LAUREN T. FLEMING

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EDUCATION

University of California, Irvine, Ph.D. (expected June 2019) **GPA:** 3.94 Irvine, CA
Department of Chemistry, atmospheric chemistry track, advanced to Ph.D. candidacy on 10/03/2016
Thesis advisors: Sergey Nizkorodov and Donald Blake

University of California, Irvine, M.S., April 2018 **GPA:** 3.94 Irvine, CA

The College of Wooster, B.A., *magna cum laude*, May 2014 **GPA**: 3.84 Wooster, OH
Major: Chemistry **Minor:** Religious studies

Awards/fellowships/memberships: Michael E. Gebel award (2018), Peter B. Wagner memorial award for women in atmospheric sciences (2018), NASA group achievement award for KORUS-AQ (2017), National Science Foundation Graduate Research Fellowship Program honorable mention (2015), Rowland Fellowship (2014-2015), Iota Sigma Pi society for women in chemistry, Clare Boothe Luce Research Scholar (2012-2014), Local Wooster ACS Section Senior Chemistry Award (2014), CRC Press Chemistry Achievement Award (2011), Phi Beta Kappa honor society (2013, junior inductee), American Chemical Society member (2013-present)

RESEARCH EXPERIENCE

DOE grant (2017-2019)- Impacts of Phase State and Water Content on Secondary Organic Aerosol Formation and Partitioning

- Produced secondary organic aerosol in a smog chamber equipped with a scanning mobility particle sizer, aerosol mass spectrometer, proton transfer reaction mass spectrometer, NO_y analyzer, and ozone analyzer.
- Carried out off-line analysis of aerosol chemical composition using soft ionization mass spectrometry

NOAA grant (2016-2019)- Studies of Atmospheric Brown Carbon Chemistry in Support of the FIREX Campaign

- Collected aerosol from controlled, laboratory fires and from wildfires in the western United States
- Obtained and analyzed data from LC-ESI-MS and nano-DESI-HR-MS instruments to learn about the molecular composition of biomass burning aerosol
- Co-authored two manuscripts based on this work

NASA grant (April- August 2015)- Analysis of Non-Methane Hydrocarbon Species in Support of KORUS-AQ

- Collected whole air samples (WAS) over South Korea onboard the NASA DC-8 aircraft
- Ran WAS on gas chromatography system in the Rowland-Blake laboratory to quantify over a hundred non-methane hydrocarbons.

EPA grant (2015-2016)- Impacts of Household Sources on Outdoor Pollution at Village and Regional Scales in India

- Collected particles and whole air samples from cookstove emissions for 34 days in a village in Haryana, India
- Determined the molecular composition of particles using LC-ESI-MS and nano-DESI-HR-MS instruments and from the analysis of these big data sets
- Quantified ~100 non-methane hydrocarbons using gas chromatography techniques

- Wrote two manuscripts based on this work

Senior Thesis - *The Fate of the Formic Acid Radical: Photo-oxidation Kinetics of the Reaction of the Hydroxyl Radical with Oxalic Acid*

- A year-long research project that resulted in a masters-level thesis and oral defense
- Photochemical kinetics of the reaction of the hydroxyl radical with oxalic acid in the presence and absence of oxygen
- Method development for the detection of μM formic acid concentrations

Clare Boothe Luce Research Scholar Wooster, OH Summer 2012-present

- Two academic years and summers of one-on-one research with a faculty member funded through the Henry Luce foundation
- Investigated the photochemical kinetics for the reaction of the hydroxyl radical with oxalate

Publications:

Fleming, L. T., Weltman, R., Yadav, A., Edwards, R. D., Arora, N. K., Pillarisetti, A., Meinardi, S., Smith, K. R., Blake, D. R. and Nizkorodov, S. A.: Emissions from village cookstoves in Haryana, India and their potential impacts on air quality, Atmos. Chem. Phys. Discuss., 1–21, doi:10.5194/acp-2018-487, 2018.

Laskin, A.; Lin, P.; Laskin, J.; Fleming, L.T.; Nizkorodov, S. A. Molecular Characterization of Atmospheric Brown Carbon. In *Multiphase Environmental Chemistry in the Atmosphere*; American Chemical Society, 2018. (accepted as ACS Symposium Series ebook chapter)

Lin, P., Fleming, L.T., Nizkorodov, S.A., Laskin, J., and Laskin, A.: Characterization of Polar and Non-polar chromophores in a Case Study of Atmospheric Brown Carbon, Anal. Chem., 2018. (submitted)

Fleming, L. T., Lin, P., Laskin, A., Laskin, J., Weltman, R., Edwards, R. D., Arora, N. K., Yadav, A., Meinardi, S., Blake, D. R., Pillarisetti, A., Smith, K. R. and Nizkorodov, S. A.: Molecular composition of particulate matter emissions from dung and brushwood burning household cookstoves in Haryana, India, Atmos. Chem. Phys., 18(4), 2461–2480, doi:10.5194/acp-18-2461-2018, 2018.

Montoya-Aguilera, J., Horne, J. R., Hinks, M. L., Fleming, L. T., Perraud, V., Lin, P., Laskin, A., Laskin, J., Dabdub, D., and Nizkorodov, S. A.: Secondary organic aerosol from atmospheric photooxidation of indole, Atmos. Chem. Phys., 17, 11605-11621, https://doi.org/10.5194/acp-17-11605-2017, 2017.

Conference Presentations:

Talks:

L. T. Fleming, S. A. Nizkorodov, P. Lin, A. Laskin, and J. Laskin: Climate-relevant compounds produced from burning forest fire fuels in conjunction with the FIREX campaign, 36th American Association for Aerosol Research meeting, October 16-20, 2017, Raleigh, NC.

Posters:

L. T. Fleming, R. Weltman, A. Yadav, N. K. Arora, A. Pillarisetti, S. Meinardi, K. R. Smith, R. D. Edwards, D. R. Blake, and S. A. Nizkorodov: Particulate and gas emissions from village cook stoves in Haryana, India and their potential impacts on air quality, 35th Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere (ISKPPA), March 30, 2018, Pasadena, CA, USA.

L. T. Fleming, S. A. Nizkorodov, P. Lin, A. Laskin, and J. Laskin: Climate-Relevant Compounds Produced from Burning Forest Fire Fuels in Conjunction with the FIREX campaign, 34th Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere (ISKPPA), May 12, 2017, San Diego, CA, USA.

Also presented at The Third Sino-European School on Atmospheric Chemistry, Shanghai, China, November 30, 2017.

J. Montoya, J.R. Horne, M.L. Hinks, L.T. Fleming, V. Perraud, P. Lin, A. Laskin, J. Laskin, D. Dabdub, and S.A. Nizkorodov: Secondary organic aerosol (SOA) from photooxidation of indole, 34th Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere (ISKPPA), May 12, 2017, San Diego, CA, USA.

L. T. Fleming, S. A. Nizkorodov, D. R. Blake, R. Weltman, R. D. Edwards, P. Lin, A Laskin, J. Laskin, K. R. Smith, N. K. Arora, S. Gautam, and A. Yadav: Gaseous and particle-phase aerosol emissions from household cooking in rural Haryana, India, International Global Atmospheric Chemistry (IGAC), September 26-30, 2016, Breckenridge, CO, USA.

L. T. Fleming, S. A. Nizkorodov, D. R. Blake, R. D. Edwards, P. Lin, A. Laskin, J. Laskin, K. R. Smith, N.K. Arora, and M. Vaswani: Biomass Burning Aerosol from Household Cooking in Rural Haryana, India, Pacifichem meeting, Honolulu, HI, December 17, 2015.

E. R. Villa; L. T. Fleming, and K. J. Feierabend: The Ultraviolet Photochemistry of Aqueous Oxalate Species. American Chemical Society National Meeting, New Orleans, LA, April 8, 2013.

R. L. Craig; L. T. Fleming, and K. J. Feierabend: Kinetics and Mechanism of the Reaction Between Aqueous Oxalate Species and the Hydroxyl Radical, American Chemical Society National Meeting, New Orleans, LA, April 8, 2013.

L. T. Fleming and K. J. Feierabend: Photo-oxidation Kinetics of Aqueous Oxalic Acid, American Chemical Society National Meeting, Dallas, TX, March 17, 2014.

TEACHING EXPERIENCE

Teaching Assistant, University of California, Irvine, Department of Chemistry

- General chemistry laboratory (1LD), Fall 2014
- General chemistry lecture (1B), Winter 2015, Spring 2015, Winter 2016
- Advanced analytical laboratory (152), Winter 2017
- Honors general chemistry (H2C), Spring 2017

PROFESSIONAL EXPERIENCE AND OUTREACH

The University of California, Irvine Irvine, CA

Science of the Total Environment/Reviewer August 2017-present

Loh Down on Science/Managing editor March 2018-present
Script writer April 2017- March 2018

- The NPR daily science segment that "is a fun way to get your daily dose of science plus a dash of humor in less than two minutes"
- Write and edit two scripts (185-195 words each) per month that feature recent publications and are accessible and fun for the average listener
- The two managing editors are responsible for editing scripts, consulting with the host Sandra Tsing Loh during recording, training new writers, and logistics.

Iota Sigma Pi/Calcium chapter treasurer Summer 2015- present

- National honors society for women in chemistry

- Participated in science outreach activities in Orange County, professional development seminars and social events
    - Panelist at graduate student Q&A for undergraduates at UCI (April 2017, roughly 40 students attended)
    - Helped with Saturday chemistry class for children (8-12 years old) with disabilities at United Cerebral Palsy (October 2017)
- As activities coordinator (2015-2016), I planned social events for the club and was in charge of logistics
- As treasurer (2016-2017, 2017-2018) I prepared annual financial reports, was head of fundraising committee, and worked with other officers to make upcoming events possible
- Fundraising committee events:
    - Merchandise sale 2017: UCI chemistry key chains and insulated grocery bags
    - Hosted trivia night in association with Geeks Who Drink, raised $273
    - Merchandise sale 2018: UCI chemistry T-shirts

Chemistry Graduate Recruitment/Recruiter March 2018

- Gave campus tours, helped with logistics, and acted as a graduate representative for the department

ACS Science Coach Fall 2015- Spring 2016

- I worked with Ms. Lynn Chuang in her high school chemistry classroom at Godinez Fundamental High School
- Visited every other month throughout the academic year, helping with their labs and giving short presentations on my research

The College of Wooster Wooster, OH

Chemistry Department/Peer Lead Team Learning (PLTL) leader Fall 2013- Spring 2014

- Weekly meetings of introductory chemistry students to reinforce the concepts presented in class
- My role was to foster a group-learning environment, and answer any individual questions
- I assisted 5- 20 students a week in studying and preparing for their chemistry class

Chemistry Department and Learning Center/Peer tutor Fall 2011- Spring 2014

- Tutored general chemistry and organic chemistry students
- I met one-on-one with 2-3 students on a weekly basis

Chemistry club/Secretary and member Fall 2011- Spring 2014

- Elementary school outreach, coordinating chemistry club seminar speakers, planned events for National Chemistry Week
- Secretary duties involved advertising meetings and recording the meeting minutes

Expanding Your Horizons program/Volunteer Spring 2013, 2014

- Facilitated a day designed to inspire girls to pursue STEM fields

Buckeye Women in Science and Engineering Research (B-WISER)/Camp counselor Summer 2012

- Five-day overnight science camp for middle school girls
- Was responsible for the safety and wellbeing of the participants, and engaged in science- related projects and activities with them