IOWA STATE UNIVERSITY

Department of Chemical and Biological Engineering

activesite

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Dear Alumni and Friends,

On behalf of the Department of Chemical and Biological Engineering at Iowa State University, best wishes and warm greetings to you all! You may be used to hearing from Andy Hillier in this space. After providing ten years of leadership and administration as department chair, Andy has chosen to return to full-time teaching and research as a faculty member in the department. His remarkable tenure as chair has been marked by navigation of significant challenges (including a fire, a flood and a pandemic!); growth in size and impact of the graduate program; many improvements during a period of unprecedented growth in the undergraduate program, such as providing more hands-on learning opportunities and laboratory equipment upgrades; and greater connection with department alumni and donors. In short, he is a tough act to follow.

As I take on the role of chair, my aspiration is to preserve all that is best about the department while facilitating even greater achievement by its faculty, staff and students. I hope to build upon our reputation by ensuring that our graduates have not only a strong technical background, but also the professional skills crucial for their success as they move to the workplace. Through its graduate program, the department's faculty, postdoctoral associates and graduate students are making many important advances in areas such as biorenewables, biomanufacturing, advanced materials and human health. In coming years, we will strive to better communicate the meaning and significance of this work.

In this edition of ActiveSite you will learn about a new $20 million National Science Foundation project led by Laura Jarboe focused on developing biomanufacturing expertise and capacity in Iowa. This multi-institution project builds on George Washington Carver's early vision for producing, in addition to food, a wide range of materials from crops. Also featured are stories on how two new projects (Reuel; Shao and Vigil) funded by the BioMADE Institute aim to reduce barriers in biomanufacturing, as well as how innovative work by Matt Panthani and Luke Roling is paving the way for next-generation microelectronics.

As I begin my tenure as chair, I am both excited and humbled by the challenges, responsibility and privilege of guiding this storied department over the next several years. I am also deeply appreciative of your loyalty, friendship, generosity and support of the department's mission and programs. Best wishes to you all.

Go Cyclones!

R. Dennis Vigil
Professor and Reginald R. Baxter Endowed
Department Chair

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CBE by the numbers 2022–2023

375 Undergraduates Fall 2023

93 Graduates Fall 2023

109 Students in Learning Communities

16 Learning Community Peer Mentors

121 Faculty Publications

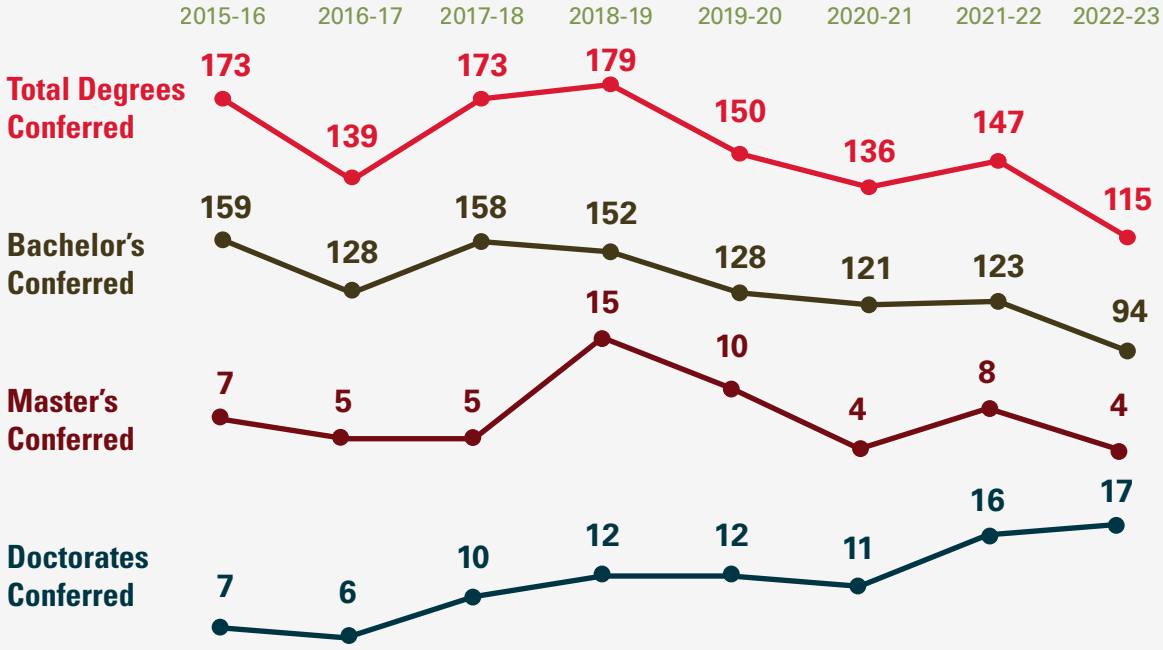
19,399 Faculty Citations

$12.5M Research Expenditure

$501.3K Avg. Faculty Research Expenditure

$635.1K Total Undergraduate Scholarship Value

$373.2K Total Graduate Fellowship Value



$20M "Chemurgy 2.0" project to build biomanufacturing

The ties to George Washington Carver at Iowa State University are strong. The noted alumnus, who became an internationally recognized agricultural scientist, advocated advancement of new agricultural techniques for human need. He coined the term "chemurgy" to describe applied chemistry that produces industrial materials from crops.

Now, with the aid of a $20M National Science Foundation (NSF) award, Iowa State University scientists and engineers will join with others around the state in "Building Capacity Across Iowa to Meet Human Needs from Things That Grow." In honor of Carver, they're calling it "Chemurgy 2.0."

CBE's **Laura Jarboe**, Cargill Professor in Chemical Engineering, is the project director. CBE associate professor and Stanley Chair in Interdisciplinary Engineering **Nigel Reuel** and associate professor **Monica Lamm** will be associate directors.

Jarboe says Chemurgy 2.0 will use microbes and other biological systems as the factories that produce some of the molecules that manufacturers need. The partners' collective vision is to go beyond just chemistry, using an array of basic and applied sciences, biological systems and advanced manufacturing techniques, to produce plastics for additive manufacturing, fibers for flexible and rigid materials and proteins for diagnostics and therapeutics.

New faculty hires at Iowa institutions and involvement with first-generation college students and students from rural areas are also included. Jarboe quotes Carver himself to sum up the philosophy of Chemurgy 2.0: "We can learn to synthesize materials for every human need from things that grow."

CBE researchers lead BioMADE bioreactor innovation projects

Researchers from the Department of Chemical and Biological Engineering are leading two of five projects under the BioMADE program to innovate bioreactor design.

These projects were funded through a special BioMADE Project Call on advancing bioreactor design and development thanks to support from Schmidt Futures.

BioMADE is a Manufacturing Innovation Institution sponsored by the U.S. Department of Defense. Its mission is to enable domestic bioindustrial manufacturing at all scales, develop technologies to enhance U.S. bioindustrial competitiveness, de-risk investment in relevant infrastructure, and expand the biomanufacturing workforce to realize the economic promise of industrial biotechnology.

Dennis Vigil, CBE professor and Reginald R. Baxter Endowed Department Chair, alongside **Zengyi Shao**, associate professor and Hershel B. Whitney Professor, Global Initiatives, are leading the development of a continuous bioreactor called the "Continuous Taylor Vortex Fermentor-Extractor-Separator," which will increase fermentation productivity by creating hydrodynamic environments, or Taylor vortices, conducive for microorganism growth and product extraction.

Vigil states, "This technology has the potential to advance the industry by lowering barriers to the broader adoption of biomanufacturing methods."

Nigel Reuel, associate professor and Stanley Chair in Interdisciplinary Engineering, in partnership with Novozymes, a global biotechnology company, aims to address the challenge of biomanufacturing's complex and stochastic behaviors of living organisms hindering the establishment of a single, optimal process.

"Our goal is to revolutionize biomanufacturing by harnessing AI and optical nanoprobes to achieve unprecedented control over enzyme production," says Reuel. This approach could greatly improve biomanufacturing by establishing efficient time-variable process conditions for different organisms and enzyme targets. Ultimately, it will enhance production efficiency, paving the way for a more sustainable future.

Revolutionizing computer chips: Synthesizing silicon nanosheets for energy savings

Matthew Panthani, associate professor and Herbert L. Stiles Faculty Fellow in Chemical Engineering, has led groundbreaking research on synthesizing silicon nanosheets (SiNSs). The study introduced a novel approach to producing SiNSs, offering tremendous potential as energy-efficient, on-chip light sources for future computer chips.

Panthani emphasizes the significance of the research, stating, "Our findings pave the way for reducing energy costs in AI-driven technologies and computing power. By harnessing SiNSs, we can minimize energy loss and contribute to a more sustainable and efficient computing landscape. This research brings us closer to enhancing the future of computing while prioritizing energy efficiency."

Roling research will advance future semiconductor materials

Assistant professor and Jack R. and Carol A. Johnson Faculty Fellow in Chemical and Biological Engineering **Luke Roling** has been granted $430,000 by the Air Force Office of Scientific Research to investigate germanium-tin alloys for next-generation micro-electronic devices.

As silicon-based semiconductors reach their miniaturization limits, Roling is using computational tools to stabilize germanium-tin, an alloy that could significantly improve semiconductors through optical information transfer.

"We're employing multiscale computational tools to comprehend and exploit atomic-scale interactions between germanium and tin," states Roling, emphasizing the vital role of predictive simulation in his research.

New biomedical engineering degree: Collaborations for health innovations

Iowa State University has launched an interdisciplinary bachelor of science degree in biomedical engineering, effective fall semester 2023.

The new major leverages expertise across the College of Engineering in engineered medicine – and cross-campus expertise in biology, kinesiology, and biomedical sciences.

"Students will get hands-on experience in cross-discipline collaborations with leading innovators – giving Iowa State biomedical engineers the broad and deep understanding needed to take on global and complex health technology challenges," says **Ian Schneider**, associate professor of chemical and biological engineering and professor-in-charge of the biomedical engineering program.

New CBE faculty members play large role in biomedical program:

The new College of Engineering biomedical engineering bachelor's degree program will be heavily driven by the involvement of several Chemical and Biological Engineering faculty members, including Ian Schneider, who has been named professor-in-charge. Three new faculty members who joined the Department of Chemical and Biological Engineering in 2022 are affiliated with the biomedical engineering program. All three are also part of the Iowa State-based Nanovaccine Institute, a consortium of researchers from 82 institutions and companies nationwide.

Jing Wang

Assistant professor **Jing Wang** says listening to students is key. "Sometimes it's more important to listen to the students, like what they want from a course, rather than following a textbook," she says. Wang has worked to engage students by adapting lessons to their interests, and has tried to impart in her classes that it's not only okay to be wrong—it is necessary in scientific work. "Doing research is not easy, even for an experienced scientist," she says. "You may have incorrect hypotheses, so you make adjustments." Much of Wang's research deals with approaches to treating cancer, including breast cancer, metastasis and lung diseases, through use of nanotechnology and drug delivery.

Ratul Chowdhury

Assistant professor **Ratul Chowdhury**, whose work includes development of computational techniques for protein design and structure-guided metabolic engineering, says the caliber of research and variety of approaches at Iowa State is inspiring. He says he tells students to take advantage of this and always look for some point of connection to their own topics of interest. He credits this mindset with helping him on a current project to create a model for designing a nanoprotein to extract/recycle rare earth elements, like the ones used in electronics screens and microchips. A Chowdhury research paper dealing with single-sequence protein structure prediction has recently been featured on the cover of an issue of Nature Biotechnology.

Molly Kozminsky

In her first year at Iowa State, assistant professor **Molly Kozminsky** has committed to being a link between students and their future STEM careers. "It's something that I feel has always been an important part of research," she says. "I've always been on the receiving end of a lot of really fantastic mentoring." She points out that proper mentoring is a crucial part of teaching students to be independent thinkers, because "in research there isn't always one correct answer." Her first year at Iowa State has also included being part of a team that received a Margaret B. Barry Cancer Research grant for a new collaborative project: "Dissecting contributions to the immunosuppressive tumor microenvironment in pancreatic cancer using novel in vitro systems."

Record number of graduate students pursue advanced chemical engineering degrees

In the fall semester of 2023 the Department of Chemical and Biological Engineering has welcomed a record number of 25 new graduate students into the department, bolstering the total number of departmental graduate students to 93. The vast majority of these students are pursuing doctoral degrees, and the interest in pursuing their graduate studies at Iowa State is a testament to the vibrancy of the department's graduate program.

Graduate student lecture series named for L.K. Doraiswamy, renowned chemical engineer and educator.

The department's graduate student seminar series is now known as the L.K. Doraiswamy Seminar Series, in honor of late Anson Marston Distinguished Professor Emeritus **L.K. Doraiswamy.**

Doraiswamy was one of the world's foremost experts in chemical reaction engineering, having authored several books on heterogeneous reactions, organic synthesis and advanced chemical reaction engineering.

In recognition of his impact on chemical engineering as a discipline, Doraiswamy received numerous prestigious national and international honors and awards. Some of these include membership in the National Academy of Sciences, India; the World Academy of Sciences; and the U.S. National Academy of Engineering. He also received the prestigious Richard H. Wilhelm and William H. Walker

Awards from the American Institute of Chemical Engineers.

Doraiswamy was also known for his leadership of the National Chemical Laboratory in Pune, India, where he spent nearly a quarter century. Doraiswamy joined the Department of Chemical and Biological Engineering faculty in 1992 and was active in the department after his retirement in 2001 until his death in 2012. A lecture series was established in Doraiswamy's name and in the original format it featured a single lecturer each year who presented research at both Iowa State and in India. The new format will bring prominent researchers to Iowa State on a regular basis each year to share their research findings with department graduate students and faculty.

BioMaP undergraduate research program participation and funding expand

Twenty-one undergraduate students from Iowa State and around the nation took part in the department's Biological Materials and Processes Research Experiences for Undergraduates (BioMaP REU) summer program in 2023.

BioMaP was funded by a National Science Foundation REU site award to CBE faculty **Monica Lamm** and **Ian Schneider**, NSF REU supplement awards to **Eric Cochran** and **Jean-Philippe Tessonnier**, and a National Institutes of Health REU supplement award to Schneider.

The program provides faculty-mentored research for students, who spend the summer conducting research in the department.

Summer lab experience in Oviedo, Spain continues with Whitney endowment

Chemical and Biological Engineering undergraduate students spent five weeks at the University of Oviedo in Spain, gaining degree credit by completing an intensive chemical engineering laboratory course. The students were led by professor of practice **John Kaiser** and they were also joined in Oviedo by chemical engineering students from the University of Wisconsin-Madison.

All participants from Iowa State were able to take advantage of support from the Hershel B. Whitney Global Initiatives program, established in the name of a 1949 department graduate, which supports faculty research and encourages international collaborations and experiences for students.

Hagenson receives Distinguished Alumni Award

Department of Chemical and Biological Engineering alumna **Mary Jane Skogen Hagenson** received the Distinguished Alumni Award from the Iowa State University Alumni Association in 2023.

She earned a B.S. in physics in 1974 and an M.S. and Ph.D. in biomedical engineering in 1976 and 1980, respectively, all from Iowa State. Among many other honors she has received are the College of Engineering Professional Citation in Engineering (PACE) Award in 2006 and Anson Marston Medal in 2015.

Hagenson and her husband provided the Mary Jane Skogen Hagenson & Randy L. Hagenson Professorship in the Department of Chemical and Biological Engineering in 2021, with Eric Cochran as the recipient.

Anson Marston Medal, CBE Hall of Fame induction for Lashier

Department alumnus **Mark Lashier** (B.S. ’85, Ph.D. ’89) received two honors from his alma mater in November of 2022.

Lashier, president and chief executive officer of Phillips 66, received Cyclone Engineering’s highest honor, the Anson Marston Medal, one day after he was inducted into the Department of Chemical and Biological Engineering Hall of Fame.

Lashier has held a number of research and leadership positions at Phillips and Chevron Phillips Chemical Company. He was named president and chief executive officer of Phillips 66 in 2022.

He has served on the Department of Chemical and Biological Engineering Advisory Council and is a member of the College of Engineering Advisory Board. He had previously received the College of Engineering Professional Citation in Engineering (PACE) award.

Christopher Ellison, a 2000 B.S. graduate of Chemical and Biological Engineering, was a recipient of the College of Engineering’s Professional Achievement Citation in Engineering (PACE) Award.

Ellison, the Zsolt Rumy Innovation Chair and Department Safety Officer at the University of Minnesota Department of Chemical Engineering and Materials Science, is a member of the CBE Advisory Council.

CBE Honors & Awards 2022-2023

FACULTY

Surya Mallapragada
Named to Department of Energy Basic Energy Sciences Advisory Committee

Nigel Reuel
Named Stanley Chair of Interdisciplinary Engineering

Brent Shanks
Named American Chemical Society Industrial & Engineering Chemistry Fellow

Zengyi Shao
Named Hershel B. Whitney Professor, Global Initiatives
College of Engineering Mid-Career Achievement in Research Award

Jean-Philippe Tessonnier
Promoted to Professor

R. Dennis Vigil
Named Reginald R. Baxter Endowed Department Chair

ALUMNI

Mark Lashier (B.S. '85, Ph.D. '89)
Inducted into CBE Hall of Fame & Anson Marston Medal

Mary Jane Skogen Hagenson (B.S. Physics '74, M.S., Ph.D., Biomedical Engineering, '76, '80)
Iowa State University Distinguished Alumni Award

Brittany Hartwell (B.S. '11)
College of Engineering Young Alumni Award

Christopher Ellison (B.S. '00)
Professional Achievement Citation in Engineering Award

UNDERGRADUATE STUDENTS

Brianna (Lauren) Burton
National Science Foundation Graduate Research Fellowship

Brianna (Lauren) Burton, Shawn Husgen, Katelyn Nelson
Lawrence E. Burkhart Outstanding Senior Award, spring 2023

Hannah Gebur
CBE senior marshal nominee, College of Engineering, fall 2022 commencement

Hannah Gebur, Bryce Reynolds
Lawrence E. Burkhart Outstanding Senior Award, fall 2022

Victoria Kyveryga
Named Goldwater Scholar (Barry Goldwater Scholarship)

Annika Lehan
CBE senior marshal nominee, College of Engineering, spring 2023 commencement

GRADUATE STUDENTS

Alexandra Barron, Ryan Godin
Awarded National Science Foundation Graduate Research Fellowships

Yifu Chen, Luman Liu
Graduate College Research Excellence Awards, 2022

Deep Patel
Kokes Travel Award, North American Catalysis Society NAM28, 2023
Best Oral Presentation, Nano@IAState meeting, 2023

Deep Patel, Dhananjay Dileep
Graduate College Teaching Excellence Awards, 2022

Elizabeth Grego (first place)**, Peter Meyer/Thivani Senathiraja** (tie for second place)**, Dhananjay Dileep** (third place)
Perfect Pitch research competition, 2022

STUDENT ORGANIZATION

American Institute of Chemical Engineers, Iowa State University Chapter
National Student Chapter of the Year, 2022

In memory of four outstanding department alumni

George Burnet was a foundational figure in the department for more than 60 years, advancing from student to faculty member, and then taking on numerous administrative roles ranging from department chair (a title he held from 1961-1978, second longest after Orland Russell Sweeney), to associate dean and interim dean of the College of Engineering. Burnet earned a B.S., M.S., and Ph.D. from the department and joined the faculty in the mid-1950s after a few years in industry.

His professional impact at Iowa State was profound, and his influence was felt nationally and internationally. He played a critical role in the development of the Nuclear Engineering Department, serving 12 years as chief of Ames Lab's chemical engineering division and as president of the American Society for Engineering Education. He was active on numerous committees and panels of the National Science Foundation and the U.S. Department of Energy, and he was a founding member of the Iowa section of the American Institute of Chemical Engineers. Burnet retired from Iowa State in 1995 as Anson Marston Distinguished Professor, and his career was marked by numerous awards and recognitions.

After retiring he remained active in the life of the department. He was instrumental in planning and coordinating events surrounding the department's centennial celebration in 2013, and co-authored a comprehensive history of the department for that event. He was inducted into the department's Alumni Hall of Fame and in 2020 received the Alumni Medal, which is the premier award from the ISU Alumni Association.

Tom Wheelock earned a B.S. and Ph.D. in chemical engineering from Iowa State in 1949 and 1958, respectively, and was part of the department faculty for more than 50 years.

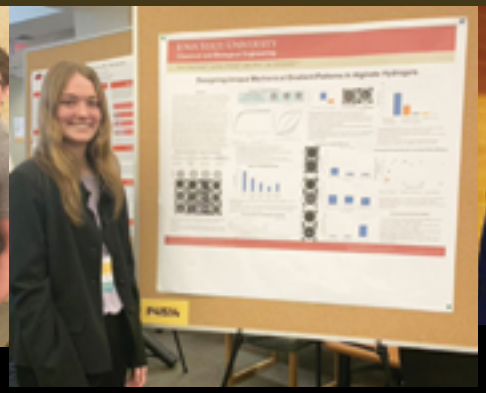
Wheelock rapidly rose to the rank of professor in 1964, and was promoted to the rank of University Professor in 1994. During his career, Wheelock became well known for his work on coal utilization and de-sulfurization, and his research laid the foundation for a new process capable of producing sulfur dioxide from natural or waste materials composed largely of calcium sulfate. Such a process made it possible to use an alternative raw material to produce sulfuric acid. This work attracted support from industry and led eventually to eight domestic and foreign patents and numerous journal articles.

Wheelock was also part of a research team funded by the U.S. Department of Energy to develop a reusable calcium-based sorbent for desulfurizing hot coal gas, which in turn resulted in several patents. Wheelock received numerous Iowa State and external awards and honors, including election as a fellow of the American Institute of Chemical Engineers, the Governor's Science Medal for Science Achievement, and a Faculty Citation from the Iowa State University Alumni Association.

A 1959 B.S. graduate, **G. Paul Willhite** was a leader in research, higher education and the petroleum industry, and his career included a 50-year tenure at University of Kansas. In 1974 he founded and co-directed the Tertiary Oil Recovery Project (TORP) at KU to acquaint Kansas and regional producers with the technical and economic potential of enhanced recovery methods for oil and gas fields that were affordable for independent operators. He authored textbooks that remain the foundational work in petroleum engineering education. He was a member of the ISU CBE Advisory Council and was inducted into the department's Hall of Fame in 2013.

Kenneth Garrett received a B.S. from the department in 1964 and immediately began a long career with AT&T. He held positions of increasing responsibility in operations, sales and engineering for the company. He attended the Sloan Fellows Program at the Massachusetts Institute of Technology where he earned an M.S. in management. He became an AT&T officer in 1981 and was appointed senior vice president of the Network Services Division in 1989. He was inducted into the CBE Hall of Fame in 2013.

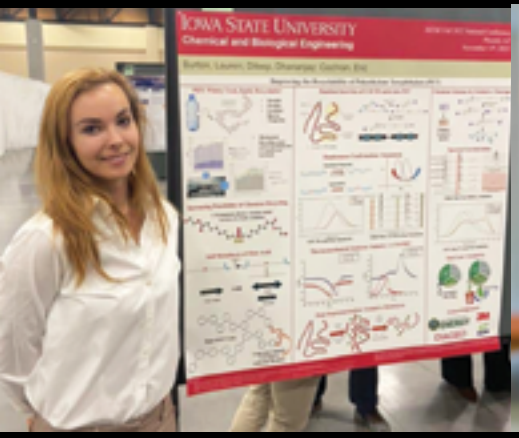
Members of ISU CBE's Chem-E-Car team "ISU Bridge" won the Safety and Chemical Engineering Safety Award at the American Institute of Chemical Engineers Mid-America Student Regional Conference in April, 2023. Their entry was recognized for mitigating potential hazards with their pressure system that powered their car.



CBE undergrad Zoe Ostrowski took first place in the research poster contest at the American Institute of Chemical Engineers Mid-America Student Regional Conference in April, 2023.

For the second time in three years, the Iowa State student chapter of the American Institute of Chemical Engineers (AIChE) was named Outstanding Chapter of the Year for 2022. It was recognized at the group's Annual Student Conference in Phoenix. Chapter president Hailey Bates (center) is shown with AIChE president Christine Grant (left) and chapter faculty advisor Stephanie Loveland.

CBE's American Institute of Chemical Engineers student chapter enjoys the surroundings of the group's 2022 Annual Student Conference in Phoenix.



Brianna (Lauren) Burton took third place honors in her division in the research poster competition at the 2022 American Institute of Chemical Engineers Annual Student Conference.

Annika Lehan was named College of Engineering outstanding senior representing chemical engineering for the spring 2023 commencement.

Hannah Gebur was named College of Engineering outstanding senior representing chemical engineering for the fall 2022 commencement. She's pictured with W. Samuel Easterling, James L. and Katherine S. Melsa Dean of Engineering.

CBE undergrad Jared Greiner (center), recipient of the Ana and Ed McCracken Engineering Scholarship, is joined by the McCrackens at the department's awards banquet in November, 2022.

Graduate student Soheyl Mirzababaei (left) is joined by department supporter Gerald Montgomery at the CBE 2022 awards banquet. Mirzababaei was the recipient of the Gerald T. and Barbara J. Montgomery Fellowship in Chemical and Biological Engineering.

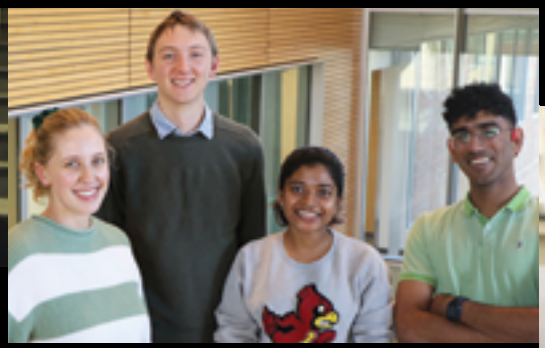
Outgoing Reginald R. Baxter Endowed Department Chair Andrew Hillier (left) is shown with faculty member R. Dennis Vigil after it was announced that Vigil would take over the department chair position.

Mark Lashier (right), president and chief executive officer of Phillips 66, is shown with Reginald R. Baxter Endowed Department Chair Andrew Hillier upon his induction to the CBE Hall of Fame in November, 2022.

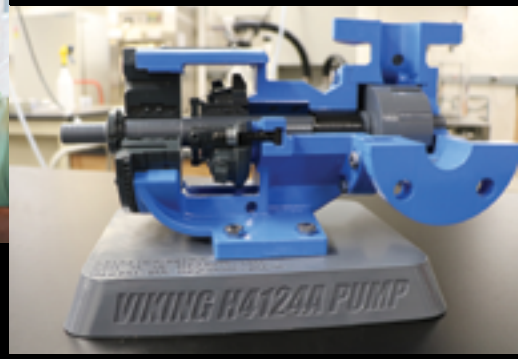
Faculty member Wenzhen Li receives the "No, it's not my office hours but come on in" award from the ISU student chapter of the American Institute of Chemical Engineers at the CBE awards banquet – one of many honors handed out by the group each year. He's shown with 2022-23 chapter president Hailey Bates.

B.S. graduates smile for the camera at the CBE December, 2022 pre-commencement reception.

The department's spring 2023 B.S. graduates gather for the group photo at the pre-commencement reception.



The top vote-getters in the 2022 Perfect Pitch competition for chemical engineering graduate students were (left to right) Elizabeth Grego (first), Peter Meyer and Thivani Senathiraja (tie for second) and Dhananjay Dileep (third). Students have 90 seconds and the use of one PowerPoint slide to present a summary of their research to faculty and their peers, who vote for their favorites.



A 3D printed cutaway of a Viking internal gear pump used in industry has become part of a CBE lab as a teaching aid. CBE professor of practice John Kaiser and Viking Pump worked together to make the donation happen.

Five new members join CBE Advisory Council

Composed of department alumni who are chemical engineering professionals, the Department of Chemical and Biological Engineering relies on the experience and expertise of the Advisory Council in crafting department policies and procedures in many areas. Curriculum development, accreditation, undergraduate and graduate student affairs, industry engagement, budget and more are all shaped by their input. In 2023 the department welcomed five new members to the Advisory Council.

Matt Kipper

Professor, Department of Chemical and Biological Engineering/Associate Dean, Colorado State University

Matthew Kipper (B.S.,'00, Ph.D., '04), has been part of the faculty at Colorado State since 2006. His research laboratory develops nanostructured biomaterials for tissue engineering, regenerative medicine and personalized medicine technologies. He also currently serves as Associate Dean for Graduate Programs for the Walter Scott, Jr. College of Engineering at CSU.

Christine Westgate

Production Leader/Site Logistics Leader, Dow Chemical Company

Christine Westgate (B.S.,'07) is a leader in Dow Chemical Company's West Virginia operations. She also heads Dow's West Virginia Site Environmental, Health, Safety and Sustainability Strategy Team. She has served in various roles with Dow for more than 15 years.

Anna Frey

Plant Manager, General Mills

Anna Frey (B.S.,'11), manages the General Mills facility in Carlisle, Iowa. She has led large teams of employees at General Mills facilities, including the company's largest cereal operations department.

Mike Pasquariello

Integrated Business Performance Director, Archer Daniels Midland

Mike Pasquariello (B.S., '98) has been employed by ADM for 25 years, including 22 years in operations management and leadership and two years as a research group technical director. He works for ADM in Decatur, Illinois.

Michael Wilson

Director, Process Engineering, Chevron Renewable Energy Group

Michael Wilson (B.S.,'90) works at Chevron's renewable energy facility in Ames, Iowa and has been employed by the company for 16 years. His team supports CREG's 11 manufacturing plants. He has also worked for Blue Bunny, Howard R. Green Company and Monsanto's (now Bayer) facility in Muscatine, Iowa.

Recent Faculty Publications

Ratul Chowdhury

R. Chowdhury, Editorial: "Advances in protein structure, function, and design," *Front Bioeng Biotechnol*, 2023, Jan 5;10:1108962, doi: 10.3389/fbioe.2022.1108962, PMID: 36686236; PMCID: PMC9849376

Rodney Fox

R.O. Fox, F. Laurent, A. Passalacqua, "The generalized quadrature method of moments," *Journal of Aerosol Science*, 2023, 167, 106096

Kurt Hebert

K. R. Hebert, "Morphological instability of lithium electrodeposition induced by elastic stress-driven diffusion," *J. Electrochem. Soc.*, 2023, 170, 050526

Laura Jarboe

C. Liao, M.C. Santoscoy, J. Craft, C. Anderson, M.L. Soupir, L.R. Jarboe, "Allelic variation of Escherichia coli outer membrane protein A: Impact on cell surface properties, stress tolerance and allele distribution," *PLOS ONE*, 2022, 17(10), e0276046

Wenzhen Li

H. Liu, Y. Chen, J. Lee, S. Gu, W. Li, "Ammonia-mediated CO2 capture andelectroreduction to formate," *ACS Energy Letters*, 2022, 7(12), 4483–4489

Monica Lamm

S. Banerjee, M.A. Hemmat, S. Shubham, A. Gosai, S. Devarakonda, N. Jiang, C. Geekiyanage, J.A. Dillard, W. Maury, P. Shrotriya, M.H. Lamm, M. Nilsen-Hamilton, "Structurally different yet functionally similar: aptamers specific for the Ebola virus soluble glycoprotein and GP1,2 and their application in electrochemical sensing," *Int. J. Mol.Sci.*, 2023, 24(5), 4627

Surya Mallapragada

H.J. Kim, W. Wang, W. Bu, S.K. Mallapragada and D. Vaknin, "Lamellar and hexagonal assemblies of PEG-grafted silver nanoparticles: implications for plasmonics and photonics," *ACS Appl. Nanomaterials*, 2022, 5, 17556-64

Tanya Prozorov

A. Pérez-Huerta, C. Cappelli, Y. Jabalera, T. Prozorov, C. Jimenez-López, D. A. Bazylinski, "Biogeochemical fingerprinting of magnetotactic bacterial magnetite," *Proceedings of the National Academy of Sciences*, 2022, 119, 31, e2203758119

Nigel Reuel

A. R. Carr, Y. J. Chan, N. F. Reuel, "Contact-free, passive, electromagnetic resonant sensors for enclosed biomedical applications: A perspective on opportunities and challenges," *ACS Sensors*, 2023, 8(3), 943-955

Luke Roling

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Zengyi Shao

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