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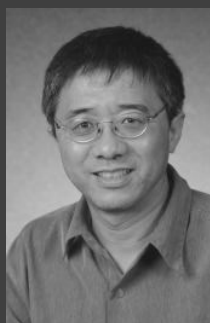
CU Denver Faculty Publications

ALUMNI NEWSLETTER



DENVER CHEMISTRY DEPARTMENT | SPRING 2018

A WORD FROM THE CHAIR



The Chemistry Department is excited to announce a new major opportunity for CU Denver students. Starting Fall 2018, students will be able to declare a B.S. in Biochemistry. This program was

approved by the Board of Regents last November. The study of biochemistry combines knowledge from chemistry, biology, physics, mathematics, and sometimes other disciplines to understand how life works at the molecular level. This integrated scientific knowledge will be essential for understanding the future of human health, sustainable energy, and the environment. The B.S. in Biochemistry will replace the current B.S. Chemistry with Biochemistry Emphasis, which has been offered in our department since 2012. The program will be directed by Professors Jeff Knight and Vanessa Fishback.

Biochemistry is a rapidly growing interdisciplinary subfield of chemistry. Like many universities nationwide, CU Denver has recently seen a sharp increase in demand for biochemistry courses and degree programs. The rapid

growth is due, in large part, to the increasingly molecular nature of both scientific research and medical practice. We expect our program to attract students interested in careers spanning the breadth of science and medicine. The B.S. Biochemistry program at CU Denver strongly emphasizes connections between basic science and human health. The program includes required courses in chemistry, biology, physics, and mathematics; plus, upper-division electives that may be taken in chemistry, biology, physics, or psychology. Required coursework covers much of the foundational knowledge and skills for graduate and health professions entrance exams.

Several recently developed courses explore connections between cutting-edge biochemical research and different diseases. These include: CHEM 4815/5815 (Structural Biology and Neurodegenerative Diseases, taught by Prof. Liliya Vugmeyster); CHEM 4825/5825 (Biochemistry of Metabolic Disease, taught by Prof. Jeff Knight); CHEM 4835/5835 (Biochemistry of Gene Regulation and Cancer, taught by Prof. Xiaojun Ren); and CHEM 4845/5845 (Molecular Modeling and Drug Design, taught by Prof. Hai Lin).

Students in both the Chemistry and Biochemistry B.S. programs are encouraged to take advantage of undergraduate research opportunities in chemistry and related fields either at CU-Denver, or at the nearby Anschutz Medical Campus. Our students will graduate with important skills in critical thinking, problem-solving, and scientific communication for careers in the health and natural sciences.

Another development is the General Chemistry sequence for students pursuing science, technology, engineering, and mathematics (STEM) majors. Widespread shortages in the STEM workforce have been reported in the United States, which has led to much discussion on how to address this growing crisis. Many of our STEM research faculty have experienced the difficulty of identifying undergraduate students who have the necessary quantitative and qualitative skills in order to maintain a robust and competitive research program.

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Word From the Chair, Continued

In response to these needs, the Department of Chemistry proposes a new General Chemistry course series explicitly intended for STEM majors. The proposed courses provide a foundation in quantitative science that is relevant to the interests and educational needs of students who intend to engage in and pursue undergraduate and post-undergraduate STEM study. Course features include:

- Chemistry curriculum, emphasizing the development of critical thinking
- Critical reading and analysis skills
- Integrated lecture and laboratory curriculum to develop a better appreciation for data-analysis and the experimental nature of chemistry and science in general
- Practice in written communication, following the guidelines of the American Chemical Society through lecture activities and pre- and post-laboratory assignments
- Emphasis on quantitative and qualitative problem solving, supported by the application of previously mastered mathematical skills, and exposure to research, science faculty, and the wider STEM community.

Undergraduate students majoring in a STEM field including: Chemistry, Biochemistry, Biology, Physics, Engineering (Bioengineering), Math, Geology, and Environmental Science are

good candidates for the General Chemistry for STEM series.

The department is also pleased to announce a new core course, Chemistry 1494-001: Forensic Science. Developed by Dr. Marta Maroñ. Forensic Science is an online course (with an online lab) that serves as an introduction to the world of forensics. It focuses on the aspects of chemistry used during an investigation. Students will be introduced to a basic understanding of chemistry, the physical and chemical properties of matter, simple types of chemical reactions and equations, and molecular structure using the theme of forensic science. This forensic theme readily lends itself to a detailed comprehensive examination of questions and problems. Criminal investigations are methodical, process-oriented, and often require an understanding of both large-scale and small-scale observations—characteristics familiar to chemists.

As always, I will be happy to hear your thoughts on how to further improve our program.

Sincerely,

Haobin Wang, Chair



Dr. Knight selected as Fulbright Scholar

Associate Professor Jefferson Knight has been selected to receive a prestigious Fulbright Scholarship through the U.S. State Department to support his research



on molecular mechanisms of protein-membrane interactions. The project is titled "Using NMR spectroscopy to determine the structure of a unique calcium-inhibited C2 domain," and will be funded during the 2018-2019 year. Working in collaboration with Professor Markus Zweckstetter at the Max Planck Institute for Biophysical Chemistry in Göttingen, Germany, Dr. Knight will learn biomolecular NMR methods for probing protein structure and protein-metal coordination. He is excited for the opportunity to learn these techniques and teach them to CU-Denver students upon his return.

Kaitlyn Torlone, New Administrative Assistant III



Kaitlyn Torlone joined the Chemistry Department at the University of Colorado Denver in February, 2018. Kaitlyn grew up in Virginia and North Carolina and moved to Colorado with her parents in 2012. She received her Bachelor's Degree in Philosophy and Psychology at the University of Northern Colorado in 2017. Previously, she worked at the University of Northern Colorado Office of Undergraduate Admissions as an Administrative Assistant II, where she found her passion for working in Higher Education. Kaitlyn is excited to pursue a Masters Degree in eLearning Design and Implementation at the University of Colorado Denver. She looks forward to continuing to work with the students and faculty within the Chemistry Department at the University of Colorado Denver.

CU Denver Chemistry Club

This year, the chemistry club participated in a few activities. In the fall, DataBlast was held, which is an event to promote undergraduate research to young chemistry students. In the spring, the club participated in the Denver Metro Regional Science Fair. Additionally, ACS study guides were sold to students to help prepare for final exams.

(Julia Deyanova and Danielle Miller)





Pictured from left to right: Julia Deyanova, Duyen Lam, Christina Cheung, Julianna Oviedo, Nara Chon, Shamik Bhat, Danielle Miller, Phoebe Bawmann, Michelle Gabbert, Owen Berg, Minyoung Lee, Dr. Haobin Wang, Samantha Kent, Austin Skinner, and Tim Spotts.

Awardees



Marti Barrett Scholarship
Minyoung Lee



Robert Damrauer Scholarship
Julia Deyanova (pictured with Robert Damrauer)



Douglas F. Dykes Scholarship
Julianna Oviedo



Mike Milash Teaching Awards
Austin Skinner, Michelle Gabbert, and Samantha Kent



Outstanding General Chemistry Students
Duyen Lam and Phoebe Bawmann



Outstanding Honors General Chemistry Student
Shamik Bhat



Outstanding Organic Chemistry Student
Minyoung Lee



Outstanding Biochemistry Students
Christina Cheung and Owen Berg



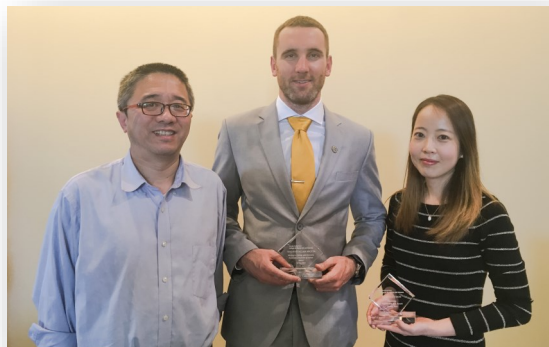
Outstanding Graduating B.S. Chemistry Students
Danielle Miller and Tim Spotts



Outstanding Graduating M.S. Chemistry Student
Nara Chon

(Not Pictured) Outstanding Analytical Chemistry Student, George Ibrahim

CLAS Awards



Dr. Wang with Tim Spotts and Nara Chon, the Chemistry Students who won the 2018 CLAS Outstanding Undergraduate and Outstanding Graduate Student Awards, respectively. They were honored at the CLAS reception.

New Upper-Division Course Developed & Taught by Dr. Vanessa Fishback

Chemistry 4421/Chemistry 5421 Cannabis Chemistry is a new upper division course developed and taught by Dr. Vanessa Fishback. The course is an elective for the new BS Biochemistry, the ACS Certified BS Chemistry, and the chemistry minor. Dr. Fishback presented a description of the course to a crowded room at the Institution for Cannabis Research ICR 2018 conference in Pueblo, Colorado this past April. The course is believed to be the first upper-division academic cannabis chemistry course in the nation.



CU Denver Chemistry Faculty Publications

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- Andrew Hund and **Karen Knaus** (Accepted and forthcoming in 2015). "Pandora's Box: Neither Climate Refugee, Migrant, Stateless or Exiles." To be published in the *International Journal of Climate Change: Impacts and Responses*.
- Cassandra Herbert, Yannick Kokouvi Dzowo, Anthony Urban, Courtney N Kiggins, **Marino JE Resendiz** (05/2018). "Reactivity and Specificity of RNase T , RNase A, and RNase H toward Oligonucleotides of RNA Containing 8-Oxo-7,8-dihydroguanosine". *Biochemistry (Easton)* (0006-2960)
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- Hai Tran, Lauren Anderson, **Jefferson Knight** (02/2018). "Cooperativity in Membrane Binding By C2AB Tandem Domains of Synaptotagmin -7 and Synaptotagmin-1: A Comparative Study". *Biophysical Journal* (0006-3495), 114 (3), p. 276a.
- Hans-Dieter Meyer, **Haobin Wang** (03/2018). "On regularizing the MCTDH equations of motion". *The Journal of chemical physics* (0021-9606), 148 (12), p. 124105.
- Ignacio J. Ferrer-Vinent, **Margaret Bruehl**, Denise Pan, and Galin L. Jones (2015) Introducing Scientific Literature to Honors General Chemistry Students: Teaching Information Literacy and the Nature of Research to First-Year Chemistry Students, *Journal of Chemical Education* 2015 92 (4), 617-624
- Jason E Roberts, Guang Zeng, **Marta K Maroń** , Mindy Mach, Iman Dwebi, **Yong Liu** (04/2016). "Measuring Heterogeneous Reaction Rates with ATR-FTIR Spectroscopy To Evaluate Chemical Fates in an Atmospheric Environment: A Physical Chemistry and Environmental Chemistry Laboratory Experiment". *Journal of chemical education* (0021-9584), 93 (4), p. 733.
- Liliya Vugmeyster**, Dmitry Ostrovsky (04/2018). "Basic experiments in 2 H static NMR for the characterization of protein side-chain dynamics". *Methods (San Diego, Calif.)* (1046-2023)
- Liran Kidon, **Haobin Wang**, Michael Thoss, Eran Rabani (2018) Bi-stability in the Nonequilibrium Anderson-Holstein Model: Developing Tools to Study Fundamental Physics of Electron Transfer in Nonequilibrium Quantum Impurity Models, *Bulletin of the American Physical Society*, American Physical Society
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