

Lelia N. Hawkins, Associate Professor of Chemistry

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ACADEMIC APPOINTMENTS **Harvey Mudd College**, Claremont, California, USA
Associate Professor of Chemistry July 2017-present
Assistant Professor of Chemistry July 2016-June 2017
Barbara Stokes Dewey Assistant Professor of Chemistry July 2011-June 2016

University of San Diego, San Diego, California, USA
Department of Chemistry and Biochemistry

Postdoctoral Teaching and Research Associate June 2010-July 2011
• Course Taught: Analytical Chemistry
• Research Topic: Investigating hygroscopic growth of secondary organic aerosol from dicarbonyl chemistry
• Principle Investigator and course co-instructor: David De Haan

TEACHING EXPERIENCE **Harvey Mudd College**, Claremont California, USA
First year chemistry (Chem 23D and Chem 23a) Sp 2013, Fa 2016
Chemical analysis including laboratory (Chem 103,109) Fa 2011-2014
Instrumental analysis including laboratory (Chem 114, 112) Sp 2015-2017
Atmospheric Chemistry of Geoengineering (Chem 193D) Fa 2013 and 2015
Core chemistry laboratory (Chem 24) Sp 2012, 2013, Fa 2015-2016
Introduction to chemical research (Chem 40) Sp 2012, 2013, 2015, 2016, 2017
Senior capstone research experience (Chem 151,152) AY 2011-2016

University of San Diego, San Diego, California, USA
Analytical chemistry (laboratory), co-instructor Fall 2010 & Spring 2011

University of California, San Diego, La Jolla, California, USA
Atmospheric chemistry, Teaching Assistant Spring 2007 & Spring 2008

RESEARCH INTERESTS Direct and indirect effects of aerosols on global climate; Aerosol-cloud interactions; Secondary organic aerosol formation and hygroscopicity; Light absorbing secondary organic aerosol (brown carbon); Dicarbonyl chemistry; Organic aerosol sources, composition, and aging; Effect of anthropogenic aerosol on coastal and marine environments; Primary marine aerosol composition

EDUCATION **University of California, San Diego**, La Jolla, California USA
Scripps Institution of Oceanography
Ph.D., Oceanography (*Climate Sciences Curricular Group*) June 2005-May 2010
• Dissertation Topic: "Understanding the Role of Organic Aerosol in the Coastal and Remote Pacific Marine Boundary Layer" Advisor: Lynn M. Russell

University of California, San Diego, La Jolla, California USA
B.S., Chemistry with Dept. Honors June, 2005
B.S., Environmental Systems June, 2005

CURRENT PROFESSIONAL MEMBERSHIPS	American Association for Aerosol Research	October 2007
	American Geophysical Union-Atmospheres Section	December 2009
	American Chemical Society	August 2010
	Earth Science Women's Network	August 2010
	COACh Women Scientists and Engineers	August 2012
	Council on Undergraduate Research	August 2012

FUNDING Research Corporation Cottrell College Scholars program, \$35,000, ended June 2016
 NSF CAREER Award, \$640,000, active until March 2021

HONORS AND AWARDS	Research Corporation Cottrell Scholar	Class of 2014
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PEER-REVIEWED
PUBLICATIONS,
UNDERGRADUATES
DENOTED WITH *

Hawkins, L. N., H. G. Welsh*, M. V. Alexander* (submitted to Atmospheric Chemistry and Physics Jan 2018), Evidence for pyrazine-based chromophores in cloudwater mimics containing methylglyoxal and ammonium sulfate.

De Haan, D. O., **L. N. Hawkins** H. G. Welsh*, R. Pednekar*, J. R. Casar*, E. A. Pennington*, A. de Loera*, N. G. Jimenez*, A. Pajunoja, L. Caponi, M. Cazaunau, P. Formenti, A. Gratién, E. Pangui, JF Doussin (2017), Brown carbon production in ammonium- or amine-containing aerosol particles by reactive uptake of methylglyoxal and photolytic cloud cycling, Environmental Science and Technology, 51, 7458-7466, doi: 10.1021/acs.est.7b00159.

Sanchez, K. J., L. M. Russell, R. L. Modini, A. A. Frossard, L. Ahlm, C. E. Corrigan, G. C. Roberts, **L. N. Hawkins**, J. C. Schroder, A. K. Bertram, R. Zhao, A. K. Y. Lee, J. J. Lin, A. Nenes, Z. Wang, A. Wonaschtz, A. Sorooshian, K. J. Noone, H. Jonsson, D. Toom, A. M. Macdonald, W. R. Leitch, and J. H. Seinfeld (2016), Meteorological and aerosol effects on marine cloud microphysical properties, Journal of Geophysical Research:Atmospheres, 121, 4142-4161, doi: 10.1002/2015JD024595.

Hawkins, L. N., A. N. Lemire*, M. M. Galloway, A. L. Corrigan*, J. J. Turley*, B. M. Espelien*, and D. O. De Haan (2016), Maillard chemistry in clouds and aqueous aerosol as a source of atmospheric humic-like substances, Environmental Science and Technology, 50, 7443-7452, doi: 10.1021/acs.est.6b00909.

Modini, R. L., A. A. Frossard, L. Ahlm, L. M. Russell, C. E. Corrigan, G. C. Roberts, **L. N. Hawkins**, J. C. Schroder, A. K. Bertram, R. Zhao, A. K. Y. Lee, J. P. D. Abbatt, J. Lin, A. Nenes, Z. Wang, A. Wonaschtz, A. Sorooshian, K. J. Noone, H. Jonsson, J. H. Seinfeld, D. Toom-Sauntry, A. M. Macdonald, W. R. Leitch (2015), Primary marine aerosol-cloud interactions off the coast of California, Journal of Geophysical Research: Atmospheres, 120, 9, 4282.

Hawkins, L. N., M. J. Baril*, N. Sedehi*, M. M. Galloway, D. O. De Haan, G. P. Schill, and M. A. Tolbert (2014), Formation of Semisolid, Oligomerized Aqueous SOA: Lab Simulations of Cloud Processing, Environmental Science and Technology, 48, 2273-2280, doi:10.1021/es4049626.

Zhao, R., A. K. Y. Lee, J. J. B. Wentzell, A. M. McDonald, D. Toom-Sauntry, W. R. Leitch, R. L. Modini, A. L. Corrigan, L. M. Russell, K. J. Noone, J. C. Schroder, A. K. Bertram, **Hawkins, L. N.**, J. P. D. Abbatt, and J. Liggió (2014), Cloud partitioning of isocyanic acid (HNCO) and evidence of secondary source of HNCO in ambient air, Geophysical Research Letters, 41(19), 6962-6969, doi:10.1002/2014GL061112.

Powelson, M. H.* , B. M. Espelien*, **L. N. Hawkins**, M. M. Galloway, and D. O. De Haan (2013), Brown carbon formation by aqueous-phase carbonyl compound reactions with amines and ammo-

mium sulfate, *Environmental Science and Technology*, 48, 985-993, doi: 10.1021/es4038325.

Saide, P. E., S. N. Spak, G. R. Carmichael, M. A. Mena-Carrasco, Q. Yang, S. Howell, D. C. Leon, J. R. Snider, A. R. Bandy, J. L. Collett, K. B. Benedict, S. P. de Szoeki, **Hawkins, L. N.**, G. Allen, I. Crawford, J. Crosier, and S. R. Springston (2012), Evaluating WRF-Chem aerosol indirect effects in Southeast Pacific marine stratocumulus during VOCALS-REx, *Atmospheric Chemistry and Physics*, 12, 3045-3064, doi:10.5194/acp-12-3045-2012.

Yang, M., B. J. Huebert, B. W. Blomquist, S. G. Howell, L. M. Shank, C. S. McNaughton, A. D. Clarke, **L. N. Hawkins**, L. M. Russell, D. S. Covert, D. J. Coffman, T. S. Bates, P. K. Quinn, N. Zagorac, A. R. Bandy, S. P. de Szoeki, P. D. Zuidema, S. C. Tucker, W. A. Brewer, K. B. Benedict, and J. L. Collett (2011), Atmospheric sulfur cycling in the southeastern Pacific longitudinal distribution, vertical profile, and diel variability observed during VOCALS-REx, *Atmospheric Chemistry and Physics*, 11, 5079-5097, doi:10.5194/acp-11-5079-2011.

Lapina, K., C. L. Heald, D. V. Spracklen, S. R. Arnold, J. D. Allan, H. Coe, G. McFiggans, S. R. Zorn, F. Drewnick, T. S. Bates, **L. N. Hawkins**, L. M. Russell, A. Smirnov, C. D. Odowd, and A. J. Hind (2011), Investigating organic aerosol loading in the remote marine environment, *Atmospheric Chemistry and Physics*, 11, 8847-8860, doi:10.5194/acp-11-8847-2011.

De Haan, D., **L. N. Hawkins**, J. Kononenko*, J. J. Turley*, A. Corrigan*, M. A. Tolbert, and J. L. Jimenez (2011), Formation of Nitrogen-Containing Oligomers by Methylglyoxal and Amines in Simulated Evaporating Cloud Droplets, *Environmental Science and Technology*, 45, 984-991, doi: 10.1021/es102933x.

Hawkins, L. N. and L. M. Russell (2010), Oxidation of ketone groups in transported biomass burning aerosol from the 2008 Northern California Lightning Series fires, *Atmospheric Environment*, 44(34), 4142-4154, doi:10.1016/j.atmosenv.2010.07.036.

Hawkins, L. N. and L. M. Russell (2010), Polysaccharides, Proteins, and Phytoplankton Fragments: Four Chemically Distinct Types of Marine Primary Organic Aerosol Classified by Single Particle Spectromicroscopy, *Advances in Meteorology*, vol. 2010, 612132, doi:10.1155/2010/612132.

Russell, L. M., **L. N. Hawkins**, A. A. Frossard, P. K. Quinn, and T. S. Bates (2010), Carbohydrate-Like Composition of Submicron Atmospheric Particles and their Production from Ocean Bubble Bursting, *Proceedings of the National Academy of Sciences*, 107 (15), 6652, doi:10.1073/pnas.0908905107.

Hawkins, L. N., L. M. Russell, D. S. Covert, P. K. Quinn, and T. S. Bates (2010), Carboxylic acids, sulfates, and organosulfates in processed continental organic aerosol over the southeast Pacific ocean during VOCALS-REx 2008, *Journal of Geophysical Research*, 115, D13201, doi:10.1029/2009JD013276.

Russell, L. M., R. Bahadur, **L. N. Hawkins**, J. Allan, D. Baumgardner, P. K. Quinn, and T. S. Bates (2009), Organic aerosol characterization by complementary measurements of chemical bonds and molecular fragments, *Atmospheric Environment*, 43, 6100-6105.

Russell, L. M., S. Takahama, S. Liu, **L. N. Hawkins**, D. S. Covert, P. K. Quinn, and T. S. Bates (2009), Oxygenated fraction and mass of organic aerosol from direct emission and atmospheric processing measured on the R/V Ronald Brown during TEXAQS/ GoMACCS 2006, *Journal of Geophysical Research*, 114, doi:10.1029/2008JD011275.

Hawkins, L. N., L. M. Russell, C. H. Twohy, and J. R. Anderson (2008), Uniform particle-droplet partitioning of 18 organic and elemental components measured in and below DYCOMS-II stratocumulus clouds, *Journal of Geophysical Research*, 113, D14201, doi:10.1029/2007JD009150.

SELECTED
PRESENTATIONS,
UNDERGRADUATES
DENOTED WITH *

American Association for Aerosol Research, Portland, OR, October 2016, (Poster), **Hawkins**, L. N., R. Pednekar, J. R. Casar, and P. Croteau, Resolving chemical contributions to atmospheric brown carbon with the Aerodyne aerosol chemical speciation monitor.

American Association for Aerosol Research, Portland, OR, October 2016 (Poster), Welsh, H. G.*, R. Pednekar*, J. R. Casar*, E. A. Pennington*, **L. N. Hawkins**, D. O. De Haan, A. Pajunoja, L. Caponi, M. Cazaunau, P. Formenti, A. Gratien, E. Pangui, and JF Doussin, Formation of secondary brown in the multiphase simulation chamber (CESAM) through aldehyde and amine initiated Mailard reactions.

American Association for the Advancement of Science, San Diego, CA, June 2016 (Poster), R. Pednekar*, J. R. Casar*, and **L. N. Hawkins**, Connecting aerosol absorption and chemical composition in the Southern California air basin.

American Chemical Society Spring meeting, San Diego, March 2016 (Invited speaker), Student-driven analytical methods in the marine-microcosm laboratory, Innovative analytical curriculum session.

American Geophysical Union Fall Meeting, San Francisco, CA, December 2015 (Poster), **Hawkins**, **L. N.**, H. G. Welsh, R. Pednekar, J. R. Casar, E. A. Pennington, D. O. De Haan, A. Pajunoja, L. Caponi, M. Cazaunau, P. Formenti, A. Gratien, E. Pangui, and JF Doussin, Formation of brown aqueous secondary organic aerosol during multiphase cloud simulations using the CESAM chamber facility.

Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere, April 2015, Cal State University Northridge (Invited speaker), **L. N. Hawkins** Heterogeneous formation and transformation of brown carbon compounds.

Chemistry Seminar Series, UC Riverside, March 2015 (Invited seminar speaker), **L. N. Hawkins** Tracking climate-relevant changes in aerosol during atmospheric aging.

American Chemical Society Spring meeting, March 2015, Denver, (Poster), Lemire, A.*, and **L. Hawkins**, Transformation of Brown Carbon Aerosol during Simulated Atmospheric Processing.

American Chemical Society Spring meeting, March 2015, Denver, (Poster), Kong, W. S.* and **L. Hawkins**, Quantitative Analysis of Atmospheric Aerosol with Atomic Force Microscopy.

American Geophysical Union, December 2014, San Francisco (Poster), **L. N. Hawkins**, A. Lemire*, and S. Kong, Tracking changes in absorptivity, stiffness, and organic chemical composition in laboratory generated HULIS aerosol using atomic force microscopy and X-ray microscopy.

American Chemical Society, August 2014, San Francisco (Presentation), **L. N. Hawkins**, L. Jahl, S. Gilardoni, M. C. Facchini and M. Paglione, Connecting the optical properties and chemical composition of Po Valley fog water.

American Chemical Society, March 2012, San Diego (Poster), V. Shieh* and **L. N. Hawkins**, Brown Carbon Concentration in Claremont, CA.

Gordon Conference in Atmospheric Chemistry, July 2011, Mt. Snow Vermont (Poster), L. N. Hawkins, M. J. Baril*, N. Sedehi*, and D. O. De Haan, Exploring the response of imines, imidazoles, and other N-containing compounds to humidification using a modified HTDMA.

Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS) July 2011, Brookhaven, New York (Presentation), L. N. Hawkins and L. M. Russell, Polysaccharides, Proteins, and Phyto-

plankton Fragments: Four Chemically Distinct Types of Marine Primary Organic Aerosol Classified by Single Particle Spectromicroscopy.

American Chemistry Society, August 2011, Denver Colorado (Invited Presentation), **L. N. Hawkins** and D. O. De Haan, Is dicarbonyl chemistry a source of atmospheric HULIS?

American Association for Aerosol Research Air Pollution and Health, International Specialty Conference, March 2010 (Presentation), **Hawkins, L. N.** and L. M. Russell, Differences in Organic Functional Groups between Aged Biomass Burning and Mixed Diesel and Residual Oil Combustion Aerosol.

Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere, UCSD, February 2010 (Poster), **Hawkins, L. N.** and L. M. Russell, Oxidation of ketone groups in transported biomass burning aerosol from the 2008 Northern California Lightning Series fires.

American Geophysical Union Fall Annual Meeting, San Francisco, December 2009 (Presentation), **Hawkins, L. N.**, L. M. Russell, D. S. Covert, P. K. Quinn, and T. S. Bates, Morphology and Organic Functional Group Composition of Submicron Single Particles Collected in the Continentally-Influenced Marine.

American Geophysical Union Fall Annual Meeting, San Francisco, December 2009 (Presentation), **Hawkins, L. N.**, D. A. Day, and L. M. Russell, Organic Mass Fragments and Organic Functional Groups in Aged Biomass Burning and Fossil Fuel Combustion Aerosol.

American Geophysical Union Fall Annual Meeting, San Francisco, December 2009 (Presentation), Russell, L. M., **L. N. Hawkins**, A. A. Frossard, P. K. Quinn, and T. S. Bates, Carbohydrate-Like Composition of Submicron Atmospheric Particles and their Production from Ocean Bubble Bursting.

American Association for Aerosol Research Annual Meeting, Minneapolis, Minnesota, October 2009 (Presentation), Russell, L. M., A. A. Frossard, D.A. Day, **L. N. Hawkins**, P. M. Shaw, P. K. Quinn, and T. S. Bates, Marine Organic Aerosol: Quantifying Hydroxyl Group Contributions from Ocean Sugars to Coastal and Shipboard Measurement Campaigns.

American Association for Aerosol Research Annual Meeting, Minneapolis, Minnesota, October 2009 (Poster), **Hawkins, L.N.**, L. M. Russell, D. S. Covert, P. K. Quinn, and T. S. Bates, Three Types of Oxygenated Groups in Organic Aerosol Measured in the Southeast Pacific Ocean on board the R/V Ronald Brown during VOCALS-REx 2008.

Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere, UC Riverside, March 2009 (Poster), **Hawkins, L. N.**, L. M. Russell, T. S. Bates, P. K. Quinn, and D. S. Covert, Effects of Continental Outflow on Organic and Inorganic Submicron Aerosol Mass in the South-East Pacific Ocean during VOCALS-REx 2008.

Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere, UC Los Angeles, February 2008 (Poster), **Hawkins, L. N.**, L. M. Russell, and T. S. Bates, Organic functional groups and trace metals in submicron aerosol by FTIR and XRF in the Gulf of Mexico during TEXAQs/GoMACCS 2006.

Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere, UC Los Angeles, February 2008 (Presentation), Russell, L. M., S. Takahama, **L. N. Hawkins**, S. Liu, R. E. Schwartz, Mixtures of Organic Functional Groups in Individual Atmospheric Particles

American Association of Aerosol Research Annual Meeting, Reno, Nevada, October 2007 (Poster), **Hawkins, L. N.**, L. M. Russell, and T. S. Bates, Organic functional groups and trace metals in

submicron aerosol by FTIR and XRF in the Gulf of Mexico during TEXAQS/GoMACCS 2006.

Global Emissions Inventory Activity Summer School, Surface emissions and prediction of atmospheric composition changes, Ile d'Oleron, France, September 2007 (Poster), **Hawkins, L. N.**, L. M. Russell, and T. S. Bates, Organic functional groups and trace metals in submicron aerosol by FTIR and XRF in the Gulf of Mexico during TEXAQS/GoMACCS 2006.