

# Lijie (Sara) Li

## Personal Data & Contact

Postdoctoral Scholar  
Department of Environmental Science and Engineering  
California Institute of Technology  
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## Education

- 2016 (June) Ph. D., Chemical and Environmental Engineering, University of California, Riverside  
Advisor: Dr. David R. Cocker III  
Dissertation title: Insights into Predicting Secondary Organic Aerosol Formation from Anthropogenic Volatile Organic Compounds: Impact of Molecular Structure and NO<sub>x</sub> Concentration
- 2012 M.S., Environmental Engineering, Zhejiang University, Hangzhou, China  
Advisor: Dr. Weixiang Wu  
Thesis title: New Method for Nitrogen Conservation and Greenhouse Gas Emission Reduction during Aerobic Composting of Swine Manure
- 2009 B.S., Environmental Engineering, Central South University, Changsha, China

## Awards & Honors

- 2016-2017 Caltech Center for Environmental Microbial Interactions Seed Grant, Weston Havens Foundation
- 2016 Student Research Award, S. Calif. Chin. Amer. Environ. Protec. Assoc. (SCCAEPA)
- 2015-2016 William R. Pierson/Ford Graduate Fellowship, UC Riverside
- 2015 American Geophysical Union 2016 Fall Meeting Student Travel Grant
- 2015 34th American Association for Aerosol Research Conference Student Travel Grant
- 2012-2013 Dean's Distinguished Fellowship, UC Riverside
- 2008-2009 Tang Han Scholarship, Central South University (Top 5%)
- 2007-2008 Li Xun Scholarship, Institute of Metal Research, Chinese Academy of Science (Top 2%)
- 2007-2008 Alcoa Outstanding Science and Engineering Female Student Scholarship (Top 5%)
- 2005-2008 Excellent Student Scholarship, Central South University (Top 5%)

## Research Experience

- 2011-2016 **Graduate Research Assistant (Ph.D.)**, Center for Environmental Research & Technology, UC Riverside, CA

- Explored the impacts of molecular structure on secondary organic aerosol formation from aromatic hydrocarbons and glycol ethers
- Studied instantaneous nitrogen oxides (NO<sub>x</sub>) effects on radical and aerosol growth rate during aromatic hydrocarbon photooxidation
- Investigated environmental fate and transportation of low vapor pressure-volatile organic compound from consumer products
- Studied low vapor pressure-volatile organic compound effect on ozone and secondary organic aerosol formation
- Developed continuous gas injection system for UCR environmental chamber
- Built architecture coating and consumer product emission database for Consumer Specialty Product Association

2009-2011 **Graduate Research Assistant**, Institute of Environmental Science and Technology, Zhejiang University Hangzhou, China

- Applied static chamber technique to sample greenhouse gas emissions from agricultural sources
- Measured paddy soil greenhouse gas emissions offline by using GC-ECD (CH<sub>4</sub> and N<sub>2</sub>O)
- Led solid and gas sample collection and measurement during field composting test
- Reviewed studies on nitrous oxide emissions during aerobic livestock composting

### **Journal Publications**

- [8] **Lijie Li**, David R. Cocker III. Molecular Structure Impacts on Secondary Organic Aerosol Formation from Glycol Ethers. Submitted.
- [7] **Lijie Li**, Li Qi, David Cocker III. Contribution of Methyl Group to Secondary Organic Aerosol Formation from Aromatic Hydrocarbon Photooxidation. *Atmospheric Environment*, 2017, 151: 133–139.
- [6] **Lijie Li**, Ping Tang, Shunsuke Nakao, David Cocker III. Molecular Structure Impact on Secondary Organic Aerosol formation from Aromatic Hydrocarbons photooxidation under Low NO<sub>x</sub> Condition. *Atmospheric Chemistry and Physics*, 2016, 16, 10793-10808.
- [5] **Lijie Li**, Ping Tang, Shunsuke Nakao, Mary Kacarab, David Cocker III. Novel Approach for Evaluating Secondary Organic Aerosol from Aromatic Hydrocarbons: Unified Method for Predicting Aerosol Composition and Formation. *Environmental Science & Technology*, 2016, 50(12): 6249-6256.
- [4] **Lijie Li**, Ping Tang, Shunsuke Nakao, Chia-Li Chen, David Cocker III. Role of Methyl Group Number on SOA Formation from Aromatic Hydrocarbons Photooxidation under Low NO<sub>x</sub> Conditions. *Atmospheric Chemistry and Physics*, 2016, 16, 2255-2272.
- [3] **Lijie Li**, Ping Tang, David R. Cocker III. Instantaneous Nitric Oxide Effect on Secondary Organic Aerosol Formation from *m*-Xylene Photooxidation. *Atmospheric Environment*, 2015, 19:144-155.
- [2] Weixiang Wu, **Lijie Li**, Haohao Lv, Cheng Wang and Hui Deng. Mechanisms of Nitrous Oxide Emission during Livestock Manure Aerobic Composting. *The Journal of Applied Ecology*, 2012, 23(6): 1704-1712.
- [1] Shengguo Xue, Yameng Ma, **Lijie Li**, Yahong Huang, Jun Wang. Investigation of Indoor Formaldehyde Pollution in Newly Decorative Residences. *Journal of Chongqing Jianzhu University*,

### **Platform Presentations**

- [1] **Lijie Li**, Ping Tang, William Porter, Kelley Barsanti, David R. Cocker III. Unified Methods for Predicting Aerosol Formation and Composition from Aromatic Hydrocarbons under NO<sub>x</sub> Conditions in Urban Atmosphere. American Association for Aerosol Research 35th Annual Conference, Portland, OR, USA, 2016.
- [2] **Lijie Li**. Novel Approaches for Predicting Secondary Organic Aerosol Composition and Formation from Aromatic Hydrocarbons. Southern California Chinese American Environmental Protection Association (SCCAEPA) - Los Angeles Environmental Forum, Los Angeles, CA, USA, 2016. (Invited talk)
- [3] **Lijie Li**, Ping Tang, Shunsuke Nakao, Li Qi, Mary Kacarab, David R. Cocker III. Novel Approach for Evaluating Secondary Organic Aerosol from Aromatic Hydrocarbons: SOA Yield and Chemical Composition. European Geosciences Union General Assembly, Vienna, Austria, 2016.
- [4] Mary Kacarab, **Lijie Li**, William P. L. Carter, David R. Cocker III. Incremental Reactivity Effects on Secondary Organic Aerosol Formation in Urban Atmospheres with and without Biogenic Influence. European Geosciences Union General Assembly, Vienna, Austria, 2016.
- [5] **Lijie Li**, Mary Kacarab, Chia-Li, Chen, Derek Price, William P. L. Carter, David R. Cocker III. "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, 2015.
- [6] Mary Kacarab, **Lijie Li**, William P. L. Carter, David R. Cocker III. Incremental Reactivity Effects of Anthropogenic and Biogenic Volatile Organic Compounds on Secondary Organic Aerosol Formation. American Geophysical Union Fall Meeting. San Francisco, CA, USA, 2015.
- [7] **Lijie Li**, Ping Tang, Chia-Li Chen, Shunsuke Nakao, Li Qi, David R. Cocker III. Insights into Modeling SOA formation from Aromatic Hydrocarbons. International Aerosol Modeling Algorithms, Davis, CA, USA. 2015.
- [8] Mary Kacarab, **Lijie Li**, David R. Cocker III. 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. 2015.
- [9] **Lijie Li**, Ping Tang, Chia-Li Chen, Shunsuke Nakao, Li Qi, David R. Cocker III. Rethinking Secondary Organic Aerosol Formation from Aromatic Hydrocarbons: Role of NO<sub>x</sub>, ·OH and Substitute. American Association for Aerosol Research 34th Annual Conference, Minneapolis, MN, USA, 2015.
- [10] Mary Kacarab, **Lijie Li**, William P. L. Carter, David R. Cocker III. Incremental Secondary Organic Aerosol Formation and Composition at Simulated Urban Atmospheric Reactivities. American Association for Aerosol Research 34th Annual Conference, Minneapolis, MN, USA. 2015.
- [11] Chia-Li Chen, **Lijie Li**, David R. Cocker III. SOA Formation from Photooxidation of Naphthalene and Methyl-naphthalenes with *m*-Xylene and Surrogate Mixtures, American Association for Aerosol Research 34th Annual Conference, Minneapolis, MN, USA, 2015.
- [12] Weihua Li, **Lijie Li**, Mary Kacarab, David R. Cocker III. 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 34th

- Annual Conference, Minneapolis, MN, USA, 2015.
- [13] **Lijie Li**, Chia-Li Chen, Mary Kacarab, Derek Price, William P. L. Carter, David R. Cocker III. Investigation of Low Vapor Pressure Volatile Organic Compound (LVP-VOC) Atmospheric Availability and Reactivity. Atmospheric Chemical Mechanisms. Davis, CA, USA, 2014.
- [14] **Lijie Li**, Ping Tang, Chia-Li Chen, David R. Cocker III. Instantaneous NO Effect on Secondary Organic Aerosol Formation during *m*-Xylene Photooxidation. American Association for Aerosol Research 33rd Annual Conference. Orlando, FL, USA, 2014.
- [15] Chia-Li Chen, Ping Tang, **Lijie Li**, David R. Cocker III. SOA Potential Formation from Whole Gasoline. American Association for Aerosol Research 33rd Annual Conference, Orlando, FL, USA, 2014.

### **Poster Presentation**

- [1] **Lijie Li**, Shinichi Enami, Michael R. Hoffmann, Agustín J. Colussi. The Contribution of Organic Aerosol to the Reactive Oxygen Species Formation on Lung Lining Fluid Interface. American Association for Aerosol Research 35th Annual Conference, Portland, OR, USA, 2016.
- [2] **Lijie Li**, Ping Tang, David R. Cocker III. Instantaneous Nitric Oxide Effect on Secondary Organic Aerosol Formation from *m*-Xylene. 33rd Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere 11th International Conference on Carbonaceous Particles in Atmosphere, Irvine, CA. 2016.
- [3] **Lijie Li**, Mary Kacarab, David R. Cocker III. Missing Urban Aerosol Source: Secondary Organic Aerosol Formation from Glycol Ethers Photooxidation under Low NO<sub>x</sub> Conditions. American Association for Aerosol Research 34th Annual Conference, Minneapolis, MN. 2015.
- [4] **Lijie Li**, Ping Tang, David R. Cocker III. Instantaneous Nitric Oxide Effect on Secondary Organic Aerosol Formation from *m*-Xylene. 11th International Conference on Carbonaceous Particles in Atmosphere, Berkeley, CA. 2015.
- [5] **Lijie Li**, Ping Tang, Chia-Li Chen, Mary Kacarab, David R. Cocker III. Instantaneous Secondary Organic Aerosol Formation from *m*-Xylene Photooxidation: Quantification of NO<sub>x</sub> and NO<sub>3</sub> Radical Effects on SOA Yield. American Association for Aerosol Research 32nd Annual Conference, Portland, OR, 2013.
- [6] Mary Kacarab, Ping Tang, **Lijie Li**, Derek Price, David R. Cocker III. Temperature Effects on Secondary Organic Aerosol Formation and its Properties. American Association for Aerosol Research 32nd Annual Conference, Portland, OR, 2013.

### **Teaching experience**

02/16	Guest Lecture, "Air Quality Monitoring Instruments", UCR
09/15-12/15	Teaching Assistant, "Environmental Engineering Laboratory", UCR
05/15	Guest Lecture, Scanning Mobility Particle Sizer, "Advanced Air Pollution Control and Engineering" UCR
01/15	Guest Lecture, Troposphere Chemistry, "Air Pollution Control Engineering", UCR
01/14-03/14	Teaching Assistant, "Air Pollution Control Engineering", UCR
01/13-03/13	Teaching Assistant, "Air Pollution Control Engineering", UCR

03/12-06/12 Teaching Assistant, “Water Quality Systems Design”, “Chemical Engineering Kinetics”, UCR  
01/12-03/12 Teaching Assistant, “Water Quality Engineering”, “Engineering Thermodynamics”, UCR

### **Professional activities**

**Memberships:** American Association for Aerosol Research (AAAR); American Geophysical Union (AGU); European Geosciences Union (EGU); Southern California Chinese-American Environmental Protection Association (SCCAEPA)

**Journal Reviewer:** Atmospheric Environment; Environmental Science & Technology; Chemosphere; Atmospheric Chemistry and Physics