES

• **Tuesday, March 18, 2008** •

Conference Registration

7:00 a.m.–6:00 p.m.

Registration Open

LTuA • Tunable Laser Sources and Trace Gas Sensing

Williams/Demens Room

8:00 a.m.–10:00 a.m.

LTuA • Tunable Laser Sources and Trace Gas Sensing

Frank K. Tittel; Rice Univ., USA, *Presider*

LTuA1 • 8:00 a.m.

Widely Tunable Quantum-Dash DFB Laser Diodes for Multi-Species Gas Analysis, Wolfgang Zeller, Johannes Koeth, Michael Legge, Marc Fischer, Jochen Seufert, Ralph Werner; nanoplus GmbH, Germany. Applying the concept of binary superimposed gratings, widely tunable singlemode laser diodes suitable for multi-species gas detection in the 1.8 μm range could be manufactured on InAs/InGaAs quantum dash-in-a-well material.

LTuA2 • 8:20 a.m.

Airborne Formaldehyde Measurements during TexAQS 2006 Using a Difference Frequency Laser Based Absorption Spectrometer, Dirk Richter¹, Petter Weibring¹, James G. Walega¹, Alan Fried¹, Michael K. Trainer², Thomas B. Ryerson²; ¹Natl. Ctr. for Atmospheric Res., USA, ²Natl. Oceanic and Atmospheric Administration, USA. We present the airborne application of a difference frequency laser based absorption spectrometer, discuss important instrument functions and requirements, present examples of airborne measurements and its preliminary interpretation toward understanding the pollution over Houston, Texas.

LTuA3 • 8:40 a.m.

Invited

Fiber-Based Laser Systems for Spectroscopic Trace-Gas Detection, David A. V. Kliner, Jeffrey P. Koplou, Roger L. Farrow, Paul E. Schrader, Sean W. Moore, Thomas A. Reichardt, Alexandra A. Hoops, Thomas J. Kulp, Karla M. Armstrong, Ricky L. Sommers, Paul Schultz, Lew Goldberg, Jean-Philippe Fève; Sandia Natl. Labs, USA. Advantages and limitations of fiber-based laser systems for trace-gas detection will be reviewed. We will present example applications of *in situ* and remote sensors operating at wavelengths from the mid-IR through the deep-UV.

LTuA4 • 9:20 a.m.

New Advances in Generation of High Repetition Rate Burst Mode Laser Output, Naibo Jiang^{1,2}, Walter R. Lempert^{1,2}; ¹Dept. of Mechanical Engineering, Ohio State Univ., USA, ²Dept. of Chemistry, Ohio State Univ., USA. We demonstrate the ability to generate bursts of high energy pulses from a custom Nd:YAG laser system. Output energy as high as 400 mJ/pulse for a twenty pulse sequence at 20 kHz is reported.

LTuA5 • 9:40 a.m.

Fiber-Laser-Based NICE-OHMS for Ultra-Sensitive Trace Species Detection, Aleksandra Foltynowicz, Florian M. Schmidt, Weiguang Ma, Ove Axner; Umea Univ., Sweden. A compact NICE-OHMS spectrometer based on a narrowband fiber laser has been used for detection of C₂H₂ down to an integrated absorption of $5 \times 10^{-11} \text{ cm}^{-1}$ in Doppler-broadened and $3 \times 10^{-10} \text{ cm}^{-1}$ in Doppler-free mode of operation.

St. Petersburg Ballroom

10:00 a.m.–10:30 a.m.

Coffee Break

St. Petersburg Ballroom

10:00 a.m.–4:00 p.m.

Exhibits Open

LTuB • Cavity Spectroscopy and Innovative Techniques

Williams/Demens Room

10:30 a.m.–12:30 p.m.

LTuB • Cavity Spectroscopy and Innovative Techniques

J. Houston Miller; George Washington Univ., USA, *Presider*

LTuB1 • 10:30 a.m.

Sputtering Measurements by Cavity Ring-Down Spectroscopy and Application to Electric Propulsion and Plasma Engineering, Azer P. Yalin, Lei Tao, Naoji Yamamoto; Colorado State Univ., USA. We describe the use of cavity ring-down spectroscopy for measurement of number densities of sputtered particles. Applications for thruster characterization in electric propulsion and process monitoring in plasma engineering are discussed.

LTuB2 • 10:50 a.m.

A New Field Instrument for NO₃ Detection Using Incoherent Broadband Cavity Enhanced Spectroscopy, Ravi M. Varma, Albert A. Ruth, Dean Venables, Uwe Heitmann; Univ. College Cork, Ireland. A new field instrument has been developed for monitoring atmospheric NO₃. This instrument has been compared with other techniques in a simulation chamber. Instrument description, comparison as well as preliminary field measurements will be presented.

LTuB3 • 11:10 a.m.

A Modified Raman Spectrometer to Measure Dissolved Gases in the Deep-Ocean, *Manfred Fink, Philip L. Varghese, Tamara Pease; Univ. of Texas at Austin, USA.* A novel Raman spectrometer will be presented which can record species such as $^{13}\text{CO}_2$, $^{12}\text{CO}_2$ at depths up to 5000 meters absolutely, with high spectral resolutions (0.1 cm^{-1}), high precision isotope ratios (1%) within minutes.

LTuB4 • 11:30 a.m.

Invited

Linking Molecular- and Atomic-Frequency Standards with Cavity Ring-Down Spectroscopy, *Joseph T. Hodges¹, Piotr Maslowski², David J. Robichaud³, M. Okumura³, Charles E. Miller⁴, L. R. Brown⁴; ¹Natl. Inst. of Standards and Technology, USA, ²Inst. Fizyki, Univ. Mekołaja Kopernika, Poland, ³Div. of Chemistry and Chemical Engineering, Caltech, USA, ⁴JPL, Caltech, USA.* We report a new method for measuring absorption transition frequencies using frequency-stabilized cavity ring-down spectroscopy. We determined absolute frequencies of O_2 A-band transitions using saturation spectroscopy of ^{39}K and demonstrated combined uncertainties $< 1\text{ MHz}$.

LTuB5 • 12:10 p.m.

Evanescence-Wave Cavity Ring-Down Spectroscopy for Enhanced Detection of Surface Binding under Flow Injection Analysis Conditions, *Lineke van der Sneppen, Freek Ariese, Cees Gooijer, Wim Ubachs; Vrije Univ., Netherlands.* The feasibility of liquid-phase evanescent-wave cavity ring-down spectroscopy (EW-CRDS) for surface-binding studies under flow-injection analysis (FIA) conditions is demonstrated. EW-CRDS is highly surface-specific, and only molecules at or near the surface are probed.

12:30 p.m.–1:30 p.m.

Lunch Break

LTuC • THz and Novel Imaging Techniques

Williams/Demens Room

1:30 p.m.–3:30 p.m.

LTuC • THz and Novel Imaging Techniques

James Gord; AFRL, USA, Presider

LTuC1 • 1:30 p.m.

Invited

Application of Terahertz Spectroscopy in Security, Chemistry and Microscopy, *P. Y. Han¹, J. Chen¹, H. W. Zhao¹, B. Schulkin¹, Y. Q. Chen¹, G. Bastiaans², J. Warrender³, Xi Cheng Zhang¹; ¹Rensselaer Polytechnic Inst., USA, ²Intelligent Optical System Inc., USA, ³Army Benet Labs, USA.* Recent progress in the application of terahertz spectroscopy is highlighted, including fingerprint spectroscopy of hidden explosives, dynamics monitoring of chemical reactions and nanometer resolution near field microscope imaging employing terahertz emission waves.

LTuC2 • 2:10 p.m.

Improving Image Contrast in Rocket Sprays Using Time-Gated Ballistic Imaging, *Terrence Meyer¹, Z. Schaefer¹, J. Schmidt¹, S. Roy², J. Gord²; ¹Iowa State Univ., USA, ²AFRL, USA.* Time-gated ballistic imaging is employed for imaging the near-field, optically dense region of atmospheric-pressure rocket sprays, enhancing image contrast and revealing information on spray geometry and break-up processes.

LTuC3 • 2:30 p.m.

Spatial Resolution Simulations for Time-Gating and Spatial Filtering in Ballistic Imaging, *David Sedarsky¹, E. Berrocal¹, M. Linne^{1,2}; ¹Lund Univ., Sweden, ²Sandia Natl. Labs, USA.* Photon discrimination by means of spatial filtering and time-gating are commonly applied in ballistic imaging of optically dense media. This work models effects of these methods in the context of contrast at the image plane

LTuC4 • 2:50 p.m.

Laser Spectroscopy for Assessing Structural Properties of Turbid Solids: Toward Optical Porosimetry, *Tomas Svensson¹, Stefan Andersson-Engels¹, Jonas Johansson², Staffan Folestad²; ¹Lund Univ., Sweden, ²Astra Zeneca R&D, Sweden.* We present significant advances in high-resolution spectroscopy for characterization of turbid and porous materials. In particular, we focus on its use for structural analysis of pharmaceutical materials, and the implementation of optical porosimetry.

LTuC5 • 3:10 p.m.

Wood Characterization by Diffuse Time-Resolved Optical

Spectroscopy, *Cosimo D'Andrea¹, Andrea Farina¹, Daniela Comelli¹, Antonio Pifferi¹, Paola Taroni¹, Gianluca Valentini¹, Rinaldo Cubeddu¹, Luca Zoia², Marco Orlandi², Alwin Kienle³; ¹Politecnico di Milano, Italy, ²Dept. di Scienze dell'Ambiente e del Territorio, Univ. Milano-Bicocca, Italy, ³Inst. für Lasertechnologien in der Medizin und Meßtechnik, Germany.*

Time-resolved optical spectroscopy technique in the visible/NIR region (700-1080 nm) is employed to characterize wood samples previously degraded and subsequently consolidated by isoeugenol treatment. Preliminary measurements of absorption spectrum of lignin and cellulose are shown.

St. Petersburg Ballroom

3:30 p.m.–4:00 p.m.

Coffee Break

NOTES

• **Wednesday, March 19, 2008** •

Conference Registration

7:00 a.m.–6:00 p.m.

Registration Open

LWA • Coherent Anti-Stokes Raman Spectroscopy

Williams/Demens Room

8:00 a.m.–10:00 a.m.

LWA • Coherent Anti-Stokes Raman Spectroscopy

Thomas Settersten; Sandia Natl. Labs, USA, Presider

LWA1 • 8:00 a.m.

Invited

Fs-CARS for High-Bandwidth, Collision-Free Temperature

Measurements, Sukesh Roy¹, Paul J. Kinnius², Robert P. Lucht², James R. Gord³; ¹Innovative Scientific Solutions Inc., USA, ²Purdue Univ., USA, ³AFRL, USA. Fs-laser-based time-resolved CARS spectroscopy of nitrogen is used to measure temperature at 1 kHz. The first few ps of the time-resolved CARS signal are free of collisions for pressures up to 20 bar.

LWA2 • 8:40 a.m.

Theory of Single-Pulse Femtosecond Coherent Anti-Stokes Raman Scattering Using a Chirped Probe Beam, Paul J.

Kinnius¹, Robert P. Lucht¹, Sukesh Roy², James R. Gord³; ¹Purdue Univ., USA, ²Innovative Scientific Solutions Inc., USA, ³AFRL, USA. The theory of single-pulse, chirped-probe, femtosecond (fs) coherent anti-Stokes Raman scattering (CARS) for gas-phase temperature and species measurements is developed. The time-dependent density matrix equations are solved numerically for the fs CARS process.

LWA3 • 9:00 a.m.

Measurements of Nitric Oxide Using Single-Shot, Midband Electronic-Resonance-Enhanced Coherent Anti-Stokes Raman Scattering (ERE-CARS) Vibrational Spectroscopy, Ning Chai¹, Sameer V. Naik¹, Robert P. Lucht¹,

Normand M. Laurendeau¹, Sukesh Roy², James R. Gord³; ¹Purdue Univ., USA, ²Innovative Scientific Solutions Inc., USA, ³AFRL, USA. Development of a single-laser-shot technique for acquiring electronic-resonance-enhanced (ERE) coherent anti-Stokes Raman scattering (CARS) spectra of nitric oxide (NO) is reported. Single-shot vibrational spectra are measured in an atmospheric pressure, room-temperature jet of NO.

LWA4 • 9:20 a.m.

Effects of Collisions on Time-Delayed Picosecond Coherent Anti-Stokes Raman Scattering (ps-CARS) Spectroscopy, James R. Gord¹, Paul Hsu², Sukesh Roy²; ¹AFRL,

USA, ²Innovative Scientific Solutions Inc., USA. The effects of collisions on the temperatures measured using time-delayed ps-CARS are investigated. In ps-CARS the probe beam is delayed wrt the pump and Stokes beams to suppress the nonresonant background.

LWA5 • 9:40 a.m.

Three-Laser Dual-Pump Vibrational and Pure Rotational CARS for Temperature and Multi-Species Measurements,

Thomas Seeger, Markus C. Weikl, Alfred Leipertz; Univ. Erlangen-Nürnberg, Germany. The further development of a dual-pump vibrational CARS setup into a dual-pump dual-broadband CARS setup by using only one detection system is presented. Measurements were taken in a partially premixed propane flame.

St. Petersburg Ballroom

10:00 a.m.–10:30 a.m.

Coffee Break

St. Petersburg Ballroom

10:00 a.m.–4:00 p.m.

Exhibits Open

LWB • Combustion Imaging

Williams/Demens Room

10:30 a.m.–12:30 p.m.

LWB • Combustion Imaging

Terrence Meyer; Iowa State Univ., USA, Presider

LWB1 • 10:30 a.m.

Invited

Micro-Invasive LIF Diagnostics in Engines, Frank

Zimmermann¹, Christopher Gessenhardt¹, René Reichle², Christof Pruss², Christof Schulz¹; ¹Univ. of Duisburg-Essen, Germany, ²ITO, Univ. of Stuttgart, Germany. Laser-based diagnostics are well established in engine research. The requirement of large-scale optical accesses makes the application expensive. Miniaturized specific endoscopes combining refractive and diffractive optics show a huge potential to overcome these restrictions.

LWB2 • 11:10 a.m.

Cinematographic Laser Combustion Diagnostics, Christof

Kittler¹, Benjamin Böhm¹, Isaac Boxx², Wolfgang Meier², Andreas M. Dreizler¹; ¹Technische Univ. Darmstadt, Germany, ²DLR Stuttgart, Germany. Cinematographic PIV and OH PLIF operated at repetition rates up to 5 kHz are applied simultaneously to identify flow structures that entail extinction in a turbulent opposed jet flame.

LWB3 • 11:30 a.m.

Interference-Free Laser-Induced Fluorescence Imaging of Atomic Hydrogen in Flames, Waruna D. Kulatilaka, Brian D. Patterson, Jonathan H. Frank, Thomas B. Settersten; Sandia Natl. Labs, USA. We investigate two-photon laser-induced fluorescence imaging of atomic hydrogen in premixed flames using picosecond- and nanosecond-duration laser pulses. Picosecond excitation produces significantly larger signals for interference-free detection in CH₄/O₂/N₂ and H₂/O₂ flames.

LWB4 • 11:50 a.m.

High-Speed UV Particle Image Velocimetry, Claudia M. Fajardo, Volker Sick; Univ. of Michigan, USA. Turbulence studies in engines require velocity data at rates that resolve relevant time scales. An ultra-violet particle image velocimetry technique was devised and applied to a fired engine to capture velocity maps at 6 kHz.

LWB5 • 12:10 p.m.

Thermometry of Surfaces: Application of a High Speed Camera as a Detector for Laser-Induced Phosphorescence, Thilo Kissel, Jan Brübach, Andreas Dreizler; Inst. for Energy and Powerplant Technology, Darmstadt Univ. of Technology, Germany. This study demonstrates the use of CMOS high speed camera systems for two-dimensional surface phosphor thermometry. Using Mg₄FGeO₆: Mn, a temperature map of a generic system was determined.

12:30 p.m.–1:30 p.m.

Lunch Break

LWC • New Spectroscopic Approaches for Combustion Diagnostics

Williams/Demens Room

1:30 p.m.–3:30 p.m.

LWC • New Spectroscopic Approaches for Combustion Diagnostics

Andreas M. Dreizler; TU Darmstadt, Germany, Presider

LWC1 • 1:30 p.m.

Invited

Designs and Applications of Hyperspectral Light Sources, Scott T. Sanders; Univ. of Wisconsin at Madison, USA. A time-division multiplexed source that cycles through 19 wavelengths every 15µs will be described. Sensing results using this and similar sources will follow, including gas thermometry at 100kHz with a precision of 4K at 2000K.

LWC2 • 2:10 p.m.

Mid-Infrared Gas Sensing for Combustion Applications, Jay B. Jeffries, Adam E. Klingbeil, Ethan A. Barbour, Aamir Farooq, Ronald K. Hanson; Stanford Univ., USA. Progress is reported in the use of room-temperature, wavelength-tunable, solid-state mid-infrared laser sensors for combustion and propulsion applications. Diverse uses range from combustion chemistry studies in shock-heated flows to pulse-detonation engines.

LWC3 • 2:30 p.m.

Detection of HCl in a Premixed H₂/O₂/Ar flame Seeded with CHCl₃ Using mid-IR Polarization Spectroscopy, Zhongshan Li¹, Zhiwei Sun¹, Bo Li¹, Marcus Aldén¹, Mikael Försth²; ¹Lund Univ., Sweden, ²SP Technical Res. Inst. of Sweden, Sweden. Mid-infrared polarization spectroscopy was applied to detect HCl at trace level in an atmospheric pressure premixed H₂/O₂/Ar flame with chloroform seeding. Detection sensitivity and potential interference from water lines was investigated.

LWC4 • 2:50 p.m.

Ultra High Sensitivity Detection of NO Photo-Fragments by Radar REMPI, Richard B. Miles, Zhili Zhang, Sohail Zaidi, Mikhail Shneider; Princeton Univ., USA. A new standoff diagnostic technique, Radar REMPI, is used to measure trace concentrations of NO for the detection of explosive material vapors by photo-fragmentation. Avalanche enhancement can increase the signal by orders of magnitude.

LWC5 • 3:10 p.m.

Development of a Picosecond-LIDAR System for Combustion Diagnostics, Billy Kaldvee, Andreas Ehn, Joakim Bood, Marcus Aldén; Lund Univ., Sweden. A picosecond-LIDAR system aiming at diagnostics in large-scale combustion devices is developed and characterized. This LIDAR system, using 30 ps Nd:YAG-pulses, has been demonstrated for single-ended measurements on gaseous acetone.

St. Petersburg Ballroom

3:30 p.m.–4:00 p.m.

Coffee Break

• **Thursday, March 20, 2008** •

Conference Registration

7:30 a.m.–3:30 p.m.

Registration Open

LThA • Biothreat Detection

Williams/Demens Room

8:00 a.m.–10:00 a.m.

LThA • Biothreat Detection

René Beigang; Kaiserslautern Technical Univ., Germany, *Presider*

LThA1 • 8:00 a.m.

Invited

Applications of Raman and Surface-Enhanced Raman Spectroscopy (SERS) to Bacterial Identification, Steven Christesen¹, Jason Guicheteau¹, Darren Emge¹, Leanne Argue¹, Ashish Tripathi², Rabih Jabbour²; ¹US Army Edgewood Chemical Biological Ctr., USA, ²Science Applications Intl. Corp., USA. Principal component analysis (PCA) of the normal Raman and surface-enhanced Raman (SER) spectra provides species level identification of bacteria. SERS provides improved discrimination over normal Raman.

LThA2 • 8:40 a.m.

Cytometric Measurement of Fluorogenically Stained Hydrosols as a Rapid Biothreat Confirmer, Robert W. Crocker, Scott E. Bisson, Thomas A. Reichardt, Thomas J. Kulp; Sandia Natl. Labs, USA. We present an orthogonal detection method to be used as a secondary confirmation of alarms generated by a single-particle laser-induced fluorescence-based (LIF) sensor. This method measures the protein content of collected particles using fluorescamine stain.

LThA3 • 9:00 a.m.

Phage-Based Opto-Fluidic Ring Resonator for Label-Free Biomolecule Detection, Hongying Zhu, Ian M. White, Jonathan D. Suter, Xudong Fan; Univ. of Missouri at Columbia, USA. Opto-fluidic ring resonators (OFRR) integrate microfluidics with state-of-the-art photonics sensing technology. Here we developed a label-free OFRR biosensor with bacteriophage as a biorecognition probe for streptavidin detection. A detection limit of 0.17 nM was achieved.

LThA4 • 9:20 a.m.

Classification and Selective Collection of Individual Aerosol Particles Using Laser-Induced Fluorescence, Vasanthi Sivaprakasam¹, John Tucker¹, Wells Jacobson¹, Jay Eversole¹, Timothy Pletcher², Joseph McGinn², David Keller²; ¹NRL, USA, ²Sarnoff Corp., USA. Spectral measurements of aerosol particles excited by two wavelengths provide information that can trigger selective separation and collection of specific (bioaerosol) particles onto a substrate by means of electrostatic charging for subsequent analysis and identification.

LThA5 • 9:40 a.m.

UV Absorption and Fluorescence Lifetime Measurements of DPA-Tb for Bacterial Spore Detection, Anali Makoui, Dennis K. Killinger; Univ. of South Florida, USA. Using a pulsed 266nm laser and a CW lamp (200nm-2062nm), the fluorescence lifetimes and absorbance spectra of terbium doped dipicolinate in different solvents have been measured as a function of their concentrations.

Foyer

10:00 a.m.–10:30 a.m.

Coffee Break

LThB • Explosives Detection and Imaging

Williams/Demens Room

10:30 a.m.–12:30 p.m.

LThB • Explosives Detection and Imaging

Jay D. Eversole; NRL, USA, *Presider*

LThB1 • 10:30 a.m.

Invited

Standoff Raman Hyperspectral Imaging Detection of Explosives, Patrick J. Treado, Matthew P. Nelson, Robert Schweitzer, Charles Gardner, Rachel Wentworth; ChemImage Corp., USA. Optical standoff detection of hazardous materials has been developed that combines hyperspectral IR imaging, Raman imaging and laser induced breakdown spectroscopy. Sensor characteristics will be presented.

LThB2 • 11:10 a.m.

Detection of Chemicals at a Standoff >10 m Distance Based on Single-Beam Coherent Anti-Stokes Raman Scattering, Haowen Li¹, D. Ahmasi Harris², Bingwei Xu², Paul J. Wrzesinski², Vadim V. Lozovoy², Marcos Dantus²; ¹BioPhotonic Solutions Inc., USA, ²Dept. of Chemistry, Michigan State Univ., USA. We report the standoff detection of chemicals using a single-beam coherent anti-Stokes Raman scattering (CARS) technique. Characteristic Raman lines for several chemicals were successfully obtained from a 12 m standoff distance.

LThB3 • 11:30 a.m.

A New Photonic Sensor Device for TATP Detection, Christoph Bauer¹, Ulrike Willer^{1,2}, Andreas Pohlkötter², Ashwini Kumar Sharma², Wolfgang Schade^{1,2}; ¹Laser Application Ctr., Technische Univ. Clausthal, Germany, ²Inst. für Physik und Physikalische Technologien, Technische Univ. Clausthal, Germany. Tunable QCLs are used for chemical sensing. Different laser types are combined with a novel photon momentum detector which allows a low cost fiber coupled setup for security and environmental applications.

LThB4 • 11:50 a.m.

Developing a Laser-Based Ionization Approach for Detecting Explosives with Ion Mobility Spectrometry,

Jeffrey M. Headrick¹, Thomas A. Reichardt¹, Ray P. Bambha¹, Jude A. Kelley², Kent B. Pfeifer¹, Francis A. Bouchier¹; ¹Sandia Natl. Labs, USA, ²Chemistry Dept., College of the Holy Cross, USA.

Rotationally resolved resonance-enhanced multiphoton ionization (REMPI) spectra of the NO photofragment from nitrobenzene have been observed for the $A^2\Sigma^+ - X^2\Pi(1, 0)$ transition. These spectra were collected in an atmospheric-pressure nitrogen bath.

LThB5 • 12:10 p.m.

Remote Sensing of Explosive Related Gases Using cw CO₂ DIAL Lidar,

Avishekh Pal¹, Dennis K. Killinger¹, Michael Sigman²; ¹Univ. of South Florida, USA, ²Univ. of Central Florida, USA. A cw CO₂ Laser differential absorption lidar system has been developed to test remote sensing of few specialized gases related to explosives. The concentration of several gases including SF₆ and TATP were measured.

12:30 p.m.–1:30 p.m.

Lunch Break

LThC • LIBS and Explosives Detection

Williams/Demens Room

1:30 p.m.–3:30 p.m.

LThC • LIBS and Explosives Detection

Wolfgang Schade; Technische Univ. Clausthal, Germany, Presider

LThC1 • 1:30 p.m.

Invited

Recent Progress in LIBS-Based Technologies for Security Applications,

Andrzej Miziolek, F. C. DeLucia, C. A. Munson, J. L. Gottfried; ARL, USA. Laser Induced Breakdown Spectroscopy (LIBS) is an emerging technology that has great potential for a wide variety of civilian and military applications. Recent history and progress of LIBS will be presented.

LThC2 • 2:10 p.m.

Molecular and Atomic Emission in Femtosecond and Nanosecond LIBS of Explosives on Surfaces,

James B. Spicer, Caroline McEnnis; Johns Hopkins Univ., USA. Laser-induced breakdown spectroscopy (LIBS) is sensitive to explosives on substrates. LIBS results show that species fragmentation is highest for nanosecond irradiation of explosives on metal substrates while molecular fragment emission is enhanced under femtosecond excitation.

LThC3 • 2:30 p.m.

Fiber Coupled LIBS Sensor for Security Applications,

Wolfgang Schippers¹, Christian Bohling², Konrad Hohmann¹, Gerhard Holl³, Wolfgang Schade¹; ¹Laser Application Ctr., Technische Univ. Clausthal, Germany, ²SECOPTA GmbH, Germany, ³Wehrwissenschaftliches Inst. für Werk- Explosiv- und Betriebsstoffe, Germany. A compact fiber coupled laser induced breakdown spectroscopy (LIBS) sensor is presented. The detection of hazardous materials, e.g. explosives and land mines are promising applications of such a system.

LThC4 • 2:50 p.m.

Enhancement of 266 nm Laser Induced LIBS Emission

Using a Simultaneous 10.6- μ m CO₂ Laser Pulse, *Robert D. Waterbury¹, Avishekh Pal², Dennis K. Killinger², Jeremy Rose¹, Edwin L. Dottery¹; ¹Alakai Consulting & Engineering Inc., USA, ²Univ. of South Florida, USA.* A Deep-UV Eye-Safe LIBS system has been constructed for standoff detection. A Q-Switched Nd:YAG Laser operating at 266nm was used for plasma generation. A simultaneous CO₂ laser was used to enhance the LIBS signal.

LThC5 • 3:10 p.m.

Thermodynamic Properties of a Nd:YAG-CO₂ Double Pulse Laser-Induced Plasma and Its Applications under Stand-Off Conditions,

Matthew Weidman, Santiago Palanco, Martin Richardson; Univ. of Central Florida, USA. The effects of CO₂ plasma reheating are presented under low-irradiance conditions typical of stand-off laser-induced breakdown spectroscopy. The mechanisms and possible applications of the technique for enhancing stand-off measurements are discussed.

Williams/Demens Room

3:30 p.m.–3:40 p.m.

LACSEA Closing Remarks

Key to Authors and Presiders

(**Bold** denotes Presider or Presenting Author)

A

A'Amar, Ousama-BTuF14
Aasa, Ando-JMA6
Abdi, Rabah A.-BSuB5
Abeytunge, Sanjeewa-BTuF56, BTuF66
Abshire, James B.-JMA19, LMA4, LMC5
Achilefu, Samuel-BWE2
Acosta, Victor M.-JMA44
Adányi, Nóra-JMA26
Adibi, Ali-BMD31
Adler, Desmond C.-BWF8
Agate, Ben-BMD60
Aguirre, Andres-BWG1
Aguirre, Aaron D.-BWC7
Ahn, Steven-DTuB1
Ahnelt, Peter-BMB3
Akers, Walter-BWE2
Akhbardeh, Alireza-BMD20
Akiba, Masahiro-BMD71
Akin, Ata-BMD3, BMD4, BMD6, BSuE62, BSuE63, BSuE64, BSuE78, BWC3
Al Abdi, Rabah-BSuE19
Al-Arashi, Munir-BTuF49
Aldén, Marcus-LWC3, LWC5
Alerstam, Erik-BSuE67
Allain, Marc-BSuE87
Allan, Graham-LMA4, LMC5
Allen, Mark-LMA1, LMB5
Amin, Khalid-BSuE27, BSuE86
Amit, Guy-BMD88
Amoozegar, Cyrus-BTuF7
Ananda, Sharmila-BSuF2
Anandasabapathy, Sharmila-BTuD3
Andegeko, Yair-BMD51
Anderson, Harry L.-BWB3
Andersson-Engels, Stefan-BMC2, BSuE67, BWB5, LTuC4
Andreeva, E. V.-BMD80
Andreou, Stylianos-BTuF39
Andronica, Randall-BSuE19
Ansari, Rehman-BSuE19
Aprelev, Alexei-BMF7
Apreleva, Sofia V.-BSuE24
Araki, Tsutomu-BTuF61
Aranda, Iana-BTuB3
Ardeshirpour, Yasaman-BSuE21, BTuD5
Arger, Peter H.-BTuF35
Argue, Leanne-LThA1
Arie, Ady-BTuF32
Ariese, Freek-LTuB5
Armstrong, Karla M.-LTuA3
Armstrong, Victoria-BSuE15
Arridge, Simon R.-BMC2, BSuE13, BSuE14, BWE6, BWG8
Ash III, William M.-DTuB6
Asobe, Masaki-JMA21
Asundi, Anand-DMC2, DWB5
Atkinson, Chris-BTuF14
Auner, Gregory W.-BSuE11
Austwick, Martin-BSuB8, BTuC2
Axelsson, Johan-BMC2, BWB5
Axner, Ove-LTuA5
Ayata, Cenk-BWC4
Aydöre, Sergül-BMD4

B

Baccaro, Nancy-BTuD5
Backman, Vadim-BTuC5, BTuC6, BTuF10, BTuF40
Badizadegan, Kamran-BTuD6, BWD3
Baek, Byung Joon-DTuC1
Baek, Hyeon-Man-BSuE69
Bajraszewski, Tomasz-BWF1
Baker, Jr., James R.-BSuE4
Bakhirkin, Yury A.-LMB4
Bakker, Leon-BSuF3
Bambha, Ray P.-LMC3, LThB4
Ban, Han Y.-BSuE18
Banerjee, Partha P.-DWA, DWB1
Baraldi, Patrizia-BMD8
Barbastathis, George-BMF2, DTuA, DWB6
Barbour, Ethan A.-LWC2
Barbour, Randall L.-BMD1, BSuB5, BSuE19, BSuE57, BSuE61
Bargo, Paulo R.-BTuF17, BTuF50
Barton, Jennifer K.-BMF2, DWB6
Baselli, Giuseppe-BMD10
Bassi, Andrea-BSuE75
Bastiaans, G.-LTuC1
Bauer, Christoph-JMA29, LThB3
Beard, Paul C.-BMA2
Beattie, Bradley J.-BMC8
Beaumont, Eric-BMD7
Bechtel, Kate-BTuA3
Becker, K.-BTuA4
Behrens, Ashley K.-BTuF2
Beigang, René-LThA
Belfield, Kevin D.-BSuE90, BSuE91
Belinson, Jerome-BMD77
Belkebir, Kamal-BMD57
Ben-Yakar, Adela-BTuF37
Bender, Janelle-BTuC3, BTuF22
Benes, Christian-BMD15
Bensalah, Karim-BTuF43, BTuF44
Benveniste, Helene-BTuE3
Benyamin-Seeyar, Anader-BWE8
Berger, Andrew J.-BTuF34
Berger, Jörn-BTuF19
Berger, Michel-BMD26
Bergethon, Peter R.-BTuE2
Bernus, Olivier-BMC3
Berrocal, E.-LTuC3
Bérubé-Lauzière, Yves-BMD32
Betzig, Eric-BTuA2
Beuthan, J.-BMD34, BSuD6, SuE59
Bewley, William-JMA40
Bhuiyan, Aizaz H.-LMC4
Bianchi, Anna M.-BMD10
Bickford, Lissett R.-BSuE7, BTuF12
Biegon, Anat-BTuF65
Bigio, Irving-BSuB8, BTuC2, BTuF14
Bigour, Damien-JMA43
Bilyy, Rostyslav-BSuE9
Bingham, Philip R.-DTuC4
Binns, Alison-BMB3
Birgul, Özlem-BSuE69
Bisson, Scott E.-LThA2
Blackmore, Kristina-BSuE70, BSuE71
Blandón, Astrid-DMB5
Blasi, Anna-BSuE79
Boas, David-BMD2, BMD24, BMD3, BSuB2, BSuB7, BSuD4, BSuD8, BSuE20, BSuE72, BSuE73, BTuE, BTuE1, BWC4, BWC5, BWC7
Bobboh-Ebo, Eudes-Evrrard-DMC4

Boccaro, Albert C.-BTuF48
Bocklage, Therese J.-BTuD7
Böehm, Benjamin-LWB2
Boffety, Matthieu-BSuE87
Bogaards, Arjen-BTuC7
Bohling, Christian-LThC3
Boisselle, Matthew-JMA33
Bolay, Hayrūnnisa-BMD6
Bontus, Claas-BMD23, BSuF3
Bood, Joakim-LWC5
Bordy, Thomas-BMD41
Bosschaart, Nienke-BWD6
Bouchard, Jean-Pierre-BWB4
Bouchard, Matthew B.-BME2, BSuD7, BTuF30, BWE1, BWC7
Bouchelev, V.-BTuE8
Bouchier, Francis A.-LThB4
Boulous, Fouad I.-BSuB6
Bouma, Brett E.-BTuB2
Boutet, Jérôme-BMD26
Bower, Bradley A.-BWF2
Bowlan, Pamela R.-BMD61
Bown, Stephen-BSuB8, BTuC2
Boxx, Isaac-LWB2
Bozinovic, Nenad-BTuF57
Brady, David J.-BTuF15
Brambilla, Marco-BSuE88, BWG8
Brand, Randall E.-BTuC6
Brendel, Bernhard-BMD23, BSuE43, BSuE44, BSuF3
Brieu, Nicolas-BMD7
Briggs, Richard-BMD13
Brock, R. S.-BTuF13
Brooks, Dana-BMD24, BMD67, BSuB2, BSuE20, BSuE26
Brooks, Traci-BSuE1
Brown, Edward B.-BTuF60
Brown, L. R.-LTuB4
Brown, Tom-BMD60
Brown, William J.-BTuC8
Brübach, Jan-LWB5
Bruno, John D.-LMB4
Buckley, Erin M.-BSuD5, BTuF35
Budker, Dmitry-JMA44
Bunce, Scott-BMD20
Bunney, Tom-BWD2
Bunting, Charles F.-BSuE31
Bur, Andres M.-BSuB5
Burgess, Sean A.-BME2, BSuD7, BTuF30, BWE1, BWC7
Burke, Ryan M.-BTuF60
Busch, David R.-BSuE16
Busch, Theresa M.-BSuD2
Butti, Michele-BMD10
Buytaert, Jan A. N.-BWG5, JMA11

C

Cadeddu, Jeffrey-BSuE80, BTuF43, BTuF44
Caffini, Matteo-BMD10
Canedy, Chadwick L.-JMA40
Cao, Zhengyi-BSuE4
Capala, Jacek-BTuD8
Carl, Daniel-DMC7
Carmen, Alejandro D.-BTuE4
Carminati, Rémi-BSuE87
Carp, Stefan-BMD2, BMD24, BSuB2, BSuB7, BSuE20, BTuE1
Carpenter, Colin-BSuB4, BSuE36
Casanova, Herley-DTuC7

Castañeda, Roman–DMB5, DTuB2, DTuC6
 Castillo, Diego–BWG1
 Cauli, Bruno–BME2
 Cayce, Jonathan M.–**BTuE5**
 Centurion, Martin–DMA5
 Cerussi, Albert E.–BSuE69
 Cerutti, Sergio–BMD10
 Cha, Jae Won–**BMD52**
 Chai, Ning–LWA3
 Chalau, Vadzim–BTuC2
 Chalut, Kevin–BTuF6, BTuF7, JMA7
 Chan, Kinpui–BMD71
 Chance, Britton–BSuB1, BSuE55, BSuE92
 Chang, Chi-Ching–DTuB4
 Chang, Joseph–BSuE7
 Chang, Yu-Chung–**BSuE4**
 Change, Shoude–BMD86
 Charrière, Florian–DTuB5, DTuC2
 Chatterjee, M. R.–DWB1
 Chaumet, Patrick–BMD57
 Chee, Oi Choo–**DWB5**
 Chen, Brenda–BME2, BWG7
 Chen, Cheng–**BTuF26**
 Chen, Chien-Hung–BMD38, BSuE54
 Chen, Debbie K.–**BTuE2**
 Chen, Gu-Liang–DTuB4
 Chen, J.–LTuC1
 Chen, Jiong–BTuF65
 Chen, Liang-Yu–**BMD38**, BSuE54
 Chen, Nanguang–**BTuF63**
 Chen, Shih-Chi–BTuF52
 Chen, Weidong–**JMA36**, **JMA43**
 Chen, Y. Q.–LTuC1
 Chen, Yaqin–**BSuE50**
 Chen, Ying-Ling–JMA22
 Chen, Yu–**BWC7**, **BWF8**
 Chen, Zhongping–DMC6
 Cheng, Chau-Jern–**DTuB3**
 Cheng, Ji-Xin–**BWD1**
 Chernomordik, Victor–**BMD44**, BTuD8, BTuF48
 Chia, Thomas H.–**BWC1**
 Chicken, Wayne–BSuB8
 Chilkoti, Ashutosh–BWF5
 Chiu, S.–BTuE8
 Cho, Eun-Jin–BMD65
 Cho, Hyun-Jun–JMA9
 Choe, Regine–**BSuB1**, BSuD3, BSuE16, BSuE18, BSuE55, BTuF35
 Choi, Bernard–BWD7
 Choi, Heejin–**BTuF52**
 Choi, Hyun-Jun–**JMA10**
 Choi, Jee Hyun–**BMD22**, **BSuE2**
 Choi, Young-Geun–JMA10
 Chong, Changho–**BWF3**
 Chow, Tzu-Hao–BSuE8
 Christesen, Steven–**LThA1**
 Chu, Kengyeh K.–**BMD55**
 Chu, Michael K.–**BSuE42**
 Chung, So Hyun–**BSuE69**
 Çiftçi, Koray–BWC3
 Clark, Benjamin–BSuB8
 Cobb, Michael J.–**BMD89**, BTuB5
 Collins, Hazel A.–BWB3
 Colomb, Tristan–**BMD58**, **DMA4**, **DTuB5**, DTuC2, DTuC3
 Comelli, Daniela–BSuE66, BSuE75, LTuC5
 Comrie, Muriel–BMD60
 Comsa, Daria C.–**BWE5**
 Comstock, Christopher–BTuD4
 Connolly, James–BWF8
 Contag, Christopher H.–BWG6
 Contini, Davide–BMD10, BMD11, **BMD8**, BMD9, **BSuE58**, BWC6
 Cook, Noah M.–BTuF35
 Cooper, Chris–BSuE76, BSuE77
 Corlu, Alper–BSuB1
 Cormier, Jean-Francois–BWB4
 Correia, Teresa M. M.–**BSuE49**
 Corsini, Eric–JMA44
 Courtney, Patrick–BWD2
 Cousin, Julien–JMA36, JMA43
 Cova, Sergio–BWC6
 Crawford, James M.–BWG6
 Crocker, Robert W.–**LThA2**
 Cronin-Golomb, Mark–BMD54
 Crow, Matthew J.–**BSuE6**
 Cubeddu, Rinaldo–BMD10, BMD11, BMD39, BMD8, BSuB3, BSuE58, BSuE75, BSuE88, BWC6, BWG8, LTuC5
 Cucchiara, Brett L.–BSuD3
 Cui, Xiquan–**BMF5**
 Cula, Gabriela Oana–**BTuF50**
 Culpepper, Martin L.–BTuF52
 Culver, Joseph P.–**BMA**, BMD27, BME3, BWE2
 Curl, Robert F.–LMB3
 Czerniecki, Brian J.–BSuB1

D
 D'Andrea, Cosimo–BWG8, **LTuC5**
 da Silva, Anabela–BMD25, BMD26, **BMD41**, BSuE47
 Dackman, Matthew–JMA22
 Dai, Guangping–BMD2
 Dalla Mora, Alberto–BWC6
 Dallas, William J.–**DWA3**
 Dam, Jan S.–BMD76
 Danielli, Amos–**BTuF32**
 Dansson, Mark A.–JMA33
 Dantus, Marcos–BMD51, LThB2
 Das, Aniruddha–BME2
 Dasari, Ramachandra–BTuD2, BTuD6, BWD3
 Davidson, David F.–JMA28
 Davidson, Michael W.–BTuA2
 Davis, Anjul M.–**BWC8**
 Davis, Cabell–**DMB1**
 Davis, Dan–BWD2
 Davis, Scott C.–BMC4, **BWE7**
 Davis, S. J.–BTuC4
 de Boer, Johannes F.–BTuE7
 de las Morenas, Antonio–BTuD6
 Debourdeau, Mathieu–BMD41
 Deckers, Peter–BTuD5
 deDeugd, Casey M.–**BMD68**
 Deep, Nicholas–BTuC5
 Dehghani, Hamid–**BMC4**, **BMD27**, BMD36, BME3, BSuB4, **BSuE30**, BSuE31, BSuE35, BSuE42, BWE7
 Delano, Matthew–BSuE10
 DeLuca, John–BMD1
 DeLucia, F. C.–LThC1
 DeMichele, Angela–BSuB1
 Demos, Stavros G.–BTuF20, BTuF42
 Deng, Helen–BMD5
 Depeursinge, Christian–**BMD58**, DMA4, DTuB5, DTuC2, **DTuC3**
 Desroches, Patrice–BWB4
 Desse, Jean-Michel–DMC4, DMC5
 Detre, John A.–BSuD3, BSuD5
 Devor, Anna–BMD3, BWC7
 Dewhirst, Mark–BTuC3
 Dhawan, Jasbeer–BTuF65
 Dholakia, Kishan–BMD60
 Diamond, Kevin R.–BWB4
 Diamond, Solomon G.–BSuD4, BSuD8
 Dick, Samantha N.–**BSuE70**
 Dietsche, Gregor–BMD21
 Dilekoz, Ergin–BWC4
 DiMarzio, Charles–BMD66, BMD67
 Dinten, Jean-Marc–BMD25, BMD26, BMD41, BSuE47
 Diop, Mamadou–**BSuE60**
 Dirckx, Joris J. J.–BWG5, JMA11
 Dixit, Sanhita–BMD69, **BSuE27**, **BTuD4**, **BTuF59**
 Dobbs, Rhonda–BTuE4
 Dodt, Hans-Ulrich–**BTuA4**
 Dogariu, Arthur–**BTuF16**, **BTuF8**
 Dong, Chen Yuan–BTuF62
 Dorin, Maxine H.–BTuD7
 Dorshow, Richard B.–BSuA5
 Dottery, Edwin L.–LThC4
 Doty, Jim–LMB3
 Douek, Michael–BSuE13, BSuE14
 Douplik, Alexandre–**BTuE8**
 Drake, Tyler–**BMD81**
 Dreizler, Andreas–**LWB2**, LWB5, LWC
 Drexler, Wolfgang–**BMB**, BMB3, BMB5
 Drezek, Rebekah–**BWA**, BSuE7, BTuF12
 Drsek, Filip–BMD57
 Du, Congwu–**BTuE3**, **BTuF65**, BWC2
 Duan, Zhihui–DMA1
 Ducros, Nicolas–**BMD25**
 Duduran, Turgut–BSuE56
 Dufour, Marc L.–BMD83
 Dumitrescu, Cosmin–JMA23
 Dunsby, Christopher–BWD2, BWE6
 Durduran, Turgut–BSuB1, BSuD2, **BSuD3**, BSuD5, BSuE16, BSuE55, BTuF35
 Durr, Nicholas J.–BTuF37

E
 Eames, Matthew E.–**BMD36**, BSuE30, **BSuE35**
 Eberhard, Dietmar–DWB7
 Ebert, Bernd–**BTuF19**
 Ebert, Volker–**LMA2**, **LMB**, LMB1
 Edlow, Brian L.–BSuD3, BSuD5
 Eftekhar, Ali A.–BMD31
 Ehn, Andreas–LWC5
 Einarsdóttir, Margrét–BSuE67
 Ekstrom, Leeland–BMD5
 El-Naggar, Adel–BTuD1
 Elackattu, Alphi–BTuD2, BTuD6, BWD3
 Elbert, Thomas R.–BMD21
 Elgawadi, Amal–BWC4
 Elias, Sjoerd–BSuF3
 Elliot-Lai, Caroline–BTuC2
 Elliott, Jonathan–BSuE60
 Elson, Daniel S.–BWE6
 Ellwell, Clare E.–BSuE76, BSuE77, BSuE79
 Emge, Darren–LThA1
 Enfield, Louise C.–**BSuE13**, BSuE14, BSuE15
 Epshtein, Haim–BTuF5
 Ercan, Ayse E.–BSuE78
 Erdmann, Rainer–**BMD43**

Erdoğan, Sinem B.–BSuE62, **BSuE64**,
BWC3
Erlich, Marcelo–BTuF32
Erts, Renars–BTuF27
Eseller, Kemal Efe–**JMA38**
Everdell, Nick L.–BSuE13
Eversole, Jay–LThA4, **LThB**

F

Faber, Dirk J.–BWD6
Fajardo, Claudia M.–**LWB4**
Falzon, Mary–BSuB8
Fan, Xudong–LThA3
Fang, Qianqian–**BMD24**, **BSuB2**, BSuB7
Fantini, Sergio–**BMD14**, BMD15, BMD42,
BTuE2
Farina, Andrea–BMD39, BSuE66, LTuC5
Faris, Gregory–BMD69, **BSuC**, BSuE1,
BSuE27, BSuE86, BTuD4,
BTuF59, **BWG3**
Farooq, Aamir–LWC2
Farrell, Thomas J.–BWE5
Farrow, Roger L.–LMC3, LTuA3
Farshchi, Salman–BSuE81
Faure de Pebeyre, Irène–BTuF58
Favicchio, Rosy–**BWE3**, BWE4
Fei, Y. Y.–BTuF53
Feld, Michael–**BTuA3**, BTuD2, BTuD6,
BWD3
Feldkhun, Daniel–**BMF4**
Fels, Lueder–BSuF3
Ferguson, R. D.–BWF6
Fernandez, Christy A.–**BTuF15**
Fernández, Enrique J.–BMB3
Ferrante, A.–BWF6
Ferrante, Simona–BSuE58
Ferrigno, Giancarlo–BSuE58
Fertein, Eric–**JMA36**
Fève, Jean-Philippe–LTuA3
Finikova, Olga S.–BMF7
Fink, Manfred–**LTuB3**
Finlay, Jarod C.–BSuD2
Fischer, Marc–LTuA1
Fischer, Thomas–BTuF19
Fleming, Christine P.–**BMD88**
Flesch, Hervé–BMD84
Flexman, Molly L.–BSuB5
Flueraru, Costel–BMD86
Fojt, Wojciech–BWF1
Folestad, Staffan–LTuC4
Foltynowicz, Aleksandra–**LTuA5**
Fong, Christopher J.–BSuB5
Ford, Timothy–BTuF57
Först, Michael–BMD90
Försth, Mikael–LWC3
Fortier, Simon–BMD28
Fortin, Michel–BWB4
Fourmentin, Marc–**JMA36**
Foust, Amanda J.–BME5
Fox-Lloyd, Sarah–BSuE79
Franceschini, Maria Angela–BMD2,
BMD5, BSuD1, BSuD4, BSuE72,
BTuE1, BWC5
Frangos, Suzanne–BSuD5
Frank, Jonathan H.–LWB3
Frank, Matthew–DMB3
Franke, Gesa L.–BMD40
Frassati, Anne–**BSuE47**
Fratz, Markus–DMC7, **DWB7**
French, Paul–BWD2, BWE6
French, P. J.–BSuE66

Freskos, John N.–BSuA5
Fried, Alan–LTuA2
Fried, Nathaniel M.–**BTuF2**
Fu, Kun–BSuE7
Fuji, Toshie–BMD74
Fujii, Mamiko–**BMD37**
Fujii, Tomohiko–**JMA12**
Fujimoto, James G.–BWC7, BWF8
Fukuma, Yasufumi–BMD71
Fulghum, Steve–BTuA3
Fung, Jerome–DTuB1
Furukawa, Shunsuke–BTuF21

G

Gabolde, Pablo–BMD61, DTuC5
Gagnon, Louis–**BSuE73**
Galbraith, Catherine G.–BTuA2
Galbraith, James A.–BTuA2
Galindo, Luis–BTuD2
Gallagher, George–BTuD2
Gallant, Pascal–BWB4
Gamelin, John–BSuE25, BWG1
Gandjakhche, Amir–BMD44, BTuD8,
BTuF48
Gao, Feng–BMD33, BMF7
Gao, Jean–BTuF44
Gao, Wen–BTuF18
Gao, Xiaohu–**BWA3**
Garcés-Chávez, Veneranda–BMD60
Garcia, Javier–DMA6
Garcia-Sucerquia, Jorge–DTuC7
Gardner, Charles–LThB1
Gareau, Daniel S.–**BTuB3**, **BTuF66**
Garnacho, Carmen–BMF7
Garofalakis, Anikitos–BWE3, BWE4
Ge, Jijia–**BMD48**, BMD49
Gelsing, Paul J.–**BMF2**, DWB6
Georgakoudi, Irene–BMD54, **BTuA**,
BTuA3, BTuF9
Georges, Didier–BSuE47
Gessenhardt, Christopher–LWB1
Giacomelli, Michael–**BTuF6**, BTuF7, **JMA7**
Gibbs, Ashley D.–BSuE27
Gibbs-Strauss, Summer L.–BWE7
Gibson, Adam P.–BSuE13, **BSuE14**,
BSuE15, BSuE49
Giel, Dominik M.–DMC7, DWB7
Gillenwater, Ann–BSuF2, BTuB4, BTuD1,
BTuF18, **BWA2**
Gillette, Jennifer–BTuA2
Gimzewski, James K.–DMB3
Giovannini, Hugues–BMD57
Girouard, Audrey–BMD14
Gisler, Thomas–**BMD21**
Gitin, Yakov–BTuF14
Giusto, Arianna–BSuB3
Godavarty, Anuradha–BMD19, BMD48,
BMD49, BSuE74
Goldberg, Lew–LTuA3
Goltsov, Alexander–BTuF8
Gomes, Andrew–BTuF10, **BTuF40**
Gonzalez Trujillo, Jorge Carlos–**BSuE53**
Gooijer, Cees–LTuB5
Gord, James–**JMA41**, **LTuC**, LTuC2,
LWA1, LWA2, LWA3, **LWA4**
Gorga, Chris–BMD12
Gossage, Kirk–BWE1
Gottfried, J. L.–LThC1
Graaff, Reindert–**BSuE52**
Graber, Harry L.–BMD1, BSuE57, **BSuE61**
Grady, M. Sean–BSuD5

Gramer, Markus–BSuE76
Grant, David–BWD2
Grant, P. Ellen–BSuD1, BSuE72
Grebe, Reinhard–BME4
Greenberg, Charles S.–BSuE86
Greenberg, Joel H.–BSuD3, BSuD5
Greenblatt, Ellen M.–BSuE70
Greene, Heather M.–BTuD7
Gregori, Giovanni–BMD75
Grillone, Gregory–BTuD2, BTuD6, BWD3
Grobmyer, Stephen R.–BSuE10
Grosenick, Dirk–BMD43, BMD45
Gu, Min–**DMB6**, **DTuB**
Gu, Xuejun–**BSuE39**, **BSuE40**
Guenther, Bobby D.–BTuF15
Guerrero, Bruno–BWE8
Guicheteau, Jason–LThA1
Gulsen, Gultekin–BSuE69
Gunn-Moore, Frank–BMD60
Gupta, Sharad–**BTuF9**

H

Hadway, Jennifer–BSuE68
Haensse, Daniel V.–BWG2
Hagen, Axel–BMD43, BMD45
Hahn, Joonku–**DWB3**, DWB4
Hahn, Stephen M.–BSuD2
Hajnal, Jo V.–BWE6
Hall, David J.–**BSuE81**
Hämäläinen, Matti S.–BWC5
Hammer, D. X.–BWF6
Hampp, Norbert–BTuC1, BTuF1
Han, P. Y.–LTuC1
Han, Sen–DMB3
Han, Xiaoxing–**BTuF60**
Handa, Hitesh–BSuE11
Hanson, Ronald K.–**JMA28**, LWC2
Harbers, Rick–BSuF3
Harmon, Kameron–BWG3
Haroon, Zishan–BSuE27, BSuE86
Harris, D. A.–LThB2
Haruna, Masamitsu–BMD74
Hasabou, Nahla–BTuC6
Hassan, El B.–**JMA32**
Hassan, Moinuddin–BMD44, **BTuD8**,
BTuF48
Haushalter, Jeanne P.–BSuE86
Haylett, Daniel R.–**JMA28**
Headrick, Jeffrey M.–**LThB4**
Hearn, Austen–**BTuF51**
Hebden, Jeremy C.–BSuE13, BSuE14,
BSuE15, BSuE49
Hegde, Poornima–BTuD5
Heitmann, Uwe–LTuB2
Henderson, Angus J.–**LMC2**
Heng, Xin–BMF5
Hennelly, Bryan M.–DTuA5
Henry, Scott M.–BSuA4
Herken, Hasan–BSuE63
Hermann, Boris–**BMB3**, BMB5
Hermann, Kay-Geert–BTuF19
Herrera, Jorge A.–DTuC6
Hervé, Lionel F.–**BMD26**
Hielscher, Andreas–**BMC**, BMD34,
BMD40, BSuB5, **BSuC1**, BSuD6,
BSuE39, BSuE40, BSuE59,
BSuE85, BTuF67
Higbie, James M.–**JMA44**
Hilliard, Aisha–BTuF16

Hillman, Elizabeth M.–BMC7, **BME2**,
BSuD7, BSuE34, **BSuF**, BTuF30,
BWE1, BWG7
Hillman, Timothy R.–BMD87
Hiltunen, Petri–BTuF36
Hincapie, Diego A.–**DTuC7**
Hinds, M. F.–BTuC4
Hirono, Taisuke–**BTuF31**
Hirshfield, Leanne H.–BMD14
Hochstrasser, Robin M.–BMF7
Hodges, Joseph T.–**LTuB4**
Hoenders, Bernhard J.–BSuE52
Hofer, Bernd–BMB3, BMB5
Hoffman, Allan S.–BSuA4
Hoffman, Paul–LMC2
Höfler, Heinrich–DMC7
Hoge, Rick D.–BSuE73
Hohmann, Konrad–LThC3
Hokoma, Leslie A.–JMA28
Holfeld, Benjamin A.–BTuF37
Holl, Gerhard–LThC3
Holley, Richard–BTuF51
Hoogheem, Jay L.–BTuC6
Hoops, Alexandra A.–**LMC3**, LTuA3
Hornkohl, James O.–JMA27, JMA45
Hovde, Chris–**JMA40**, **JMA44**
Hovhannisyann, Vladimir A.–**BTuF62**
Hoying, James–BTuF39
Hronik-Tupaj, Marie C.–**BMD54**
Hsiang, David–BSuE69
Hsieh, Wang-Ta–**DTuB4**
Hsu, Paul–LWA4
Hu, Xin-Hua– BSuE51, BTuF13, BTuF26
Hu, Ying–BSuE7, **BTuF12**
Hu, Zhilin–**BMD78**, BTuF54
Huang, Billy–BTuB3
Huang, Fei–BWG1
Huang, Minming–BSuE21
Huber, Robert–BWF8
Hughes, Michael–BMD73
Huh, Yong-Min–BMD65
Hui Koh, Peck–BSuE79
Huijing, Peter A.–BSuE64
Hunter, Martin–BTuF9
Huppert, Theodore J.–BMD3, **BSuD8**
Hurt, Hallam H.–BTuF35
Hutchins, Michael–BSuE82
Hwang, Dong-Choon–JMA1
Hyatt, Christopher J.–BMC3
Hyde, Damon E.–**BSuE26**

I

Iftimia, Nicusor V.–BWF6
Ingram, Leonard–JMA32
Ionita, Iulian–**BMD92**
Iranmahboob, Amir K.–BME2, **BSuE34**
Iwai, Hidenao–BMD59
Iwakuma, Nobutaka–BSuE10
Iyers, Malini–BTuD5
Izatt, Joseph–**BMB1**, BWC8, BWF2, BWF5,
BWF7
Izzetoglu, Meltem–BMD20

J

Jabbour, Rabih–LThA1
Jacob, Robert J. K.–BMD14
Jacobs, Kenneth M.–BTuF26
Jacobson, Wells–LThA4
Jadczak, Chris–BTuF4
Jährling, N.–BTuA4
Jaillon, Franck–BMD12

Jameel, Mohammed–BTuC6
Jansen, Duco–BTuE5
Javier, David–BSuF2
Jeffries, Jay B.–**JMA28**, **LWC2**
Jelzow, Alexander–BSuC4
Jeong, HyeonSeop–JMA4
Jiang, Huabei–BSuE10, BSuE28, BSuE29,
BSuE51, BSuE83, BSuE84
Jiang, Naibo–LTuA4
Jiang, Shudong–BMC6, BSuB4, **BSuC3**,
BSuE17
Jiang, Zhen–**BWG4**
Jiao, Shuliang–BMB4, **BMD72**, BMD75
Jiao, Yunxin–BMD72
Jockovich, Maria E.–BMB4
Johansson, Ann–BWB5
Johansson, Jonas–LTuC4
Jonathan, Enock–**BMD76**
Jones, Linda R.–BTuF45
Jones, S. G.–JMA40
Joshi, Sachin–JMA23
Jourdain, Pascal–BMD58
Jung, Jae-Hyun–**DTuA2**, JMA16, JMA2
Jung, Michael J.–BTuC6

K

Kabani, Sadru–BTuD2
Kabbani, Wareef–BTuF43, BTuF44
Kacprzak, Michal–**BMD46**, **BMD47**
Kah, James C. Yong.–**BSuE8**
Kajić, Vedran–BMB5
Kaldvee, Billy–**LWC5**
Kane, Daniel J.–BMD85
Kane, Mark–BTuD5
Kang, Hoonjong–**DWA4**
Kang, Jin-Mo–**JMA15**
Kang, Wei–**BMD77**, BTuF54
Kano, Hiroshi–BMD62, BMD63
Kao, Chris–BTuE5
Kaplan, David–BMD54, BTuF9
Kara, Ercan–BWC3
Karahan, Esin–**BMD6**, BWC3
Kareta, Margareta–BMD77
Kashyap, Dheerendra–**BSuE80**, BTuF43,
BTuF44
Kasner, Scott E.–BSuD3
Kassi, Samir–JMA43
Katan, Matilda–BWD2
Kato, Yuji–BMD35
Katsura, Takushige–BTuF21
Katz, Barak–**JMA13**
Kaundinya, Gopinath–BMD13
Kawa, S. R.–JMA19, LMA4
Kawaguchi, Hiroshi–**BSuE38**
Kawaguchi, Hideo–BTuF21
Kawanaka, Akira–BMD37
Kaz, David–DTuB1
Keenlside, Lynn–BSuE60
Kehrlöfer, Daniel–BTuC1
Keller, David–LThA4
Keller, Matthew D.–**BSuB6**
Kelley, Jude A.–LThB4
Kelley, Mark C.–BSuB6
Kempner, Joshua–BMD30
Kennedy, Gordon–BWD2
Kepshire, Dax–**BSuE82**, BTuF3
Kerstel, Erik–**LMB2**
Keshtgar, Mohammed–BSuB8, BSuE13
Khalil, Michael–BWG1
Kham, Keetaek–DWA2, DWA5
Khan, Nadeem–BSuC3

Khayat, Mario–BSuE82, BWE8
Khamaladze, Alexander–**DMB5**
Khosroshahi, Mohammad E.–**BSuE12**
Khurana, Mamta–**BWB3**
Kieffer, Jean-Claude–**BWB2**
Kienle, Alwin–**BSuE48**, BSuE66, LTuC5
Kilger, Alex–BSuE55
Killinger, Dennis K.–BTuF33, JMA24,
JMA34, **LMC**, LThA5, LThB5,
LThC4
Kim, Antony–BTuC7
Kim, Beop-Min–BMD22
Kim, Chang-Keun–**JMA1**
Kim, Chul S.–JMA40
Kim, Daekeun–**BMD53**
Kim, Daesuk–**DTuC1**
Kim, Donghyun–BMD65
Kim, Dong-Wook–DWA2, DWA6, JMA10,
JMA9
Kim, Eun-Soo–JMA1, JMA14
Kim, Hanyoung–**BMD69**, BTuD4
Kim, Hee-Cheol–**BTuC1**, BTuF1
Kim, Hwa-Sung–JMA10
Kim, Hwi–JMA3
Kim, Hyun K.– **BMD34**, BMD40, **BSuE85**,
BTuF67
Kim, Joohwan–DTuA2, JMA15, JMA16,
JMA2
Kim, Kyujung–**BMD65**
Kim, Meeri N.–BSuD3, **BSuD5**, BTuF35
Kim, Mijin–JMA40
Kim, Myung–DMB2, DMB5, DTuB2,
DTuB6, **DWB**, **DWB2**
Kim, Nam–**DTuA6**, **JMA4**
Kim, Seung-Cheol–JMA1, JMA14
Kim, Sungjee–BSuE2
Kim, Young–BTuF40
Kim, Young L.–BTuC6
Kim, Young R.–BMD2
Kim, Youngmin–DTuA2, **JMA2**
Kim, Yunhee–JMA2
Kinnius, Paul J.–LWA1, LWA2
Kino, Gordon S.–BWC6
Kirimli, Ceyhan E.–**BSuE62**
Kirkpatrick, Nathaniel D.–BTuF39
Kissel, Thilo–**LWB5**
Kissler, Johanna–BMD21
Kittler, Christof–LWB2
Klemme, Dietmar–BMD43
Klibanov, Michael V.–**BSuE33**
Klifa, Catherine–BSuE69
Kliner, Dahv A. V.–LMC3, **LTuA3**
Klingbeil, Adam E.–LWC2
Klose, Alexander D.–**BMC8**, BSuE42,
BSuE59, **BTuF67**
Klose, Christian D.–**BSuE59**
Koban, Leonie–BMD21
Kobat, Demirhan–**BMF6**
Kobayashi, Hisataka–**BMA3**
Koch, Edmund–BWF4
Kocjan, Gabrijela–BSuB8
Koehler, Thomas–BMD23, BSuF3
Koenig, Anne–BMD26
Koeth, Johannes–LTuA1
Koh, Dalkwon–BMD22
Kohl-Bareis, Matthias–BSuE76
Kojima, Jun–**JMA42**
Kollias, Nikiforos–BTuF17, BTuF50
Konecky, Soren D.–**BMC5**, BSuB1, BSuE18,
BSuE55
Kongolo, Guy–BME4

Konrad, Peter-BTuE5
Kopans, Daniel-BMD24, BSuB2, BSuB7
Koplow, Jeffrey P.-LTuA3
Korgel, Brian A.-BTuF37
Kosterev, Anatoliy A.-LMA5, LMB4
Kostin, Yu. O.-BMD80
Kostuk, Raymond-BMF2, DWB6
Kotilahti, Kalle-BTuF36
Kotlyar, Alina-BSuE4
Kotz, Kenneth T.-BSuE27
Kowalczyk, Andrzej-BWF1
Kozel, Frank A.-BTuE4
Krainak, Michael A.-JMA19, LMA4, LMC5
Kray, Stefan-BMD90
Kreuzer, Jurgen-DTuC7
Krolicki, Leszek-BMD46
Kromin, Alexey-BTuF10
Krüger, Alexander-BWF4
Kubota, Akira-BMD71
Kuebler, Wolfgang-BWF4
Kuech, Thomas F.-BTuF55
Kühn, Jonas-DTuC2, DTuC3
Kukhtarev, N. V.-DWB1
Kulatilaka, Waruna D.-LWB3
Kulp, Thomas J.-LThA2, LTuA3
Kumar, Sunil-BWD2
Kumaravel, M.-BSuE22
Kunte, Dhananjay-BTuC5
Kuo, Chaincy-BMC1, BSuE46
Kuo, Ming-Kuei-DTuB4
Kurachi, Cristina-BTuD1
Kurtzman, Scott-BTuD5
Kurz, Heinrich-BMD90
Kute, Tim-BTuF16
Kuwabara, Mitsuo-BMD74

L
Laine, Romain-BWE6
Lam, K. S.-BTuF53
Lamouche, Guy-BMD83
Landry, J. P.-BTuF53
Langkopf, Martin-BMD43
Lapin, P. I.-BMD80
Lappas, Petros-JMA28
Larson, Timothy-BTuF37
Las Heras, Facundo-BWA4
Lasser, Tobias-BTuF58
Lau, Condon-BTuA3, BTuD2, BTuD6, BWD3
Lauer, Christian-LMA2
Laughney, Ashley M.-BSuE17
Laurendeau, Normand M.-LWA3
Lauritsen, Kristian-BMD43
Lebedev, Artem Y.-BMF7
Leblond, Frederic-BMD28, BSuE82
Lech, Gwen-BSuE56
Leclair, Sébastien-BWB4
Ledbetter, Micah P.-JMA44
Lee, Byounggho-DTuA2, DWB3, DWB4, JMA15, JMA16, JMA2, JMA3
Lee, Byung-Gook-JMA8
Lee, Keong-Jin-JMA1
Lee, Kijoon-BMC5, BSuB1, BSuE18
Lee, Minah-BMD22
Lee, Nam S.-BSuA5
Lee, S.-BTuC4
Lee, Sang Bong-BTuD8
Lee, Seungduk-BMD22
Lee, Seung-Hyun-DWA2, DWA5, DWA6
Lee, Seonkyung-BWB

Lee, Ting-Yim-BSuE60, BSuE68
Legge, Michael-LTuA1
Leipertz, Alfred-LWA5
Lemberg, Vladimir-BTuF4, BTuF5
Lempert, Walter R.-LTuA4
Leng, Yuxin-BTuB5
Lengenfelder, Jean-BMD1
Leproux, Anais-BSuF3
Lesage, Frédéric-BMD7, BSuE73
Leung, Terence S.-BSuE76, BSuE77
Levene, Michael J.-BMD70, BWC1
Levenson, Richard M.-BWE1
Levin, Ken-BTuF2
Levine, Josh-BSuD5
Levkovets, Inna-JMA26
Lewicki, Rafal-LMB3
Lewis, James W. L.-JMA22
Li, Bo-LWC3
Li, Dong-BTuF38
Li, Haowen-LThB2
Li, Hyung-Chul O.-DWA2, DWA5
Li, Jun-BMD21
Li, Xiaoli-BTuB5
Li, Xingde-BMD89, BSuA4, BTuB, BTuB5
Li, Yang-BSuB5
Li, Yongbiao-BMD56, BTuB3
Li, Zhongshan-LWC3
Licha, Kai-BSuF3, BTuF19
Licht, Daniel J.-BTuF35
Liebert, Adam-BMD46, BMD47, BMD9
Liese, Julia-BTuC1
Lihachev, Alexey-BTuF27
Lilge, Lothar-BSuE70, BSuE71, BTuC, BTuC7, BWA4, BWB1
Lim, Daryl-BMD55, BMF3
Lim, S.-BTuF15
Lim, Yongjun-DWB3, DWB4
Lin, Bevin-BTuF42
Lin, Wei-Chiang-BTuF24, BTuF41
Lin, Yu-Chih-DTuB3
Linne, M.-JMA33, LTuC3
Lipiäinen, Lauri-BTuF36
Liu, Hanli-BMD13, BMD29, BMD50, BSuE33, BSuE80, BTuE4, BTuF43, BTuF44
Liu, Jingxuan-BWD4
Liu, Jonathan T. C.-BWB6
Liu, Linbo-BTuF63
Liu, Ning-BMD42
Liu, Shih-Ki-BSuE55
Lo, Justin Y.-BTuF55
Lo, Wen-BTuF62
Lo, Yuan-BMF2
Lobintsov, A. A.-BMD80
Loew, Leslie M.-BTuF30
Lomnes, Stephen J.-BSuF1
Lozovoy, Vadim V.-BMD51, LThB2
Lu, Jun Q.-BTuF13, BTuF26
Lucht, Robert P.-JMA41, LMC4, LWA1, LWA2, LWA3
Luijten, Peter-BSuF3
Lunazzi, Jose J.-DTuA4
Luo, J. T.-BTuF53
Luo, Yuan-DWB6
Luo, Zhongchi-BTuE3, BWC2
Lurie, Kristen-BTuF3

M
Mihçak, Kıvanç-BMD4
Ma, Guobin-BWE8
Ma, Lin-JMA17

Ma, Weiguang-LTuA5
Macdonald, Rainer-BMD43, BMD45, BSuC4, BTuF19
MacDonald, Daniel J.-BMD89, BTuB5
MacRobert, Alexander J.-BTuC2
Maczewska, Joanna-BMD46
Magalhães, Daniel S. F.-DTuA4
Magee, Paula-BTuF16
Magee, Tony-BWD2
Magistretti, Pierre-BMD58, DTuB5
Mahadevan-Jansen, Anita-BSuB6, BTuE5, BWD6
Mahoney-Wilensky, Eileen-BSuD5
Maire, Guillaume-BMD57
Major, James C.-BMB4
Majoros, Istvan J.-BSuE4
Majumder, Shovan K.-BSuB6
Maki, Atsushi-BTuF21
Makoui, Anali-BTuF33, LThA5
Mali, Willem-BSuF3
Malkowicz, S. Bruce-BSuD2
Malphurus, Jonathan D.-BTuE5
Mamalaki, Clio-BWE3, BWE4
Mandella, Michael J.-BWC6
Maniewski, Roman-BMD46, BMD47
Mann, Christopher J.-DTuC4
Manoharan, Vinodhan N.-DTuB1
Mansfield, James R.-BWE1
Mao, Guangzhao-BSuE11
Mao, Jianping-JMA19, LMA4
Mao, L.-BTuE8
Mao, Youxin-BMD86
Mardirossian, Vartan-BTuD2
Margalit, Ofer-DMA6
Margallo-Balbás, Eduardo-BSuE66
Margrain, Tom-BMB3
Mariampillai, Adrian-BWB3
Mariano, Laura-BTuD5
Marinakos, Stella-BWF5
Marjono, Andhi-BMD33
Markel, Vadim A.-BMC5, BSuE45
Marquet, Pierre-BMD58, DTuB5, DTuC3
Martelli, Fabrizio-BMD39, BSuE37, BWC6
Martin, Jeffrey M.-BTuE2
Maru, Dipen-BTuD3
Marzan, Tim A.-BSuA5
Masciotti, James-BMD40, BSuE85
Maslowski, Piotr-LTuB4
Massonneau, Marc-BSuE87
Mathker, Aditya-BTuF43, BTuF44
Matiukas, Arvydas-BMC3, BSuC5
Matthew, Howard W.-BSuE11
Matthews, Dennis L.-BTuF20, BTuF42
Maurudis, Anastasios-BWG1
Mayor, Shane D.-JMA20
Mayorga-Cruz, D.-JMA25
Mazzulli, Tony-BWA4
McCain, Scott T.-BTuF15
McDowell, Emily J.-BMD79, BSuE32
McElhinney, Conor P.-DTuA5
McEnnis, Caroline-LThC2
McGee, Sasha-BTuA3, BTuD2, BTuD6, BWD3
McGhee, Ewan-BWD2
McGinn, Joseph-LThA4
McGinty, James-BWD2, BWE6
McGorty, Ryan-DTuB1
McKeown, Craig-BMB4
McNeil, Jason-BSuE10
Meier, Wolfgang-LWB2
Meissner, Sven-BWF4

Mendez Gamboa, Jose Angel-BSuE53
Meriläinen, Pekka-BTuF36
Mermut, Ozzy-BWB4
Merritt, Sean I.-BSuE69
Mertens, Michael-BWF4
Mertz, Jerome-BMD55, BMF3, BTuF57,

BWD

Mesquita, Rickson C.-BMD3
Meszoely, Ingrid M.-BSuB6
Meyer, Heiko-BWE4
Meyer, Jerry R.-JMA40
Meyer, Terrence-LTuC2, LWB
Mhaisalkar, Subodh G.-BSuE8
Michels, Rene-BSuE48
Michelsen, Hope A.-JMA33
Miles, Richard B.-LWC4
Miller, Charles E.-LTuB4
Miller, Eric-BMD24, BSuB2, BSuE20,
BSuE26
Miller, J. Houston-LTuB
Min, Sung-Wook-JMA3
Mincu, Niculae-BSuE82
Mirkovic, Jelena-BTuA3, BTuD2, BTuD6,
BWD3

Mishina, Tomoyuki-DMC1
Mitina, Natalia-BSuE9
Mitrea, Bogdan G.-BSuC5
Miwa, Mitsuharu-BMD59
Miyamoto, Yoko-DMA1
Miziolek, Andrzej-LThC1
Mohajerani, Pouyan-BMD30, BMD31
Mohler, Emile R.-BSuE56
Molteni, Franco-BSuE58
Monahan, Tim-BTuF3
Montfort, Frédéric-DMA4
Moore, Laura-BTuC3, BTuF22
Moore, Richard-BMD24, BSuB2, BSuB7
Moore, Sean W.-LTuA3
Morales, Alma R.-BSuE91
Mordmüller, Mario-JMA29
Moriyama, Eduardo H.-BTuC7, BWB3
Morley, Bruce-JMA20
Morofke, D.-BTuE8
Morosawa, Atsushi-BWF3
Morris, Michael D.-BWD5
Morris, Norma-BSuE15
Mortelmans, Kristien E.-JMA28
Mosse, Charles A.-BSuB8, BTuC2
Moulton, Peter F.-LMC1
Mounier, Denis-DMC4
Mourant, Judith R.-BTuD7, BTuF13
Moussazadeh, Philip-BTuF30
Muehlemann, Thomas L.-BWB2
Muehlschlegel, Susanne-BSuD4
Mujat, Mircea-BWF6
Muldoon, Timothy J.-BTuB4
Mulhall, Philip A.-LMB5
Münir, Kerim-BWC3
Munro, Ian-BWD2, BWE6
Munson, C. A.-LThC1
Muro, Silvia-BMF7
Muschol, Martin-BMD16
Musgrove, Cameron-BSuE31
Mutyal, Nikhil N.-BTuF10

N

Naeni, Jafar G.-BTuF16
Naik, Sameer V.-LMC4, LWA3
Nakayama, Kiyoshi-BMD37
Namita, Takeshi-BMD35
Näsi, Tiina-BTuF36

Naughton, Thomas J.-DTuA5
Navab, Nassir-BTuF58
Navas, Jinna A.-BME5
Neel, Victor A.-BTuF49
Nehal, Kishwer-BTuB3
Nehmetallah, G.-DWB1
Neil, Mark-BWD2, BWE6
Nelson, Andrew-BTuF49
Nelson, Matthew P.-LThB1
Nemes, László-JMA27, JMA45
Netz, Uwe-BMD34, BSuD6, BSuE59
Neumann, William L.-BSuA5
Nevsehrlir, Deniz-BSuE78
Newaz, Golam M.-BSuE11
Newmark, Judith A.-BMD66
Nguyen, Quang-Viet-JMA42
Nguyen, Thu H.-BSuE74
Ni, Ping-DMC2
Nida, Dawn L.-BTuB4
Nielsen, Tim-BMD23, BMD45, BSuE43,
BSuE44, BSuF3
Nieminen, Timo A.-BTuF12
Ninck, Markus-BMD21
Nioka, Shoko-BSuE92
Nishida, Kohji-BMD71
Nishida, Yoshiki-JMA21
Nishimura, Goro-BTuF29
Nissila, Ilkka-BWC5
Nocetti, Luca-BMD8
Noiseux, Isabelle-BWB4
Noponen, Tommi E.-BTuF36
Norris, Theodore B.-BSuE4
Nothdurft, Ralph E.-BWE2
Ntzachristos, Vasilis-BSuE26, BWE
Numata, Kenji-LMC5
Nussbaum, Ethne L.-BWA4
Nwanguma, Onyeoziri R.-BSuE57
Nyman, Jeffry S.-BWD6

O

O'Donoghue, Geoffrey-BTuD6, BWD3
O'Hara, J. A.-BTuC4
Obrig, Hellmuth-BME1, BSuC4
Oh, Daniel B.-JMA40, LMA
Oh, Jung Hun-BTuF44
Ohmi, Masato-BMD74
Okada, Eiji-BSuE38, BTuF21
Okano, Fumio-DTuA1
Okawa, Shinpei-BMD33, BSuE41, BTuF31
Okui, Makoto-DMC1
Okumura, M.-LTuB4
Olcmen, Semih-JMA23
Olenych, Scott-BTuA2
Olivo, Malini C.-BSuE8
Onaral, Banu-BMD20
Öncü, Bedriye-BWC3
Öner, Özgür-BWC3
Onural, Levent-DWA1
Orduna, Juan M.-BSuE27
Orlandi, Marco-LTuC5
Ou, Wanmei-BWC5

P

Pache, Christophe-DTuC2
Pal, Avishekh-LThB5, LThC4
Palanco, Santiago-JMA30, LThC5
Palmer, Gregory M.-BTuF55
Palyvoda, Olena-BSuE11
Pan, Chia-Pin-BMD69, BSuE1, BSuE86
Pan, Min-Cheng-BMD38, BSuE54
Pan, Min-Chun-BMD38, BSuE54

Pan, Rubin-BTuF65
Pan, Yingtian-BTuF65, BWC2, BWD4
Pan, Yinsheng-BTuF54
Panasyuk, George Y.-BMC5
Pandian, P. S.-BSuE22
Pantong, Natee-BSuE33
Papamatheakis, Sifis-BWE3
Parameswaran, Krishnan-LMA1, LMB5
Parigger, Christian G.-JMA22, JMA27,
JMA35, JMA45

Park, B. Hyle-BTuE7
Park, Gilbae-JMA16
Park, Jae-Hyeung-DTuA3, JMA4
Parlapalli, Renuka-BMD13, BMD50
Passaglia, Chris L.-BTuE7
Patil, Chetan A.-BWD6
Patnaik, Anil K.-JMA41
Patterson, Brian D.-LWB3
Patterson, Michael S.-BWB4, BWE5
Patwardhan, Sachin-BWE2
Paulsen, Keith D.-BMC6, BSuB4, BSuE17,
BSuE36, BWE7

Pava, Diego-DMA3
Pavani, Sri Rama Prasanna-DMA2
Pavillon, Nicolas-DTuC3
Pearl, Roy-DMA6
Pease, Tamara-LTuB3
Pedrocchi, Alessandra-BSuE58
Pei, Yaling-BMD1, BSuE61
Peltié, Philippe-BMD26, BMD41
Perez Cortes, Mario-BSuE53
Pertsov, Arkady-BMC3, BSuC5, BTuF30
Pessel, Martin-BSuF3
Peswani, Disha-BSuE80, BTuF43, BTuF44
Peter, Jörg-BSuE50, BSuE89
Peterson, Kristen A.-BMD85
Peyrin, Françoise-BMD25
Pfeifer, Kent B.-LThB4
Piao, Daqing-BSuE30, BSuE31, BWG4
Picart, Pascal-DMC4, DMC5
Pierce, Mark C.-BTuB4
Piestun, Rafael-DMA2
Pifferi, Antonio-BMD11, BMD39, BMD8,
BSuB3, BSuE37, BSuE66,
BSuE75, BSuE88, BWC6, LTuC5

Pike, Pavlina J.-JMA35
Piksarv, Peeter-JMA6
Pistey, Robert-BTuD2
Pivetti, Christopher D.-BTuF20
Pletcher, Timothy-LThA4
Plutov, Denis-JMA24
Podoleanu, Adrian-BMD73, BWF
Pogue, B. W.-BMC4, BMC6, BMD36,
BSuB4, BSuC3, BSuE17, BSuE35,
BSuE36, BSuE82, BTuC4,
BTuF3, BWD5, BWE7

Pohlkötter, Andreas-JMA29, LThB3
Ponder, Steven L.-BSuE74
Poon, Ting-Chung-JMA3
Porat, Noga-BTuF32
Porro, Carlo A.-BMD8
Porter, Jason M.-JMA28
Potcoava, Mariana C.-DMB2
Potma, Eric O.-BWD7
Pourrezaei, Kambiz-BMD20
Považay, Boris-BMB3, BMB5
Powers, Tamara M.-BTuD7
Pradhan, Prabhakar-BTuC5, BTuC6
Prahraj, S. C.-DWB1
Prajapati, Suresh-BMD29, BMD50
Preyer, Norris W.-BTuF45

Pritchard, Caroline–BSuE77
Pritzker, Kenneth P. H.–BWA4
Pruss, Christof–LWB1
Psaltis, Demetri–BMF5, DMA5
Psycharakis, Stylianos–BWE4
Pu, Ye–DMA5
Puliafito, Carmen A.–BMB4, BMD72,
BMD75
Pun, Suzie H.–BSuA4
Purev, Sukhbat–JMA14
Putt, Mary E.–BSuD3
Puzinauskas, Paul–JMA23

Q

Qi, Xin–BMD77, **BTuF54**
Qu, Jianan Y.–**BTuF38, BTuF47**
Quan, Kara J.–BMD88
Quon, Harry–BSuE55

R

Radhakrishnan, Harsha–**BMD5, BTuE1,**
BWC5
Radosevich, Andrew J.–BME2, BTuF30,
BWG7
Rafferty, Elizabeth–BSuB7
Rajadhyaksha, Milind–BTuB3, BTuF56,
BTuF66
Rajaram, Narasimhan–**BTuF23**
Raman, Rajesh N.–**BTuF20**
Ramanujam, Nirmala–**BMA4, BSuB,**
BTuC3, BTuF22, BTuF55
Ranasinghesagara, Janaka–BTuF25
Ranji, Mahsa–**BSuE92**
Rappaz, Benjamin–BMD58, DTuB5
Ratner, Désirée–BSuD7
Ravicz, Michael E.–BTuB2
Rector, David–BME5, **BTuE6, BWC**
Reed, Jason–DMB3
Regalado, Steven–**BMD49, BSuE74**
Reichardt, Thomas A.–LMC3, LThA2,
LThB4, LTuA3
Reichle, René–LWB1
Reif, Roberto–**BTuF14**
Reisman, Charles–BMD71
Reivelt, Kaido–JMA6
Rendon, Augusto–BWB1
Reneker, Joseph W.–LMC4
Restrepo, Cesar–DTuC7
Restrepo, John F.–**DTuC6**
Restrepo-Martínez, Alejandro–DMB5,
DTuB2
Reynolds, Daryl–BTuF45
Rhodes, William T.–**DMA3**
Rice, Brad–BMC1, BSuE46
Rice, William–BMD54
Richards-Kortum, Rebecca–**BSuD, BSuF2,**
BTuB4, BTuD1, BTuD3, BTuF18
Richardson, Daniel R.–LMC4
Richardson, Martin–JMA30, LThC5
Richter, Dirk–**LTuA2**
Riedel, Wolfgang J.–DWB7
Riley, Jason–BMD44, BTuD8
Rinehart, Matthew T.–**JMA7**
Rinneberg, Herbert–BMD45, BSuE44
Ripoll, Jorge–BWE3, BWE4
Riris, Haris–LMA4, LMC5
Risby, Terence H.–LMB4, LMB5
Riza, Nabeel A.–BTuF64
Rizo, Philippe–BMD26, BMD41
Robichaud, David J.–LTuB4
Robichaud, Vincent–BMD32

Robitaille, Nicolas–BMD28
Robles, Francisco–BMD81
Roblyer, Darren M.–**BTuD1**
Roche-Labarbe, Nadege–**BME4, BSuD1**
Rodrigues, Matthew–**BTuF46**
Rodriguez, Victoria B.–BSuA4
Rodriguez-Díaz, Eladio–BTuF14
Rogers, Jeremy–**BTuF10, BTuF40**
Rojas, Manuel J.–BME5
Rollins, Andrew–BMD77, BMD78,
BMD88, BTuF54
Romanini, Daniele–JMA43
Romanowski, Marek–BSuA3
Rose, Jeremy–LThC4
Rosen, David L.–LMB5
Rosen, Joseph–DMA1, DMC3, JMA13
Rosen, Mark–BSuB1, BSuE16
Rosen, Richard–BMD73
Rosenfeld, Philip J.–BMB4
Rosowski, John J.–BTuB2
Rothenberg, Florence–BWC8
Rothman, Laurence S.–**LMA3**
Roy, Hemant K.–BTuC5, BTuC6
Roy, Sukesh–JMA41, LTuC2, **LWA1,**
LWA2, LWA3, LWA4
Rozhetskin, Dmitry D.–**BTuF4**
Ruggeri, Marco–**BMB4, BMD75**
Ruth, Albert A.–LTuB2
Ruvinskaya, Svetlana–BWC4, BWC7
Ryerson, Thomas B.–LTuA2
Rylett, R. J.–BSuE68

S

Sainsbury, Richard–BSuE13
Sakadžić, Sava–**BWC4**
Sakaguchi, Koichiro–**BTuF21**
Sakai, Tooru–BWF3
Salakhutdinov, Ildar–**BSuE11**
Salomatina, Elena–BTuF49
Sampson, David D.–BMD87
Sanders, Scott T.–**LWC1**
Sardini, Alex–BWE6
Sarmiento-Martínez, Oscar–**JMA25**
Sarunic, Marinko V.–BMD79
Sassaroli, Angelo–BMD14, **BMD15,**
BMD42, BSuE37, BTuE2
Sato, Manabu–BMD82
Sawosz, Piotr–BMD46, BMD47
Saxena, Vishal–**BMD17, BSuE65**
Sayli, Omer–BSuE78
Scepanovic, Obrad–BTuA3
Schade, Wolfgang–JMA29, LThB3, **LThC,**
LThC3
Schaefer, Z.–LTuC2
Schäfer, Jan–BSuE48
Schäfer-Hales, Katherine J.–BSuE90,
BSuE91
Scheel, Alexander–BSuE59
Schei, Jennifer L.–**BME5, BTuE6**
Schilt, Stephane–LMA5
Schippers, Wolfgang–**LThC3**
Schirmer, Michael–BTuF19
Schlaggar, Bradley L.–BME3
Schmidt, Florian M.–LTuA5
Schmidt, J.–LTuC2
Schmidt, Titania A. R.–JMA40
Schmit, Joanna–**DMB3**
Schmitt, Joseph M.–BWF8
Schmitt, Randal L.–LMC3
Schmitz, Christoph H.–**BSuE19**
Schnall, Mitchell D.–BSuB1, BSuE16
Schneiderheinze, Dirk H. P.–**BMD87**
Schossig, Tobias–JMA29
Schotland, John C.–BMC5, BSuE45
Schrader, Paul E.–LTuA3
Schraub, Martin–BTuF1
Schulkin, B.–LTuC1
Schulmerich, Matthew V.–BWD5
Schultz, Paul–LTuA3
Schulz, Christof–**LWB1**
Schulz, Paul–LMC3
Schulz, Ralf–BSuE26, BSuE50, BSuE89,
BWG8
Schwamm, Lee H.–BSuD4
Schwarz, Richard A.–**BTuF18**
Schweiger, Martin–BMC2, BSuE14
Schweitzer, Robert–LThB1
Scott, Nicholas J.–BTuF2
Scully, Marlan O.–BTuF8
Sedarsky, David–**LTuC3**
Seeger, Thomas–**LWA5**
Sehgal, Chandra M.–BTuF35
Selb, Juliette–BMD24, BSuB2, BSuB7,
BSuD1, **BSuD4, BSuE73,**
BSuE72
Semmler, Wolfram–BSuE50, BSuE89
Sentenac, Anne–**BMD57, BSuE87**
Seo, Junho–DWA5
Seo, Young-Ho–JMA10, **JMA9**
Serap, Sinem–**BSuE63, BWC3**
Settersten, Thomas–**LWA, LWB3**
Seufert, Jochen–LTuA1
Shah, Qaisar–BSuD3
Shah, Raj–BWG1
Shah, Raamil–BWG1
Shaked, Natan T.–**DMC3, JMA13**
Shalinsky, Mark H.–BWC4
Shan, Hua–BSuE33
Sharareh, Shiva–BTuF42
Sharikova, Anna V.–**JMA34**
Sharma, Anita–BSuE13, BSuE15
Sharma, Ashwini Kumar–LThB3
Sharma, Parvesh–BSuE10
Sharma, Vikrant–**BMD13, BMD50**
Sheikh, Mumtaz–**BTuF64**
Sheng, Chao–BTuF3
Shepherd, Neal–BWC8
Sheppard, Colin–BMD64, BSuE8, BTuF63
Sherif, Sherif S.–**BMD86**
Shi, Songhai–BMD56
Shi, Yihui–BSuE86
Shidlovski, Vladimir–**BMD80**
Shieh, Jeng J.–BSuA5
Shimada, Sotaro–BSuE79
Shimizu, Koichi–BMD35
Shin, Dong-Hak–**JMA5, JMA8**
Shneider, Mikhail–LWC4
Shramenko, M. V.–BMD80
Shroff, Hari–**BTuA2**
Shultz, Susan–BTuF35
Sick, Volker–LWB4
Sierra, Heidy–**BMD67**
Sigman, Michael–LThB5
Sim, Eddy–DWB5
Singh, Jagdish P.–JMA32, JMA38
Singh, Megha–BSuE22
Singh, Satish K.–BTuF14
Singh, Vijay Raj–DWB5
Sivak, Michael V.–BTuF54
Sivaprakasam, Vasanthi–**LThA4**
Skala, Melissa C.–**BWF5**
Smith, Danielle K.–BTuF37

Smith, Harriet O.–BTuD7
Smith, Martin–BSuE77
Smith, Zachary J.–BTuF34
So, Peter T. C.–BMD52, BMD53, **BTuA1**,
BTuF52
Sokolov, Konstantin V.–**BSuA**, **BSuA1**,
BTuF37
Solovey, Erin Treacy –BMD14
Soloviev, Vadim–BWE6, **BWG8**
Somasundaram, Santosh–BSuB8
Sommers, Ricky L.–LTuA3
Sonnensfroh, David M.–**LMA1**
Sorg, Brian S.–BMD68
Spicer, James B.–**LThC2**
Spigulis, Janis–**BTuF27**
Spinelli, Lorenzo–BMD10, BMD11,
BMD39, BMD8, BMD9, BSuB3,
BSuE37, BSuE58, BSuE88,
BWC6
Splinter, Robert–JMA35
Spöler, Felix–BMD90
Spuler, Scott M.–**JMA20**
Srinivasan, Kalyan–JMA38
Srinivasan, Subhadra–BSuB4, **BSuE36**,
BWD5
Srivastava, Abneesh–BSuE1, BWG3
St. Lawrence, Keith–BSuE60, BSuE68
Stadelhoff, Christian–BMD45
Stafford, Ryan–LMC2
Stayton, Patrick S.–BSuA4
Steele, Philip–JMA32
Steinbrink, Jens–**BME**, **BME1**, BSuC4
Steinkellner, Oliver–BMD43, **BMD45**
Stelzer, Ernst–**BMF1**
Stephen, Mark–**JMA19**, LMA4
Sternberg, Paul W.–BMF5
Stevenson, David J.–BMD60
Stier, Elizabeth–BTuD6, **BWD3**
Stoika, Rostyslav–BSuE9
Stolper, Roman–BWG7
Strohmeier, Dirk–DMC7
Styles, Iain–**BTuF28**
Su, Jianzhong–BSuE33
Subramanian, Hariharan–**BTuC5**
Sueiras, Vivian–BSuE74
Sumer, Suna–BSuE62
Sun, Xiaoli–JMA19, LMA4, LMC5
Sun, Y. S.–BTuF53
Sun, Zhiwei–LWC3
Sunar, Ulaş–BSuE55, BSuE81
Surova, Andrea–**BSuD1**
Suter, Jonathan D.–LThA3
Suzuki, Kenneth M.–JMA40
Suzuki, Takuya–BWF3
Svanberg, Katarina–BSuE67
Svenmarker, Pontus–**BMC2**
Svensson, Tomas–BSuE67, **LTuC4**
Sviridov, Alexander P.–**BTuF48**
Swartling, Johannes–BWB5
Swartz, Harold M.–BSuC3
Székács, Andras–**JMA26**
Szendro, István–JMA26
Szkulmowski, Maciej–BWF1

T

Tabuchi, Arata–BWF4
Tachiki, Mark L.–DMB4
Tachtsidis, Ilias–**BSuE76**, BSuE77
Tadanaga, Osamu–JMA21
Tahir, Bilal–BSuE76
Tahir, Khadija B.–BWE6

Tahriri, Mohammadreza–BSuE12
Takahashi, Yu–BTuF61
Takeda, Mitsuo–**DMA1**, **DTuC**
Talbot, Clifford–**BWD2**, BWE6
Talneau, Anne–BMD57
Tamura, Mamoru–BTuF29
Tan, Chun-Wei–JMA8
Tan, Yiyong–**BSuE83**, BSuE84
Tankam, Patrice–DMC5
Tannenbaum, Susan–BTuD5
Tao, Lei–LTuB1
Tao, Yuankai K.–BWF2
Taroni, Paola–**BSuB3**, **BSuE66**, **BSuE75**,
LTuC5
Taylor, Robin–BTuF51
Tchapyjnikov, Alexei–BTuF2
Tchou, Julia C.–BSuB1
Tearney, Gary–**BTuB1**
Tearney, Guillermo J.–BTuB2
Teitell, Michael A.–DMB3
Terakado, Goro–BMD62, **BMD63**
Terry, Neil G.–BTuC8
Thekkekk, Nadhi–**BTuD3**
Thomas, Andrew S.–**BWF2**
Thomas, Thommey P.–BSuE4
Ti, Yalin–**BTuF24**, BTuF41
Tian, Fenghua–**BMD29**, BMD50, **BTuE4**
Tichauer, Kenneth–BSuE60, **BSuE68**
Tisdall, Martin–BSuE77
Tittel, Frank K.–LMA5, LMB3, LMB4,
LTuA
Tobin, Kenneth W.–DTuC4
Toledo-Crow, Ricardo–**BMD56**, BTuF56
Tomy, Andriy–BSuE9
Tong, Yunjie–BMD14, BMD15, BTuE2
Topaloğlu, Nermin–BSuE62, **BWC3**
Toricelli, Alessandro–BMD10, BMD11,
BMD39, BMD8, BMD9, BSuB3,
BSuE37, BSuE58, BSuE88, BWC6
Torti, Cris–BMB3
Tosi, Alberto–BWC6
Träger, Jens–BTuC1, **BTuF1**
Trainer, Michael K.–LTuA2
Trammell, Susan R.–BTuF2
Tran, Danh–BTuF2
Treado, Patrick J.–**LThB1**
Trebino, Rick–BMD61, **DTuC5**
Trifanov, Irina–BMD73
Tripathi, Ashish–LThA1
Tripathi, Markandey M.–**JMA32**
Trope, Joshua J.–DMB3
Tromberg, Bruce–**BSuC2**, BSuE69
Troppmann, Christoph–BTuF20
Troutman, Timothy–**BSuA3**
Troxler, Thomas–BMF7
Tsampoula, Xanthi–**BMD60**
Tseng, Sheng-Hao–BTuF50
Tu, Han-Yen–DTuB3
Tucker, Don M.–BMD18
Tucker, John–LThA4
Tuncel, Altug–BTuF43, BTuF44
Tunnell, James–BTuA3, BTuF23
Turkoglu, Ahu N.–**BSuE78**
Turovets, Sergei I.–**BMD18**
Turzhitsky, Vladimir–**BTuC6**, BTuF10,
BTuF40

U

Ubachs, Wim–LTuB5
Uhlemann, Falk–BMD23, BSuF3
Ulissi, Zachary–BTuF48

Umeki, Takeshi–JMA21
Unholtz, Daniel–**BSuE89**
Unterhuber, Angelika–BMB3
Uruchurtu-Chavarín, J.–JMA25
Utzing, Urs–**BTuD**, **BTuF39**

V

Vakhtin, Andrei B.–**BMD85**
Valentini, Gianluca–BWG8, LTuC5
Valle, Bertha–BTuD3
Valluru, Rahul–BSuE57
van Beek, Michiel–BSuF3
van de Ven, Stephanie–BSuF3
van der Mark, Martin B.–**BSuF3**
van der Sneppen, Lineke–**LTuB5**
van der Steen, Anton F. W.–BMD84
van der Voort, Marjolein–BSuF3
van Leeuwen, Ton G.–BWD6
van Ruijven, Leo J.–BSuE66
van Soest, Gijb–**BMD84**
Vandevord, Pamela J.–BSuE11
Vanduffel, Wim–BMD5
Varghese, Philip L.–LTuB3
Varma, Ravi M.–**LTuB2**
Venables, Dean–LTuB2
Ventalon, Cathie–BMF3, BTuF57
Vergnole, Sébastien–BMD83
Vernon, Marcia L.–BWB4
Vexberg, Emanuel–DMA6
Vidolova, Eleonora Z.–**BSuE20**
Vinogradov, Sergei A.–**BMF7**, BSuE24,
BWC4
Virtanen, Jaakko–BTuF36
Vishwanath, Karthik–**BTuC3**, BTuF22
Visser, Brendan–BTuD4
Vitkin, A.–BTuE8
Voelbel, Gerald T.–BMD1
Voigt, Jan–BTuF19
Vu, D.–BWF6, BTuC4
Vunjak-Novakovic, Gordana–BMD54
Vurgaftman, Igor–JMA40

W

Wabnitz, Heidrun–**BMD9**, **BSuC4**
Wagner, Kelvin–BMF4
Wagner, Steven–LMA2, LMB1
Wahl, Michael–BMD43
Walega, James G.–LTuA2
Wallace, Michael B.–BTuF45
Wallos, Fabrice–BME4
Wan, Rachel C. Y.–BSuE8
Wang, Hui–BMD88
Wang, Jia–**BMC6**
Wang, Jianhua–BMB4, BMD72
Wang, Lihong–**BMA1**, **BWG**, BWG1
Wang, Qiang–BSuE28, BSuE29
Wang, Thomas D.–**BSuF4**, BWG6
Wang, Wei–DMA1
Wang, X. B.–BTuF53
Wang, Zhenguo–BWC2
Wang, Zhi–BWD3
Wang, Zimmern–BTuD2
Wang, Zhenguo–BWD4
Wankhede, Mamta–BMD68
Warger, Il, William C.–**BMD66**
Warnasooriya, Nilanthi–**DWB2**
Warner, Carol M.–BMD66
Warren, Elizabeth–BSuD1
Warrender, J.–LTuC1
Warsen, Addie–BMD89
Watanabe, Kouyou–**BMD62**, BMD63

Watanabe, Yuuki-BMD82
Waterbury, Robert D.-LThC4
Watt, David-BWG3
Wax, Adam-BMD81, **BSuA2**, BSuE6,
BTuC8, BTuF7, JMA7
Waxman, Alan-BTuD7
Weber, Crystal E.-BTuF18
Weber, Dieter-LMA2
Weersink, Robert-BTuF46
Wehbe, Hassan-BMB4, **BMD75**
Weibring, Petter-LTuA2
Weidman, Matthew-LThC5
Weidner, Douglas A.-BTuF13
Weikl, Markus C.-LWA5
Weisel, Lindsay R.-BMD51
Wellner, Marcel-BSuC5
Wendler, Thomas-BTuF58
Wentworth, Rachel-LThB1
Werner, Ralph-LTuA1
Whelan, William-BTuF46
White, Brian R.-BMD27, **BME3**
White, Helen-BTuA2
White, Ian M.-LThA3
White, Nathan-BWG1
Wi, Sung-Min-DWA2
Wiethoff, Andrea-BSuF3
Willer, Ulrike-JMA29, LThB3
Williams, Benjamin B.-BSuC3
Williams, Michelle D.-BTuD1
Williamson, Anne-BWC1
Wilson, Brian C.-BTuC7, **BWA1**, BWB3
Wilson, Emily-LMA4
Wilson, Tony-BME, BTuF51
Wininger, Fred A.-BTuE6
Wittmann, Priscila-BTuF2
Wojtkowski, Maciej-BWF1
Wolf, Martin-BWG2
Wolfsen, Herbert C.-BTuF45
Won, Nayoun-BSuE2
Wong, Daisy Y. L.-BSuE68
Woodhams, Josephine-BTuC2
Wooley, Karen L.-BSuA5
Wrzesinski, Paul J.-LThB2
Wu, Changfeng-BSuE10
Wu, Tao T.-BTuF47
Wu, Weicheng-BTuE1
Wu, Yicong-BMD89, **BTuB5**, BTuF38
Wunderle, Karl-LMB1
Wuskell, Joseph P.-BTuF30
Wylie, Glenn-BMD1
Wysocki, Gerard-LMB3, LMB4

X

Xi, Peng-BMD51
Xing, Xiaoman-BSuD2, **BSuE56**
Xu, Bingwei-LThB2
Xu, Chen-**BSuE23**, BTuD5
Xu, Chris-BMF6
Xu, Guan-**BSuE31**, BWG4
Xu, Heng-BMC1
Xu, Min-BTuF11
Xu, Yong-BSuE61

Y

Yadav, Nitin-BMD19
Yakubovich, S. D.-BMD80
Yalavarthy, Phaneendra K.-BSuE35
Yalin, Azer P.-JMA23, **LTuB1**
Yamada, Yukio-BMD33, BSuE41, BTuF31
Yamaguchi, Ichirou-DMA
Yamaguchi, Takeshi-DWA4, **JMA12**

Yamamoto, Naoji-LTuB1
Yamashita, Yutaka-BMD59
Yamauchi, Toyohiko-BMD59
Yamazaki, Kyoko-BTuF21
Yan, Hao-DWB5
Yanagawa, Tsutomu-JMA21
Yang, Changhui-BMD79, BMF5, BSuE32
Yang, V.-BTuE8
Yano, Akira-BMD33
Yao, Gang-BTuF25
Yao, Sheng-BSuE90
Yao, Xincheng-BMD12
Yaqoob, Zahid-BSuE32
Yared, Wael-BMD30
Yaroslavsky, Anna N.-**BTuF49**
Yasui, Takeshi-BTuF61
Yasuno, Yoshiaki-BMB2
Yatagai, Toyohiko-DMB4
Yau, Hon-Fai-DTuB4
Ye, Jing Yong-BSuE4
Yelin, Dvir-BTuB2
Yew, Elijah Y. S.-BMD64
Yin, Lu-**BSuE29**, BSuE84
Yodh, Arjun-BMC5, BSuB1, BSuD2,
BSuD3, BSuD5, BSuE16,
BSuE18, BSuE55, BSuE56,
BTuF35
Yoo, Hoon-JMA5, JMA8
Yoo, Ji-Sang-DWA2, DWA6, JMA10
Yoshikawa, Hiroshi-DMC, DWA4,
JMA12
Youn, Jeongkyu-BSuE2
Yu, Anthony W.-LMC5
Yu, Bing-BTuF55
Yu, Chung-Chieh-BTuA3, BTuD2, BTuD6,
BWD3
Yu, Guoqiang-**BSuD2**, BSuD3, BSuD5,
BSuE16, BSuE56, BTuF35
Yu, Lingfeng-DMC6
Yu, Mei-BTuE3
Yu, Tse-Kuan-BSuE7
Yu, Yang-BMD42
Yu, Yingjie-DMC2
Yuan, Baohong-BMC7, BSuD7, **BSuE25**
Yuan, Hong-BTuC3
Yuan, Shuai-BWC4
Yuan, Zhen-**BSuE28**, **BSuE51**, BSuE84
Yuan, Zhijia-BWC2, **BWD4**
Yucel, Meryem A.-BMD3
Yucesoy, Can A.-BSuE64
Yueh, Fang-Yu-JMA32, JMA38

Z

Zaccanti, Giovanni-BMD39, BSuE37,
BWC6
Zacharakis, Giannis-BWE3, **BWE4**
Zacharopoulos, Athanasios-BMC2
Zaichenko, Alexander-BSuE9
Zaidi, Sohail-LWC4
Zalevsky, Zeev-DMA6, **DMB**
Zappa, Franco-BWC6
Zeff, Benjamin W.-BMD27, BME3
Zelikova, Olga-BSuE9
Zeller, Wolfgang-LTuA1
Zemlin, Christian W.-BMC3
Zhang, Qizhi-**BSuE10**, **BSuE84**
Zhang, W.-BWD2
Zhang, Xi Cheng-LTuC1
Zhang, Zhijiang-DMC2
Zhang, Zhili-LWC4
Zhao, Chao-BSuE16

Zhao, H. W.-LTuC1
Zhao, Mingtao-BWF7
Zhao, Weizhao-BMD75
Zhao, Youbo-BMD12
Zheng, Wei-BTuF38
Zhong, Weiwei-BMF5
Zhou, Chao-BSuB1, BSuD2, BSuD3,
BSuD5, BSuE56, BTuF35, BWF8
Zhou, Wenjing-DMC2
Zhu, Banghe-BMD19, BMD48, BMD49,
BSuE74
Zhu, Guanghao-BMF6
Zhu, Hongying-LThA3
Zhu, Qing-BSuE21, BSuE23, BSuE25,
BTuD5, BWG1
Zhu, Timothy-BSuD2
Zhu, Xiangdong-BTuF53
Zhu, Yizheng-BTuC8
Ziegler, Andy-BSuE44, BSuF3
Ziegler, Ronny-BMD23, BMD45, **BSuE44**,
BSuF3
Zimmerley, Maxwell-BWD7
Zimmermann, Frank-LWB1
Zinter, Joseph P.-BMD70
Zoia, Luca-LTuC5
Zondlo, Mark A.-JMA40
Zsemlye, Meggan M.-BTuD7

Laser Applications to Chemical, Security and Environmental Analysis (LACSEA) Postdeadline Paper Abstracts

•Monday, March 17, 2008•

JMA • Joint DH and LACSEA Poster Session

Foyer

4:00 p.m.–6:00 p.m.

JMA • Joint DH and LACSEA Poster Session

PDPJMA9

Photonic-Crystal-Fiber Raman Spectroscopy for Real-Time, Gas-Composition Analysis, Michael P. Buric^{1,2}, Kevin P. Chen^{1,2}, Joel Falk^{1,2}, Steven D. Woodruff¹; ¹Natl. Energy Technology Lab, USA, ²Dept. of Electrical and Computer Engineering, Univ. of Pittsburgh, USA. Raman spectroscopy in a hollow-core, photonic crystal fiber is reported. The fiber is used as the sample cell and the Stokes light collector. Raman signals were observed for major species in air and natural gas.

PDPJMA10

Simultaneous Detection of Exhaled NO and CO₂ with a cw Quantum Cascade Laser-Based Spectrometer, Simona M. Cristescu, Stefan T. Persijn, Frans J. M. Harren; Radboud Univ., Netherlands. We report on recent progress on continuous-wave quantum cascade laser (QCL)-based spectrometer using wavelength modulation for detection of nitric oxide (NO) and carbon dioxide in breath. Comparison is made with a standard chemiluminescence instrument.

PDPJMA11

High Precision Analysis of NO and CO from Human Breath and Blood Samples via MIR Laser Spectroscopy, Thomas Fritsch, Kathrin Heinrich, Marcus Sowa, Peter Hering, Manfred Mürtz; Univ. of Düsseldorf, Germany. Cavity Leak-Out Spectroscopy is a potent method to detect NO and CO from breath and blood which doesn't need to fear the comparison to gold standard techniques. Applications of this technique are discussed.

PDPJMA12

Laser Assisted Microwave Plasma Spectroscopy (LAMPS) Applied to Commercial Applications, Environmental Analysis and Homeland Security, Phillip Efthimion¹, Robert Kearton²; ¹Envimetrics, USA, ²Ocean Optics, USA. Presentation describes the application of microwaves to a laser generated plasma for elemental analysis. The process called LAMPS (laser assisted microwave plasma spectroscopy) prolongs and grows the plasma leading to greatly increased sensitivities.

PDPJMA13

Quantitative Trace Gas Sensing with Mid-Infrared Difference Frequency Generation Lasers, James J. Scherer, Joshua B. Paul, Hans-Jürg Jost; NovaWave Technologies Inc., USA. Difference frequency generation lasers offer immediate access to the O-H, N-H and CH stretch region between 3-4 micron that is particularly suited for sensing of key greenhouse and other atmospheric trace gases.

PDPJMA14

Design of a Confocal Raman Microscope, J. Houston Miller¹, Toni K. Laurila², Clemens F. Kaminski²; ¹George Washington Univ., USA, ²Cambridge Univ., UK. This report concerns the design and construction of an open-frame, inverted, combined wide-field and Raman microscope using readily available optical mounting hardware. Demonstration of the collection of solution spectra and Raman images are presented.

PDPJMA15

Information Content of Spectral Depolarization in Scattering Measurements, Lin Ma, Weiwei Cai, Yan Zhao; Clemson Univ., USA. A method is developed to analyze the information content of spectral depolarization in scattering measurements. Applications of this method to the detection of airborne biological agents and energetic nanoparticles will be discussed.

Key to Authors

(**Bold** Denotes Presenting Author)

Azar, Fred S.—**PDPBTuF1**

Backman, Vadim—PDPBTuF5

Bakker, Leon—PDPBTuF8

Barbastathis, George—PDPJMA4,
PDPJMA6

Barsi, Christopher—**PDPJMA3**

Brendel, Bernhard—PDPBTuF8

Brooker, Gary—**PDPJMA5**

Buric, Michael P.—PDPJMA9

Burykin, Nikolaj—PDPJMA7

Cai, Weiwei—PDPJMA15

Carpenter, Colin—PDPBTuG4

Cerussi, Albert—PDPBTuF1, PDPBTuF6

Chen, Chien-Hung—PDPBMD1

Chen, Kevin P.—PDPJMA9

Chen, Liang-Yu—**PDPBMD1**

Chen, Weiliam—PDPBTuG2

Choi, Hyun-Jun—**PDPJMA1**

Choi, Young-Geun—PDPJMA1

Chung, Sophie—PDPBTuF6

Clegg, Nancy J.—PDPBTuG3

Cristescu, Simona M.—**PDPJMA10**

Damania, Dhwanil—PDPBTuF5

Davis, Scott C.—PDPBTuG4

De Roquemaurel, Benoit—PDPBTuF1

Delgado, Mauricio R.—PDPBTuG3

Deliolanis, Nikolaos—**PDPBTuF10**

Dominguez-Caballero, Jose A.—
PDPJMA6

Dwyer, Edward—PDPBTuF3

Dyukova, Tatyana—PDPJMA7

Efthimion, Phillip—PDPJMA12

Erlinger, Anthony—PDPBTuF4

Falk, Joel—PDPJMA9

Flannery, Elizabeth—PDPBTuF1

Fleischer, Jason W.—PDPJMA3

Fong, Chris J.—PDPBTuF3

Fortier, Simon—PDPBTuF9

Fritsch, Thomas—**PDPJMA11**

Harren, Frans J. M.—PDPJMA10

Heifetz, Alexander—PDPBTuF5

Heinrich, Kathrin—PDPJMA11

Hering, Peter—PDPJMA11

Hielscher, Andreas H.—**PDPBTuF3**

Huang, Zhiwei—**PDPBSuE2**

Jiang, Shudong—PDPBTuG4

Jost, Hans-Jürg—PDPJMA13

Kaminski, Clemens F.—PDPJMA14

Kearton, Robert—**PDPJMA12**

Khayat, Mario—PDPBTuF9

Kim, Dong-Wook—PDPJMA1

Kim, Hwa-Sung—PDPJMA1

Korchemskaya, Elena—**PDPJMA7**

Krishnaswamy, Venkataramanan—
PDPBTuG4

Kwon, HyukSang—**PDPBTuG1**

Lasker, Joseph M.—PDPBTuF3

Laurila, Toni K.—PDPJMA14

Leblond, Frederic—**PDPBTuF9**

Lee, Kye-Sung—**PDPBTuG5**

Leproux, Anaïs—**PDPBTuF8**

Li, Zhiqiu—**PDPBTuG4**

Liu, Hanli—PDPBTuG3

Lu, Fake—PDPBSuE2

Luijten, Peter—PDPBTuF8

Ma, Lin—**PDPJMA15**

Mali, Willem—PDPBTuF8

McDowell, Emily—PDPBTuF2

Miller, J. Houston—**PDPJMA14**

Mincu, Niculae—PDPBTuF9

Mürtz, Manfred—PDPJMA11

Neidrauer, Michael—PDPBSuE1,
PDPBTuF7

Nielsen, Tim—PDPBTuF8

Ntziachristos, Vasilis—PDPBTuF10

Oh, Se Baek—**PDPJMA4**

Ou, Jingxing—PDPJMA8

Ozcan, Aydogan—**PDPBTuF4**

Pan, Min-Cheng—PDPBMD1

Pan, Min-Chun—PDPBMD1

Pan, Yingtian—PDPBTuG2

Papazoglou, Elisabeth S.—**PDPBSuE1**,
PDPBTuF7

Paul, Joshua B.—PDPJMA13

Paulsen, Keith D.—PDPBTuG4

Persijn, Stefan T.—PDPJMA10

Pogue, Brian W.—PDPBTuF9, PDPBTuG4

Pourrezaei, Kambiz—PDPBSuE1,
PDPBTuF7

Pradhan, Prabhakar—**PDPBTuF5**

Ren, Hugang—PDPBTuG2

Robitaille, Nicolas—PDPBTuF9

Rolland, Jannick—PDPBTuG5

Romero-Ortega, Mario I.—PDPBTuG3

Rosen, Joseph—PDPJMA5

Roy, Hemant K.—PDPBTuF5

Ruth, Jason—**PDPBTuF6**

Scherer, James J.—**PDPJMA13**

Seo, Sungkyu—PDPBTuF4

Seo, Young-Ho—PDPJMA1

Shah, Khalid—PDPBTuF10

Sjödahl, Mikael—**PDPJMA2**

So, Peter T. C.—PDPBTuG1

Song, Bing—PDPJMA8

Sowa, Marcus—PDPJMA11

Stepanchikov, Dmitrij—PDPJMA7

Su, Ting-Wei—PDPBTuF4

Subramanian, Hariharan—PDPBTuF5

Sun, Hongyue—**PDPJMA8**

Tannous, Bakhos A.—PDPBTuF10

Tian, Fenghua—**PDPBTuG3**

Tromberg, Bruce J.—PDPBTuF1,
PDPBTuF6

Turzhitsky, Vladimir—PDPBTuF5

Uhlemann, Falk—PDPBTuF8

van den Ven, Stephanie—PDPBTuF8

van der Mark, Martin—PDPBTuF8

van der Voort, Marjolein—PDPBTuF8

Wan, Wenjie—PDPJMA3

Watson, John—PDPJMA8

Weingarten, Michael S.—PDPBSuE1,
PDPBTuF7

Weissleder, Ralph—PDPBTuF10

Wiethoff, Andrea—PDPBTuF8

Woodruff, Steven D.—**PDPJMA9**

Wurdinger, Thomas—PDPBTuF10

Yang, Changhuei—**PDPBTuF2**

Yaqoob, Zahid—PDPBTuF2

Yoo, Ji-Sang—PDPJMA1

Yuan, Zhijia—**PDPBTuG2**

Zakehaleva, Julia—PDPBTuG2

Zhao, Min—PDPJMA8

Zhao, Yan—PDPJMA15

Zheng, Wei—PDPBSuE2

Zhu, Linda—PDPBSuE1

Zubkov, Leonid—PDPBSuE1, PDPBTuF7