

SEMESTER NEWSLETTER

Message From the Chair



“It Takes a Village to Raise a Child,” is also true for university students. It takes a community of the faculty, university support system, alumni, parents, friends and beyond to produce a well-rounded graduate

who is prepared to take on the challenging problems related to energy, environment, and health.

Student success has been and is the number one priority for the department. As faculty, put continuous effort into understanding the changing world needs and provide students with the relevant knowledge and tools to succeed.

Our faculty writes winning research proposals. Externally funded cutting-edge research that faculty conducts helps them stay at the top of their field. In 2023 the CHBE faculty had \$3.2 million in research expenditures on projects funded by NASA, DoD, DOE, USDA and NIH and published 31 journal articles. Those funds provide opportunities for graduate and undergraduate research. Undergraduate student research opportunities are rare in many universities, but that is what sets us apart. Most of our students get to experience research. Hands-on experience in the research world is an invaluable experience in undergraduate education.

Alumni and friends have always enthusiastically supported the department. Alumni sponsor scholarships, contribute to endowed professorship, fund capstone projects, provide instrumentation for research and teaching, engage in upgrading departmental facilities and space, mentor students, bring job and internship opportunities, support student travel, and advise to our curriculum. Donors contributed over \$150,000 for various activities this year.

After receiving feedback from a recently graduate, we are going to add a page to our departmental website. The links allow alumni to share news, learn about departmental activities, share job opportunities, offer help, answer questions posted by someone or mentor students.

The college of engineering Career Services assists students with job placement in various industries. Our students have been recruited by industries across the nation and in fields ranging from agriculture, food processing, bio-medical, chemical, semiconductor, advanced manufacturing and more. I believe the quality of our students is what creates a strong demand. Career Services alone cannot keep track of all employers who would hire our students. We also look to our friends and alumni to provide names to whom the career services team should reach out to build a strong relation.

In line with providing options for students, the faculty approved a “Biomedical Engineering” certificate this semester. This certificate would be simple to obtain for current students in the department and not too difficult for other students in science or engineering fields. We plan to expand a targeted certificate that would address specific industrial needs. So, again, we solicit your feedback on what those future certificate programs should be and what skill set students need to receive such a certificate.

You can email your thoughts to chbe@uidaho.edu or through a [web form](#).

Thank you.


Dev Shrestha, Ph. D.

Department Chair

 **University of Idaho**
Department of Chemical and
Biological Engineering

uidaho.edu/engr/departments/chbe

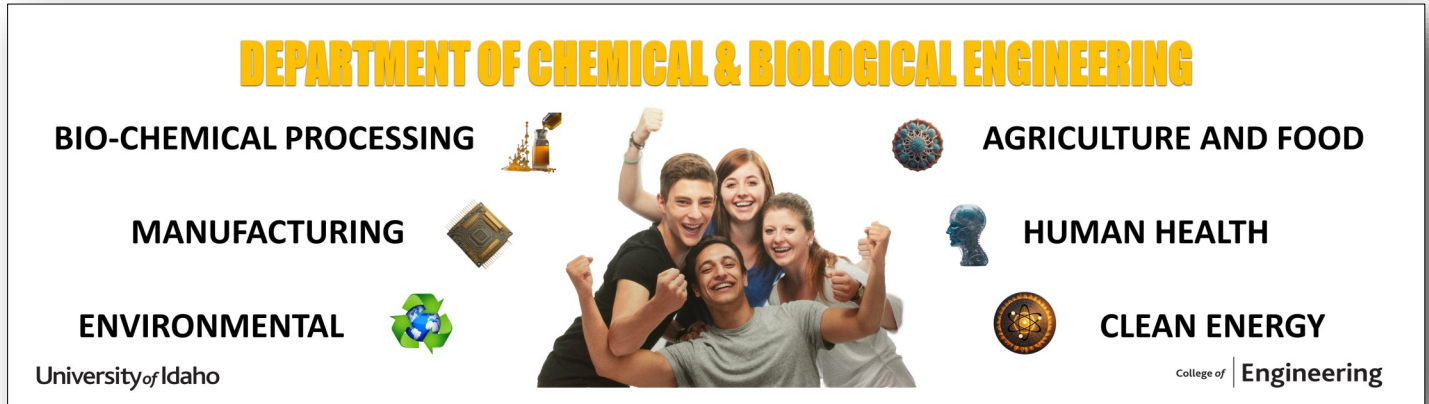
Email: chbe@uidaho.edu

 208-885-6182



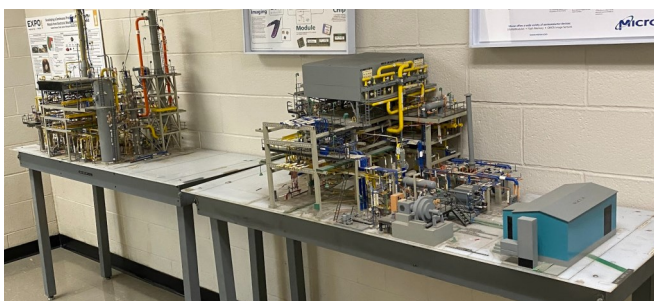
New Departmental Banner

The departmental banner is updated to highlight the recent academic foci of the combined Chemical Engineering and Biological Engineering Department. The banner is now displayed on BEL 308 (Previously the CME Office) and EP 1st floor display kiosk. The focal area encompasses our faculty research and contributes to top challenges that our society, nation and the world facing today. The students enrolled in the department can pick technical elective courses in one of those areas.



Model Replaced by Dissertations

Summer is the time to organize. We decluttered the storage space and hallways. The hallway had 3D model of two petroleum refinery plants. One of them came from the Cherry Point Refinery in Bellingham, WA which is now owned by BP and was originally ARCO. That refinery was built in the 1970's when the Alaska Pipeline was built. At that time in history, design drawings were all done with pencil and paper blueprints plus plastic 3D models were made by the design engineers, which were used to verify layout spacing, then taken to the job site for the construction crews to use to verify they were following the 2D drawings correctly and to begin training operators to run all the manually controlled valves. It was donated to the department in the mid-to-late 1980s, arranged by some of our alumni who worked at the Cherry Point refinery after they made upgrades to the refinery, outdating the model.



Before

The second model was used in the early stages of construction planning for the Chevron El Segundo (California) refinery. Although the model had historical value, it was collecting dust and we determined that it was not an accurate representation of how would be designed and constructed today. Finding no takers, we decommissioned the model.

In its place, we organized a collection of thesis and dissertations chronologically since 1901. The collection is composed of 825 theses and dissertations from Chemical Engineering, Biological Engineering, Agricultural Engineering, Material Science, Metallurgical Sciences, and Mining. They were scattered over four different rooms and locked away from general access. We plan to convert the collection to a searchable database for anyone to find and read.

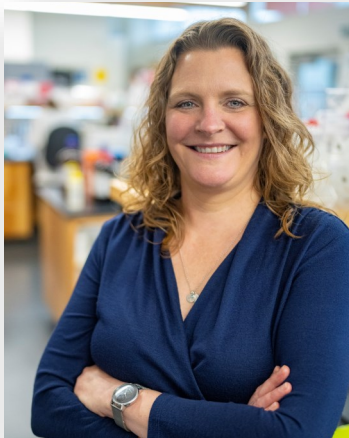


After

Welcome our New Advisory Board Member

The advisory board members play a key role in our success. They provide the critical support needed for the department in all categories. We would like to welcome Dr. Jennifer Zimmer as the newest member of the board.

Dr. Zimmer is the Laboratory Director at Alturas Analytics, Inc. and has been working in the field of bioanalysis for over 20 years. She received her B.A. in English and Zoology from the University of Idaho and her Ph.D. in Pharmacology from the University of Colorado Health Sciences Center, working in Dr. Robert Murphy's laboratory on the leukotriene lipid mediator pathway. Her post-doctoral experience in Dr. Richard Smith's laboratory focused on using metabolomics to elucidate disease pathways and to discover novel biomarker targets. Dr. Zimmer is responsible for the overall operation of the Alturas Analytics laboratory. She has experience with FTICR, TOF, ion trap and quadrupole instrumentation. She has utilized these instruments for quantitation as well as structure elucidation using HPLC-MS/MS and HPLC-MSⁿ.



JML Moveout Complete

We updated you with the J.W. Martin Lab move-out in last semester's newsletter due to needed space for Deep Soil Ecotron Units, a NSF funded \$18.9 million project. The Biodiesel Plant that was housed in J.W. Martin lab was initially planned for an auction or donation to a non-profit. However, after deliberation from the Risk Management and Environmental Health and Safety, it was deemed increased risk to the university. The equipment therefore cannot be sold or donated even in parts. The department will reevaluate to see if it can be re-purposed.



The Bio Ram is being auctioned soon

The department has three vehicles that ran on Biodiesel. One of the three vehicles, 92 Dodge truck, will be auctioned soon. The truck has 5-speed manual transmission, a 160 Horsepower Cumming Turbo Engine and about 161k mileage. This truck served as part of Biodiesel Research fleet that used B20 (20% biodiesel blend). Although it ran on biodiesel blend, it can run on regular diesel. The truck was originally donated to the biodiesel research program from Idaho Department of Water Resources. The biodiesel research facility at the university is transitioning and it was deemed that trucks can be put to better use. This truck will be auctioned soon from <https://www.uidaho.edu/dfa/facilities/les/surplus/auctions>

Research Highlight

Funded by Department of Defense (DoD), Dr. Sarah Wu's research is establishing a non-thermal plasma-based Aqueous film-forming foams (AFFF) treatment technology that will be efficient for per- and polyfluoroalkyl substances aka PFAS destruction. PFAS contamination of groundwater, drinking water, and soils is a major problem throughout the United States.

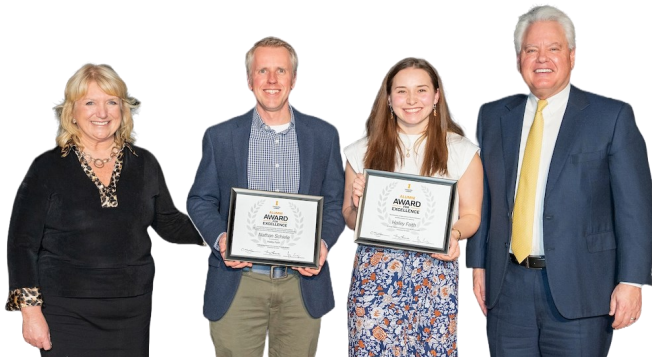


Dr. Sarah Wu working with her Ph.D. student Aamir Bashir. Due to their chemical structure, PFAS are very stable in the environment and are resistant to biodegradation, photo-oxidation, direct photolysis, and hydrolysis. Research has shown that PFAS, even in parts per trillion levels, could lead to serious health effects such as kidney cancer, liver damage, immunotoxicity, neurotoxicity, testicular cancer, and abnormal thyroid hormone levels.

Dr. Wu is also developing Non-Thermal Plasma Technology for milk pasteurization. Thermal milk processing usually leads to unwanted changes in sensory attributes (due to overheating) and to alterations in bioactive milk nutrients which have significant health benefits. This nonthermal plasma-based milk processing technology will be compact, easy to operate, and efficient in producing a safe product with well-preserved sensory and nutritional characteristics and extended shelf life.

Alumni Award of Excellence

The Alumni Award for Excellence recognizes the University of Idaho's distinguished seniors at the undergraduate level, nominated by faculty, staff, and



Amy Lientz, Dr. Nathan Schiele, Hailey Faith, Scott Green



Amy Lientz, Dr. Woody Admassu, Paetra Mortan, Scott Green

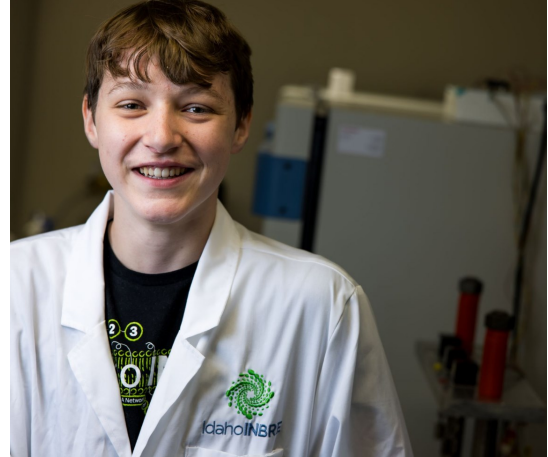


Amy Lientz, Dr. Woody Admassu, Kaylee Janett, Scott Green

administrators. Three chemical and biological engineering students received the award. Congratulations to award recipients: Hailey Faith (Nominated by Nathan Schiele); Kaylee Janett and Paetra Morgan (Nominated by Woody Admassu). The above pictures were taken during the ceremony with Amy Lientz, the associate vice president for alumni relations and President Scott Green.

Biological Engineering Student Receives INBRE Fellow

Congratulations to INBRE Fellow, Peter Wieber, for winning 1st place Undergraduate Presentation at the 2023 NIH IDEa Western Regional Conference in New Mexico in August!



The goal of this conference was to provide a platform for biomedical scientists to learn from colleagues about the latest research in the NIH IDEa Western Region (Alaska, Hawaii, Idaho, Montana, Nevada, New Mexico, and Wyoming). The conference features oral and poster scientific sessions, keynote talks, professional development workshops, and information sharing sessions with NIH officials. Peter presented his research poster titled "Development of a bioreactor to mechanically stimulate cell self-assembled neotendons."

Way to go Peter!

December Degrees Awarded

Undergraduate:

Biological Engineering

Trenton Patton
Honeyville Boiser

Chemical Engineering

Samuel Johnson

Post Graduate :

Student

Tejaswini Vaidya
Soha Alkhalidi

Degree Major Major Professor

Ph.D. ChE Haiyan Zhao
Ph.D. BE Ching-An Peng

 Congratulations Graduates!

Student Travels

Funds from “Frank and Cleda Tipton Endowment” made it possible for students to compete, present paper, and participate in professional societies such as American Institute of Chemical Engineers (AIChE), American Society of Agricultural and Biological Engineers (ASABE), Biomedical Engineering Society (BMES), and Society of Woman Engineers (SWE).

Four UI AIChE chapter officers traveled to the AIChE Annual Student Conference in Orlando, FL. Having placed second in AIChE Jeopardy at the 2023 AIChE Pacific Northwest Regional conference at Oregon State University in April, the team was invited to compete in the National AIChE Jeopardy Competition in Orlando. The team did not win the competition, but are grateful for the opportunity to compete against other students from across the nation.

Outside of the AIChE Jeopardy competition, Katelyn Shadley competed against hundreds of other students in the Undergraduate Research Poster Competition where she presented “Improving the Performance of Lead-Acid Batteries Through GUITAR Coated Fibers”, based on her work under Dr. David Drown. The team also attended the National Chem-E-Car Competition and, while they did not compete, they received first-hand inspiration for future UI Chem-E-Car teams. Additionally, the AIChE Annual Student Conference provided an excellent opportunity for the team to network with employers and other chemical engineering students from around the world. Overall, the team found the Annual Conference to be highly rewarding and inspirational for the future of AIChE at UI.



Gavin Baker, Katelyn Shadley, Kaylee Janett, & Samuel Johnson, AIChE Jeopardy Competition

Students travelled to Seattle for BMES annual meeting in October. They presented their research posters and had a booth representing the program to over 4,400 conference attendees.



Julia Palmer, Destinee Ditton, Christina Mai, Hailey Faith, Colin Marchus, and Tabitha Verhage in BMES Conference in Seattle

Seven CHBE students participated in SWE National Conference in Los Angeles, CA. The students listened to inspiring stories of accomplished female engineers and learned key strategies for



Students participating in SWE Conference in Los Angeles

success in the field. The students who attended the conference wrote “We attended various lectures and seminars on topics such as how to negotiate salaries, navigate engineering careers as a minority group, and many more life lessons that can't always be taught in a classroom. We also attended a career fair, at which every member seeking jobs or internships received interviews and offers. This experience was especially valuable for our CHE/BE members because it provided us with more opportunities to network with large companies in these fields.”

Chasing Gravity Waves

A team of University of Idaho engineering students, under the guidance of Dr. Matthew Bernards, travelled to Lakeview, Oregon, to gather data during a 30-hour



launch session in October. The team is helping NASA gather complex datasets scientists have been trying to capture for decades, data that can improve global weather forecast models and our understanding of the atmosphere. The story is featured on College of Engineering news at: www.uidaho.edu/engr/news/features/eclipse-ballooning

Lou-Edwards Endowed Chair Position Readvertised

With help from College and Friends, Lou Edwards Position was re-advertised this October. The position description was revised to be more inclusive of industries such as energy, health-related biotechnologies, artificial intelligence, data analytics and modeling, food and agriculture, semiconductor, and microelectronics, relevant to industries in Idaho. Although the initial review started Dec 4, the position is open until filled. The application link is <https://uidaho.peopleadmin.com/postings/42510>.

Links and Contact

Departmental Webpage:

<https://www.uidaho.edu/engr/departments/chbe>

LinkedIn: The department does not have a separate Linked-In page but is integrated with the College of Engineering page. This is a great page to collect with

current students and alumni.

<https://www.linkedin.com/company/vandalengr/>

Instagram: The Department's Instagram is integrated with the College of Engineering page. See our recent posts at:

<https://www.instagram.com/vandalengr/>

Alumni Survey/Feedback: We are ABET accredited program, and there are seven key measures that we would like your feedback on topics such as:

- * Quality of education
- * Important topic areas we should cover
- * Emerging areas
- * Things we need to improve

Please use this link:

<https://forms.office.com/r/uQ4Qp4HMZA>

Quick Feedback: Just want to give us quick feedback, suggestion, or comment like:

