

## 26th Informal Symposium on Kinetic and Photochemical Processes in the Atmosphere

University of California, Riverside

Thursday, March 5, 2009

*Sponsored by*

Air Pollution Research Center, UC-Riverside

California Air Resources Board

**7:30** Continental breakfast  
Poster set-up and load Powerpoint summaries for posters M1-M35

**8:40** Welcome and introductory remarks

### SESSION 1

**8:45-9:15** Plenary talk: *Alkanes: Atmospheric Chemistry and Pathways to SOA Formation*  
Roger Atkinson, University of California, Riverside

**9:15-9:45** 1-minute Powerpoint summaries for posters M1-M35

**9:45-10:45** Poster viewing

### SESSION 2

**10:45-11:15** Plenary talk: *Tropospheric Chemistry from Space: TES Highlights and Ideas for the Future*  
Annmarie Eldering, Jet Propulsion Laboratory

**11:15-12:00** Poster viewing

**12:00-1:00** Lunch (box lunches provided)

Remove posters M1-M35

Poster set-up and load Powerpoint summaries for posters A1-A35

### SESSION 3

**1:00-1:30** Plenary talk: *Reactive Chlorine and Pollutant Transport in the Marine Atmosphere*  
Eric Saltzman, University of California, Irvine

**1:30-2:00** 1-minute Powerpoint summaries for posters A1-A35

**2:00-3:00** Poster viewing

### SESSION 4

**3:00-3:30** Plenary talk: *Characterization of Polycyclic Aromatic Hydrocarbon Derivatives using LC/MS Techniques*  
Krishna Foster, California State University at Los Angeles

**3:30-4:30** Poster viewing

**4:30** Concluding remarks

## MORNING POSTER SESSIONS 1 & 2 (POSTERS M1-M35)

- M1 *Analysis of secondary organic aerosol using high-resolution electrospray ionization mass spectrometry*  
A. Bateman, T. Nguyen, M. Walser, Y. Desyaterik, A. Laskin, J. Laskin, S. Nizkorodov (UC-Irvine)
- M2 *Chamber studies of glyoxal uptake*  
P. Chhabra, A. Chan, J. Surratt, R. Flagan, J. Seinfeld (Caltech); M. Galloway, F. N. Keutsch (U Wisconsin)
- M3 *Rate constants for the gas-phase reactions of NO<sub>3</sub> radicals and O<sub>3</sub> with C<sub>6</sub>-C<sub>14</sub> 1-alkenes and 2-methyl-1-alkenes at room temperature*  
S. Mason (UC-Riverside and SUNY-Fredonia); J. Arey, R. Atkinson (UC-Riverside)
- M4 *Kinetics for the reactions of para-, ortho- and meta-xylene with OH radicals at 1-10 Torr and 240-340 K using the relative rate/discharge flow/mass spectrometry technique*  
D. Mehta, Z. Li (CSU-Fullerton)
- M5 *A wide area of air pollutant impact downwind of a freeway during pre-sunrise hours*  
S. Hu, A. Winer, S. Paulson (UCLA); S. Fruin (USC); K. Kozawa, S. Mara (CARB)
- M6 *Collection and analysis of nitrate and chloride in ambient atmospheric particles in Northridge*  
J. Lujan, D. Curtis (CSU-Northridge)
- M7 *Reactions of HCl with surface-adsorbed NO<sub>x</sub> and their role in chlorine activation*  
J. Raff, B. Njagic, W. Chang, D. Dabdub, R. Gerber, M. Gordon, B. Finlayson-Pitts (UC-Irvine)
- M8 *Remote sensing of spatial distribution of concentrations and emissions of the ozone precursors and greenhouse gases in the Los Angeles Basin*  
D. Fu, D. Ditzhazy, J. Stutz (UCLA); S. Sander, Qinbin Li (JPL)
- M9 *Spectromicroscopy investigation of organic aerosol morphology*  
S. Takahama, S. Liu, R. Schwartz, L.M. Russell (Scripps/UC-San Diego); S. Gilardoni (JRC-EC, Italy)
- M10 *The effects of dicarboxylic acids on the deliquescence of inorganic salts*  
A. Malla, J. Lam, J. Taing, P. Hudson (CSU-Fullerton)
- M11 *Secondary organic aerosol formation from primary aliphatic amines with NO<sub>3</sub> radical*  
Q. Malloy, L. Qi, B. Warren, D. Cocker III (UC-Riverside); M. Eurpe, P. Silva (Utah State)
- M12 *Detection of atmospheric pollutant SO<sub>2</sub> using cavity ring-down spectroscopy*  
D. Medina, Y. Liu, J. Zhang (UC-Riverside)
- M13 *Investigation of the Los Angeles Basin atmospheric sulfur budget*  
K. Spencer, J. Crouse, J. St. Clair, C. Kuerten, P. Wennberg (Caltech); R. Stickel, A. Case Hanks, L. Huey (Georgia Tech); M. Cubison, J. Jimenez (U. Colorado); E. Scheuer, J. Dibb (U. New Hampshire); G. Sachse, G. Diskin, S. Vay (NASA-Langley)
- M14 *Radical chemistry in photoinduced nucleation studies*  
A. Noell (Caltech/JPL); F. Grieman (Pomona Coll./JPL); M. Okumura (Caltech); S. Sander (JPL)
- M15 *Characterization of atmospheric organic nitrates in particles*  
E. Bruns, V. Perraud, Y. Yu, M. Ezell, S. Johnson, B. Finlayson-Pitts (UC-Irvine); A. Zellenyuk, M. Alexander (PNNL); D. Imre (Imre Consulting)
- M16 *Oxygenated organic functional groups and their sources in single and submicron particles in MILAGRO 2006*  
S. Liu, S. Takahama, L. Russell (Scripps/UC-San Diego); S. Gilardoni (JRC-EC, Italy); D. Baumgardner (UNAM)
- M17 *Direct Sun measurements of NO<sub>2</sub> column abundances with high resolution FTUVS from Table Mountain, California: Retrieval method, instrument intercomparison, and comparison to OMI*  
S. Wang, T. Pongetti, S. Sander (JPL); E. Spinei, G. Mount (Wash. State), A. Cede, J. Herman (NASA Goddard)

- M18 *Dry lakebed salts serve as natural cloud nuclei*  
K. Pratt, K. Prather (UC-San Diego); C. Twohy (Oregon State); C. Gaston (Scripps/UC-San Diego); S. Murphy, J. Seinfeld (Caltech), A. Heymsfield (NCAR); P. DeMott (Colorado State)
- M19 *Measurements of peroxy radicals using chemical amplification-cavity ringdown spectroscopy*  
Y. Liu, R. Morales-Cueto, J. Hargrove, D. Medina, J. Zhang (UC-Riverside)
- M20 *Future sulfate-nitrate-ammonium aerosol levels in the United States*  
H. Pye, J. H. Seinfeld (Caltech); H. Liao (Chinese Academy of Sciences, Beijing); S. Wu, L. Mickley, D. Jacob (Harvard); D. Henze (Columbia U.)
- M21 *Kinetics for the reaction of ethylbenzene with OH radicals at 1-10 Torr and 298 K using the relative rate/discharge flow/mass spectrometry technique*  
J. Alammar, Z. Li (CSU-Fullerton)
- M22 *Kinetics for the reaction of undecane with OH radicals at 1-2 Torr and 240-340 K using the relative rate/discharge flow/mass spectrometry technique*  
A. Salam, Z. Li (CSU-Fullerton)
- M23 *Determination of deliquescence of atmospherically-relevant salts by UV/Vis reflectance spectroscopy*  
G. Chenreddy, D. Curtis (CSU-Northridge)
- M24 *Daytime and nighttime vertical gradients of HONO in Houston, TX*  
K. Wong, H-J Oh, J. Stutz (UCLA)
- M25 *Bromide ion enhancement of nitrate ion photolysis*  
N. Richards, L. Wingen, K. Callahan, J. Promlap, D. Tobias, B. Finlayson-Pitts (UC-Irvine)
- M26 *Climatology of PM<sub>2.5</sub> organic carbon concentrations from a review of measurements*  
R. Bahadur, L. Russell (Scripps/UC-San Diego); G. Habib (IIT-Delhi)
- M27 *Seasonal changes in acidic and other organic hydroxyl group concentrations from 2008 in Barrow, Alaska*  
P.M. Shaw, L. Russell (Scripps/UC-San Diego); A. Jefferson (U. Colorado); P. Quinn (NOAA)
- M28 *Understanding the interaction of water with atmospherically relevant surfaces*  
S. Moussa, T. McIntire, D. Tobias, R. Grimm, J. Hemminger, B. Finlayson-Pitts (UC-Irvine); M. Szori, M. Roeselova (Academy of Sciences of the Czech Republic)
- M29 *Rate constants for the gas-phase reactions of OH radicals with a series of C<sub>6</sub>-C<sub>14</sub> alkenes at 299 ± 2K*  
N. Nishino, J. Arey, R. Atkinson (UC-Riverside)
- M30 *Detection of polycyclic aromatic hydrocarbons in sediment and water collected from Ballona Creek*  
A. Obisesan, H. Pech, K. Foster (CSU-Los Angeles)
- M31 *Aging of secondary organic aerosol from terpene ozonolysis over long time scales*  
D. Bones, S. Mang, D. Henricksen, A. Bateman, T. Nguyen, S. Nizkorodov (UC-Irvine)
- M32 *Optical properties of non-absorbing secondary organic aerosols from various precursor chemistries*  
H. Kim, B. Barkey, Y. Wang, S. Paulson (UCLA)
- M33 *Validation of Tropospheric Emission Spectrometer (TES) nadir stare ozone profiles using ozonesonde measurements at mid-to-high latitudes during Arctic Research on the Composition of the Troposphere from Aircraft and Satellites (ARCTAS)*  
C. Boxe, J. Worden, G. Osterman, R. Herman, A. Eldering (JPL); D. Tarasick (Environment Canada); A. Thompson (Penn State); S. Oltmans (NOAA)
- M34 *Evaluation of quinones as biomarkers for exposure to ambient particle-borne quinones and polyaromatic hydrocarbons*  
A. Ikeda, K. Vu, A. Ikeda, D. Lim, A. Hasson (CSU-Fresno)
- M35 *CO<sub>2</sub>/H<sub>2</sub>O complex formation at low temperatures: CO<sub>2</sub> sequestration in the Antarctic troposphere*  
X. Zhang, S. Sander (JPL)

## AFTERNOON POSTER SESSIONS 3 & 4 (POSTERS A1-A35)

- A1 *MAX-DOAS measurements of reactive halogens at Greenland Summit in 2007 and 2008*  
S. Hurlock, J. Thomas, M. Schneider, J. Stutz (UCLA)
- A2 *Oxidation of organic coatings on particles from the bottom up*  
C. Dilbeck, F. Karagulian, B. Finlayson-Pitts (UC-Irvine)
- A3 *Regional differences in organic composition of submicron and single particles during INTEX-B 2006*  
D. Day, S. Takahama, L.M. Russell (Scripps/UC-San Diego); S. Gilardoni (JRC-EC, Italy)
- A4 *Real-time detection and mixing state of methanesulfonate in single aerosol particles in Riverside, CA during a phytoplankton bloom*  
C. Gaston, Xueying Qin (Scripps/UC-San Diego); K. Pratt, K. Prather (UC-San Diego)
- A5 *Molecular dynamics study of nonequilibrium ice-vapor interactions via the quasi-liquid layer*  
S. Neshyba, E. K. Nugent (U. Puget Sound); M. Roeselova, P. Jungwirth (Academy of Sciences of the Czech Republic)
- A6 *Real-time aerosol density determination utilizing a aerosol particle mass analyzer-scanning mobility particle sizer system*  
Q. Malloy, S. Nakao, L. Qi, R. Austin, C. Stothers, J. Araiza, D. Cocker III (UC-Riverside)
- A7 *Secondary organic aerosol formation from photooxidation of naphthalene and alkylnaphthalenes: Formation yields and atmospheric implications*  
A. Chan, K. Kautzman, J. Surratt, P. Chhabra, M. Chan, J. Crouse, A. Kuerten, P. Wennberg, R. Flagan, J. Seinfeld (Caltech)
- A8 *Organic oxygenated groups during high concentrations of isoprene and monoterpenes at Whistler Mountain in Spring 2008*  
R. Schwartz, S. Takahama, L. Russell (Scripps/UC-San Diego); A. Vlasenko, J. Slowik (U. Toronto), D. Toom-Sauntry, A. Macdonald, J. Liggio, W. Leitch (Environment Canada)
- A9 *Mechanistic study of first ring formation in the pyrolysis of small hydrocarbons*  
K. Weber, J. Lemieux, J. Zhang (UC-Riverside)
- A10 *Volatile organic compounds (VOCs) measurements in Karachi, Pakistan (2006): a comparison with previous urban sampling campaigns worldwide*  
B. Barletta, S. Meinardi, K. Haider, A. Beyersdorf, A. Baker, S. Zou, F. Rowland, D. Blake (UC-Irvine)
- A11 *Hygroscopic Growth of NaCl Nanoparticles Coated with Surfactant Sodium Dodecyl Sulfate (SDS)*  
C. Harmon, M. Peterson, S. Nizkorodov, V. Bergstedt, D. Tobias, B. Njagic, R. Gerber (UC-Irvine)
- A12 *Formation of glyoxal and methylglyoxal from the gas-phase OH radical-initiated reactions of aromatic hydrocarbons: effect of NO<sub>2</sub>*  
N. Nishino, J. Arey, R. Atkinson (UC-Riverside)
- A13 *Determination of the optical properties of biomass burning particles using UV/Vis spectroscopy*  
R. Okoshi, D. Curtis (CSU-Northridge)
- A14 *Internal Rotation in ClO Dimers*  
M. McGrath, A. Melkonian, F. Rowland (UC-Irvine)
- A15 *Mechanism and products of secondary organic aerosol formation from the reactions of 2-methyl-1-alkenes with OH radicals*  
A. Matsunaga, P. Ziemann (UC-Riverside)
- A16 *Portable ground based ozone measurements in Ventura County California by UV absorption*  
J. Wilber, S. Aloisio (CSU-Channel Islands)
- A17 *Effect of continental outflow on organic and inorganic submicron aerosol mass in the South-East Pacific Ocean: VOCALS-REx 2008*  
L. Hawkins, L. Russell (Scripps/UC-San Diego); T. Bates, P. Quinn (NOAA); D. Covert (U. Washington)

- A18 *Nitrate availability for photolysis near the surface of sea salt aerosols*  
K. Callahan, D. Tobias (UC-Irvine)
- A19 *Progress in development of a chemical ionization mobility mass-spectrometer using an electrostatic classifying inlet for speciation of ultrafine aerosol*  
D. J. Phares, S. Collier (USC)
- A20 *Aerosol hygroscopicity in the marine atmosphere: a closure study using high-time-resolution, multiple-RH DASH-SP and size-resolved C-ToF-AMS data*  
S. Hersey, A. Sorooshian, S. Murphy, R. Flagan, J. Seinfeld (Caltech)
- A21 *Air pollution transport from the Ports of Long Beach and Los Angeles and its impacts on the local community*  
M. Yandell, A. Ault, K. Pratt, Y. Wang, M. Zauscher, K. Prather (UC-San Diego); C. Gaston (Scripps/UC-San Diego)
- A22 *1D modeling of snow photochemistry at Summit Greenland*  
J. Thomas, J. Stutz (UCLA); R. von Glasow (U. East Anglia)
- A23 *Measurement of line strengths of carbonyl sulfide (OCS) in the 4100 cm<sup>-1</sup> region*  
K. Sung, R. Toth, L. Brown, T. Crawford (JPL)
- A24 *Detection and quantification of selected nitro-polycyclic aromatic hydrocarbons in NIST Diesel Standard Reference Material and ambient particulate matter*  
K. Zimmermann, J. Arey, R. Atkinson (UC-Riverside)
- A25 *Product and SOA formation from the NO<sub>3</sub> radical-initiated oxidation of alpha-pinene*  
V. Perraud, E. Bruns, Y. Yu, M. Ezell, S. Johnson, B. Finlayson-Pitts (UC-Irvine); M. Alexander, A. Zellenyuk (PNNL); D. Imre (Imre Consulting)
- A26 *Secondary organic aerosol formation from the reaction of benzaldehyde with OH radicals*  
C. Strollo, P. Ziemann (UC-Riverside)
- A27 *A CARDS-GID Analyzer that measures haze, gas and particle nitrogenous compounds, ozone, water dimer, peroxides, and peroxy radicals*  
J. Gundersen, J. Hargrove, J. Hargrove
- A28 *A comparison of the production of reactive oxygen species by ambient particulate matter, secondary organic particles, and diesel exhaust particles*  
Y. Wang, S. Abraham, H. Kim, S. Paulson (UCLA)
- A29 *Determination of the equilibrium constant for the reaction between Acetone and HO<sub>2</sub> using infrared kinetics spectroscopy (IRKS)*  
F. Grieman (Pomona Coll./JPL), A. Noell (Caltech/JPL), M. Okumura (Caltech), S. Sander (JPL)
- A30 *Investigating the interactions of biogenic and anthropogenic emissions using chemical ionization mass spectrometry*  
J. Crouse, F. Paulot, K. Spencer, A. Kuerten, M. Beaver, P. Wennberg (Caltech)
- A31 *Comparison of physical characteristics of fresh/aged diesel particulate matter*  
S. Nakao, Q. Malloy, L. Qi, D. Cocker III, M. Shrivastava, H. Jung (UC-Riverside)
- A32 *Organic acid, hydroxyl, and sulfate group contributions to oxygenated organic concentrations during ICEALOT 2008*  
A. Frossard, L. Russell (Scripps/UC-San Diego); P. Quinn, T. Bates (NOAA)
- A33 *Branching ratios for the reaction of selected carbonyl-containing peroxy radicals with hydroperoxy radicals*  
S. Singh, S. Hernandez, Y. Ibarra, S. Campbell, A. Hasson (CSU-Fresno); G. Tyndall, J. Orlando (NCAR)
- A34 *Atmospheric phosphorus dynamics in Sequoia National Park*  
W. Vicars, P. Ziemann, J. Sickman (UC-Riverside); T. Cahill (UC-Davis)
- A35 *Direct detection of the peroxy radical intermediate from the addition of NO<sub>3</sub> to butene by cavity ringdown spectroscopy*  
K. Takematsu, N. Eddingsaas, M. Okumura (Caltech)