

Akua A. Asa-Awuku

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- Current Position:** Assistant Professor, *(July, 2008 to present)*
Bourns College of Engineering
Department of Chemical and Environmental Engineering
Center for Environmental Research and Technology
University of California - Riverside
- Research Focus:** Experimental investigation of the formation of cloud droplets: the activation of organic Cloud Condensation Nuclei (CCN) and its subsequent effects on climate
Climate relevant primary and secondary organic aerosol; black carbon; chemical composition and effects on the health and the hydrological cycle
Water uptake of organic particles; characterizing thermodynamic properties governing droplet formation
- Educational Background:**
- Dreyfus Foundation Post Doctoral appointment in Environmental Chemistry
Project Title: "Multiphase Oxidation Chemistry and Organic Aerosols"
Department of Chemical Engineering, Center for Atmospheric Particle Studies, Carnegie Mellon University, 2009
- Doctorate in Chemical Engineering
Thesis Title: "Characterizing Water Soluble Organics and their Effects on Cloud Droplet Formation: Interactions of carbonaceous matter with water vapor", Georgia Institute of Technology, 2008
Doctoral Minor: Atmospheric Chemistry
- Masters in Chemical Engineering
Thesis Title: "The Effects of Dissolution Kinetics for Cloud Droplet Formation, Georgia Institute of Technology, 2006
- Bachelor of Science in Chemical Engineering,
Massachusetts Institute of Technology, 2003
- Work Experience:**
- Tutor, Georgia Tech Athletic Association
• Atlanta, GA. (September 2005- December 2006)
• *Aided undergraduate varsity student athletes with academic pursuits in general, organic, inorganic chemistry, biochemistry, chemical engineering mass and energy balances, and thermodynamics,*
- Teaching Instructor, The Princeton Review
• Atlanta, GA. (November 2003- January 2006)
• *Prepared pre-medical students in the subject of General Chemistry for the MCAT Standardized Examination*
- Teaching Instructor, MIT Project Interphase
• Cambridge, MA. (June 2002- August 2003)
• *Devised lesson plans, Prepared incoming 1st year minority students in physical chemistry concepts*

Membership in Professional and Honor Societies:

American Association for Aerosol Research (AAAR)
American Chemical Society (ACS)
American Geophysical Union (AGU)
American Institute of Chemical Engineers (AIChE)
Air & Water Management Association (A&WMA)
American Meteorological Society (AMS)
Alpha Chi Sigma (AXE)
Association of Environmental Engineering and Science Professors (AEESP)
European Geophysical Union (EGU)
National Society of Black Engineers, (NSBE)
National Organization of Black Chemists and Chemical Engineers (NOBCChE)
The Combustion Institute

Honors and Awards:

2012 NSF CAREER
2011 EPA Science to Achieve Results (STAR)
2009 NSF-Georgia Tech FACES Career Initiation Grant Recipient,
2009 Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS X)
2008 NSF-Georgia Tech FACES Postdoctoral Fellowship
2008 Camille and Henry Dreyfus Post Doctoral Scholar
2006 Outstanding Teaching Assistant 2006, Chemical and Biomolecular Engineering Department
2005-7 NASA ESS (Earth Sun-System) Fellow, Georgia Institute of Technology
2003 7 NSF-FACES (Facilitating Academic Careers in Engineering and Science) Graduate Fellow, Georgia Institute of Technology,
2004 Dow Chemical Scholarship Recipient in Chemical Engineering, Georgia Institute of Technology
2001-3 MIT, Barnett D. Gordon Scholar Grant Recipient 2001, 2002, & 2003

Field Campaigns:

2009 UCR SERDP Biomass Burning Field Campaigns, Cloud Condensation Nuclei Measurements at ground site of prescribed chaparral burns at Vandenberg AFB. Lompoc, CA. October 2009

2006 Texas Air Quality Study (TexAQS) 2006 and Gulf of Mexico Atmospheric Composition and Climate Study (GoMACCS), Cloud Condensation Nuclei Measurements aboard the National Oceanic and Atmospheric Association (NOAA) WP-3 D Aircraft. Houston, TX August-October 2006

Service:

2014 – Present UCR CEE Department Graduate Advisor
2013 – Present UCR Office of Research and Development Conflicts of Interest Committee
2013 – Present NSF Earthcube Domain End-User Workshop Organizer
2012 – Present UCR Chancellor's Committee on Sustainability - Climate
2012 – Present Editorial Staff, AAAR Newsletter
2011 – 2014 UC Senate Committee on Diversity and Equal Opportunity (CODEO)
2011 – 2013 Institute for Broadening Participation, Program Mentor
2011 – 2013 ABET/Undergraduate Student Committee, UCR
2011 - 2012 Session Chair and Organizer ACS Spring Meeting, San Diego, CA
2011 – 2012 Institute for Broadening Participation, AGU Science Mentor
2010 - Present Session Co-Chair AAAR Annual Conference
2010 – 2013 UCR CEE Department Seminar Chair
2010 – 2013 AGU Outstanding Paper Award Judge
2010 – 2011 Session Organizer and Co-Chair ACS Fall Meeting, Denver, Colorado

2009 – Present	Session Organizer , Chair, co-Chair AiChe Annual Meeting,
2009 – Present	Poster Judge, AAAR Annual Conference
2009 – 2011	CEE Graduate Student Committee, UCR
2009 – Present	Environmental Engineering faculty Mentor, UCR
2009 – 2010	Affordability and Accessibility Workshop, UCR
2009 – 2010	Global Climate Change Workshop sponsored by Bank of America at CE-CERT
Journal	Journal of Atmospheric Chemistry and Physics; Journal of Geophysical
Reviewer	Research – Atmospheres; Journal of Physical Chemistry ; The Journal of Nanomaterials; Geoscientific Model Development ; Environmental Science and Technology; Atmospheric Environment; Physical Chemistry Chemical Physics (PCCP); Geophysical Research Letters; Aerosol Science and Technology; International Journal of Sustainable Transportation

**Meetings and
Symposia
Contributed
(Presentations*
and Posters#):**

1. Relating Volatility, Size and Cloud Condensation Nuclei Activation Properties of Longifolene SOA. Ashley Vizenor, Akua Asa-Awuku, AAAR 33rd Annual Conference, October 20- 24, 2014, Orlando, FL*
2. Understanding Cloud Condensation Nuclei Mixing States from Flow Tube Experiments. Diep Vu, Shaokai Gao, Jeffrey Pierce, Akua Asa-Awuku, AAAR 33rd Annual Conference, October 20- 24, 2014, Orlando, FL*
3. Particle Number and Composition Differences From Conventional and Emerging Vehicle Technology on Varying Aromatic and High Octane Fuels. Daniel Short, Diep Vu, Tyler Berte, Georgios Karavalakis, Thomas D. Durbin, Akua Asa-Awuku, AAAR 33rd Annual Conference, October 20- 24, 2014, Orlando, FL#
4. Polluted vs Clean: Chronic Nitrogen Deposition Affects on Emissions from Burning of Forest Litter. Michael Giordano, David R. Weise, Akua Asa-Awuku, AAAR 33rd Annual Conference, October 20- 24, 2014, Orlando, FL*
5. Determination of Suspended Exhaust PM Mass for Light Duty Vehicles Using IPSD Method. Heejung Jung, Yang Li, Jian Xue, Kent Johnson, Thomas D. Durbin, Mark Villela, Liem Pham, Seyedehsan Hosseini, Zhongqing Zheng, Daniel Short, Georgios Karavalakis, Akua Asa-Awuku, Xiaoliang Wang, David Quiros, Shaohua Hu, Tao Huai, 2014 AAAR 33rd Annual Conference, October 20- 24, 2014, Orlando, FL*
6. The Chemical and Physical Evolution of Complex Cloud Condensation Nuclei, 13th Quadrennial iCACGP Symposium and 13th IGAC Science Conference, September , 2014*
7. Air Toxic, Particle, and PAH Emissions From Spray Guided and Wall-Guided SIDI Passenger Cars Fuelled with Different Alcohol Formulations” Daniel Short, Diep Vu, Mark Villela, Thomas Durbin, George Karavalakis, and Akua Asa- Awuku, CRC Real World Emissions Workshop, March 30th- April 2nd, 2014, San Diego, CA*
8. Gaseous and Particle Emissions From a Flex-Fuel Vehicle Operating on Ethanol and Iso-butanol Blends” Daniel Short, Vincent Chen, Carlos Espinoza, Mark Villela, Heejung, Jung, Thomas Durbin, George Karavalakis, and Akua Asa- Awuku, CRC Real World Emissions Workshop, March 30th- April 2nd, 2014, San Diego, CA#
9. Assessing Rates of Global Warming Emissions from Port-Fuel Injection and Gasoline Direct Injection Engines in Light-Duty Passenger Vehicles” Daniel Short, Diep Vu, Georgios Karavalakis, Thomas Durbin, and Akua Asa- Awuku,

American Geophysical Union Fall Meeting, December 9-13, 2013, San Francisco, CA#

10. An Unique On-line Method to Infer Black Carbonaceous Contributions to Water-Insoluble Aerosol Compositions” Akua Asa- Awuku and Daniel Short, American Geophysical Union Fall Meeting, December 9-13, 2013, San Francisco, CA#
11. Changes in Water-Soluble Particulate Composition From Vehicles”, 2013 AIChE Annual Meeting, Daniel Short, Diep Vu, Georgios Karavalakis, Thomas Durbin, and Akua Asa- Awuku, November 3-8, 2013, San Francisco, CA*
12. The Impact of Ethanol and Iso-Butanol Blends on Regulated Emissions, Air Toxics, and Particle Emissions from SIDI Vehicles”, 2013 AIChE Annual Meeting, Georgios Karavalakis, Daniel Short, Diep Vu, Thomas Durbin, and Akua Asa- Awuku, November 3-8, 2013, San Francisco, CA#
13. Sources of Black Carbon Condensation Nuclei”, 2013 AAAR 32nd Annual Conference, Shaokai Gao, Michael Giordano, Daniel Short, Diep Vu, Akua Asa- Awuku, September 30-October 4, 2013*
14. Ethanol and Iso-Butanol Gasoline Blends Use in Light Duty Gasoline Direct Injection Vehicles: Real-Time Measurements of Particle Number, Sizing, and Composition”, 2013 AAAR 32nd Annual Conference, Daniel Short, Diep Vu, Georgios Karavalakis, Thomas Durbin, Akua Asa- Awuku, September 30-October 4, 2013*
15. Particle Mass and Number Emissions, Size Distributions, and Composition from Commercial Charbroiling Operations- Are They Really Dangerous?”, 2013 AAAR 32nd Annual Conference, Nicholas Gysel, Daniel Short, Poornima Dixit, Chia- Li Chen, William A. Welch, Keisha Williams, Ning Li, Akua Asa- Awuku, David R. Cocker III, Georgios Karavalakis, September 30-October 4, 2013*
16. “Cloud Condensation Nuclei Closure Study for Transient Drive Cycles”, 2013 AAAR 32nd Annual Conference, Diep Vu, Daniel Short, Mark Villela, Georgios Karavalakis, Thomas Durbin, Akua Asa- Awuku, 2013 AAAR 32nd Annual Conference, September 30-October 4, 2013*
17. Evaluation of Selective Ion Flow Tube Mass Spectrometry for Controlled Laboratory Studies. Ashley Vizenor, Chia-Li Chen, Derek Price, Mary Kacarab, Xinze Peng, Kelly McCoy, Igor Irianto, Shaokai Gao, David R. Cocker III, Akua Asa-Awuku, 2013 AAAR 32nd Annual Conference, September 30-October 4, 2013*
18. The Limitations of Electrical Mobility Diameter for Biomass Burning CCN Activation. Michael Giordano, Carlos Espinoza, Akua Asa-Awuku, 2013 AAAR 32nd Annual Conference, September 30-October 4, 2013*
19. Determination of Suspended Exhaust PM mass for Light Duty Vehicles” 2013 European Aerosol Conference, Heejung Jung, Yang Li, Jian Xue, Kent Johnson, Tom Durbin, Ehsan Hosseini, Akua Asa-Awuku, Georgios Karavalakis, Daniel Short, Shaohua Hu, Tao Huai, Alberto Ayala, September 5th, 2013, Prague, Czech Republic#
20. A Unique Online Method to Infer Water- Insoluble Particulate Mass- Fractions” 2013 European Aerosol Conference, Daniel Short, Michael Giordano, Yifang Zhu, Phillip Fine, Andrea Polidori, Diep Vu, Tom Durbin, George Karavalakis, Akua Asa- Awuku, September 6th 2013, Prague, Czech

Republic*

21. Environmental Tobacco Smoke Composition for Enhanced Condensational Droplet Growth by Water Vapor, European Aerosol Conference, Prague Czech Republic September, 2013*
22. CCN Relevant Properties of Biomass Burning Aerosol, Goldschmidt Conference, Florence Italy, August 2013*
23. Real-Time Measurements of Water-Insoluble Particles; Gordon Research Conference on Atmospheric Chemistry, West Dover VT, 2013#
24. Understanding the Hygroscopicity of Multi-Component Secondary Organic Aerosol From Precursor Mixtures; ACS Colloids and Surface Science Symposium, Riverside, CA June 2013*
25. Criteria Emissions, Particle Number Emissions, Size Distributions, and Black Carbon Measurements from PFI Gasoline Vehicles Fuelled with Different Ethanol and Butanol Blends”, SAE 2013 World Congress & Exhibition, Georgios Karavalakis, Daniel Short, Maryam Hajbabei, Diep Vu, and Thomas Durbin, April 10, 2013*
26. Composition of particulate matter emissions from gasoline vehicles with different ethanol and butanol fuel blends”. 245th ACS National Meeting, Daniel Short, Diep Vu, Thomas Durbin, Georgios Karavalakis, Akua Asa-Awuku, April 11, 2013*
27. Criteria Emissions, Toxic Pollutants, and Particle Number Emissions From Gasoline PFI and GDI Vehicles Operated on Ethanol and Iso-Butanol Blends”, 2013 CRC Real-World Emissions Workshop, Daniel Short, Diep Vu, Thomas Durbin, Georgios Karavalakis, and Akua Asa-Awuku, April 8, 2013*
28. Vu, D., D. Short, G. Karavalakis, T. Durbin, and A. Asa-Awuku. Poster Presentation. “Cloud condensation nuclei study over a transient drive cycle for light duty gasoline vehicles”. 30th Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere. March 8, 2013, California Institute of Technology, Pasadena CA.#
29. Effects of Ethanol and Butanol Blended Gasoline in Light-Duty Vehicles on Gaseous and Particle Phase Emissions”, University of California Transportation Center 2013 Research Conference, Daniel Short, Diep Vu, Georgios Karavalakis, and Akua Asa-Awuku, March 1, 2013#
30. Hygroscopicity of Amine Secondary Aerosol – Mixtures of Organic and Inorganic Components; American Geophysical Union (AGU) Annual Meeting, San Francisco, CA, December, 2012#
31. Can organic aerosols become less hygroscopic with age? American Geophysical Union (AGU) Annual Meeting, San Francisco, CA, December, 2012*
32. Secondary Organic Aerosol From the Mixtures of Isoprene with Sesquiterpenes, American Institute of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh, PA 2012*
33. Real-Time Measurements of Water- Insoluble Fractions and Black Carbon Concentrations With Water and Butanol Based Particle Counters”, AAAR 31st Annual Conference, Daniel Short, Michael Giordano, Yifang Zhu, Andrea Polidori, and Akua Asa-Awuku, October, 2, 2012#

34. The Investigation of Water-Insoluble Particle Emissions of Butanol and Ethanol Gasoline Mixtures”, AAAR 31st Annual Conference, Daniel Short, Diep Vu, Maryam Hajbabaei, Georgios Karavalakis, Thomas Durbin, and Akua Asa-Awuku, October 2, 2012*
35. Density and Elemental Ratios of Secondary Organic Aerosol: Application of a Density Prediction Method. SHUNSUKE NAKAO, Ping Tang, Xiaochen Tang, Christopher Clark, Li Qi, Eric Seo, Chia-Li Chen, Akua Asa-Awuku, David R. Cocker III, , AAAR 31st Annual Conference, October 2, 2012, Minneapolis, MN#
36. Internal or External? The Mixing State of Biomass Burning Aerosol, Its Photochemical Evolution, and Climate Impacts. Michael Giordano, Lelia Hawkins, Akua Asa-Awuku, AAAR 31st Annual Conference, October 2, 2012, Minneapolis, MN#
37. Hygroscopicity of Amine Secondary Aerosol – Mixtures of Organic and Inorganic Components. Xiaochen Tang, David R. Cocker III, Kathleen Purvis-Roberts, Akua Asa-Awuku, AAAR 31st Annual Conference, October 2, 2012, Minneapolis, MN#
38. Understanding the role of Surface Active Aerosol for Ambient Cloud Droplet Formation; ACS 86th Colloid and Surface Science Symposium, Baltimore, MD June 2012*
39. Will Black Carbon Influence water ad butanol based condensational particle counts? Real-time Particle measurements from I-710. Daniel Short, Michael Giordano, Andrea Polidori¹, Yifang Zhu, Phillip Fine, Akua Asa-Awuku, Combustion Institute, Western States Section WSS Technical Fall Meeting 2011, Riverside, CA. October 16th-18th, 2011*
40. Significant Effects of Photochemical aging on Biomass Burning Aerosol; Michael Giordano, Daniel Short, Ehsan Hosseini, David Cocker, Akua Asa-Awuku, Combustion Institute, Western States Section WSS Technical Fall Meeting 2011, Riverside, CA. October 16th-18th, 2011*
41. The Hygroscopic and Droplet Growth of Cigarette Smoke Particles. Xiaochen Tang, Zhongqing Zheng, Heejung S. Jung, AKUA ASA-AWUKU, University of California Riverside, American Association for Aerosol Research, AAAR, Orlando, FL, October 3rd-7th, 2011*
42. Significant Changes in Optical and CCN Properties of Photochemically Aged Wood Smoke. MICHAEL GIORDANO, Seyedehsan Hosseini, David Cocker III, Akua Asa-Awuku, American Association for Aerosol Research, AAAR, Orlando, FL, October 3rd-7th, 2011*
43. Temperature Dependence of Secondary Organic Aerosol Particle-Phase Products from Isoprene Dark Ozonolysis and NO Photooxidation. CHRISTOPHER CLARK, Shunsuke Nakao, Kei Sato, Akua Asa-Awuku, David Cocker III, American Association for Aerosol Research, AAAR, Orlando, FL, October 3rd-7th, 2011*
44. Impact of Fuel Switching on PM_{2.5} from Ocean-going Vessels. M YUSUF KHAN, Michael Giordano, James Gutierrez, WA Welch, A Asa-Awuku, J Wayne Miller, David R Cocker, et al., American Association for Aerosol Research, AAAR, Orlando, FL, October 3rd-7th, 2011*
45. Is There a Silver Lining in Air Quality? Understanding Cloud Droplet Formation, Wright State University, September 19th, 2011

46. "Probing the links between Sesquiterpene SOA chemistry and CCN" 242nd American Chemical Society Denver, CO. August 30, 2011*
47. Do primary and secondary aerosols mix? Interactions of natural and anthropogenic aerosol, The International union of Geodesy and Geophysics, IUGG, Melbourne, Victoria, Australia, July 5th, 2011*
48. CCN Activity and AMS Mass Spectra of Tobacco Smoke, H. S. Jung, Z. Zheng, X. Tang, A. A. Asa-Awuku, 16th ETH-Conference on Combustion Generated Nanoparticles, 24th - 27th June, 2011, ETH Zentrum, Zurich, Switzerland *
49. Is there a silver lining in air quality? Understanding Cloud Droplet Formation UC Riverside Palm Desert, March 30th, 2011*
50. Hygroscopic Changes in Primary and Secondary Organic Mixtures, "Environmental Chemistry of Aerosols Symposium" at the Pacificchem 2010 Congress (ACS) Hawaii Convention Center, Honolulu, Hawaii, USA December 15 - 20, 2010*
51. Understanding Droplet Growth Rates of Organic Mixtures, American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT November 7th - November 12th, 2010*
52. Dynamic Changes in Cloud Droplet Growth due to Organic Particle Mixing, American Association for Aerosol Research (AAAR) 29th Annual Conference Portland, OR, October 25 - 29, 2010*
53. Chemical Characterization by Particle into Liquid Sampling Directly Coupled to an Accurate Mass Time-of-Flight Mass Spectrometer (PILS-ToF) of Secondary Organic Aerosol (SOA). American Association for Aerosol Research (AAAR) 29th Annual Conference Portland, OR, October 25 - 29, 2010*
54. Synthesis of Metal Particles from Heavy Fuel Oil Using Spray Flame Pyrolysis for Health Effects Studies, University of California Riverside, American Association for Aerosol Research (AAAR) 29th Annual Conference Portland, OR, October 25 - 29, 2010
55. Probing Sesquiterpene SOA CCN: CCN Activity correlations with Density, Volatility, and Aerosol Mass Fragments, American Association for Aerosol Research (AAAR) 29th Annual Conference Portland, OR, October 25 - 29, 2010*
56. How do ambient particles form cloud droplets? Linking Air Quality to Climate Impacts NOBCCHe Regional Meeting, San Diego, CA October 15th, 2010*
57. How do organic particles form cloud droplets and impact climate? UCR Department of Earth Sciences, Riverside, CA October 5th, 2010*
58. How can anthropogenic and biogenic particle mixtures impact climate? Understanding the hygroscopicity of primary and vehicular and secondary particle mixtures. University of California, Riverside - Science of Climate Change Graduate Student Symposium, Riverside, CA. April 24, 2010*
59. Understanding the Hygroscopicity of Mixtures from Primary and Secondary Organic Aerosols.- American Association for Aerosol Research (AAAR) Specialty Conference: "Air Pollution and Health: Bridging the Gap from Sources to Health Outcome, San Diego, CA, March 22-26, 2010*

60. How will Primary and Secondary Organic Mixtures Impact CCN? 90th American Meteorological Society (AMS) Annual Conference, Atlanta, GA, January 2010*
61. How will Primary and Secondary Organic Mixtures Impact CCN? American Geophysical Union (AGU) Annual Meeting, San Francisco, CA, December 14-18, 2009*
62. A Novel Model for Organic Aerosol-Cloud Interactions – International Aerosol Modeling Algorithms (IAMA) Conference, UC Davis, Sacramento, CA, December 9-11, 2009*
63. New Tools for Estimating and Managing Local/Regional Air Quality Impacts of Prescribed Burns -- Partners in Environmental Technology Technical Symposium and Workshop (SERDP-ESTCP), Washington D.C., December 1-3, 2009#
64. Do Semi-volatile Primary and Secondary Organic Aerosol Mix?. -- American Association for Aerosol Research (AAAR), Minneapolis, MN, October 27th, 2009#
65. The Effects of Vehicular Exhaust on Biogenic Secondary Organic Aerosol CCN. -- American Association for Aerosol Research (AAAR), Minneapolis, MN, October 27th, 2009#
66. Linking Organic Aerosol Properties to Cloud Condensation Nuclei, Gordon Research Conference (GRC) in Atmospheric Chemistry, Waterville Resort, NH August 27th 2009#
67. Towards an understanding of semi-volatile organic aerosol mixtures: gas-particle partitioning and mixing of primary and secondary organic aerosols – European Geophysical Union (EGU) , Vienna, Austria, April 21st, 2009#
68. Understanding Anthropogenic and Biogenic Primary and Secondary Aerosol Mixtures, American Geophysical Union (AGU) Fall Meeting 2008, December 15-19, 2008 San Francisco, CA*
69. Understanding the Evolution of Cloud Condensation Nuclei In Urban Plumes: Effects of Aerosol Ageing and Mixing, American Institute of Chemical Engineers (AIChE) Annual Meeting, Philadelphia, Pennsylvania, USA 2008*
70. Relating Cloud Condensation Nuclei Activity, Volatility, and Droplet Growth Kinetics of Terpene Secondary Organic Aerosol, American Institute of Chemical Engineers (AIChE) Annual Meeting, Philadelphia, Pennsylvania, USA 2008*
71. Using polydisperse CCN activity measurements to understand aerosol compositional impacts on droplet growth kinetics. American Association for Aerosol Research (AAAR), Orlando, FL 2008#
72. The Importance of Mixing and Ageing for the Evolution of CCN in Urban Plumes: Airborne CCN Measurements and Closure during TEXAQS 2006. American Association for Aerosol Research (AAAR), Orlando, FL 2008*
73. Exploring the cloud droplet formation of semi-volatile organic carbon from ageing beta-caryophyllene SOA: International Workshop: Aerosols in the Amazon – Changes and their Consequences from Past and future human activities: Hosted by Harvard Brazilian Studies, Manaus, Amazonia, Brazil, February 18th-22nd, 2008#

74. CCN properties of organics Collected from PILS during GoMACCS 2006 – American Geophysical Union (AGU) Annual Meeting, San Francisco, December 9th -14th, 2007#
75. Characterizing the CCN characteristics and Droplet Growth Kinetics of Ageing Secondary Organic Aerosol from Betacaryophyllene -- American Association for Aerosol Research (AAAR), Reno, NV September 25th, 2007*
76. The Ability of Fresh and Aged Monoterpene Secondary Organic Aerosol to Act as Cloud Condensation Nuclei -- American Association for Aerosol Research (AAAR), Reno, NV September 25th, 2007*
77. Characterization of Sesquiterpene Secondary Organic Aerosol: Thermodynamic Properties, Aging Characteristics, CCN Activity, and Droplet Growth Kinetic Analysis, --17th Annual International Conference on Nucleation and Atmospheric Aerosols (ICNAA), Galway, Ireland, August 13th-18th, 2007*
78. The importance of Water Soluble Organic Aerosol Characterization for Climate Change Assessment -- Chemical Engineering Graduate Student Symposium Georgia Institute of Technology, Atlanta, March 22 -23rd GA 2007*
79. Identifying Key Properties of Water Soluble Organic Aerosol and their importance for Climate Change Assessment – Georgia Tech Graduate Technical Symposium [GT]², Georgia Institute of Technology Atlanta, GA, March 15-16th, 2007*
80. Droplet Growth Kinetics of CCN from Biomass Burning and Secondary Organic Aerosol – American Geophysical Union (AGU) Annual Meeting, San Francisco, December 8th -15th, 2006#
81. Organic CCN Activity of In-Situ Samples Obtained from the MASE 2005 Campaign - American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA November 11th – November 16th, 2006*
82. Characterizing the interactions of water vapor with carbonaceous aerosol -- 58th Southeast Regional Meeting, American Chemical Society (ACS), Augusta, GA November 14th, 2006*
83. The CCN Activity of Water-Soluble Secondary Organic Aerosols Generated from the Ozonolysis of Alkenes -- International Aerosol Conference (IAC)/ American Association for Aerosol Research (AAAR), St. Paul, MN, September 14th, 2006*
84. Measuring Water-Aerosol Interactions Downwind of Mexico City: Inferences about chemical composition and aging of ambient Aerosols -- International Aerosol Conference (IAC)/ American Association for Aerosol Research (AAAR), St. Paul, MN, September 13th, 2006.*
85. CCN Activity of Cloud Processed Organic Aerosol Collected during MASE 2005 --International Aerosol Conference (IAC)/ American Association for Aerosol Research (AAAR), St. Paul, MN, September 13th, 2006*
86. Understanding The Impact of Aerosol-Cloud Climate Interactions: From a Modeling and Experimental Perspectives – International Center for Process Systems Engineering (ICPSE) Conference, Georgia Institute of Technology, Atlanta, GA March 30th – 31st, 2006 #

87. Are Surfactants Ubiquitous? -- Chemical Engineering Graduate Student Symposium Georgia Institute of Technology, Atlanta, March 23 -24th GA 2006*
88. Are Surfactants Ubiquitous? – Georgia Tech Graduate Technical Symposium [GT]², Georgia Institute of Technology Atlanta, GA, March 9-10th, 2006*
89. Understanding The Impact of Aerosol-Cloud Climate Interactions: From a Modeling and Experimental Perspectives -- Strategic Energy Initiative Energy Research Exposition, Georgia Institute of Technology, Atlanta, GA February 28th, 2006[#]
90. Are Surfactants Ubiquitous? -- Earth and Atmospheric Sciences Graduate Student Symposium, “Are Surfactants Ubiquitous?”, Georgia Institute of Technology Atlanta, GA, November 11th, 2005*
91. Are Surfactants Ubiquitous? -- American Institute of Chemical Engineers Annual Meeting (AIChE), Cincinnati, OH October 30th – November 4th, 2005*
92. Are Surfactants Ubiquitous? -- Annual Meeting of the American Association for Aerosol Research (AAAR), Austin, TX, October 17th – 21st, 2005*
93. The Effects of Dissolution Kinetics on Cloud Droplet Formation -- Georgia Tech Graduate Technical Symposium [GT]², Georgia Institute of Technology Atlanta, GA, March 17th 2005*
94. The Effects of Dissolution Kinetics on Cloud Droplet Formation -- Chemical Engineering Graduate Student Symposium, Georgia Institute of Technology, Atlanta, GA March 2005[#]
95. The Effects of Dissolution Kinetics on Cloud Droplet Formation -- Earth and Atmospheric Sciences Graduate Student Symposium, Georgia Institute of Technology Atlanta, GA, October 2004[#]
96. The Effects of Dissolution Kinetics on Cloud Droplet Formation -- Annual Meeting of the American Association for Aerosol Research, Atlanta, October 4th – 8th, GA 2004[#]

Invited Talks:

1. University of California, Los Angeles, October 2014
2. International Global Atmospheric Chemistry (IGAC), Brazil, September 2014
3. Claremont College, McKenna, Pitzer and Scripps Colleges, September 2014
4. The University of Helsinki, Hyytilaia, Finland, August 2014
5. The University of Stockholm, Stockholm, Norway, August 2014
6. 31st Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere, UCR, May 2014
7. Columbia University, April 2014
8. Pennsylvania State University, March 2014
9. California State University, Fullerton, Biochemistry October 2013

10. California State University, Fullerton, ECS September 2012
11. Ohio State University, February 2012
12. Iowa State University, November 2011
13. Wright State University, September 2011
14. ACS, Denver Meeting , Invited Talk , August 2011
15. North Carolina State University, June 2011
16. University of California, Palm Desert, March 2011
17. NOBCCHe Regional Meeting, San Diego, CA October 15th, 2010
18. University of California, Earth Science Department –Riverside, October 5th, 2010
19. Dalhousie University, Halifax, Canada September 11th, 2009

Teaching Experience:

- CHE 122 Chemical Kinetics and Reaction Engineering
Spring 2011-14, University of California - Riverside, Riverside, CA
- CEE 158 Professional Development for Engineers
Winter 2014, University of California-Riverside, Riverside, CA
- CEE 132/232 Green Engineering (Guest Lecturer)
Spring 2011-14, University of California - Riverside, Riverside, CA
- CEE 204 Advanced Kinetics and Reaction Engineering
Winter 2011-13, Spring 2010, University of California - Riverside, Riverside, CA
- CEE 269 Special Topics in Aerosols and Climate
Fall, Winter, Spring, 2010-14, University of California - Riverside, Riverside, CA
- ENVE 171 Introduction to Environmental Engineering (Guest Lecturer)
Fall, 2010, Spring 2014, University of California - Riverside, Riverside, CA
- CHE 160B Laboratory II – Heat Transfer and Kinetics and Reactor Design
Fall 2009-13 University of California - Riverside, Riverside, CA
- EAS 3603 Thermodynamics of the Earth System (Guest Lecturer)
Fall 2007, Georgia Institute of Technology, Atlanta, GA,
- CHBE 6200 Advanced Transport Phenomena (Guest Lecturer)
Fall 2007, Georgia Institute of Technology, Atlanta, GA,
- CHBE 3120 Heat and Mass Transfer (Guest Lecturer)
Spring 2007, Georgia Institute of Technology, Atlanta, GA,
- CHBE 4300 Kinetics and Reactor Design (Teaching Assistant)
Spring 2006, Georgia Institute of Technology, Atlanta, GA,
- CHBE 4505 Chemical Engineering Process Design and Economics (TA)
Summer 2005, Georgia Institute of Technology, Atlanta, GA,
- CHBE 4200 Chemical Engineering Undergraduate Research Laboratory, (TA)
Summer 2004 Georgia Institute of Technology, Atlanta, GA,

**Research
Advising/Mentoring:**

Shaokai Gao, Post Doctoral Scholar, 2012-2013
University of California - Riverside, Riverside, CA

Michael Giordano, Phd. Student, 2010-2014
University of California - Riverside, Riverside, CA

Daniel Short, Phd. Student, 2010-2014
University of California - Riverside, Riverside, CA

Xiaochen Tang, Phd Student, 2008-2013
University of California - Riverside, Riverside, CA

Emmanuel Fofie, Phd, student, Expected Graduation 2017
Univeristy of California-Riverside, CA

Pedro Piqueras, Phd, student, Expected Graduation 2017
Univeristy of California-Riverside, CA

Diep Vu, Phd, student, Expected Graduation 2015
Univeristy of California-Riverside, CA

Ashley Vizenor, Phd, student, Expected Graduation, 2016
University of California - Riverside, Riverside, CA

Vincent Chen, Masters and Undergraduate Chemical Engineering Student, 2013 & 2014
University of California – Riverside, Riverside CA

Carlos Espinoza, Masters and Undergraduate Chemical Engineering Student, 2013 & 2014
University of California – Riverside, Riverside CA

Linh Tong, Masters Chemical Engineering Student, 2014
University of California – Riverside, Riverside CA

Carola Acurio, Undergraduate Environmental Engineering Student
University of California – Riverside, Riverside CA

Patricia Arriaga, Undergraduate Environmental Chemical Engineering Student
University of California – Riverside, Riverside CA

Robel Araya, Undergraduate Enivronmental Engineering Student
University of California – Riverside, Riverside CA

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**Published Journal
Articles:**

1. Short, D., Giordano, M., Zhu, Y., Fine, P., Polidori, A., Asa-Awuku, A. A Unique On-line Method to Infer Water-Insoluble Particle Contributions. *Aerosol Science and Technology*. Vol. 48: 7 p.706-714. 9p. 2014

1st and 2nd authors were doctoral graduate students in my group. 3rd, 4th, and 5th authors are collaborators from UCLA and SCAQMD at field site measurement. Co-author and corresponding author Asa-Awuku devised experimental concepts, analytical theory, contributed to data analysis and writing.

2. Tan, C.L., Gao, S., Wee, S., Asa-Awuku, A., B, T.R. Adhesion of Dust Particles to Common Indoor Surfaces in Air-Conditioned Environment. *Aerosol Science and Technology*. Vol. 48: 5 p.541-551., 2014

2nd author was a post-doctoral student in my group. 1st, 3rd, and 5th authors are collaborators from Singapore University of Technology and Design. Co-Author-Asa-Awuku contributed to the writing and is a co-corresponding author. AFM spring constant measurements and chemical spectral analysis of particles were conducted at UCR.

3. Tang, X., Price, D., Praske, E.J., Vu, D., Purvis-Roberts, K., Silva, P., Cocker III, D.R., Asa-Awuku, A. CCN Activity of Two Aliphatic Amine Secondary Aerosol. *Atmospheric Chemistry and Physics*. Vol. 14: p.5959-5967., 2014

1st author was a doctoral graduate student co-advised with D.R. Cocker III. 4th Author, Vu is my doctoral student who provided additional data after the graduation of the first author. Co-Author and corresponding author Asa-Awuku devised experimental CCN measurements, contributed to data analysis and writing.

4. Karavalakis, G., Short, D., Vu, D., Villela, M., Asa-Awuku, A., Durbin, T. Evaluating the regulated emissions, air toxics, ultrafine particles, and black carbon from SI-PFI and SI-DI vehicles operating on different ethanol and iso-butanol blends. *Fuel*. Vol. 128: p.410-421., 2014

2nd, and 3rd authors were doctoral graduate students in my group, funded through my projects and grants; 2nd, and 3rd authors acquired and analyzed all particle data and were integral to the daily data collection of gas and particle phase experiments. Co-Author Asa-Awuku, devised and funded black carbon experiments and contributed to data analysis and writing.

5. Giordano, M., Espinoza, C., Asa-Awuku, A. 2014. Experimentally measured morphology of biomass burning aerosol and its impacts on CCN ability. *Atmospheric Chemistry and Physics*. Vol. 14: p.12555-12589.

1st author was a doctoral graduate student in my group. 2nd author was a former undergraduate, current masters student in my group. Co-author and corresponding author-Asa-Awuku devised experiments, contributed to data analysis and writing.

6. Giordano, M., Asa-Awuku, A. Rebuttal to Correspondence on "Changes in Droplet Surface Tension Affect the Observed Hygroscopicity of Photochemically Aged Biomass Burning Aerosol". *Environmental Science and Technology*. Vol. 48: 3 p.2084-2085, 2014.

1st author was a doctoral graduate student in my group. Co-author and corresponding author-Asa-Awuku contributed to data analysis and writing.

7. Kreidenweis, S., Asa-Awuku, A. Aerosol Hygroscopicity: Particle Water Content and Its Role in Atmospheric Processes. Treatise on Geochemistry 2nd Edition. Editors: H. D. Holland, K.K. Turekian. Elsevier. Oxford. Vol. 5: p.331-361, 2014

Book chapter resulted from an invitation to revise edition of the prestigious Treatise on Geochemistry book. Co-author Asa-Awuku shared significant contributions to the writing and development of chapter.

8. Clark, C. H. , S. Nakao, A. Asa-Awuku, K. Sato, and D. R. Cocker. Real-time study of particle-phase products from α -pinene ozonolysis and isoprene photo-oxidation using particle into liquid sampling directly coupled to a time of flight mass spectrometer (PILS-ToF), *Aerosol Sci. & Tech.*, p.1374-1382. 2013

Co-author-Asa-Awuku contributed to the writing and generated programming code for the three dimensional analysis of molecular weight data, abundance, and time analysis of the oligomerizing SOA system.

9. Giordano, M. R., D. Z. Short, E. Hosseini, W. Lichtenberg, and A. Asa-Awuku. Changes in Droplet Surface Tension Affect the Observed Hygroscopicity of Photochemically Aged Biomass Burning Aerosol. *Env. Sci. & Tech.* doi:10.1021/es401867j, 2013

1st and 2nd authors were doctoral graduate students in my group. 4th author was an undergraduate research assistant in my group. Co-author and corresponding author - Asa-Awuku devised experiments and contributed to the writing and the data analysis

10. Tang, X., D. Price, E. Praske, S. A. Lee, M. A. Shattuck, K. Purvis-Roberts, P. Silva, A. Asa-Awuku, and D. R. Cocker III. NO₃ radical, OH radical and O₃- initiated secondary aerosol formation from aliphatic amines- salt formation and the effect of water vapor. *Atmos. Environ.* 72, 105–112, 2013

1st author is my co-advised doctoral student with D.R Cocker III. Co-author-Asa-Awuku contributed to the writing and contributed to understanding the role of water vapor and RH in the amine aerosol systems.

11. S. Nakao, P. Tang, X.Tang, C. H. Clark, L. Qi, A. Asa-Awuku, D. R. Cocker III. Density and elemental ratios of secondary organic aerosol: application of a density prediction method. *Atmos. Environment*, 68, 273 -277, 2013

3rd author is my co-advised doctoral student with D.R Cocker III. 3rd and Co-author Asa-Awuku contributed density and mass spectral data set of sesquiterpene SOA for the presented analysis. Co-author Asa-Awuku contributed to the analysis and writing of the paper.

12. Tang, X., Cocker III, D. R., and Asa-Awuku, A.: Are sesquiterpenes a good source of secondary organic cloud condensation nuclei (CCN)? Revisiting β -caryophyllene CCN, *Atmos. Chem. Phys.*, 12, 8377-8388, doi:10.5194/acp-12-8377-2012, 2012

1st Author was my co-advised doctoral student with DR Cocker III. Co-author and corresponding Author-Asa-Awuku devised experiments, contributed to data analysis and the writing of publication.

13. M. Y. Khan, M. Giordano , J. Gutierrez, W. A. Welch, A. Asa-Awuku, J. W. Miller, D. R. Cocker III, Benefits of Two Mitigation Strategies for Container Vessels: Cleaner Engines and Cleaner Fuels, *Environmental Science and Technology. Environ. Sci. Technol.*, 2012, 46 (9), pp 5049–5056 DOI: 10.1021/es2043646

2ndauthor was my doctoral graduate student. 2ndauthor and Co-author Asa-Awuku contributed particle size distribution data and number concentrations information. Co-author Asa-Awuku had a significant contribution to the writing and the data

14. X. Tang, Z. Zheng, H S. Jung, A. Asa-Awuku. The Effects of Mainstream and Sidestream Environmental Tobacco Smoke Composition for Enhanced Condensational Droplet Growth by Water Vapor. *Aerosol Science and Technology*, Vol. 46, Iss. 7, 2012

1st Author was my co-advised doctoral student. Co-author and corresponding Author-Asa-Awuku devised experiments and had a significant contribution to data analysis and the writing of publication.

15. A. Asa-Awuku, R. Moore, A. Nenes, R. Bahreini, C. A. Brock, A. Middlebrook, J. Holloway, T. Ryerson, J. Jimenez, P. DeCarlo, A. Hecobian, R. Weber, D. Tanner, R. Stickel and L. G. Huey "Airborne Cloud Condensation Nuclei Measurements during the 2006 Texas Air Quality Study" *J. Geophys. Res.*, 116, D11201, doi:10.1029/2010JD014874, 2011

1st Author and corresponding Author-Asa-Awuku had a significant contribution to data analysis and the writing of publication.

16. Z. Zheng, X. Tang, A. Asa-Awuku, H. Jung, Characterization of a Method for Aerosol Generation from Heavy Fuel Oil (HFO) as an Alternative to Emissions from Ship Diesel Engines, *Journal of Aerosol Science*, 41(12), 1143-1151, 2010

2nd author was my co-advised doctoral graduate student. 2nd author and Co-author Asa-Awuku contributed hygroscopicity data and analysis. Co-author Asa-Awuku had a significant contribution to the writing and subsequent revisions of the submitted manuscript.

17. Asa-Awuku, A., Nenes, A., Gao, S., Flagan, R. C., and Seinfeld, J. H.: Water-soluble SOA from Alkene ozonolysis: composition and droplet activation kinetics inferences from analysis of CCN activity, *Atmos. Chem. Phys.*, 10, 1585-1597, 2010.

1st author-Asa-Awuku had a significant contribution to data collection, analysis and the writing of publication.

18. Asa-Awuku, A., M. A. Miracolo, J. H. Kroll, A. L. Robinson, and N. M. Donahue, Mixing and phase partitioning of primary and secondary organic aerosols, *Geophys. Res. Lett.*, 36, L15827, doi:10.1029/2009GL039301, 2009

1st author and corresponding Author-Asa-Awuku had a significant contribution to data collection, analysis and the writing of publication.

19. Asa-Awuku, A., G.J. Engelhart., B.H. Lee, S.N. Pandis and A. Nenes, Relating CCN activity, volatility, and droplet growth kinetics of β -caryophyllene secondary organic, *Atmospheric Chemistry and Physics*, 9, 795-812, 2009

1st author Asa-Awuku had a significant contribution to data collection, analysis and the writing of publication.

20. Asa-Awuku, A., A. P. Sullivan, C.J. Hennigan, R. J. Weber and A. Nenes, Investigation of Molar Volume and Surfactant Characteristics of water-soluble Organic Compounds in Biomass Burning Aerosol, *Atmospheric Chemistry and Physics*, 8, 799-812, 2008

1st author Asa-Awuku had a significant contribution to data collection, analysis and the writing of publication.

21. Engelhart G.J., A. Asa-Awuku, A. Nenes and S. N. Pandis, CCN activity and droplet growth kinetics of fresh and aged monoterpene secondary organic aerosol , *Atmospheric Chemistry and Physics*, 8, 3937-3949, 2008

2nd Author Asa-Awuku had a significant contribution to data collection, analysis and the writing of publication. This is the first paper published during co-author Asa-Awuku's tenure-track appointment.
22. Padró, L.T., A. Asa-Awuku, R. Morisson, and A. Nenes, Inferring Thermodynamic Properties from CCN Activation Experiments a) Single-component and Binary Aerosols, *Atmospheric Chemistry and Physics*, 7, ,3805-3836, 2007
23. Asa-Awuku, A., and A. Nenes (2007), Effect of solute dissolution kinetics on cloud droplet formation: Extended Koehler theory, *Journal of Geophysical. Research.*, 112, D22201, 2007 doi:10.1029/2005JD006934

**Conference Papers,
Accepted, Submitted
Articles, and Papers in
Preparation:**

1. Karavalakis, G., Short, D., Hajabeibi, M., Vu, D., Villela, M., Russell, R., Durbin, T., Asa-Awuku, A. 2013. Criteria Emissions, Particle Number Emissions, Size Distributions, and Black Carbon Measurements from PFI Gasoline Vehicles Fuelled with Different Ethanol and Butanol Blends . SAE, doi:10.4271/2013-01-1147. 10p. Detroit, Michigan. 04/08/2013.
2. Karavalakis, G., Short, D., Vu, D., Villela, M., Russell, R., Jung, H., Asa-Awuku, A., and Durbin, T. "Regulated Emissions, Air Toxics, and Particle Emissions from SI-DI Light-Duty Vehicles Operating on Different Iso-Butanol and Ethanol Blends", SAE Int. J. Fuels Lubr. 7(1):183-199, 2014, doi:10.4271/2014-01-1451, 2014
3. Li, Y., Jian, X., Johnson, K., Durbin, T., Villela, M., Pham, L., Hosseini, E., Short, D., Asa-Awuku, A., Karavalakis, G., Quiros, D., Hu, S., Huai, T., Ayala, A., Jung, H. Determination of Suspended Exhaust PM Mass for Light-Duty Vehicles, SAE Technical Paper 2014-01-1594, 2014, doi:10.4271/2014-01-1594, 2014
4. Karavalakis, G., Short, D., Chen, V., Espinoza, C., Berte, T., Durbin, T., Asa-Awuku, A., Jung, H. 2014. "Evaluating Particulate Emissions from a Flexible Fuel Vehicle with Direct Injection When Operated on Ethanol and Iso-butanol Blends", "Evaluating Particulate Emissions from a Flexible Fuel Vehicle with Direct Injection When Operated on Ethanol and Iso-butanol Blends", SAE Technical Paper, Accepted 2014
5. Short, D., Vu, D., Durbin, T., Karavalakis, G., Asa-Awuku, A. Particle Speciation of Emissions from Iso-Butanol and Ethanol Blended Gasoline in Light-Duty Spark-Ignition Vehicles. *Journal of Aerosol Science*. (Submitted 06/24/2014. 38 manuscript pages.)
6. Karavalakis, G., Short, D., Russell, R., Jung, H., Johnson, K.C., Asa-Awuku, A., Durbin, T. Assessing the Impacts of Ethanol and Iso-Butanol Impacts on Gaseous and Particulate Emissions from Flexible Fuel Vehicles. *Environmental Science and Technology*. (Submitted 07/17/2014. 25 manuscript pages.)
7. Short, D., Vu, D., Durbin, T., Asa-Awuku, A. Components of Particle Emissions from Light- Duty Spark-Ignition Vehicles with Varying Aromatic Content and Octane Rating in Gasoline. *Environmental Science and Technology*. (Submitted to *ES&T* Prepared 08/10/2014.)
8. Asa-Awuku, A., Sorooshian, A., Flagan, R.C., Seinfeld, J.H., Nenes, A. CCN Properties of Organic Aerosol Collected during MASE I. (In preparation 09/30/2012.)
9. Xue, J., Li, Y., Wang, X., Durbin, T., Johnson, K.C., Karavalakis, G., Asa-Awuku, A., Villela, M., Quiros, D., Hu, S., Huai, T., Ayala, A., Jung, H. Comparison of vehicle exhaust particle size distributions by SMPS and EEPS during steady state operating

conditions. (*In preparation 06/19/2014.*)

10. Short, D., Vu, D., Chen, V., Espinoza, C., Berte, T., Karavalakis, G., Durbin, T., Asa-Awuku, A. Select Particle Composition Emissions from Spray and Wall-Guided GDI and Flex Fuel Vehicles on Various Ethanol and Iso-butanol Gasoline Blends. (*In preparation 07/15/2014.*)