Kyla Siemens

Analytical Chemist

Contact

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Education

PhD Candidate Student
Analytical Chemistry
Purdue University
Expected Grad: Spring 2024

BS Chemistry
Minors: Math & Management
Jacksonville University
2014 – 2018

Key Skills

Mass Spectrometry
Liquid Chromatography
Experimental Design
Complex Mixture Analysis
Data Interpretation
Software Usage
Collaboration
Communication

Interests

ISP President *(Women in Chem)*
Community Outreach
Website Design
Running
Cooking
Crocheting
Gardening

Awards

Director of Transition into Teaching with Technology *(2020)*
Arthur Kelly Teaching Award *(2020)*
Purdue Grad Summer Research *(2019)*
NSERC Undergraduate Research *(2017)*

Profile

Analytical chemist specialized in complex mixture analysis, experimental design, and data interpretation. Eight years utilizing various forms of extraction, liquid chromatography, mass spectrometry, and spectrophotometry. Hardworking, trustworthy, and reliable. Quick and eager learner. Efficient problem solver. Diligent with attention to detail. Team player who leads by example.

Experience

GRADUATE RESEARCHER | PURDUE UNIVERSITY | AUGUST 2018 - PRESENT

> Determined the molecular properties of organic aerosol products formed from laboratory-controlled oxidation of naphthalene, a major fossil-fuel emission, by using **HPLC-PDA-(ESI)HRMS**.

> Developed a novel multi-modal MS technique to determine the chemical evolution and atmospheric fate of individual molecular components from wildfire smoke by:
(1) Interpreted online **aerosol-MS** and **extractive ESI-MS** data.
(2) Developed and implemented **HPLC-PDA-(ESI)HRMS** and **tandem MS** techniques to analyze wildfire smoke samples extracted from Teflon filters.

> Established source-specific emission profiles to distinguish wild versus agricultural fires using **HPLC-PDA-(ESI)HRMS**.

> Conducted laboratory-controlled burns of specific biomass materials:
(1) Investigated smoke from various types of biomass using **UPLC-PDA-(ESI/APPI)HRMS, IPN spectrometers,** and a **scanning mobility particle sizer (SMPS)**.
(2) Developed a method for rapid analysis of biomass-specific emission profiles, useful to conclude high-level information about wildfire samples (eg. atmospheric lifetimes and climate impact).

> Investigated the impact of a haze event on snowmelt in the Colorado Rockies. Extracted light-absorbing organics from snow by **SPE**, then analyzed with **UPLC-PDA-(ESI/APPI)HRMS**.

> Investigated plastic leaching in bottled water exposed to sunlight using **flow imaging microscopy**.

TEACHING ASSISTANT | PURDUE UNIVERSITY | AUGUST 2018 – MAY 2020

> Developed and implemented training for use of iPad technology in undergraduate chemistry courses.

> Administered group and individual instruction, graded, proctored exams, and held office hours and review sessions for undergraduate chemistry courses.

UNDERGRADUATE RESEARCHER | UNIVERSITY OF MANITOBA | MAY 2017 – AUGUST 2017

> Synthesized swine glycopeptides and quantified glycopeptide concentrations in swine IgG samples using **HPLC-MALDI-TOF-MS^n**.

UNDERGRADUATE RESEARCHER | JACKSONVILLE UNIVERSITY | AUGUST 2015 – MAY 2018

> Developed methods to extract and concentrate *microcystis*, a liver toxin present in algal blooms. Identified and analyzed multiple variants in Florida waters using **MALDI-TOF MS^n**.

> Exposed snails to varying concentrations of copper and acidity (CO_2). Investigated toxic effects using **spectrophotometry** and **enzyme kits**.

> Established functional movement of an ionic polymer metallic composite (IMPC) using electroplating and alternating current, in an effort to develop a biomimetic fish tail for a robotic fish.

UNDERGRADUATE TUTOR | JACKSONVILLE UNIVERSITY | AUGUST 2015 – MAY 2017

> Tutored students individually and in groups for chemistry, mathematics, physics, and business classes.

Peer-Reviewed Publications

[1] **Siemens, K.**; Sharpe, S.; Laskin, A. "Investigating the Impact of a BrC Haze Event on Snow Albedo in the Colorado Rockies." **2023.** *In Preparation.*

[2] **Siemens, K.**; Pagonis, D.; Guo, H.; Schueneman, M.; Dibb, J.; Campuzano-Jost, P.; Jimenez, J.; Laskin, A. "Comparing Emission Profiles of Biomass Burning Organic Aerosol from Wild and Agricultural Fires." **2023.** *In Preparation*.

[3] **Siemens, K.**; Paik, T.; Li, A.; Rivera-Adorno, F.; Tomlin, J.; Chakrabarty, R.; Laskin, A. "Developing Biomass-Specific Emission Profiles of Organic Aerosol in Biomass Burning Smoke by Optical and Molecular Characterization." **2023.** *In Preparation.*

[4] **Siemens, K.**; Pagonis, D.; Guo, H.; Schueneman, M.; Dibb, J.; Campuzano-Jost, P.; Jimenez, J.; Laskin, A. "Probing Atmospheric Aerosols by Multimodal Mass Spectrometry Techniques: Revealing Aging Characteristics of its Individual Molecular Components." *Earth & Space Chemistry,* **2023.** DOI:10.1021/acsearthspacechem.3c00228. *Accepted.*

[5] **Siemens, K.**; Morales, A.; He, Q.; Li, C.; Hettiyadura, A. P.S.; Rudich, Y.; Laskin, A. "Molecular Analysis of Secondary Brown Carbon Produced from Photooxidation of Naphthalene." *Environ. Sci. & Tech.,* **2022.** 56, (6), 3340-3353. DOI: 10.1021/acs.est.1c03135.

[6] Jiang, F.; **Siemens, K.**; Linkel, C.; Li, Y.; Gong, Y.; Leisner, T.; Laskin, A.; and Saathoff, H. "Molecular Analysis of Secondary Organic Aerosol and Brown Carbon from the Oxidation of Indole." *Atmospheric Chemistry & Physics*, **2023.** DOI: 10.5194/egusphere-2023-1804. *Submitted.*

[7] He, Q.; Li, C.; **Siemens, K.**; Morales, A.; Hettiyadura, A. P.S.; Laskin, A.; Rudich, Y. "Optical Properties of Secondary Organic Aerosol Produced by Photooxidation of Naphthalene under NO_x Condition." *Environ. Sci. & Tech.,* **2022.** 56, (8), 4816-4827. DOI: 10.1021/acs.est.1c07328.

[8] Pagonis, D.; Campuzano-Jost, P.; Guo, H.; Day, D.A.; Schueneman, M.K.; Brown, W.L.; Nault, B.A.; Stark, H.; **Siemens, K.**; et al. "Airborne Extractive Electrospray Mass Spectrometry Measurements of the Chemical Composition of Organic Aerosol." *Atmospheric Measurement Techniques,* **2021.** 14, (2), 1545–1559. DOI: 10.5194/amt-14-1545-2021.

[9] Smith, N. R.; Crescenzo, G.; Huang, Y.; Hettiyadura, A. P.S.; **Siemens, K.**; Li, Y.; Faiola, C. L.; Laskin, A.; Shiraiwa, M.; Bertram, A. K.; Nizkorodov, S. A. "Viscosity and Liquid-liquid Phase Separation in Healthy and Stressed Plant SOA." *Environ. Sci.: Atmos.,* **2021**. 1, (3), 140-153. DOI: 10.1039/d0ea00020e.

[10] Bielmyer-Fraser, G.K.; Alip, F.; Adeyemi, R.; Carney, N.; Santiago, F.; **Siemens, K.**; and Donaghy, K. "The Influence of Acidification and Copper Exposure on Copper Accumulation and Anti-Oxidant Enzyme Responses in the Pond Snail, Lymnaea stagnalis." *Georgia Journal of Science*, **2020.** 78, (2), Article 7. https://digitalcommons.gaacademy.org/gjs/vol78/iss2/7.