



Chemistry Department Newsletter

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Welcome to the Chemistry Department's Spring semester newsletter. We hope you enjoy reading about the exciting things going on in the department.

Faculty Focus

Dr. Chuck Caldwell is a Pueblo near-native and graduate of East High. He graduated from Colorado School of Mines with a chemical engineering degree and took a job in the steel industry, working as a metallurgist, production foreman, and tooling engineer CF&I. After being laid off from CF&I, he spent time on unemployment and briefly worked construction on a framing crew, which was way too much like work. More to his liking was a bartending job at a local nightclub. Eventually he took a second job as a bicycle mechanic, fixing bikes by day and pouring drinks at night. Later he left the club and went full time at the bike shop which was owned and staffed by former steelworkers.

Working at the bike shop eventually got boring, especially in the winter, so Chuck enrolled part-time in the master's program at the University of Southern Colorado. Before completing his Master of Science in Applied Natural Science (MSANS) degree he headed off to Duke to work on his Ph.D., returning to Pueblo at Christmas break to defend his master's thesis. After completing his research and course work, but before doing his proposal and defending his dissertation, he came back to USC to take a job as a Visiting Assistant Professor (VAP). That's right, he left ABD a second time, something he swore he would never do! He returned to Duke the following June and completed his proposal and defense on successive days.

For four years he taught full time as VAP, then took the lab coordinator job for ten years before returning to teaching in 2012. Dr. Caldwell notes that a lot has changed here in 21 years and the timing is right to retire. So after many years of service Dr. Caldwell will be hanging up the dry erase pens, PowerPoint slides, and lab coat at the end of the current academic year.

Alumni Notes



S. Garrett Williams (CSU-Pueblo Alum) with his graduate advisor Dr. Anne K. Jones.

I am currently a 5th year chemistry graduate student at Arizona State University (ASU). I became interested in chemistry thanks to a wonderful teacher in high school. During high school, I joined the Chemistry Club and was fortunate enough to visit nearby elementary schools and perform chemistry demonstrations; the kids and I always loved elephant's toothpaste!

I began attending CSU-Pueblo in the fall of 2011 where I was introduced to Dr. Dillon and Organic Chemistry. I quickly fell in love with retro synthesis, albeit research under Dr. Dillon taught me that chemistry on paper is easy, chemistry on the bench isn't. I was fortunate enough to do research with both Dr. Dillon and Dr. Druelinger for all three years of my stay at CSU-Pueblo and was fortunate enough to present my research at the ACS meeting in Dallas, TX in the spring of 2011. I am

certain that the experience I gained in the lab was instrumental to my early success at ASU.

On top of gaining research experience with Dr. Dillon and Druelinger, Dr. Cranswick, Farrer, and Bonetti's classes were crucial for preparing me for graduate work. I somehow became a physical bioinorganic electrochemist during graduate school and I certainly wouldn't have made it without their excellent teachings. I am particularly grateful for Dr. Cranswick's patience and support during our discussions on my often-eccentric research ideas; those discussions truly helped me develop the confidence to go to graduate school. Dr. Bonetti taught me that there is a difference between knowing and knowing, and Dr. Farrer somehow managed to grade my terribly messy homework.

My advice to current students considering graduate school is to take hard and diverse courses. The more well rounded you are as a chemist/scholar the more successful you will be in graduate school. For those who are just starting I recommend taking lots of math and computer science classes, they will make everything else easier in the long run. Also, go to office hours and ask questions.

I began research in Dr. Anne K. Jones Lab over the summer of 2014 at ASU and hope to graduate this summer (2019). We are a bioinorganic chemistry laboratory and we use electrochemistry to study the catalytic activity of redox enzymes that catalyze energetically relevant reactions. My research has largely been a collaboration with many different universities via the BET-Cy EFRC (DOE). I have been fortunate enough to present my research at several conferences (GRC, ACS, Penn State Bioinorganic Workshop). During the course of my research, I was fortunate enough to stumble upon two extraordinarily odd enzymes and have had to build catalytic models from the ground up to simulate their unique catalytic activities. I am co-author on a JACS publication (*Journal of the American Chemical Society* **2017**, 139 (28), 9544-9550), where we determined the reduction potential of an [FeS]-cluster array using EPR deconvolution. Additionally, I hope to publish two manuscripts this summer: the first on the unique catalytic profiles of three [FeFe]-Hydrogenases and the second on the electrocatalytic effects of substituting tungsten for molybdenum in a pterin enzyme.

Chemistry has provided me a strong background over a large swath of science. I am currently utilizing that expertise as a patent agent at Skysong Innovations, the technology transfer unit of ASU. My next step will likely be law school so that I can work as a patent attorney.

S. Garrett Williams

ACS Program-in-a-Box

On February 26, Chem. Club sponsored another in the ACS webinar series, "Program-in-a-Box". This one surveyed the history and development of the Periodic Table. The program highlighted early attempts at organizing the known elements according to such properties as relative atomic mass and similarity of chemical properties. Audience participants in the webinar were able to see how competing organizational schemes were developed, the advantages of each, and how one eventually won out over the others. Properties and historical uses of elements known since ancient times were discussed (such as gold, silver, and copper used for ancient coins). Attendees learned the historical origins of some elements names, some named for places of discovery or occurrence (such as helium and germanium), some for physical characteristics (such as mercury and lead), and some to honor historical figures (such as curium and einsteinium). Newly discovered synthetic elements were also described along with details of how they are made.

The Program-in-a-Box series is a periodic webinar event provided by the American Chemical Society and sponsored locally by CSU-Pueblo Chem. Club.





Nicholas Androes, Kaitlin Diodosio, Keenan Wyatt, Sarah Lira, Breana Williams, Brittany Mullen

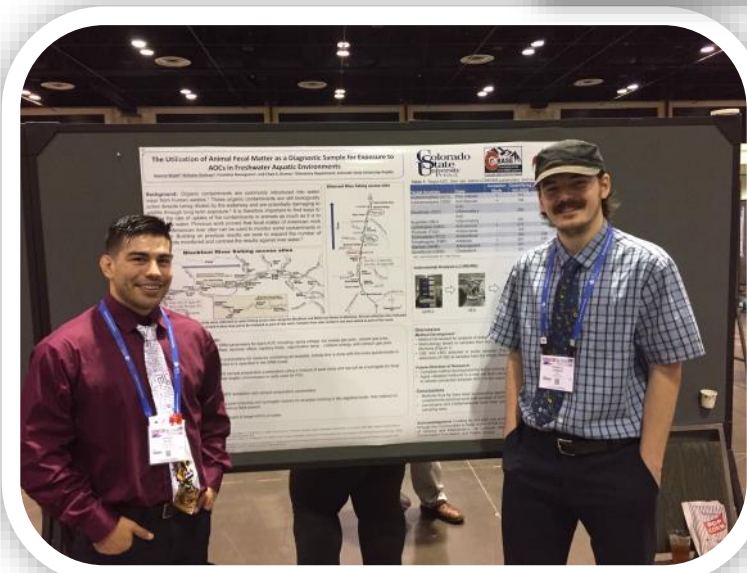
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American Chemical Society National Meeting in Orlando

Chemistry students from the CSU-Pueblo Chem. Club recently attended the 257th ACS National Meeting and Exposition in Orlando, Florida. Six students: Nich Androes, Kaitlin Diodosio, Sarah Lira, Brittany Mullen, Breana Williams, and Keenan Wyatt presented a poster showcasing the Club's activities over the last year. In addition to some sightseeing in Orlando, students also attended the vendor exposition at the ACS meeting where new products are highlighted, and they were able to view some poster and oral presentations by other students as well as research chemists and educators. Nich and Keenan presented their own poster detailing research they had done with Frankline Nwanguma and Dr. Chad Kinney.



Keenan Wyatt, and Nich Androes poster presentation

New Chemistry Department Chair



With the end of the 2018-19 Academic Year will come a change in the Chair of the Chemistry Department. Dr. Chad Kinney will be stepping down as Chair of the Department and Dr. David Dillon will be taking up the reigns.

Dr. Dillon has been with the Chemistry Department at CSU-Pueblo for more than 20 years and is well versed in the operation of the Department and the University. In his time at CSU-Pueblo Dr. Dillon has been recognized by students and his peers for excellence in teaching. He is a staunch champion for students and an advocate for academic freedom.

For the past decade Dr. Dillon has served as the Department Coordinator for the ACS Project SEED Program. Project SEED supports economically disadvantaged high school students by providing opportunities for these students to participate in faculty mentored research at the University as a mechanism to expose them to what college has to offer and their potential for success. CSU-Pueblo is the only host site for Project SEED in Colorado.

Dr. Dillon has a long history of mentoring undergraduate and graduate students in a research environment and supporting those students to attend and present the results of their research at appropriate regional and national meetings. The students, faculty, and staff in the Chemistry Department will certainly be well represented, served, and led with Dr. Dillon as Chair.



How can you help support excellence in education and research within the Chemistry Department?



If you are interested in supporting the Chemistry Department with a gift for program enhancement or student scholarships please call the CSU-Pueblo Foundation office at (719) 549-2380 or visit www.csupueblo.edu/foundation/ and simply specify that your gift is to support the Chemistry Department or Chemistry Student Scholarships.

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