SEMESTER NEWSLETTER

Message From the Chair

We are thrilled to announce the completion of a long-standing project. Started under the volunteer leadership of chemical engineering graduate Bill Thomson, over two million dollars was raised over the last 12 years, establishing the first endowed chair in Chemical Engineering at the University of Idaho.

We are excited to welcome Dr. Steven Gardner, who brings an outstanding career in both academia and industry, to continue Lou Edwards's legacy. Dr. Gardner, a tenured university professor of chemical engineering for ten years and a principal chemical engineer in industry for twenty years, brings cutting-edge expertise in membrane technology and surface science. He has already begun building a world-class center for materials surface science and analytics at the University of Idaho.

Another piece of exciting news is a significant increase in undergraduate enrollment. Enrollment in both Chemical Engineering and Biological Engineering programs is up. This success is attributed to our faculty's reputation, the strong demand for our graduates, the drive of our students to solve big problems in biomedical engineering, the environment, and energy, and the outstanding hands-on educational experience our department emphasizes.

This fall, we started offering a "Biomedical Engineering Certificate". While our biological engineering program still covers a wide range of topics, this certificate recognizes students' focus areas and provides them with a solid background in biomedical engineering.

We are also in the process of creating a "Chemical Engineering of Semiconductors" Certificate, which we hope will be approved and available starting in the fall of 2026.

Last summer, we upgraded several facilities in the department. These include a newly renovated computer lab in Buchanan Engineering Lab, a Maker Hub for students to use rapid prototyping tools such as 3D printers, CNC routers, laser cutters, and a tabletop lathe, along with many other standard engineering tools. Additionally, the Instrumentation and Controls Teaching Lab was upgraded with new tables, computers, and modern instruments, allowing students to develop a deep understanding of instrumentation for measurements and controls. These upgrades were made possible by generous donations from the Nord Foundation.

We honor the memory of Dr. Rance Bare, who completed his Ph.D. in Biological Engineering before his passing on September 18. We extend our gratitude to Dr. Amin Mirkouei, Rance's major professor, for guiding him through his academic career, and to President Scott Green for conferring his degree posthumously in a special ceremony. Rance's extraordinary perseverance and dedication have left a lasting legacy, inspiring everyone in the department.

Finally I would like to thank friends, alumni, and well-wishers who helped improve student learning though mentoring, giving a seminar, donating, and many other ways. As always, if you have comments or suggestion please share your thoughts via email chbe@uidaho.edu or through a web form.

Thank you.

Dev Shrestha, Ph. D.

Department Chair.

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Scholarship

Financing college can be tough. We surveyed students who were admitted to the department last year but ended up not enrolling. Size of the financial package was one of the main reasons for not attending the University of Idaho. The Go Idaho! scholarship program supports Idaho's high school students and transfer students. Go Idaho! program funding are based on a student's Idaho high school GPA and provided for all four years.

On top of Go Idaho! scholarships, the department has some named stackable scholarship funds, thanks to generous donors. Those scholarships have specific criteria set by donors like student's enrolled program, financial need, geographical location, and merit. The scholarship committee, selects students for additional awards based on those criteria. Students do not have to apply for those. Fifty students were awarded departmental scholarship of about $135,000 total this year. Thank you for your generosity!

Alumni Awards

Nominated by faculty, biological engineering senior Christina Mai and chemical engineering senior Katelyn Shadley received the Alumni Award for Excellence this year. This award recognizes students who have achieved outstanding academic success and demonstrated career preparation, leadership, and involvement in campus and community activities. Christina serves as an College of Engineering Allen Ambassador and Idaho INBRE undergraduate research fellow. Katelyn was recognized for her exceptional academic performance and research contributions in Lead Acid Battery and GUITAR applications, along with her leadership in U of I chapters of AIChE, SWE, and Tau Beta Pi.

Christina recognized Judy Vandegrift, departmental administrative assistant as her mentor. Judy has been a phenomenal support to our students. Judy's motto is: "The best part about my job is the students." In Christina's words "It's the unseen things that Judy does that really make her my inspiration. Judy inspires me every day through her hard work and authenticity. I, and

Judy Vandegrift and Christina Mai

every student in our department, have someone rooting for them whether they know it or not. She is the gem and cornerstone of the Department of Chemical and Biological engineering. I aspire to be as lovely, funny, and diligent as Judy Vandegrift . "

Welcome Reception for the Lou Edwards Endowed Chair

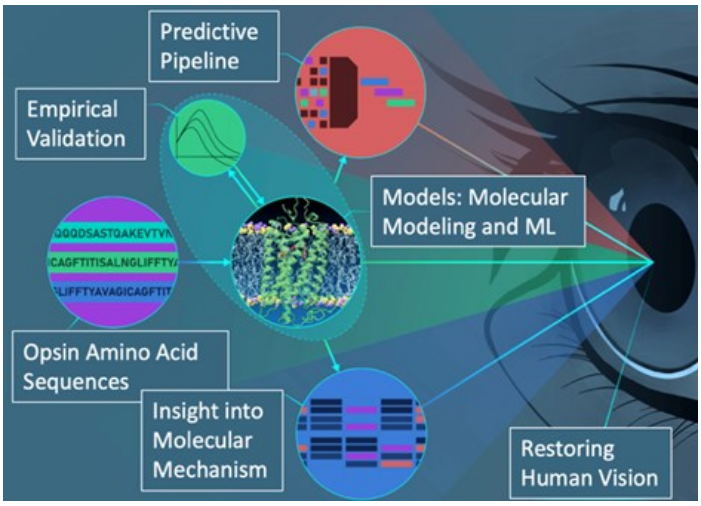
In October, donors, alumni, and friends gathered to meet and welcome Dr. Steven Gardner, the Lou Edwards Endowed

Lou Edwards Endowed Chair Dr. Steven Gardner talking to donors and friends.

Chair Professor. The well-attended event, organized by the College of Engineering Development team, was held immediately after the fall departmental advisory board meeting.

Among the attendees were former students of Dr. Lou Edwards and alumni who had the privilege of working alongside him on pioneering projects, such as the development of the pulp and paper simulation software WinGEMS.

WinGEMS, a groundbreaking control software designed primarily for the pulp and paper industry, continues to be a vital tool in the field. Over the years, the software has seen significant updates and advancements. Reflecting on its evolution, former students Pami Singh and Ron Baldus shared their experiences of working with Dr. Edwards and emphasized his enduring influence on the industry through his innovative contributions .



Dr Patel's lab is developing and refining predictive tools for peak spectral sensitivity to understand and potentially restore human visual functions

Research Highlight

Dr. Jagdish Patel

Computational approaches like molecular modeling and AI have revolutionized our understanding of protein structures, functions, and binding mechanisms, crucial for addressing biological questions and improving health. Protein functions are tied to their dynamic structures, with conformational changes affecting binding specificity and interactions. Current computational tools struggle to predict binding characteristics and biological functions accurately, highlighting the need for innovative, interdisciplinary tools that integrate dynamic structural data and are experimentally validated.

Dr. Jagdish Patel's lab combines molecular modeling and AI to develop tools for predicting protein function and understanding mechanisms, focusing on opsin proteins responsible for human vision. Opsins require precise predictions of peak spectral sensitivity and understanding mutations' effects, making them ideal for validating computational tools. These tools can enhance colorblind correction glasses by enabling personalized lenses tailored to specific spectral sensitivity shifts, improving vision correction for individuals with color vision deficiencies and aiding in diagnosing and treating retinal diseases.

Alumni Highlight

University of Idaho alumnus Kevin Lyon was recently honored with the American Nuclear Society's inaugural 40 Under 40 award. This award recognizes young professionals making significant contributions across various sectors of the nuclear industry, including advanced reactor technology, radioisotope systems, nuclear policy, waste management, AI, fusion technology, and more. The 40 Under 40 honorees are also celebrated for their public engagement, policy influence, mentorship, and collaboration, which help shape the future of nuclear energy.

Kevin Lyon

Kevin began his career at Idaho National Laboratory (INL) in 2010 after earning his B.S. in Chemical Engineering from the University of Idaho. While working at INL, he

completed his M.S. and Ph.D. in Chemical Engineering in 2016 and 2020, respectively. Currently, Kevin is a Senior Technical Advisor in the Fuel Cycle Science & Technology division at INL. His research focuses on separation technologies related to the nuclear fuel cycle, nuclear fuel reprocessing, and critical materials processing.

Kevin has served as the principal investigator or technical lead for several research programs, including high assay low enriched uranium (HALEU) polishing, nuclear nonproliferation R&D, rare earth element separations, lithium extraction and purification, and fuel cycle testbed design and operations. His work in these areas has been instrumental in advancing the field and addressing critical challenges in nuclear technology.

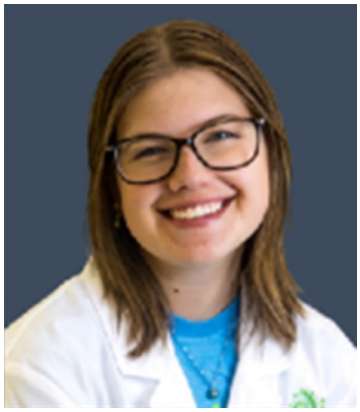
In addition to his technical expertise, Kevin has experience as a nuclear reactor operator and senior experiment operator at INL's Advanced Test Reactor, supporting various irradiation programs. His leadership and contributions continue to inspire colleagues and strengthen the foundations of the nuclear field.

Undergraduate Research

Biological engineering student **Rafe Richardson** and

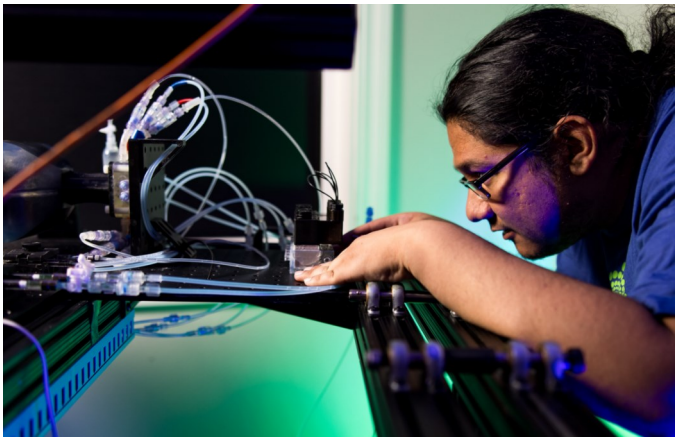
Associate Professor Joshua Bailey from the Department of Movement Sciences at the University of Idaho have teamed up to research injury prevention for ROTC cadets. Their work, which resumed after a four-year hiatus due to COVID-19, aims to teach cadets how to move more effectively to prevent musculoskeletal injuries. This research, conducted through the College of Education, Health and Human Sciences, could benefit ROTC programs nationwide by promoting healthier training practices. They recently completed their first wave of research, studying the movement of 50 ROTC cadets from the University of Idaho and Washington State University.

Biological Engineering Student **Julia Palmer** began her undergraduate career at North Idaho College (NIC) intent on going to nursing school. In preparation, she worked in a hospital but realized she didn't enjoy the clinical exposure. NIC faculty encouraged her to transfer to the University of Idaho (UI) and apply to become an INBRE Fellow.



She found Dr. Nathan Schiele's laboratory where she studies the role of the enzyme lysyl oxidase in tendon injury repair. This INBRE undergraduate research changed her career trajectory. Julia says, "I'm majoring in biological engineering, loving research, wanting to go to graduate school, and seeing my future in experimental science.

Biological Engineering junior **Sebastian Herrera-Alegre** Worked as a summer intern in "Alcyone Therapeutics Inc." and won second place for his poster project presented at the Idaho INBRE statewide conference. Sebastian's supervisor Dr. Bryn Marin noted on his LinkedIn Post " Sebastian was very diligent, a strong problem solver and an overall pleasure to have in the lab. He will be continuing research with our team into the 2024-25 academic year."



Faculty Research

Chemical and biological engineering are rapidly growing fields with immense potential. The dedicated faculty have invested approximately $3 million in research funded by external agencies, up from $2.9 million last year. Forty-one new proposals were submitted, primarily to the Department of Energy, National Institutes of Health, National Science Foundation, and the U.S. Department of Agriculture. Active research is valued at $2.2 million, with $800,000 in new projects funded this year. Research topics include bioremediation, new polymer development, tendon and tissue engineering, protein engineering, high-temperature energy storage, nuclear waste management, eco-friendly solutions, and sustainable agriculture. This diverse research portfolio underscores the department's commitment to advancing knowledge and developing innovative solutions for pressing global challenges.

December Degrees Awarded

Post Graduate :

Student	Degree	Major	Major Professor
Rance Bare	Ph.D.	BE	Amin Mirkouei
Taylor Booker	M.E.	BE	Sarah Wu
Colin Marchus	M.S.	BE	Nathan Schiele
Torrey Mortenson	Ph.D.	BE	Lee Ostrom
Ekow Agyekum-Oduro	M.S.	ChE	Sarah Wu

Congratulations Graduates !

MOU with Cathay General Hospital

With leadership of Dr. Ching-An Peng, the University of Idaho establishes this MOU with Cathay General Hospital and Cathay Medical Research Institute in Taiwan. The purpose of this MOU is to serve students from both institutions to enhance opportunities in the pursuit of their higher education learning, enhance opportunity for faculty in developing pedagogy and research and enhance opportunity of collaboration.

Holiday Celebration

Fall is the time of celebration. Right after Thanksgiving Break, departmental students, faculty, and staff organized a holiday potluck led by students Tori Lansing and Gabriel Garcia. It was great to see students leading the event to a fun-filled evening.

Links and Contacts

LinkedIn: The department shares the College of Engineering page.

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

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