Mary E. Kacarab

(Mary E. Fishell)

Education:

University of California, Riverside **2011 to 2016**
Ph.D. in Chemical and Environmental Engineering
"Impacts of Controlling Reactivity and Temperature on Advanced Study of Secondary Organic Aerosol Formation"

University of California, Riverside **2006 to 2011**
B.S. in Environmental Engineering

Awards/Recognition:

Esther Hays Scholarship **2015**

University Teaching Certificate **2014**

University of California Transportation Center (UCTC) Graduate Fellowship **2013 – 2014**

Dean's Distinguished Fellowship Award, UC Riverside **2011 – 2012**

University of California Regents Academic Scholarship **2006 – 2010**

UCR Alumni Association Academic Scholarship **2006**

Research Interests:

Aerosol formation and properties, air quality, atmospheric chemistry, STEM education

Research Experience:

Postdoctoral Fellow **2016 – Present**
Earth & Atmospheric Science, Georgia Institute of Technology
Research Focus: CCN activity of biomass burning aerosol as part of NASA ORACLES
Research advisor: Dr. Athanasios Nenes

Graduate Research Assistant **2011 – 2016**
Chemical & Environmental Engineering, UCR
Research Focus: Formation and properties of chamber SOA under different reactive conditions
Responsibilities included coordinating and supervising the use of the UCR/CE-CERT chamber and associated instrumentation
Research advisor: Dr. David R. Cocker III

Publications:

9. *Kacarab, M.,* Peng, W., Carter, W.P.L., Cocker, D.R.III, Incremental Secondary Organic Aerosol formation from Anthropogenic and Biogenic Compounds in an Isoprene-Dominated Controlled Reactivity Environment, In Prep.
8. *Kacarab, M.*, Peng, W., Carter, W.P.L., Cocker, D.R.III, Incremental Secondary Organic Aerosol Formation and Properties from Isoprene in Controlled Reactivity Conditions, In Prep.
7. *Kacarab, M.*, Peng, W., Cocker, D.R.III, Temperature Effects on Secondary Organic Aerosol Formation and Physicochemical Properties, In Prep.
6. *Kacarab, M.*, Cocker, D.R.III, Temperature Effects on Secondary Organic Aerosol Formation from Gasoline Vehicle Exhaust, In Prep.
5. *Kacarab, M.*, Li, L., Carter, W.P.L., Cocker, D.R.III, Incremental Secondary Organic Aerosol Formation from Anthropogenic and Biogenic Compounds in Controlled Reactivity Environments, In Prep.

4. Price, D., *Kacarab, M.,* Cocker, D.R.III, Purvis-Roberts, K., Silva, P.J., Effects of Temperature on the Formation of Secondary Organic Aerosol from Amine Precursors, under review
3. Li, L., Tang, P., Nakao, S., *Kacarab, M.*, Cocker, D.R.III, Novel Approach for Evaluating Secondary Organic Aerosol from Aromatic Hydrocarbons: Unified Method for Predicting Aerosol Composition and Formation, Environmental Science & Technology, 2016
2. Clark, C.H., *Kacarab, M.,* Nakao, S., Asa-Awuku, A., Sato, K., Cocker, D.R.III, Temperature Effects on Secondary Organic Aerosol from the Dark Ozonolysis and Photo-oxidation of Isoprene Reactions, Environmental Science & Technology, 2016
1. Chen, C., *Kacarab, M.*, Tang, P., Cocker, D.R.III, SOA Formation from Naphthalene, 1-Methylnaphthalene and 2-Methylnaphthalene Photooxidation, Atmospheric Environment, 2016

Platform Presentations:

14. ***Kacarab, M.***, Li, L., Carter, W.P.L., Cocker, D.R.III (2016) Incremental Reactivity Effects on Secondary Organic Aerosol Formation in Urban Atmospheres with and without Biogenic Influence, European Geosciences Union General Assembly, Vienna, Austria
13. **Li, L.**, Tang, P., Nakao, S., *Kacarab, M.*, Cocker, D.R.III (2016) Novel Approach for Evaluating Secondary Organic Aerosol from Aromatic Hydrocarbons: SOA Yield and Chemical Composition, European Geosciences Union General Assembly, Vienna, Austria
12. **Vu, D.**, Gao, S., *Kacarab, M.*, Asa-Awuku, A. (2015) Understanding the Effect of Mixing State and Water on CCN Activation, The International Chemical Congress of Pacific Basin Societies – Pacifichem, Honolulu, HI, USA
11. **Li, L.**, *Kacarab, M.,* Chen, C., Price, D., Carter, W.P.L., Cocker, D.R.III (2015) Emission and Photochemical Evolution of Low Vapor Pressure-Volatile Organic Compounds (LVP-VOCs): from Consumer Products to Secondary Organic Aerosol, American Geophysical Union Fall Meeting, San Francisco, CA, USA
10. ***Kacarab, M.,*** Li, L., Chen, C., Li, W., Price, D., Cocker, D.R.III (2015) Secondary Organic Aerosol Formation and Vapor Wall Loss Effects from the Oxidation of Intermediate Volatile Organic Compounds from Consumer Products, International Aerosol Modeling Algorithms, Davis, CA, USA
8. ***Kacarab, M.***, Li, L., Carter, W.P.L., Cocker, D.R.III (2015) Incremental Secondary Organic Aerosol Formation and Composition at Simulated Urban Atmospheric Reactivities, American Association for Aerosol Research, Minneapolis, MN, USA
7. ***Kacarab, M.,*** Cocker, D.R.III (2015) Temperature Effects on Secondary Organic Aerosol Formation, Composition, and Phase State, American Association for Aerosol Research, Minneapolis, MN, USA
6. **Li, W.**, Li, L., *Kacarab, M.*, Cocker, D.R.III (2015) Influence of Vapor Wall Loss in Laboratory Chambers on Secondary Organic Aerosol (SOA) Formation from Select Low Vapor Pressure-Volatile Organic Compounds (LVP-VOCs), American Association for Aerosol Research, Minneapolis, MN, USA
5. ***Kacarab, M.,*** Cocker, D.R.III (2014) Temperature Effects on Secondary Organic Aerosol Formation and Properties, American Geophysical Union Fall Meeting, San Francisco, CA, USA
4. Li, L., Chen, C., *Kacarab, M.*, Price, D., Carter, W.P.L., **Cocker, D.R.III** (2014) Investigation of Low Vapor Pressure Volatile Organic Compound (LVP-VOC) Atmospheric Availability and Reactivity, Atmospheric Chemical Mechanisms, Davis, CA, USA

3. ***Kacarab, M.***, Cocker, D.R.III (2014) Temperature Effects on Secondary Organic Aerosol Formation from Gasoline Vehicle Exhaust, American Association for Aerosol Research, Orlando, FL, USA
2. ***Kacarab, M.***, Carter, W.P.L., Cocker, D.R.III (2014) Incremental Secondary Organic Aerosol Formation at Simulated Atmospheric Reactivites, American Association for Aerosol Research, Orlando, FL, USA
1. **Chen, C.**, *Kacarab, M.,* Tang, P., Cocker, D.R.III (2013) Secondary Organic Aerosol Fomation from Naphthalene and Methylnaphthalene Photooxidation, American Association for Aerosol Research, Portland, OR, USA

Poster Presentations:

7. ***Kacarab, M.,*** Li, L., Carter, W.P.L., Cocker, D.R.III (2015) Incremental Reactivity Effects of Anthropogenic and Biogenic Volatile Organic Compounds on Secondary Organic Aerosol Formation, American Geophysical Union Fall Meeting, San Francisco, CA, USA
6. **Li, L.**, *Kacarab, M.,* Cocker, D.R.III (2015) Missing Urban Aerosol Source: Secondary Organic Aerosol Formation from Glycol Ethers Photooxidation under Low NOx Conditions, American Association for Aerosol Research, Minneapolis, MN, USA
5. **Price, D.**, *Kacarab, M.,* Cocker, D.R. III, Purvis-Roberts. K., Silva, P. (2014) Effects of Meteorological Conditions on the Formation of Secondary Organic Aerosol from Amine Precursors, American Association for Aerosol Research, Orlando, FL, USA
4. **Chen, C.**, *Kacarab, M.*, Tang, P., Cocker, D.R.III (2014) SOA Formation from Photooxidation of Individual PAHs and Mixtures, American Association for Aerosol Research, Orlando, FL, USA
3. ***Kacarab, M.*** and Cocker, D.R.III (2014) Temperature Impact on Aerosol Formation from Gasoline Vehicle Exhaust, University of California Transportation Center Conference, Pomona, CA, USA
2. **Li, L.**, Tang, P., Chen, C., *Kacarab, M.,* Cocker, D.R.III (2013) Instantaneous Secondary Organic Aerosol Formation from m-Xylene Photooxidation: Quantification of NO_X and NO_3 Radical Effects on SOA Yield, American Association for Aerosol Research, Portland OR, USA
1. ***Kacarab, M.,*** Tang, P., Li, L., Price, D., Cocker, D.R.III (2013) Temperature Effects on Secondary Organic Aerosol Formation and its Properties, American Association for Aerosol Research, Portland, OR, USA

Teaching Experience:

Guest Lecture

Fundamentals of Air Pollution Engineering (ENVE133)	Winter 2016
Fundamentals of Air Pollution Engineering (ENVE133)	Winter 2014

Teaching Assistant

Environmental Engineering Lab (ENVE160B)	Fall 2015
Environmental Engineering Lab (ENVE160B)	Fall 2014
Chemical & Environmental Engineering Lab (CHE/ENVE160A)	Spring 2013
Environmental Engineering Lab (ENVE160B)	Fall 2012
Chemical Process Analysis (CHE110A)	Fall 2011

Personal/Other:

Graduate Student Mentorship Program (GSMP) 2012 to 2016

I have mentored 13 first-year graduate students (3-4 mentees per year) at UCR in the Chemical and Environmental Engineering Department and Materials Science & Engineering Program. I provide

guidance for the students in their classes, research, outreach opportunities, balancing work with other interests, and professional development.

Science and Technology Education Partnership (STEP) 2006 to 2016
I volunteered year-round for preparation as well as during the two day STEP Conference. This included helping guide students through exhibits and laboratory tours and helping at the math and science teacher outreach portion of the conference. I hope to inspire students to pursue careers in science and technology through my work with STEP.

General STEM Education Outreach 2011 to Present
Experience and activities include volunteering with Dr. Pamela Clute's ALPHA Center events to inspire girls in math and science, speaking at Riverside Unified School District science outreach programs, and directing middle and high school level students in science projects studying air quality.

Undergraduate Mentoring 2011 to 2016
I guided over 15 undergraduate students in the Atmospheric Processes Laboratory to direct them with good laboratory practices, research projects, and advice on coursework and career paths as well as assisted the senior design research of over 5 different undergraduate research teams.

Measurement Science Conference (MSC) Scholarship Chair 2011 to 2014
I volunteered year-round to run the Scholarship program for the Measurement Science Conference. expanded the applicant pool for the scholarship program and increased student interest in and awareness of metrology.

Associations/Organizations:

American Association for Aerosol Research 2010 to Present

American Geophysical Union 2014 to Present

European Geoscience Union 2016 to Present

Professional Experience:

Computer Sciences Corporation (CSC) 2006 to 2011
Performed detailed technical review of Standard Operating Procedures (SOPs) developed for the Navy's Metrology Engineering Program. Proactively worked with government engineers and managers to communicate effectively the recommended resolutions to the issues uncovered.

University of California, Riverside, College of Engineering 2009 to 2011
Center for Environmental Research & Technology (CE-CERT)
Became familiar with proper research laboratory practices and how to use aerosol mass spectrometer (AMS), scanning mobility particle sizer (SMPS), UV-Vis spectrophotometer, and various other air sampling or analysis instruments.