CAROLYN P. HUTCHINSON, PH.D.

OFFICE: LBVSC 325 • 5201 University Blvd • Laredo, TX 78041
(956) 326-2597 • carolyn.hutchinson@tamiu.edu

EDUCATION

IOWA STATE UNIVERSITY Ames, IA
Doctorate in Analytical Chemistry (3.8/4.0) *2017*
Dissertation: High resolution mass spectrometry to explore molecular-level understanding of biomass pyrolysis
ISU Teaching Excellence Award

CHRISTOPHER NEWPORT UNIVERSITY Newport News, VA
Bachelor of Science in Chemistry; Minor in Latin Classical Studies (3.8/4.0) *2011*
Magna Cum Laude; Departmental honors, Alpha Chi honor society

PROFESSIONAL APPOINTMENTS

ASSISTANT PROFESSOR
St. Bonaventure University St. Bonaventure, NY *August 2020-Present*
VISITING ASSISTANT PROFESSOR
Texas A&M International University Laredo, TX *August 2019-July 2020*
POSTDOCTORAL RESEARCH SCHOLAR
Willamette University Salem, OR *August 2017-August 2019*
GRADUATE RESEARCH ASSISTANT
Iowa State University Ames, IA *January 2012-July 2017*
GRADUATE TEACHING ASSISTANT
Iowa State University Ames, IA *August 2011-May 2017*

TEACHING EXPERIENCE

TEXAS A&M INTERNATIONAL UNIVERSITY

GENERAL CHEMISTRY I
1 section, about 150 students. Includes Early College High School students. Instructor of record.
Summer session (5-week class). 1 section, about 50 students. Instructor of record.
GENERAL CHEMISTRY I LAB
6 sections, 24 students. Includes Early College High School students. Instructor of record.
Summer session (5-week class). 1 section, about 25 students. Instructor of record.
GENERAL CHEMISTRY II LAB
1 section, about 150 students. Includes Early College High School students. Instructor of record.
ENVIRONMENTAL CHEMISTRY
1 section, 15 students. Writing intensive course. Instructor of record.
ENVIRONMENTAL CHEMISTRY LAB
1 section, 15 students. Instructor of record.

IOWA STATE UNIVERSITY

GENERAL CHEMISTRY FOR ENGINEERING STUDENTS
Head teaching assistant, 1 semester. Teaching assistant, 1 semester.
GENERAL CHEMISTRY I
Head teaching assistant, 1 semester. Teaching assistant, 3 semesters.
QUANTITATIVE AND ENVIRONMENTAL ANALYSIS
Head teaching assistant, 3.5 semesters.

• (540) 604-3270 • carolyn.hutchinson@tamiu.edu •

COURSE DESIGN

TEXAS A&M INTERNATIONAL UNIVERSITY

ENVIRONMENTAL CHEMISTRY

Designed writing intensive lecture class with a focus on the broad implications of environmental chemistry, including socioeconomic factors and impacts. Lecture and lab together produced 5 papers based on independent research by undergraduates.

ENVIRONMENTAL CHEMISTRY LAB

Designed two-part lab to complement Environmental Chemistry lecture. First part of lab highlighted common analysis techniques. Second part of lab was small group projects with independent research.
Independent projects shifted from student-collected data to publicly available data following virtual transition due to COVID-19 global pandemic.

GENERAL CHEMISTRY I LAB

Designed 5-week summer lab course entirely online and remote.

RESEARCH EXPERIENCE

POSTDOCTORAL RESEARCH SCHOLAR

Willamette University Salem, OR
Adviser: Dr. David R. Griffith *August 2017-Present*

Quantify and compare 23 estrogens in wastewater from several locations in northwestern Oregon
Identify seasonal influences on estrogen distributions and behavior
Model halogenation process of estrogens in wastewater treatment plants
Identify photodegradation products of estrogens using high resolution mass spectrometry
Co-mentor undergraduates in independent research

GRADUATE RESEARCH ASSISTANT

Iowa State University Ames, IA
Adviser: Dr. Young-Jin Lee *January 2012-July 2017*

Develop instrumentation for real-time analysis; create a system for controlled & optimized humidity
Explore thin-film pyrolysis behavior of glucose-based carbohydrates in real-time
Study real-time reaction behavior of single particles of whole biomass (herbaceous, softwood, hardwood)
Use stable isotope labels to identify reaction pathways in glucose pyrolysis

HONORS & AWARDS

IOWA STATE UNIVERSITY

ISU TEACHING EXCELLENCE AWARD

Recognizes top 10% of graduate students with teaching duties for the year. Awarded by the graduate college by department nomination. Can only be awarded to a graduate student once.

WOMEN IN CHEMISTRY AWARD

Awarded by the chemistry department by nomination from major professor. One awarded per year.

IOTA SIGMA PI

National honor society for women in chemistry. Aurum chapter. Minimum 3.0 GPA overall, 3.3 GPA in chemistry.

CHRISTOPHER NEWPORT UNIVERSITY

DEPARTMENTAL HONORS

Awarded to top 10% of graduating seniors from the Department of Biology, Chemistry, and Environmental Sciences at Christopher Newport University.

ALPHA CHI

National college honor society. Virginia Zeta chapter. Membership is offered to top 10% of students.

PUBLICATIONS

PRINT

Hutchinson, C.; Nance, K.; Milstead, R.; Dwyer, B.; Griffith, D. Photolysis Transformation Products from Brominated Estrogens and Their Implications in the Environment. Submitted.

Hutchinson, C.; Cole, D.; Dalluge, E.; Larson, E.; Lee, Y. J. Novel Instrumentation for Tracking Molecular Products in Fast Pyrolysis of Carbohydrates with Sub-Second Temporal Resolution. *Journal of Analytical and Applied Pyrolysis* **2018**, *136*, 107-114. DOI: 10.1016/j.jaap.2018.10.017

Larson, E.; **Hutchinson, C.**; Lee, Y. J. Gas Chromatography-Tandem Mass Spectrometry of Lignin Pyrolyzates with Dopant-assisted Atmospheric Pressure Chemical Ionization and Molecular Structure Search with CSI:FingerID. *Journal of the American Society for Mass Spectrometry* **2018**, *29* (9), 1908-1918. DOI: 10.1007/s13361-018-2001-3

Hutchinson, C.; Lee, Y. J. Evaluation of Primary Reaction Pathways in Thin-Film Pyrolysis of Glucose Using ^{13}C Labeling and Real-Time Monitoring. *ACS Sustainable Chemistry & Engineering* **2017**, *5* (10), 8796-8803. DOI: 10.1021/acssuschemeng.7b01601

Bai, X.; Kim, K. H.; Brown, R. C.; Dalluge, E.; **Hutchinson, C.**; Lee, Y. J.; Dalluge, D. Formation of Phenolic Oligomers During Fast Pyrolysis of Lignin. *Fuel* **2014**, *128*, 170-179. DOI: 10.1016/j.fuel.2014.03.013

UNDERGRADUATE THESIS WORK

These papers represent undergraduate students' senior thesis work from co-mentoring and are intended for publication in collaboration with the students.

Carolan, M.; Gutierrez, M.; Romig, A.; **Hutchinson, C.**; Griffith, D. Biodegradation Behavior of 17β-estradiol and Its Derivatives at Environmentally Relevant Levels.

Hutchinson, C.; Vine, L.; Olson, L.; Griffith, D. Seasonal Estrogen Distributions at a Wastewater Treatment Plant in Northwestern Oregon.

GUEST & SUBSTITUTE LECTURES

WILLAMETTE UNIVERSITY

INSTRUMENTAL ANALYSIS

1 guest lecture on applications of spectroscopy. Class of 24 students.

IOWA STATE UNIVERSITY

GENERAL CHEMISTRY FOR ENGINEERING STUDENTS

>20 guest lectures during the fall 2014 semester. Class of approximately 350 students. Covered ~¼ of the course.

GENERAL CHEMISTRY I

>20 guest lectures during the spring 2015 semester. Class of approximately 300 students.

QUANTITATIVE AND ENVIRONMENTAL ANALYSIS

15 guest lectures over 3 semesters. Class of approximately 60-80 students.

CONFERENCE PRESENTATIONS

UNDERGRADUATE CONTRIBUTIONS ARE UNDERLINED

ORAL PRESENTATIONS

Hutchinson, C.; Nance, K.; Griffith, D. Identifying Phototransformation Products from Brominated Estrogens in Treated Wastewater Effluent with High Resolution Tandem Mass Spectrometry. 74th Northwest Regional Meeting (American Chemical Society); 2019 June 16-June 18; Portland, OR.

Hutchinson, C.; Nance, K.; Griffith, D. Evaluating photolysis products of brominated estrogens with high resolution mass spectrometry. 257th ACS National Meeting; 2019 March 31-April 4; Orlando, FL.

Hutchinson, C.; Vine, L.; Olson, L.; Griffith, D. Quantification and comparison of free, conjugated, and halogenated estrogens in effluent from several wastewater treatment plants in northwestern Oregon. 255th ACS National Meeting; 2018 March 18-22; New Orleans, LA.

Hutchinson, C.; O'Connor, K.; Lee, Y. J. Reaction Pathway Analysis Using Isotopically-Labeled Glucose in Real-Time Monitoring of Thin-Film Fast Pyrolysis. 64th Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2016 June 5-June 9; San Antonio, TX.

Hutchinson, C.; Heinen, K.; Lee, Y. J. Negative APPI High Resolution Mass Spectrometry for Analysis of Nitrogen-Rich Switchgrass Bio-Oils. SciX 2014; 2014 September 28-October 3; Reno, NV.

POSTER PRESENTATIONS

Hutchinson, C.; Nance, K.; Griffith, D. Direct Photolysis Transformation Products from Brominate Estrogens in Treated Wastewater Effluent. 67th Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2019 June 2-June 6; Atlanta, GA.
Hutchinson, C.; Griffith, D. Modeling the formation and fate of halogenated estrogens. 257th ACS National Meeting; 2019 March 31-April 4; Orlando, FL. Selected for Sci-Mix.
Hutchinson, C.; Vine, L.; Olson, L.; Griffith, D. Seasonal concentrations of free, halogenated, and conjugated estrogens in effluent from a wastewater treatment plant in Salem, Oregon. Gordon Research Conference, Environmental Sciences: Water; 2018 June 24-29; Holderness, NH.
Hutchinson, C.; Vine, L.; Olson, L.; Griffith, D. Seasonal concentrations of free, halogenated, and conjugated estrogens in effluent from a wastewater treatment plant in Salem, Oregon. Gordon Research Seminar, Environmental Sciences: Water; 2018 June 23-24; Holderness, NH.
Hutchinson, C.; Larson, E.; Lee, Y. J. Real-time monitoring of single particle herbaceous and woody biomass in μPy-dAPCI-TOF MS. 65th Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2017 June 4-8; Indianapolis, IN.
Hutchinson, C.; Cole, D.; Lee, Y. J. Effect of humidity on ionization efficiencies in dopant-assisted GC-APCI-TOF MS. 63rd Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2015 May 31-June 4; St. Louis, MO.
Hutchinson, C.; Heinen, K.; Lee, Y. J. Negative APPI Fourier transform ion cyclotron resonance mass spectrometry for analysis of fast pyrolysis bio-oils. 62nd Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2014 June 15-19; Baltimore, MD.

UNDERGRADUATE PRESENTATIONS

These presentations represent work presented by mentored undergraduates at national conferences
Washington, R.; Griffith, D.; **Hutchinson, C.**; Ilgen, A. Molecular processes at mineral-water interfaces: Predictions via linking theory and experiments. 257th ACS National Meeting; 2019 March 31-April 4; Orlando, FL.
Nance, K.**; Hutchinson, C.**; Griffith, D. Structural Elucidation of the Direct Photolysis Products of a Halogenated Estrogen. 67th Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2019 June 2-June 6; Atlanta, GA. Selected for Undergraduate Poster Competition.
Carolan, M.; Romig, A.; **Hutchinson, C.**; Griffith, D. Quantifying biodegradation rates of 17β-estradiol in sewage impacted rivers at environmentally relevant concentrations. 257th ACS National Meeting; 2019 March 31-April 4; Orlando, FL.
Bond, N.; Cole, D.; Kvam, A.; **Hutchinson, C.**; Lee, Y. J. Exploring molecular structures using in-source CID on μPy-GC-APCI-TOF mass spectrometry. 62nd Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2014 June 15-19; Baltimore, MD

MEDIA CONTRIBUTIONS

AUDIO

Contributor. "Getting Hormones Out Of Wastewater." Living on Earth. 2018 Nov 2.
https://www.loe.org/shows/segments.html?programID=18-P13-00044&segmentID=2

PRINT

"LGBT STEM Day: Carolyn Hutchinson." ACS Axial. 2019 July 5.
https://axial.acs.org/2019/07/05/lgbt-stem-day-carolyn-hutchinson
Wang, L. "LGBT chemists seek a place at the bench." C&EN. 2016 Oct 17.
https://cen.acs.org/articles/94/i41/place-bench.html

UNDERGRADUATE RESEARCH MENTORING

WILLAMETTE UNIVERSITY

Research was conducted through Science Collaborative Research Program (2 students), external funding (1 student), and as senior research projects (3 students)
CO-ADVISED WITH DR. DAVID GRIFFITH

Manual Gutierrez (Summer 2019) *Chemistry, Willamette University '20*
Biodegradation of 17β-estradiol derivatives at environmentally relevant concentrations in the Willamette River
MacKayla Carolan (Summer 2018; Fall 2018-Spring 2019) *Chemistry, Willamette University '19*
Biodegradation of 17β-estradiol at environmentally relevant concentrations in the Willamette River
Keeton Nance (Summer 2018; Fall 2018-Spring 2019) *Biochemistry & Spanish, Willamette University '19*
Photolysis of halogenated estrogens and HRMS identification of photoproducts
Rachel Washington (Fall 2018-Spring 2019) *Chemistry, Willamette University '19*
Redox reactions of 17β-estradiol by iron-rich mineral (nontronite)

IOWA STATE UNIVERSITY
Research was conducted through NSF Research Experience for Undergraduates (2 students), Undergraduate Research Assistantship (1 student), and Undergraduate Research (CHEM 399) (3 students)
James Frank (Fall 2015, Spring 2016) *Chemical Engineering, Iowa State University '17*
Pyrolysis kinetics of α-, β-, and γ-cyclodextrin using μPy-dAPCI-TOF MS
Returned for an additional fall semester (2017) to continue project.
Nathan Bond (Spring 2014, Summer 2014) *Chemistry, Iowa State University '16*
Induced in-source fragmentation of pyrolyzates using μPy-dAPCI-TOF MS
Joshua Bill (Summer 2013, Summer 2014) *Biochemistry, Iowa State University '18*
FT-ICR MS application for bio-oil (2013) and method development for μPy-dAPCI-TOF MS (2014)
Kaitlin Heinen (Summer 2013, Fall 2013) *Chemistry & Political Science, Iowa State University '14*
FT-ICR MS applications of (-) APPI to bio-oils including method development
Eric Anderson; Summer 2016 *Carlisle High School; Carlisle, IA*
NSF Research Experience for Teachers program. Developed a classroom lesson plan based on research. Thickness-dependent cellulose pyrolysis kinetics using μPy-dAPCI-TOF MS

INVITED TALKS

TAMIU SPEAKER SERIES, Texas A&M International University; Laredo, TX *October 21, 2019*
"Detection and Fate of Halogenated Estrogens in Wastewater and the Environment." Research presentation to TAMIU faculty members and scholars.

QUEER PERSPECTIVES SPEAKER SERIES, Stanford University; Stanford, CA *October 18, 2019*
"The Journey of a First-Generation, Queer, Rural Scientist." Presentation and facilitated discussion about experiences and challenges faced as a first-generation, rural student.

FIRESIDE CHAT, Willamette University; Salem, OR *April 8, 2019*
"Diversity: A Catalyst for Progress in Science." Facilitated discussion on the challenges and advantages of diversity in science, including privilege and bias activities as well as current research on diversity.

MEET A SCIENTIST PROGRAM, Crossler Middle School; Salem, OR *May 8, 2018*
Crossler Middle School invites 1 scientist, 1 historian, and 1 author every year. Spoke to ~800 students (grades 6-8) about conducting research. Students competed to eat lunch with the visitor; 15 students and 5 faculty/staff attended lunch.

PROFESSIONAL DEVELOPMENT ACTIVITIES

AMERICAN CHEMICAL SOCIETY POSTDOC TO PUI PROFESSOR WORKSHOP
ATTENDEE *April 20-21, 2018*
Intensive 2-day workshop including panels, discussion, and small group sessions designed to address the transition from a postdoctoral position to a professor position at a primarily undergraduate institution (PUI). Topics covered included types of PUIs, conducting research at a PUI, and expectations during and after the tenure process.

SESSION CHAIR, Energy, Petroleum, and Biofuels: Instrumentation and Applications; 66th Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2018 June 4; San Diego, CA.
Received, reviewed, and selected 6 talks and 2 alternates from 26 abstracts. Speakers chosen include 1 undergraduate student, 1 graduate student, and 2 postdoctoral researchers.

WORKSHOP PRESENTER, Energy, Petroleum, and Biofuels: Experimental Challenges; 65th Annual ASMS Conference on Mass Spectrometry and Allied Topics; 2017 June 7; Indianapolis, IN.

Presented information and fielded questions about challenges in high resolution mass spectrometry of biofuels.

NEW TEACHING ASSISTANT ORIENTATION, Iowa State University

ATTENDEE *August 8-19, 2011*

Two week program designed to help new TAs prepare to teach. Participated in microteaching sessions for recitation and completed sample lab experiments.

REU MENTOR TRAINING WORKSHOP, Iowa State University *May 21, 2013*

Half day workshop including panels and small group discussions designed to help prepare for the mentoring of individuals in NSF Research Experiences for Undergraduates (REU) programs.

SERVICE & OUTREACH ACTIVITIES

CAMPUS CLIMATE SURVEY WORKGROUP, Iowa State University *Fall 2016 – Summer 2017*

GRADUATE STUDENT REPRESENTATIVE

Campus climate survey was conducted to meet Iowa State University's Strategic Plan Goal 4. Survey created by Rankin & Associates Consulting. Survey launched October 2017.

SPEAKER'S BUREAU PANELIST, Iowa State University *January 2016 – July 2017*

Trained volunteer panelists (2-5) visit classes of 15-400 students as well as clubs and organizations to lead facilitated discussions. Participated in at least 3 panels per semester.

NEW TEACHING ASSISTANT ORIENTATION, Iowa State University

ORIENTATION TA *August 12-23, 2013*; *August 11-22, 2014*

Two week program designed to help new TAs prepare to teach. Led microteaching sessions for both lab and recitation. Helped design and carry out mock scenarios to help new TAs prepare for possible challenges.

LABORATORY SAFETY COORDINATOR & REPRESENTATIVE *January 2014 – June 2015*

Oversaw group adherence to safety guidelines, attended monthly safety meetings with department and EH&S, maintained chemical and biological inventories, monitored waste collection and disposal.

IOWA STATE UNIVERSITY QUEER* GRADUATE STUDENT ASSOCIATION

PRESIDENT *August 2016 – July 2017*

PUBLIC RELATIONS AND OUTREACH COORDINATOR *August 2015 – July 2016*

OSTEM AT IOWA STATE (OUT IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH)

FOUNDING MEMBER

VICE PRESIDENT *January 2017 – July 2017*

PROFESSIONAL MEMBERSHIPS

American Association for the Advancement of Science
American Chemical Society
American Society of Mass Spectrometry
Council on Undergraduate Research
National Organization of Gay and Lesbian Scientists and Technical Professionals