

2020 Undergraduate Student Award in Environmental Chemistry

The Division of Environmental Chemistry sponsors annual awards to full-time undergraduate students currently enrolled in an educational institution in chemistry, environmental engineering or other programs emphasizing environmental chemistry. The Division of Environmental Chemistry is pleased to announce this year's awardees:

Madison Ames

Department of Chemistry
Lewis & Clark College

Madison Ames has demonstrated her dedication to the environmental aspects of chemistry through her research and coursework during her time at Lewis & Clark. Working in Prof. Louis Kuo's research lab in the summer and fall of 2019, Madison contributed to the fundamental chemistry for the degradation of the herbicide glyphosate (Roundup). Glyphosate is one of the most widely used herbicides that is implicated in non-Hodgkin lymphoma, and the Kuo lab found a way to degrade the phosphinate with heterogeneous catalysis. Madison's project utilized a battery of spectroscopic tools to understand the mechanistic pathway for glyphosate degradation into phosphate, formate and carbon dioxide. Madison excelled in our department's aquatic chemistry course, where part of her work involved analyzing an article exploring the role of orthophosphate as a corrosion inhibitor in water coming in contact with lead-containing pipes.

Dr. Anne K. Bentley
Associate Professor and Chair

Emily Nicole Barragan

Department of Chemical Engineering
University of California, Irvine

Emily has been doing research in the group of Professor Shane Ardo to develop and evaluate a solar thermal distillation device that could meet the Oman Humanitarian Desalination Challenge. Emily is passionate about environmental research, and she is pushing the limits of what is known about energy recapture via heat transport in small-scale solar thermal distillation desalination technologies. Her new data on the analytical analyses of conditions that affect the rate of desalination resulted in Emily being awarded several talks and posters at meetings, and will be included in a manuscript. Emily is also an outstanding citizen of UCI campus.

Prof. Sergey Nizkorodov
Vice-Chair for Undergraduate Curriculum,
Department of Chemistry

Mary Beall

Department of Chemistry
Albion College

Mary has distinguished herself as a researcher in nanoscale materials for environmental remediation. Mary initiated a brand-new project synthesizing, characterizing, and assessing the catalytic properties of earth-abundant, bimetallic nanoparticle-carbon microsphere composites. She has been testing these systems as catalyst for the hydrogenation of bromate, using bromate as a model system to examine the removal of oxyanions from natural waters. Her initial results suggest that earth-abundant bimetallic catalysts may be able to replace palladium-like catalysts in this application.

Kevin M. Metz, PhD
Professor of Chemistry

Kyle Beiter

Environmental Sciences Program
SUNY College of Environmental Science and Forestry

Kyle Beiter has worked with Dr. Dibble investigating mercury chemistry in the atmosphere. Mercury mostly enters the atmosphere as atomic mercury, but is not efficiently transferred to ecosystems unless it is oxidized to Hg(II) compounds. Kyle has used computational quantum chemistry to investigate the stability of key intermediates in mercury oxidation. He carried out high-level calculations to determine that a key intermediate, BrHg^\bullet , forms only very weak bonds with O_2 . He has also investigated the degradation of CH_3HgCH_3 , one of the most toxic forms of mercury.

Prof. Theodore S. Dibble
Professor

James Campbell

Department of Chemistry & Biochemistry
University of Alaska Fairbanks

Of the chemistry majors I have interacted with, James has shown the greatest enthusiasm for research. He is extremely intelligent, motivated by interest and enthusiasm rather than grades. He is open to new experiences and truly excited about a career in environmental research. He has excellent quantitative skills in math, chemistry and physics, and is an excellent writer and communicator. I give James my highest recommendation.

Thomas K. Green
Chair, Professor of Chemistry

Olivia Driessen

Department of Chemistry
Towson University

Olivia Driessen is a senior at Towson University majoring in chemistry. In addition to her academic excellence in the classroom, Olivia has completed four semesters of research on the kinetics of organic compound halogenation in aqueous systems disinfected with free chlorine or free bromine. Olivia has also

completed a summer undergraduate research program at the University of Iowa. Olivia is on track to complete and defend an undergraduate honors thesis.

John D. Sivey
Associate Professor

Anna Feerick

Chemical, Biochemical, and Environmental Engineering
University of Maryland Baltimore County

Anna Feerick was selected for the Undergraduate Student Award in Environmental Chemistry due to her outstanding contributions to research efforts involving analysis of contaminants of emerging concern (CECs) in the natural environment. Ms. Feerick has extracted CECs from hundreds of water, sediment, and tissue samples collected from the Chesapeake Bay, Hawaii, and elsewhere. To date, these data have been included in several ACS presentations and one peer-reviewed journal article. Her work has enabled collection of new information about the occurrence, concentrations, distribution, and sources of CECs in the environment.

Lee Blaney
Associate Professor

Anna Feldman

Department of Civil & Environmental Engineering
Syracuse University

Anna Feldman is a talented student with outstanding academic qualifications and strong motivation for environmental research. She is double majoring in Environmental Engineering and Environment, Sustainability, & Policy with a 3.98 GPA. Anna's research focuses on characterizing the occurrence patterns of organic micropollutants in the aquatic environment of Kampala, the capital city of Uganda. Her work will contribute new knowledge regarding the sources and distribution of organic micropollutants in this understudied region. On top of her research excellence, Anna's passions for sustainability initiatives, environmental education and public policy will serve her well as she moves forward in her career.

Teng Zeng
Assistant Professor

Michelle Fiamingo

Department of Chemistry & Biology
The Ohio State University

Michelle is a Biochemistry and Environmental Public Health double major and undergraduate researcher in the NSF Center for Aerosol Impacts on Chemistry of the Environment (CAICE). She is published in the Journal of Geophysical Research: Oceans for her work on trace metal enrichment in the sea surface microlayer. Currently she is examining the anthropogenic impacts of persistent perfluoroalkyl compounds at proxy sea spray aerosol surfaces for her Senior Honors Thesis. Michelle will be joining the Biological & Biomedical Sciences Graduate Program at UNC Chapel Hill this fall to pursue her interests in biochemistry, toxicology, and environmental medicine.

Terry Gustafson
Professor and Vice Chair, Undergraduate Studies

Joseph Herrli

Department of Chemistry
University of St. Thomas

Joe has worked in Dr. Kris Wammer's environmental chemistry research lab since his first year; he will graduate this year with a Biochemistry major. Joe worked on a project studying the role of dissolved organic matter composition on photochemical transformation of contaminants. He was a co-author on a paper that resulted from this project that was published in Environmental Science and Technology.

Kristine Wammer
Associate Dean, College of Arts & Sciences

Sarah Jones

Donald J Bettinger Department of Chemistry & Biochemistry
Ohio Northern University

Sarah has conducted research into how different forms of phosphorus react with colorimetric assays and that relation to NMR speciation. She has performed extensive field work in conjunction with this project and has made great progress.

Christopher Spiese
Associate Professor

Megan Keen

Department of Chemistry
University of New Orleans

Megan Keen has always had a deep appreciation for science which stems back to when she was in grade school. During her pursuit of a chemistry BS degree at UNO, she started working in an environmental analytical chemistry laboratory. Here, she blossomed into a perceptive, sharp, quick individual with a high aptitude for science. Megan is intelligent and competent, easily becoming a strong leader in the lab, eager to share her knowledge with others and learn new skills.

Mark L. Trudell, PhD
Distinguished Professor and Chair

Jordan Louie

Chemistry Department
SUNY College of Environmental Science and Forestry

Jordan Louie is working diligently with Dr. Jaime Mirowsky to develop a new laboratory experiment using air quality sensors. She has worked on developing and vigorously testing the protocol under different scenarios, as well as writing the handout to be given to students. This handout will inform students about the importance of studying air quality, the role of citizen science, and the techniques for reliable sampling. Dr. Mirowsky anticipates utilizing this laboratory exercise in her undergraduate course on environmental sampling next semester. Jordan has also been a lead undergraduate TA for General Chemistry.

Prof. Theodore S. Dibble
Professor

Alissa Martin

Department of Chemistry
Lebanon Valley College

We proudly nominate Alissa Martin for this award. As evidenced by her exceptional performance in coursework, as well as on research projects related to sustainability (in the laboratory of our physical chemist, Dr. Anderson Marsh), she shows significant promise as a future contributor to the field of environmental chemistry. Alissa is a dual major in Chemistry and Environmental Science and is currently taking courses in Environmental Chemistry and Instrumental Analysis. She has served as a laboratory assistant (as an in-lab TA) and assisted in laboratory set-up preparation for freshman chemistry. Alissa envisions a career in environmental health and safety.

Walter A. Patton, Ph.D.
Associate Professor
Chair, Departments of Chemistry & Physics

Sarah Mersch

Department of Chemistry
Gustavus Adolphus College

Sarah is a third-year chemistry major and conducted geochemical research on a sediment core from Lake Challa, a crater lake at the base of Mount Kilimanjaro. Sarah analyzed Hg and Pb concentrations in the core and related her findings to major climatic events occurring over the ~250,000 years represented by the core. She found higher concentrations of the trace metals during interglacials, but key differences between Hg and Pb suggest regional sources of Pb on wind-blown dust may be important. Sarah presented her work at the Midstates Science Consortium and had abstracts accepted at the American Chemical Society and the Association for the Sciences of Limnology and Oceanography.

Jeff Jeremiason and Amanda Nienow
Professors

Brittney Mitchell

Department of Chemistry
Humboldt State University

Brittney has developed her own project analyzing the metal content in different types of algae. She has worked tirelessly to develop the analytical method using a variety of literature methods, and she has successfully obtained metal concentration values that are in line with literature values. She has seen differences in the metal content of different types of algae, and has moved on from there to investigate whether location along the California coastline plays a role in the metal content of different algae.

Claire Till
Assistant Professor

Kyndalanne Pike

Department of Chemistry
College of Wooster

Kyndalanne is double majoring in mathematics and chemistry and is on track to complete both degrees in 3 years. Her thesis project, that integrates the two disciplines, examines trace methods (LC-MS) to detect PFAS compounds in rainwater. Her graduate work will involve developing mathematical approaches to analyze complex data sets arising from advanced mass spectrometry measurements.

Brett Baker
General Chemistry Lab Coordinator

Rahel Pommerenke

Department of Civil, Architectural & Environmental Engineering
Missouri University of Science and Technology

Rahel has worked as an undergraduate researcher over three years and in multiple departments: electrical, geological, and environmental engineering. She also served as a student field technician the USGS Missouri Water Science Center as well. Rahel's work at USGS included preparing sediment samples from 2015 and 2017 Missouri Floods and analyzed them for heavy metals (Pb, Ba, Zn) to map the spread of contaminants by waterways. Rahel was also involved with collecting indoor air and groundwater samples in buildings at the Riverfront superfund site. In my research group, Rahel is learning to do plant sampling to delineate groundwater pollutants, called phytoforensics. She also served as President of our Honors Society.

Joel G. Burken
Curators' Distinguished Professor

Madison Preston

Department of Chemistry
Georgia Gwinnett College

Madison Preston conducted productive research in environmental chemistry from Fall 2018 through Summer 2019, with outcomes influential in synthesis and application of hydrogels for nutrients recycled from human urine. Her work included comparative thermodynamic and kinetic studies of different types of hydrogels and production of prototypes for urea adsorption and desorption. Madison's work was presented at local and national conferences, and she won the Best Paper award in the Chemistry Section at the 96th Annual Meeting of the Georgia Academy of Science, 2019. She has also maintained a 3.61 GPA in the professional chemistry track.

Patrice Bell
Interim Chair of Faculty &
Associate Professor of Chemistry

Daria Savitskaia

Department of Chemistry
State University of New York at Oswego

Daria possesses the diverse set of skills, knowledge, and abilities needed for graduate-level research activity. Daria's research focused on utilizing high-volume ambient air sampling methods to determine atmospheric concentrations of several legacy contaminants using low-resolution gas chromatography/mass

spectrometry. Over the past two years, Daria has demonstrated outstanding skill and discipline in her laboratory techniques. Overall Daria's laboratory work demonstrates an advanced understanding for research technique and methods. Aside from her outstanding GPA, Daria is an outgoing, hard-working, conscientious, and mature individual.

James J. Pagano
Director, Environmental Research Center

Charlie Skurie

Department of Energy, Environmental & Chemical Engineering
Washington University in St. Louis

Charlie Skurie works in the Environmental NanoChemistry Lab at Washington University in St. Louis. His research elucidates photochemical oxidation of aqueous Mn²⁺ and its consequential MnIV oxide formation in saline water. This work is important because desalination and energy-related subsurface engineering processes generate a vast quantity of highly saline brine, but less is known about its impacts on redox chemistry in the environment. Charlie has shown his skill in experimental design and careful testing, as well as his exceptional dedication in research.

Young-Shin Jun
Professor

Marina D'Souza

Department of Civil, Architectural, and Environmental Engineering
Drexel University

Marina D'Souza is a graduating senior at Drexel University, who has immersed herself in research since her freshmen year (nearly five years ago). She has blossomed into a highly dependable and productive independent researcher, who is eager to pursue a doctorate in Environmental Engineering. She has worked and presented on studies at Drexel ranging from the use of algal bioreactors for wastewater treatment to the development of novel cold plasma technologies to remove the environmental contaminant PFAS from water and activated carbon, and conducted research on using organoclays to treat pharmaceutical wastes during one of her co-ops in Germany.

Christopher M. Sales
Associate Professor

Jenna Swenson

Department of Chemistry & Biochemistry
University of Minnesota Duluth

Jenna is a talented, hardworking, and creative chemist in my lab. Her career ambitions include attending graduate school, obtaining a PhD, and working in academia, and I am certain that within the decade she will achieve them. Jenna is by far the best and brightest undergraduate student I have ever had in my lab, displaying an independence, leadership ability, and scientific curiosity more often attributed to late-stage PhD students. She was one of the best students in my 90+ seat Quantitative Analysis course and TA'ed subsequent iterations of the course with great success.

Dr. Kathryn Schreiner
Assistant Professor

Robert Winton

Department of Earth & Environmental Engineering
Columbia University

Robert is an exceptionally fast learner with potential to be an exceptional researcher. He published in Environmental Science & Technology in his sophomore year, demonstrating his dedication and strong work ethics. He has shown maturity beyond his young years and conducts himself professionally and with dignity. Robert is a team player and has excellent communication skills. His working relations with his project mates are particularly productive and have yielded synergistic outcomes. Through being a board member of the American Academy of Environmental Engineers, he has demonstrated leadership qualities and passion to engage with the environmental chemistry community.

Dr. Ngai Yin Yip
Lavon Duddleson Krumb Assistant Professor
of Earth and Environmental Engineering