IOWA STATE UNIVERSITY
Department of Chemical and Biological Engineering

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2017 Issue 28

Balaji Narasimhan named Anson Marston Distinguished Professor

Lanny Robbins joins CBE as Distinguished Faculty Fellow

Graduate student enrollment hits new record

Surya Mallapragada inducted into National Academy of Inventors

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Dear Alumni and Friends,

Hello from Ames. A new semester has started and campus is bustling with activity. It has been an exciting and productive year in the department. In this publication, we highlight achievements of our students, faculty and staff, and alumni. We also highlight news from around campus. From all of us here in the Department of Chemical and Biological Engineering at Iowa State University, we hope you enjoy reading the most recent version of Active Site.

With the start of classes, we have another large and diverse group of students joining us in our classes and research labs. Our enrollment as of this fall is 779 undergraduates, which puts us firmly among the top ten largest chemical engineering programs in the country. We are also delighted to have reached a new record in our graduate enrollment at 85 students, which includes 79 students pursuing Ph.D. degrees. We are very proud of the large percentage of women who are involved in our undergraduate (30%) and graduate (38%) programs, as well as the high percentage of female faculty in our department (32%). All of these are near the top of the engineering college, and also at the very top of chemical engineering programs in our peer institutions.

Our undergraduate students continue to be highly successful and sought after by companies and graduate programs. They are involved in a number of activities ranging from the Chem-E-Car competition through the American Institute of Chemical Engineers (AIChE) and our long-standing summer lab program in Oviedo, Spain, to our newly established Griswold Research Internship program. Our graduate students are also very active, being heavily involved in teaching and research, and their accomplishments are reflected in the various teaching and research awards they have received.

Our faculty has grown in size as our student numbers have increased, and we are looking forward to the arrival of Dr. Luke Roling in January as our newest faculty member. Luke was an undergraduate at Iowa State, and we are delighted to have him back to join our department. As you will note, Luke is joining a highly productive and distinguished group of faculty and staff in our department, who continue to be recognized for their achievements in teaching, research, and service.

The successes and impact of our alumni continues to impress. We are very proud of the accomplishments of our alumni and delight in the chance to share their stories with you.

If you have been back to campus recently, you may notice a significant change to the south side of Sweeney Hall. Construction of the Student Innovation Center has begun, which involved demolition of the original Chemical Engineering Building and the West Chemical Engineering Building (known by many as "Old Sweeney" and the "Nuclear Engineering Building"). Emeritus Professors Tom Wheelock and George Burnett took a final tour of these buildings and reflected upon their time when our department occupied those spaces. I should note that we recovered some bricks from the demolition, and would be happy to share them if you are interested.

We are so very blessed and thankful for the generosity and support of our many alumni and friends. Throughout this ActiveSite newsletter you see the impact of philanthropy on our own department. The support we receive allows the department to do many positive things, ranging from providing scholarships and fellowships to our students, to renovating and upgrading our facilities, and allows us to recruit and retain the very best faculty and staff. We truly appreciate and value your support and friendship.

I hope you enjoy reading this issue of Active Site. Please send me any comments or suggestions you have for future issues, and if you are ever on campus, please stop in and say hello. I'd be delighted to visit with you.

My best wishes to all of you for a happy, healthy and productive 2017-18.

Go Cyclones,

Andrew C. Hillier

Andrew C. Hillier
Professor and Reginald R. Baxter Endowed Department Chair

Help keep CBE strong!

Contributions help the Department of Chemical and Biological Engineering provide quality education for undergraduate and graduate students. Increasing enrollment makes the need for the best in personnel, facilities and equipment even more important. Your generosity helps with many important functions, such as:

- Flexible funds to support initiatives, such as the CBE Excellence Fund.
- Support of students through fellowships and scholarships.
- Support of department personnel through professorships.
- Support of facilities through the CBE renovation fund.

Unsolicited gifts to any of the above areas are welcome. Use the handy envelope included in this publication to designate your choice for funding; or use the "Make a Gift" electronic link on the home page of the CBE web site at cbe.iastate.edu. If you wish for your donation to be used for a specific purpose outside of the choices offered, be sure to note your intention in the "Notes/Instructions" box.

Thank you for your support of CBE!

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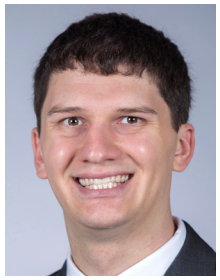

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Andrew C. Hillier
Reginald R. Baxter Endowed Department Chair, Department of Chemical and Biological Engineering

Michelle Stotts
CBE Operations Manager

John Burnett-Larkins
CBE Communication Specialist

IOWA STATE UNIVERSITY
Department of Chemical and Biological Engineering

by the numbers

Enrollment (Fall 2017)
- Undergraduate: 779, fall 2017
- Graduate: 85, fall 2017 (new record enrollment)

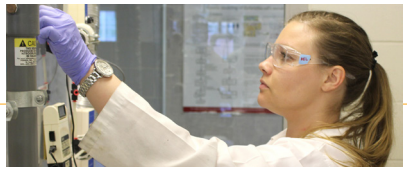
Scholastic Achievement
- Avg. ACT Score (incoming freshman CBE undergrads, fall 2016): 28.8
- Avg. GRE Scores (graduate, incoming fall 2017): Verbal Reasoning 151.5; Quantitative Reasoning 163.8; Analytical Writing 3.6

Facilities
Sweeney Hall/ Biorenewables Research Lab
- 35,000+ sq. ft. research space
- 9,000+ sq. ft. teaching space
- 3,976 sq. ft. computer labs
- 150 student computer work stations
- 9,000 sq ft. office space
- 1,000 sq. ft. conference space

Degrees Awarded (2017 Academic Year, Summer 2016-Spring 2017)
- B.S. 143
- M.S. & M.E. 6
- Ph.D. 9

Department Faculty
- 4 Distinguished Professors
- 1 University Professor
- 4 Professors
- 8 Associate Professors
- 6 Assistant Professors
- 2 Adjunct Professors
- 4 Lecturers
- 8 Courtesy Professors
- 6 Recent Emeritus Professors

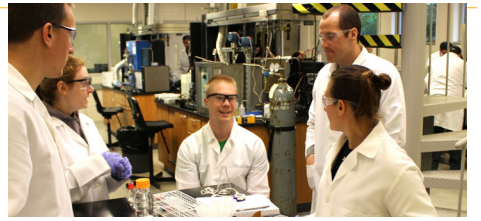
Endowed Positions
- 4 Endowed Chair Holders
- 5 Endowed Professorships
- 3 Faculty Fellowships



Research
- Direct Research Expenditures: $9.3M (FY 2016)

Scholarships & Fellowships
- 261 undergraduate scholarships awarded in 2017-18 totaling $504,140, impacting 222 students
- 20 graduate fellowships totaling $128,000

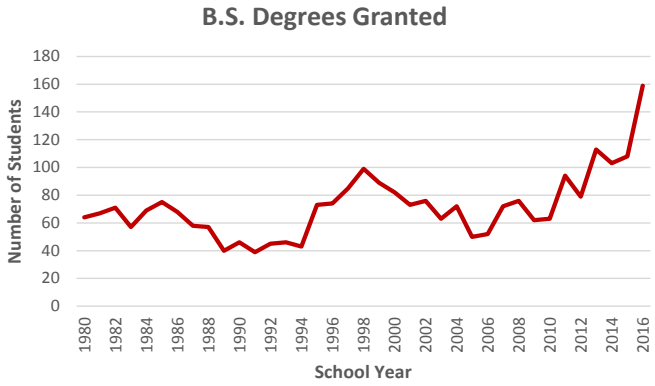
Rankings
(Iowa State University Chemical Engineering, *U.S. News & World Report*, Best College Rankings, 2015-16)
- **Undergraduate:** 20th overall, 15th nationally
- **Graduate:** 31st overall, 22nd for public universities

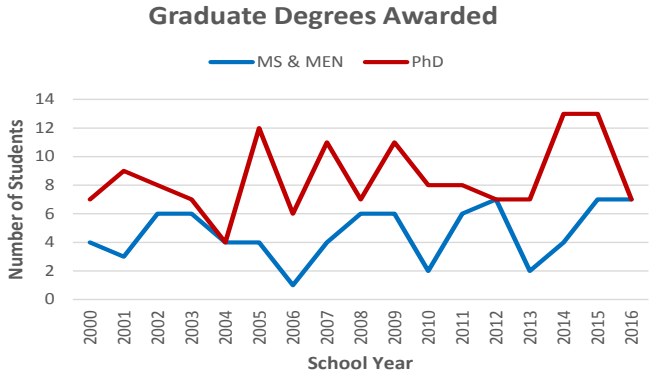


Department Vision: To be internationally recognized as the Chemical and Biological Engineering department that best exemplifies the dual commitment to outstanding research and excellence in student education.

Department Mission: To provide a high-quality education in chemical and biological engineering at the undergraduate and graduate levels that prepares graduates for productive careers in engineering and related fields, and for life as educated, effective citizens and leaders. Discover and disseminate new knowledge in science and engineering through creative activity in research and scholarship. Provide service to the state, nation, and world by advancing the profession of chemical engineering.

Trends & Diversity





The Iowa State University Department of Chemical and Biological Engineering attracts undergraduates and graduate students from all parts of America and the world. The above word cloud represents the many places our diverse students call home.

Narasimhan named Anson Marston Distinguished Professor

Dr. Balaji Narasimhan, Department of Chemical and Biological Engineering Professor and Vlasta Klima Balloun Chair, has been named Anson Marston Distinguished Professor in Engineering at Iowa State University.

Balaji Narasimhan

The title of Anson Marston Distinguished Professor honors outstanding achievement in advancing engineering science, technology or policy having national and international impact in academics, industry, public service, government or other venues. The awardee retains the title for the remainder of his or her career at Iowa State.

Narasimhan joined the Iowa State CBE faculty as an assistant professor in 2001 and was promoted to associate professor with tenure in 2003. From 2006 to 2007, he was the director of the Institute for Combinatorial Discovery at Iowa State University. In 2007, he was promoted to professor and also appointed the associate dean of research and economic development for the College of Engineering.

He earned his B.S. from the Indian Institute of Technology in Bombay, India, in 1992 and Ph.D. from Purdue University in 1996, both in chemical engineering. After a postdoctoral stint at MIT and a visiting position at Purdue, Balaji joined the chemical and biochemical engineering faculty at Rutgers University as an assistant professor in 1997. He also spent time at the University of Naples, Italy, and Cambridge University, UK, as a visiting scientist.

Among many other honors and awards are the ISU Foundation Early Excellence in Research Award in 2003; being named Vlasta Klima Balloun Professor of Engineering in 2010; being named a fellow in the American Association for the Advancement of Science in 2011; and the Iowa State University Award for Outstanding Achievement in Research in 2015.

Narasimhan's research is focused on the molecular design of nanoscale polymer systems and biomaterials to precisely control molecular architecture and functionality in these systems. One of his primary research thrusts is the Nanovaccine Initiative, a consortium of 68 researchers at 21 universities, research institutes, national laboratories, companies and health care coalitions that is coordinated by Iowa State University. The Initiative is developing nanovaccines and nanotherapeutics for respiratory infections, neural disorders, tropical diseases, cancer, and veterinary diseases. Novel "pathogen-mimicking" nanovaccines the group is developing are expected to revolutionize the ability to prevent viral and bacterial diseases.

The Anson Marston Distinguished Professor honor was announced in April of 2017 and will be conferred at the University Awards Ceremony in September.

Mallapragada inducted into National Academy of Inventors

Surya Mallapragada at the NAI Conference, where her induction was made official. She is shown with Paul Sanberg (right), President of the National Academy of Inventors; and Drew Hirschfeld, Commissioner for Patents, U.S. Patent & Trademark Office.

Dr. Surya Mallapragada has joined an elite group of research and academic officials following her official induction as a fellow of the National Academy of Inventors (NAI).

The honor was bestowed at the Sixth Annual NAI Conference in Boston. Dr. Pat Halbur, DVM, executive director of the ISU Veterinary Diagnostic Laboratory, was also inducted.

Election to NAI Fellow status is the highest professional distinction accorded solely to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society.

Nominees must be a named inventor on patent(s) issued by the United States Patent and Trademark Office (USPTO) and must be affiliated with a university, non-profit research institute or other academic entity. Fellows have been nominated by their peers for outstanding contributions to innovation in areas such as patents and licensing, innovative discovery and technology, significant impact on society, and support and enhancement of innovation.

Mallapragada, Anson Marston Distinguished Professor and Carol Vohs Johnson Chair ("Carol's Chair") in CBE, has worked for about two decades to invent bio-materials and bio-inspired materials with the goal of improving human health. Her research group has been responsible for six patents, with more in the works. In addition to bio- and bio-inspired materials, others involve biodegradable polymer substrates to help nerves bridge gaps and regenerate. Her group also works in developing materials for nanovaccines as part of ISU's Nanovaccine Initiative.

"This is really a huge honor," she said, when her induction was announced in December of 2016. "The credit goes to all of my students – all of our research enterprise is fueled by them. This is a testament to their efforts, and not just my own."

Mallapragada also holds a courtesy appointment in the Department of Materials Science and Engineering and is a scientist with the Ames Laboratory.

She was also named an associate vice president for research with the Iowa State University Office of the Vice President for Research in 2017 (see separate story on next page).

Mallapragada teams with Iowa State's Office of the Vice President for Research in new job appointment

Department of Chemical and Biological Engineering (CBE) faculty member Surya Mallapragada is sharing her significant research expertise with Iowa State's Office of the Vice President for Research.

Surya Mallapragada

Mallapragada, Anson Marston Distinguished Professor and Carol Vohs Johnson Chair ("Carol's Chair") in Chemical and Biological Engineering, has joined that office as a half-time associate vice president for research. In her new position she will focus on research advancement, including engagement with research foundations, developing interdisciplinary collaborations, and continuing institutional service in nominating faculty for prestigious awards.

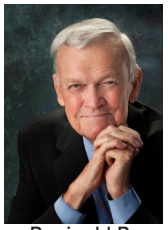
"I am honored to be working with Vice President for Research Sarah Nusser and her excellent research team to grow the research enterprise at Iowa State," Mallapragada said.

Mallapragada has been part of the CBE faculty since 1996 and served as the department chair from 2009-2013. She has served as a faculty fellow in the Office of the Senior Vice President and Provost since 2015, is a scientist with Iowa State's Ames Laboratory in the Division of Materials Science and Engineering, is a researcher with the university's Nanovaccine Institute and holds a courtesy faculty appointment in the Department of Materials Science and Engineering. She is a WiSE Champion as part of ISU's Program for Women in Science and Engineering.

In 2017 Mallapragada was named a fellow in the National Academy of Inventors, the highest professional distinction accorded solely to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society (see separate story on previous page).

Ceremony officially recognizes Reginald R. Baxter Endowed Chair honor for department chair Hillier


Andrew Hilllier is joined by James L. and Katherine S. Melsa Dean of Engineering Sarah Rajala at the medallion ceremony recognizing the Reginald R. Baxter Chair endowment.


Reginald R. Baxter

Dr. Andrew Hillier has been officially recognized as Reginald R. Baxter Endowed Department Chair in Chemical and Biological Engineering. A medallion ceremony led by James L. and Katherine S. Melsa Dean of Engineering Sarah Rajala commemorated the honor at the department's Honors and Awards Banquet in November of 2016.

The endowment is made possible by the generosity of Reginald "Barney" Baxter and his wife, Jamie, who have been strong supporters of the department for many years. Barney Baxter obtained an M.S. in chemical engineering from Iowa State in 1949 and enjoyed a career in industry and entrepreneurship. He holds fond memories of his time in the department as a student, and of Sweeney Hall: "It holds a warm place in my heart," he said. "Dr. Sweeney (the department's first chair) was an enduring inspiration to me throughout my career, and I am forever grateful for having studied with him." The Baxters have previously supported renovations to Sweeney Hall, specifically a student computer and collaboration lab which was named in their honor; and the recent addition of a new research laboratory space in Sweeney Hall.

"It gives me great pleasure to provide this gift to the Chemical and Biological Engineering Department at Iowa State University," said Baxter, in written comments he provided. "This chair endowment is a 'give back' for the advanced degree and the outstanding teachers in chemical engineering that Iowa State University provided me in 1949."

Alumnus, National Academy of Engineering member Lanny Robbins joins department as CBE faculty fellow

Iowa State chemical engineering alumnus and noted member of the National Academy of Engineering Lanny Robbins began his new position as Distinguished Faculty Fellow with the Department of Chemical and Biological Engineering in January of 2017.

Robbins lends his experience and expertise to benefit both faculty and students in a number of areas, including advising on faculty advancement and industry engagement; enhancing undergraduate teaching laboratories; preparing students to work in industry; and leading seminars and workshops on professional development and leadership. He received a B.S. in chemical engineering from Iowa State in 1961; an M.S. in 1963 and a Ph.D. in 1966.

He retired as a research fellow with Dow Chemical in 2003, and is world renowned for his expertise in fundamental engineering research and pilot plant process development, particularly in separation and purification processes that reduce harmful emissions from industrial towers and remove impurities from commercial wastewater. His work has resulted in more than 200 Dow technical reports and outside publications, 18 U.S. patents, and a 2011 book, "Distillation Control, Optimization, and Tuning." He is also an author in the subject of liquid-liquid extraction in the renowned *Perry's Chemical Engineers' Handbook*.


Lanny Robbins

Rodney Fox honored at conclusion of Franqui Chair


Rodney Fox

Anson Marston Distinguished Professor Rodney Fox spent six months with an appointment to the International Francqui Chair at Ghent University, Ghent, Belgium, ending in June, 2017. He was featured in a closing symposium at the university. The day-long ceremony included a lecture program with various presenters, with Fox delivering the concluding address.

The Francqui Chair dates to 1933 when the Francqui Prize was first presented. A Belgian or non-Belgian scientist can be invited by the Francqui Foundation for the six-month stay at a Belgian university. The scientist participates in scientific life and provides specialized teaching. Dr. Fox was nominated for the Francqui Chair by Guy Marin, chair of the Department of Chemical Engineering and Technical Chemistry at Ghent University, and was recommended by four Belgian universities and three research institutes.

200 YEARS GHENT UNIVERSITY

Fox has made numerous ground breaking contributions to the field of multiphase and reactive flow mixing and reactive flow modeling. His research group spearheaded many fundamental advances in the development of novel computational fluid dynamics models to overcome specific scientific challenges faced in the chemical and petroleum industries. The impact of his work has been recognized as extending far beyond chemical engineering to touch every technological area dealing with turbulent flow and chemical reactions.

In 2016 Fox was named recipient of two prestigious honors: the North American Mixing Forum (NAMF) Award for Excellence and Sustained Contributions to Mixing Research and Practice; and the Shell Thomas Baron Award in Fluid-Particle Systems. Both are from organizations affiliated with the American Institute of Chemical Engineers (AIChE) and were presented as part of the AIChE Annual Meeting in San Francisco in November of 2016.

Fox is also executive director of Iowa State's ComFRE organization, a team of engineering faculty members dedicated to the study of Multiphase Flow Research.

Tessonnier named to ACS Early Career Advisory Board


J.P. Tessonnier

Assistant Professor Jean-Philippe Tessonnier has been appointed to the Early Career Advisory Board of the journal *ACS Sustainable Chemistry and Engineering*. He becomes just one of 11 individuals worldwide to hold the honor.

In a statement, the publication said, “ACS SCE welcomes 11 members of our inaugural Early Career Board (ECB). This ECB supplements our Editorial Advisory Board (EAB), with researchers who are launching their careers in green chemistry, green engineering, and sustainability.”

Jim Hill retires from CBE after 46 years in department


Professor Jim Hill (left) is presented with a commemorative plaque by Reginald R. Baxter Endowed Department Chair Andy Hillier at his retirement reception.

Chemical and Biological Engineering University Professor James (Jim) Hill announced his retirement in the spring of 2017. He will maintain connection with the department as professor emeritus. Hill has been part of the CBE faculty since 1971 and served as department chair from 2005-2009. His work as a researcher, educator and advocate for students through the renowned ISU solar car team and student organizations have left a lasting legacy.

He obtained his Ph.D. from the University of Washington, Seattle, in 1968. After working in NASA's Laboratory for Theoretical Studies and Shell Development Co., he began looking into a career in academia, which led him to Iowa State.

Computational fluid dynamics dominated his research at Iowa State, with a particular emphasis on chemical reactions and turbulent flow. His turbulence research received support from the NASA-Ames Research Center, IBM, The National Center for Supercomputing Applications, the National Science Foundation (NSF), the Center for Turbulence Research and the National Center for Atmospheric Research. In 2000 Hill and fellow CBE professor Rodney Fox received funding from NSF and Dow Chemical to develop a turbulent mixing laboratory at Iowa State which includes laser and high-speed particle imagery components. At the time, few chemical engineering departments boasted such laboratories. He held visiting appointments at Japan's Nagoya University, the Isaac Newton Institute in the United Kingdom and at Centre National de la Recherche Scientifique, Rouen, France. He received the Iowa Board of Regents Faculty Excellence Award in 1996.


In 2016 Hill was featured in ISU's “Change Agent” series of profiles for his involvement as faculty adviser for the university's solar car team for many years. Photo by Christopher Gannon/ISU News Service.

He was active for many years in the American Institute of Chemical Engineers (AIChE), where he was named a Fellow in 1996 and has been on the organization's Board of Directors since 2004. He has also been involved with the Council for Chemical Research and the Tau Beta Pi engineering honor society as a campus adviser and Director of District 11 (upper Midwest). He was named Tau Beta Pi's first National Outstanding Adviser in 1994.

One of Hill's most enduring contributions came as faculty adviser for Iowa State's PrISUm solar car racing team, a position he held from 1989-2017. Under Hill's guidance, Team PrISUm became one of the most successful and familiar forms of outreach for science and engineering at Iowa State. In honor of his years of dedication to the ISU program, Hill was presented with the American Solar Challenge Lifetime Achievement Award in 2016.

Fellowships for professors Zengyi Shao, Thomas Mansell

Tom Mansell and Zengyi Shao

Two Department of Chemical and Biological Engineering faculty members were appointed the recipients of fellowships in 2017.

Assistant Professor Zengyi Shao was named Jack and Carol Johnson Faculty Fellow; and Assistant Professor Tom Mansell was named the Karen and Dennis Vaughn Faculty Fellow.

Jack Johnson, who received a B.S. in computer science from Iowa State in 1981, has shown generous support for the Department of Chemical and Biological Engineering in memory of his wife, Carol Vohs Johnson, who obtained a B.S. in chemical engineering from Iowa State in 1980. She passed away in 2014. CBE professor Surya Mallapragada was named Carol Vohs Johnson Chair ("Carol's Chair") in 2015.

Dr. Shao came to Iowa State CBE in 2013. Her research centers on synthetic biology and renewables.

Karen and Dennis (Denny) Vaughn both graduated with B.S. degrees in chemical engineering from Iowa State in 1970. They have a long history of supporting Iowa State and the Department of Chemical and Biological Engineering. Denny Vaughn served on the department's Advisory Council from 2010-2015. In 2016 he was a recipient of the Professional Achievement Citation in Engineering (PACE) Award.

Dr. Mansell joined the ISU CBE faculty in 2015. His primary research area is synthetic biology for engineering of microbial communities.

Both fellowships will be held through the 2018 calendar year.

In photos taken at earlier ceremonies, left to right, Jack Johnson, who is the benefactor of the Jack and Carol Johnson Faculty Fellowship, is shown with Senior Vice President & Provost Jonathan Wickert. In the photo at right, Dennis and Karen Vaughn are shown with Reginald R. Baxter Endowed Department Chair Andy Hiller (right).

Biomass work nets Iowa Energy Center award for Shao

Assistant Professor and Jack and Carol Johnson Faculty Fellow Zengyi Shao is a recipient of the Iowa Energy Center Impact Award. It was presented as part of the Iowa Association for Energy Efficiency Iowa Energy Summit in late 2016.

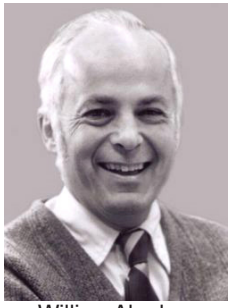
She was recognized in the category of Bioenergy for her work to make biomass conversion more efficient and the lasting effects it could have on the energy industry. Her work revolves around the use of biomass to create everyday products such as chemicals and plastics, which may help to reduce the country's dependence on foreign fuel. Dr. Shao has also been the recipient of an Opportunity Grant from the Iowa Energy Center.

Zengyi Shao receives the Iowa Energy Center Impact Award from Mufit Akinc, a professor in ISU's Dept. of Materials Science and Engineering and a CBE courtesy professor, who is serving as interim director of the Iowa Energy Center.

She also delivered a presentation at the meeting, entitled "Building a Highly Adaptable Microbial Consortium for Efficiency Business Utilization."

The Iowa Energy Center has been actively serving Iowans since 1990. It supports economic development, environmental sustainability and social well-being in the state through energy innovation, education and entrepreneurship.

Longtime CBE professor William Abraham passes away



William Abraham

William (Bill) Abraham, a former Iowa State University Department of Chemical Engineering faculty member, passed away December 28 at the age of 84. He was a resident of Ames, Iowa at the time of his passing.

He graduated from Cornell University with a B.S. in Chemical Engineering, and earned a Ph.D. in Chemical Engineering from Purdue University. He was an Iowa State chemical engineering professor from the early 1960s through the mid-1990s and was named Emeritus Professor in 1994.

Bill and his family spent five years in the Philippines where he worked on a project to develop a chemical engineering program at the University of the Philippines. He also served for two years as a Lieutenant in the U.S. Air Force. After retiring from Iowa State he pursued a lifelong interest in legal issues and obtained a law degree from Drake University. He passed the Iowa Bar and volunteered with the Legal Aid Society of Story County.

Three published articles within weeks for Wu research group

The research group of Herbert L. Stiles Associate Professor Yue Wu saw three published articles in some of the world's most prominent research journals within two months in early 2017. Wu is listed as lead author in all three.


Yue Wu

"Nanocomposites from Solution-Synthesized PbTe-BiSbTe Nanoheterostructure with Unity Figure of Merit at Low-Medium Temperatures (500–600 K)" was published in the January 25 issue of *Advanced Materials* (international edition). The project uses a low-temperature solution process for synthesis of materials as an effective and reliable way to curb energy consumption waste. The paper's authors include Biao Xu, a Department of Chemical and Biological Engineering post-doctoral research associate.

The February 1, 2017 issue of *Angewandte Chemie* included "Highly Porous Thermoelectric Nanocomposites with Low Thermal Conductivity and High Figure of Merit from Large-Scale Solution-Synthesized Bi2Te2.5Se0.5 Hollow Nanostructures." The project works with the synthesis of hollow nanostructures to enhance the performance of thermoelectric materials. The paper's authors include CBE postdoc Xu, and Dr. Lin Zhou of the Ames Laboratory.

Another article, "Thermoelectric Materials – The Power of Pores," was released in the February 2017 issue of *Nature Reviews Materials*. It focuses on the research that has yielded a method for the production of porous thermoelectric nanocomposites with extremely low thermal conductivity and good electrical conductivity. Xu is again included among the paper's authors.

Shanks article called "one of most significant" by ACS journal


Brent Shanks

A document co-authored by Mike and Jean Steffenson Chair and Anson Marston Distinguished Professor in Engineering Brent Shanks of Iowa State University's Department of Chemical and Biological Engineering was selected by peers as one of the most significant to be published in a question posed by the editor-in-chief of the prominent scientific journal *ACS Catalysis*.

A letter written by Shanks, James A. Demesic and others, entitled "Production of 5-Hydroxymethylfurfural from Glucose Using a Combination of Lewis and Brønsted Acid Catalysts in Water in a Biphasic Reactor with an Alkylphenol Solvent" (ACS Catal., 2012, 2 (6), pp 930–934) was nominated and was highlighted in a November 2016 *ACS Catalysis* editorial.

Tessonnier, Rao research published in *Nature Communications*


Assistant Professor Jean-Philippe Tessonnier and Ph.D. candidate Radhika Rao.

Carbon-supported metal nanoparticles have been used for decades as catalysts for the industrial production of chemicals. Yet, little is known about the role the carbon support plays on the performance of these materials. The choice of a support (activated carbon, carbon black, etc.) for a given process remains mostly based on trial and error. However, a recent study published in *Nature Communications* by researchers at Iowa State University now explains how carbon supports interact with precious metal nanoparticles and alter their electronic nature, thereby their catalytic performance.

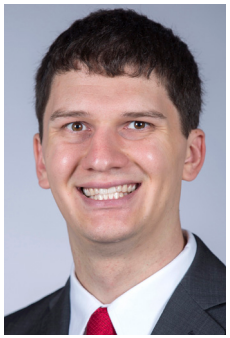
"Interfacial charge distributions in carbon-supported palladium catalysts" (DOI: 10.1038/s41467-017-00421-x) is the result of a three-year collaboration between Jean-Philippe Tessonnier, assistant professor of chemical and biological engineering, Ph.D. candidate Radhika Rao, and research teams at the University of Texas at Dallas, University of Florida, University of Strasbourg in France, Technical University of Denmark, and the Fritz Haber Institute of the Max Planck Society in Germany. The research was funded by the National Science Foundation Engineering Research Center for Biorenewable Chemicals (CBiRC).

"Carbon-supported noble metal catalysts have a broad array of applications and yet little is known about the strategies to rationally design them in order to obtain a target product from the reaction," said Dr. Tessonnier. "We wanted to lay the foundation for understanding how carbons interact with metal nanoparticle catalysts. The results published in our Nature Communications article are a big step in this direction since they not only highlight the role of carbon supports on the catalyst's performance, but also provide a simple methodology that can help leverage these properties for designing next-generation catalysts." Currently, hundreds of activated carbons and carbon blacks are commercially available. The common approach to designing carbon-supported catalysts consists of selecting a subset of materials based on the carbon manufacturers' experience, and then testing them.

"This archaic trial and error selection process represents a serious roadblock to the further optimization of important industrial processes such as hydrogenation reactions," said Tessonnier. "Our work opens new routes for increasing the selectivity of conventional palladium on carbon catalysts, thus decreasing waste. This is particularly important when dealing with renewable molecules obtained from biomass, where we want to selectively convert one chemical bond within a complex multifunctional chemical."

Palladium on carbon is not only used for hydrogenation reactions, but it is also a common coupling catalyst that plays an important role for the production of pharmaceuticals and fine chemicals. Therefore, Iowa State researchers expect their work to have a broad impact spanning from the production of large volume petrochemicals to renewable chemicals from biomass and cancer therapeutics.

From ISU CBE undergrad to ISU CBE professor in six years: Luke Roling hired by his alma mater for first faculty position


Luke Roling

Luke Roling is happy to bring the power of computational analysis to his undergraduate alma mater. And even happier to do so with what was "just a dream job" not many years ago.

Roling will begin his first faculty appointment when he becomes an assistant professor in Iowa State's Department of Chemical and Biological Engineering (CBE) in the spring semester of the 2017-18 academic year. Roling, originally from Clinton, IA, who received his B.S. from the department in 2011 (along with a second B.S. from ISU in mathematics), will offer expertise in the research and teaching area of computational catalysis – which has as its goal the design of chemical engineering catalysts entirely from a computer. Roling's research will use state-of-the-art computational chemistry toolkits along with high-performance supercomputing to understand how chemical reactions occur at the atomic scale. As chemical engineering research goes, it is a field that is still very much in its youth.

"When I left Iowa State, I didn't realize what a good research fit it would end up being here. But then I came to realize that it is a perfect fit for me," Roling said, acknowledging the research in his area that Iowa State CBE is now engaged in: "A lot of complementary research here came in right after I graduated, with professors like Jean-Philippe Tessonnier, Wenzhen Li and Matthew Panthani, adding to existing complements such as Brent Shanks."

One of his main research interests has been heterogeneous catalysis and alternative energy. The seminar he presented as a department faculty candidate was entitled "First-Principles Design of Fuel Cell Catalysts with Reduced Platinum Dependence," which discussed using computational design to develop more cost-efficient fuel cells.


Roling is pictured with CBE associate professor Eric Cochran, his faculty mentor, at the 2011 undergraduate commencement ceremonies. He will now join Cochran as a colleague in the department.

After receiving his B.S. from Iowa State, Roling ventured to the University of Wisconsin-Madison to pursue a Ph.D. in chemical engineering and became part of the Computational Surface Science and Catalysis Group led by Professor Manos Mavrikakis. It was there he began to fully appreciate the power of computation in scientific processes: "Our collaborators were doing experiments that had been going on for probably ten to fifteen years. The research group I was in thought there might be an opportunity to develop better materials and do so in a much faster time period. Experiments can be very labor intensive. With computations you can analyze hundreds of factors in a matter of days and select the best candidates for evaluation. You become more efficient by doing experiments on only the best candidates."

Since receiving his Ph.D. from Wisconsin, Roling has been working as a postdoctoral scholar with the SUNCAT Center for Interface Science and Catalysis at Stanford University, which explores challenges associated with the atomic-scale design of catalysts for chemical transformations of interest for energy conversion and storage.

As an undergraduate at Iowa State Roling was elected student body president in his senior year and was also chosen as the student marshal representing the College of Engineering in the 2011 spring commencement ceremony. He selected CBE professor Eric Cochran as his faculty escort because of his influence on his development as a student. Roling said it is a bit of a mental adjustment returning to Iowa State as a colleague to professors he studied under just a few years ago, including Cochran, who he had for two classes; and Reginald R. Baxter Endowed Department Chair Andy Hillier, who he also had for a pair of classes as an undergrad.

Roling's wife Katie (Hughes) is also an ISU alum, having graduated with a B.S. in psychology in 2012.

Associate professorship for CBE's Dr. Kaitlin Bratlie


Kaitlin Bratlie

Chemical and Biological Engineering faculty member Kaitlin Bratlie has been promoted to Associate Professor. She is also part of the Department of Materials Science and Engineering faculty.

Bratlie holds a B.S. in chemistry from the University of Minnesota Institute of Technology which she received in 2003, and a Ph.D. in chemistry from the University of California, Berkeley, received in 2007. She was a graduate research fellow at Berkeley and was a National Institutes of Health post-doctoral research fellow at Massachusetts Institute of Technology from 2008-2011 prior to coming to Iowa State.

Bratlie's research is centered on new and innovative strategies for improved outcomes in various medical conditions such as Type 1 diabetes and cancer. Much of her current work involves drug delivery for macrophages (immune system white blood cells that engulf and digest substances such as cancer cells) and targeted drug delivery.

Heinen becomes Director of Undergraduate Education


Jennifer Heinen

Chemical and Biological Engineering senior lecturer Jennifer Heinen has become the department's first Director of Undergraduate Education. She will work closely with other faculty and staff members to plan and communicate ways to best serve the department's large population of undergraduate students.

Heinen joined the department in 2008 after receiving a B.S. in chemical engineering from Bucknell University in 2001 and a Ph.D. in chemical engineering from the University of Delaware in 2007. She also received higher education teaching certification in 2007 at Delaware. She worked as graduate research assistant at Delaware and a post-doctoral research associate at Australia's University of Sydney.

CBE faculty member T.J. Paskach has been hired as a senior lecturer in the department. He is a CBE alum, having received a B.S. from the department in 1990 and a Ph.D. in 2002. He has also worked as the Director of Technology at Frontline BioEnergy LLC in Ames, Iowa since 2011.


T.J. Paskach

Michael Brady (B.S. '65, Ph.D. '69), Gayle Roberts (B.S. '81) inducted into CBE Hall of Fame

Iowa State University alumnus Michael D. Brady was inducted into the Iowa State University Department of Chemical and Biological Engineering (CBE) Hall of Fame in November of 2016.

Michael Brady addresses the audience at his Hall of Fame induction ceremony.

Dr. Brady earned a B.S. in chemical engineering from Iowa State University in 1965. He then went on to earn a Ph.D. at Oregon State University in 1969 before embarking on a distinguished career that saw him work for some of America's largest and most influential companies, with process and materials analysis and innovation characterizing his career at 3M, Imation (a business spun off from 3M), Corning Glass and in consulting work. At 3M he invented trade secret processes for coating water based adhesives and fused coating on carpet fibers; worked in processes for reflective highway signs, X-ray film and screens and with color proofing materials for printing. At Corning Glass he was involved in both trade secret processes as well as patented processes invented in the areas of cellular ceramics for automotive catalytic converters and diesel particulate filters, print heads for high density printing for DNA analysis, coating materials for ultra-thin glass for TV and computer screens as well as hand held devices. He holds more than 20 patents worldwide and many of his trade secret processes are still being practiced.

Reginald R. Baxter Endowed Department Chair Andy Hillier presents Brady with his commemorative Hall of Fame plaque.

As an undergraduate he was vice president and programs chair for the ISU student chapter of the American Institute of Chemical Engineers (AIChE) and organized the 1965 Midwest Student Chapter Meeting and Symposium. He has continued his involvement with AIChE and has been a member for more than 50 years.

While at 3M Brady continued his connection with Iowa State by arranging guest appearances from many ISU chemical engineering professors and also interviewed and helped hire many chemical engineering, electrical engineering, chemistry and physics graduates of Iowa State. He was involved with establishing the National Science Foundation Coating Center of Excellence at the University of Minnesota, as well as the Microelectronics Center at Iowa State.

Gayle A. Roberts, P.E., an Iowa State University Chemical and Biological Engineering alumna, was inducted into the department's Hall of Fame during a banquet April 12, 2017. From 2007 until 2017 Roberts was president of Stanley Consultants, a global engineering firm that provides planning, design, consulting, construction and management services to clients around the world. She was the fifth president in the company's history and its first female president. In 2012 she was also elected chief executive officer. As of May 2017 she was named the corporation's chairman of the board.

Roberts graduated from Iowa State University in 1981 with a B.S. in Chemical Engineering, and earned an M.B.A. from St. Ambrose University in 1991. She is a licensed professional engineer in seven states and Puerto Rico.

Roberts (center) is joined by James L. and Katherine S. Melsa Dean of Engineering Sarah Rajala and Reginald R. Baxter Endowed Department Chair Andy Hillier at her induction ceremony.

After joining Stanley Consultants in 1981 she has achieved more than 30 years of experience in the consulting engineering industry. Throughout her career she has eagerly accepted new and challenging assignments. This enthusiasm led her to positions as resident engineer, project manager, market leader, and business leader.

She is a longtime champion of women in engineering and regularly encourages young women to consider the field as a viable and exciting career choice that holds many opportunities. She has been recognized for these efforts, as well as her contributions to the engineering industry, with multiple awards including: Athena Award from The Women's Connection; Upward Mobility Award from the Society of Women Engineers; Professional Achievement Citation in Engineering (PACE) Award from the Iowa State University College of Engineering; Woman of Influence Award from the Corridor Business Journal; Voice of the Engineer Award from the Iowa Engineering Society; 50% Solution Award from the Iowa Women's Foundation; and the Large Company Innovation and Leadership Category of the Iowa Women of Innovation Award from the Technology Association of America.

Her service to Iowa State University includes three terms on the Department of Chemical and Biological Engineering Advisory Council, including one term as chair. She also served on the board of the University's Engineering Policy and Leadership Institute. She is also a member of Rotary International, the Iowa Engineering Society, the American Council of Engineering Companies (ACEC), and the Society of American Military Engineers (SAME).

Both Brady and Roberts have had plaques in their honor placed on the Department of Chemical and Biological Engineering Hall of Fame Wall in the lobby of Sweeney Hall.

CBE alum Mark Lashier to Chevron Phillips president/CEO

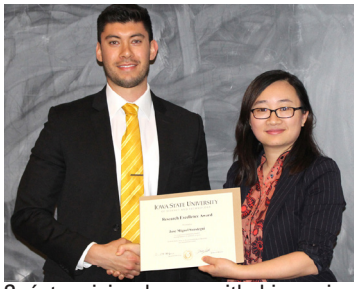

Mark Lashier

Mark Lashier, an Iowa State University chemical engineering alumnus and a member of the department's Advisory Council, was named president and chief executive officer of Chevron Phillips Chemical Company LLC. He succeeded president and CEO Peter Cella upon Cella's retirement August 1, 2017.

Lashier received a B.S. and Ph.D. in chemical engineering from Iowa State in 1985 and 1989, respectively, and has served on the department's Advisory Council since 2014. He has nearly 30 years of experience in the chemicals industry, holds 12 U.S. patents and has authored several technical papers.

He began his career at Phillips Petroleum Company in 1989 (prior to its later merger with Chevron) in Bartlesville, Oklahoma as an associate research engineer in Phillips' chemicals group of research and development. In 1994, he became a senior production engineer at the Sweeny Petrochemical Complex in Old Ocean, Texas; and in 1996, he served as commercial development specialist in natural gas, chemicals and plastics, in Bartlesville, Oklahoma. In 1997 he was named olefins manager in chemicals and plastics. He joined Chevron Phillips Chemical Company in 2000 as the two corporations combined their resources.

Ph.D. alum Suástegui presentation earns "best of" honors


Suástegui is shown with his major professor Zengyi Shao, presenting the Research Excellence Award in April, 2017.

Dr. Miguel Suástegui, who received his Ph.D. in chemical engineering from Iowa State in May of 2017, was honored at a national conference.

His talk at the April 2017 American Chemical Society National Meeting in San Francisco was awarded "Best of BIOT" by the Division of Biochemical Technology (BIOT). The talk, entitled "Multilevel engineering of the upstream module of aromatic amino acid biosynthesis in Saccharomyces cerevisiae for high production of polymer and drug precursors," was judged worthy of the award by peers at the conference.

Suástegui was invited to have his presentation featured in a "Best of BIOT" webinar series taking place in the fall of 2017. The research was also published in *Metabolic Engineering* in mid-June. It was carried out when Suástegui was working toward his doctorate at Iowa State. Prior to his graduation Suástegui received one of the department's Research Excellence Awards and Graduate and Professional Student Senate Research Award for the project. The project was supported by NSF Center for Biorenewable Chemicals (CBiRC).

Suástegui is now a post-doctoral researcher at the Wyss Institute for Biologically Inspired Engineering at Harvard University.

Department grad Korin Reid in *Forbes* magazine's "30 Under 30"


Korin Reid

Dr. Korin Reid (B.S.ChE'08), a Department of Chemical and Biological Engineering alumna, was honored by Forbes magazine as part of its annual "30 Under 30" leaders in science awards in early 2017

Reid, employed as a Senior Data Scientist with McKesson in Atlanta, GA, was singled out for her work using big data technologies to scale predictive modeling and machine learning on billions of healthcare records, reaching more than 160 million people.

She was named one of McKesson's 2016 Distinguished Technologists and also mentors youth in STEM (Science, Technology, Engineering and Mathematics) skills.

CBE associate professor Eric Cochran (right) was joined by Civil, Construction & Environmental Engineering's Gerald and Audrey Olson Professor in Civil Engineering R. Christopher Williams at the 2017 College of Engineering Convocation award ceremony. They were honored for receiving a patent for thermoplastic elastomers via reversible addition-fragmentation chain transfer polymerization of triglycerides at Iowa State's Bio-Polymer Processing Facility. The $5.3 million plant, opened in 2015, was spearheaded by Cochran and Williams. It also recently launched its first production run (see story on page 16). The award was presented by James L. and Katherine S. Melsa Dean of Engineering Sarah Rajala.


CBE assistant professor Nigel Reuel was recognized at the 2017 College of Engineering Convocation for being named Black & Veatch Building a World of Difference Faculty Fellow in Engineering. He is shown receiving congratulations from James L. and Katherine S. Melsa Dean of Engineering Sarah Rajala.

ISU AIChE chapter gets ADM donation

The Iowa State University chapter of the American Institute of Chemical Engineers (AIChE) has received a $2,500 gift from Archer Daniels Midland.

AIChE is a national organization of chemical engineers and includes a large roster of undergraduate student groups at colleges and universities. It is the largest student group in Iowa State's Department of Chemical and Biological Engineering (CBE) and provides members many opportunities for education, networking and outreach.

ADM's donation will help such AIChE chapter activities as the annual Chem-E-Car competition.

The funds will be used to support activities such as development of Iowa State teams for AIChE's annual Chem-E-Car national competition (where students plan, construct and compete with small vehicles powered and stopped by chemical reactions); and to subsidize student participation in AIChE events such as the Midwest regional conference and Annual Student Conference, which will be held in Minneapolis in October. The funds will also support outreach and networking events, such as the department's annual Showcase, which highlights student organizations and opportunities.

CBE undergraduate Vincent Anderson, who is the incoming president of ISU's AIChE chapter for the upcoming academic year, said, "Iowa State AIChE is proud to partner with a great company like Archer Daniels Midland. We look forward to participating in many activities with these funds, and to continue to plan successful networking events with ADM representatives, which all CBE undergrads are welcome to attend."

CBE Advisory Council welcomes two new members


Jack Starr

The Department of Chemical and Biological Engineering Advisory Council added alums Jack Starr and Derek Winkel to its Advisory Council in 2017.

Starr is a Director of Engineering R&D for Cargill, where he leads the Process Modeling team. He earned a B.S. in chemical engineering from Iowa State University in 1987 while working for Dow Chemical on the cooperative education program. He then attended the University of California – Berkeley and earned his Ph.D. in 1991. His research at Berkeley contributed to improved processes for separating organic acids from fermentation broth.

Upon finishing at Berkeley, Jack joined the Process Development team at Abbott Laboratories in the Chicago area where he helped pilot new processes for the production of novel pharmaceutical compounds. He was part of a team that scaled up batch processes into manufacturing sites in USA and England.

He then joined Cargill in 1997 to work on bio-industrial product and process development, including the development of polylactic acid (PLA) polymers. He was the technical lead for the development of an innovative process to produce polymer grade lactic acid at low cost for the production of PLA. Jack helped in the engineering, construction, commissioning, and start up of this novel process at the Cargill Corn Milling site in Blair, NE. In 2008, Jack moved to Engineering R&D where he has held multiple leadership positions in the process development areas, before moving to leading the Process Modeling team.


Derek Winkel

Derek Winkel is Executive Director, Manufacturing Operations, Renewable Energy Group, Inc. For 18 years, he has been responsible for managing manufacturing operations in the chemical and renewable fuel industries. He coordinates the efficient operation of the company's 14 operating plants by leading a team that monitors plant performance, analyzes data and drives continuous improvement to increase margins and quality. In addition, he oversees several areas that support plant operations, including environmental, health and safety; corporate process and mechanical engineering; and manufacturing reliability.

Winkel joined REG in 2006 as the General Manager of REG Newton LLC during its construction and successfully led the plant through start-up and continued operations until transitioning to his current position full time in 2010.

He received his Bachelor of Science in Chemical Engineering and Master of Business Administration from Iowa State University in 1998 and 2015, respectively. He currently serves on the board of directors for the Iowa Renewable Fuels Association and is a member of the American Institute of Chemical Engineers.

Brooke Long joins CBE staff for HR/data position

CBE has welcomed Brooke Long as the department's Program Assistant for HR & Data Coordination. She has a B.A. from Iowa State in Speech Communication and an M.A. in Communication Education from the University of Northern Iowa, and also has a background in human resources.


Brooke Long

John Burnett-Larkins joins ISU P&S Council

CBE communication specialist John Burnett-Larkins has become a member of Iowa State's Professional & Scientific Council. The council serves as a resource for all ISU Professional & Scientific employees, providing information and responding to needs. He will also serve on the council's Communications Committee.


John Burnett-Larkins

Before the wrecking ball, "Old Sweeney" fondly remembered as significant part of Iowa State CBE history

Emeritus Professors George Burnet (left) and Tom Wheelock pose next to the door of an office they once occupied in the Chemical Engineering Building.

In 2017 the original Chemical Engineering Building was one of two demolished to make way for the new ISU Student Innovation Center to be constructed just south of the current Sweeney Hall.

Once the home of Iowa State's chemical engineering department for nearly 40 years, the Chemical Engineering Building, which was fondly called "Old Sweeney" – in honor of the department's first head and inspirational leader, Orland Russell Sweeney – held its share of memories for those who worked, studied and conducted research in it; and for two Department of Chemical and Biological Engineering emeritus professors, Dr. George Burnet and Dr. Thomas (Tom) Wheelock, they have done all three. On the eve of the building's destruction, they discussed days gone by in the structure that played a key role in the evolution of a department and curriculum.

Burnet walked through the doors of the Chemical Engineering Building as an undergraduate chemical engineering major in 1942. He then put his studies aside and volunteered for the Army in 1944 and served in the South Pacific. He returned to Iowa State to finish his bachelor's degree in 1948; he earned a master's at ISU in 1949 and Ph.D. in 1951. After working in industry he returned to his alma mater as an associate professor in charge of unit operations and became department head in 1961.

The Chemical Engineering Building, AKA "Old Sweeney," shown in 1922.

Wheelock interrupted his undergraduate chemical engineering studies at Iowa State in 1943 to serve the war effort in the U.S. Navy. He returned to ISU after the war and received his B.S. in 1949. After spending time in industry he returned to ISU for graduate school in 1954 and received his doctorate and joined the faculty in 1958.

It is perhaps ironic, yet fitting, that Old Sweeney and the Nuclear Engineering Building fell into history together. Unknown to many, the "NukeE Building," as it was often called, was originally named the West Chemical Engineering Building. It was built in 1935 as a USDA Research Laboratory and was a key part of the earliest chemical engineering work on campus. Sweeney was heavily involved with the use of agricultural by-products in his early years at ISU, and "The USDA built that building to expand Sweeney's ag by-product research," said Burnet. "Sweeney was interested in uses for soybeans. At that time soybeans were being imported from China and the expelling process they used for extracting ingredients was not very efficient – so Sweeney started looking at ways to do a more practical chemical extraction." The building became home to a 10-ton per day soybean extraction facility.

But it was in the nearby Chemical Engineering Building where the majority of the long-term education and research was performed. The chemical engineering department was originally housed in the basement of Gilman Hall. But when the new Chemical Engineering Building went up in 1927 there was a great exodus of people and equipment to the new dedicated structure. An architect's rendering of the building ran in the Des Moines ***Register*** with the bold headline, "Iowa's prosperity may be determined in this building." It cost about $70,000 to build.

The two-story open atrium of the Chemical Engineering Building saw large-scale experiment and production work in its early days.

"The original large building was mostly labs," Wheelock recalled. "It had a large open bay in the center that encompassed the whole second floor. Sweeney developed it that way so that he could have the space to demonstrate uses of many different products he constantly worked on." Just a few of those projects Sweeney and company developed in that building included Maizewood, an insulting board made from cornstalks, which was demonstrated at the Chicago World's Fair in 1933; hardwood made from cornstalks; Maizolith, or "cornstone," a product that could be processed into a substance with great strength; and furfural, a compound of formic acid made from corncobs that had many uses in manufacturing products.

In 2017, just prior to the building's demolition, a lab sink is a reminder of "Old Sweeney's" days of classes and lab work.

Then there was the elevator: "There was an elevator that went from the first floor to the second floor," Wheelock commented. "It was hand operated. You pulled a rope to make it go up and down." But perhaps the biggest conversation piece in the building was the fire pole. Just like what can be found in fire stations, the brass pole was installed to allow quick exit from the second floor in the event of a fire. "There was a railing around the perimeter of the big opening on the second floor, like a balcony," Burnet explained. "In one spot next to the pole there was a gate. You'd open the gate, reach out, grab the pole and slide down." As you'd expect, a fire pole designed for emergency exit also made for an attractive way to quickly get from the second floor to the first under normal circumstances. It was said that Sweeney himself would often surprise visitors to the building by sliding down the pole, nattily dressed in his trademark gray suit. Students, too, "Would sometimes take advantage of the pole, even though they were not supposed to," said Burnet. When asked if faculty over the years ever did the same, he just smiled and shrugged. Question answered.

See photos of the Chemical Engineering Building and Nuclear Engineering Building demolition in preparation for the Student Innovation Center on the next page.

In May of 2017 the original Chemical Engineering Building (also known as "Old Sweeney") and the Nuclear Engineering Lab (which was originally used as an additional chemical engineering facility) met the wrecking ball. They were demolished to make way for the Student Innovation Center, an all-new shared space structure to be erected just south of Sweeney Hall. At left is a photo from August 2017 as crews worked to remove massive amounts of dirt from the building site. Old Sweeney stood to the left next to the Marston Water Tower, and the Nuclear Engineering Lab to the right. The Student Innovation Center is scheduled to be completed in early 2020.

Due to the construction of the Student Innovation Center south of Sweeney Hall, the department's original loading dock was permanently closed. A new dock was then created in the northwest portion of Sweeney in the spring of 2017.

Phase I remodeling work in the basement of Sweeney Hall is ongoing in preparation for new laboratory space. It will house an all-new small angle scattering X-ray machine that will be approximately 30 feet in length and will be used by different departments.

A group of CBE advisers and undergraduate students received the Outstanding Innovation Award for a new transfer student program with the department learning community. Peer mentors Qiao-Ying "Jee" Jee, Wenjiao "Nikki" Chen, Victoria Kriuchkovskaia (pictured, second from right) and Jamie Pryhuber; and academic advisers Tonia Baxter and Janessa Boley (pictured, center and second from left) were honored.

Senior lecturer Stephanie Loveland received the Outstanding Service Award for five years of dedication to the CBE learning communities. It was presented at the Learning Communities Institute ceremonies.

Associate Professor Monica Lamm received the Outstanding Achievement in Teaching award from the university for her performance in teaching over an extended period of time.

Bio-Polymer Processing Facility sees first production run

Left to right, CBE's Reginald R. Baxter Endowed Department Chair Andy Hiller; associate professor Eric Cochran; Civil, Construction and Environmental Engineering Gerald and Audry Olson Professor R. Christopher Williams and CCEE's Don and Sharon Greenwood Endowed Department Chair Terry Wipf are shown at the facility's grand opening and dedication in 2015.

The Iowa State University Bio-Polymer Processing Facility, which opened in 2015, celebrated a major milestone in 2017 when it launched its first production run of biopolymers – plastics that are made from the conversion of fats and vegetables.

Construction of the plant, which is located in the ISU BioCentury Farm, was spearheaded by Department of Chemical and Biological Engineering Associate Professor Eric Cochran and Department of Civil, Construction and Environmental Engineering Gerald and Audrey Olson Professor R. Christopher Williams.

Since its inception, the vision for the plant was to allow university engineers to research and develop the process for producing biopolymers, which has numerous commercial uses, including asphalt paving, adhesives, coatings and packing materials. A major plus for the facility is that it also "de-risks" the technology for companies that may be interested in producing large quantities of biopolymers.

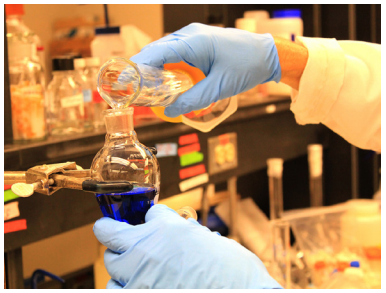
The plant allows for both the research and production of biopolymer processes for many industrial applications.

It is able to produce 1,000 pounds of biopolymers per day and will play a key role in evaluation for industry. Feedstock materials used in the process are domestically sourced and can be produced anywhere in the U.S. The plant also serves as a valuable source of experiential learning for both undergraduate and graduate students in both of the involved engineering departments.

Development of the $5.3 million plant was assisted by grants, from sources that included the U.S. Department of Agriculture and the Iowa State University Regents' Innovation Fund. More than 200 individuals, including faculty, staff, students and university corporate and government partners attended its dedication in August of 2015.

The facility was recently issued it first process patent. See a photo of the commemoration of that achievement at the College of Engineering Convocation on page 13.

Online ChemE Ph.D. preperatory program to debut in 2018

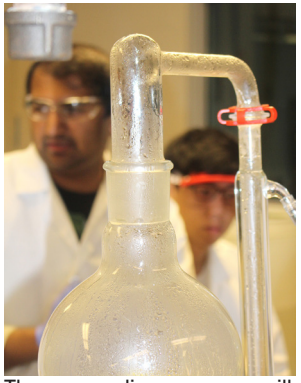


A new online preperatory program from the Iowa State University Department of Chemical and Biological Engineering (CBE) has been designed with non-traditional Ph.D. candidates in mind.

The department has unveiled plans for an online graduate core preparatory course for qualified individuals seeking the advanced degree.

It will debut in the summer of 2018 and is targeted to students with undergraduate degrees from related science disciplines such as chemistry, physical chemistry, general engineering and more; and students desiring to return to school from industrial practice in chemical engineering to pursue advanced degrees.

The eight-week, three credit online summer course will help prepare students for success in the core graduate courses by reviewing and reinforcing such topics as mass and energy balances, transport, thermodynamics, kinetics and reaction engineering and numerical methods.



The new online program will assist both current students and those wishing to return to school after spending time in the work force.

"Entering the chemical engineering Ph.D. program at Iowa State has offered me great professional opportunities since I found an area of interest for me within the department. I have improved not only my academic level, but also soft skills such as time management and more," said current graduate student Miguel Chavez-Santoscoy, who joined the program after an undergraduate experience in biochemical engineering.

"If an online summer preparatory course had been offered to help my transition to the Ph.D. program I would have definitely taken advantage of it," said John Matthiesen, who recently graduated from Iowa State with a Ph.D. in chemical engineering. He came to the program with degrees in engineering science and chemistry.

The course will run from June 11 – August 3, 2018 and will be free to students who have accepted admission into the Department of Chemical and Biological Engineering Ph.D. program. Other students wishing to apply at a later date or to prepare for a Ph.D. program at another institution will be charged standard summer tuition. If a student is subsequently admitted and joins the Iowa State chemical engineering Ph.D. program this tuition can be reimbursed.

For additional information visit the program's page on the Department of Chemical and Biological Engineering web site at cbe.iastate.edu/online-ph-d-core-program/

Record number of graduate students in fall 2017 semester

The Department of Chemical and Biological Engineering has welcomed a record number of graduate students in the fall 2017 semester, with 85 individuals from more than a dozen countries pursuing advanced degrees in chemical engineering. Twenty of the students are new to Iowa State.

Both new and returning graduate students gathered for the kickoff Graduate Seminar Series event, where all are introduced, along with department faculty and staff, and the schedule for the coming year's Graduate Seminar Series, which features researchers from around the nation, is announced.

"We are thrilled to reach this new record number of graduate students enrolling in our programs," said Reginald R. Baxter Endowed Department Chair Andy Hillier. "Increasing graduate student enrollment is a priority set by the Department and the College of Engineering, so we are delighted to be able to reach this milestone, and plan to continue with further growth."

"The rising number of applicants to our graduate program shows that Iowa State is being recognized as a major force in the realm of chemical engineering higher education," remarked Dr. Eric Cochran, the department's Director of Graduate Education.

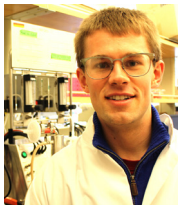
The department also hosts 20 post-doctoral researchers and visiting scientists and two interdisciplinary graduate students.

Chemical Engineering graduate students at Iowa State utilize research facilities in both Sweeney Hall and in the Center for Biorenewable Chemicals (CBiRC), in the Biorenewables Laboratory. In calendar year 2016 the department saw $9.35 million in total research funding. The department currently has an average of nearly four graduate students per faculty member with an average of two years to graduation for master's degree candidates and 4.5 years to graduation for those in the Ph.D. program.

The record crop of graduate students comes to Iowa State from the United States, and also from countries that include Bangladesh, China, Germany, India, Iran, Indonesia, Italy, Mexico, Saudi Arabia, South Korea and Taiwan.

The department's largest-ever crop of graduate students is shown in a group photo.

Grad fellowships for Ploessl, Rao



Deon Ploessl

Chemical engineering graduate student **Deon Ploessl** was named a recipient of the prestigious National Science Foundation (NSF) Graduate Research Fellowship. He was a CBE undergraduate who received his B.S. in May of 2016 and then entered the graduate program. Ploessl's major professor is CBE's Assistant Professor and Jack and Carol Johnson Faculty Fellow Dr. Zengyi Shao.

Radhika Rao

Graduate student **Radhika Rao** was the recipient of a prestigious Brown Graduate Fellowship to strategically advance Iowa State University research in specific areas. Her major professor is Dr. Jean-Philippe Tessonnier. Their work has resulted in a paper recently published in *Nature Communications* (see story on Page 10).

Enam awarded for HMO research

Graduate student Fatima Enam became one of the first recipients of a new award that recognizes research in the use of fluorescent proteins.

Fatima Enam

The Michael Davidson and Roger Tsien Commemorative Travel Award has been developed by the Addgene plasmid research repository blog to help individuals share fluorescent protein research with the academic community and to fund travel to a conference of interest. Iowa State's Enam was one of two first awardees.

Enam, whose major professor is the Department of Chemical and Biological Engineering's Dr. Thomas Mansell, was recognized for her research with biosensors for Human Milk Oligosaccharides (HMOs). They are thought to play an important role in nurturing the development of beneficial bacteria in the gut of newborns.

Jose Miguel Suástegui (Fall 2016, upper left photo) and **John Matthiesen** (Spring 2017, upper right) were honored with the 2016-17 Research Excellence Awards while **Benjamin Schlichtmann** (Fall 2016) and **Zhe Li** (Spring 2017, above left) were honored with the Teaching Excellence Award in a spring 2017 ceremony. Suástegui is pictured with major professor Zengyi Shao; Matthiesen is shown with major professor Jean-Philippe Tessonnier. Li is shown with major professor Yue Wu, above. Suástegui's research project was also awarded at a national conference in the spring of 2017 (see story on page 13).

Schlichtmann, who was unable to attend the ceremonies, has studied under professor Balaji Narasimhan. His certificate is shown above.

Suástegui receives a piece of cake from Director of Graduate Education Eric Cochran at the award reception.

We congratulate our 2017-18 graduate student fellowship recipients, and thank those who make our fellowships possible!

Hamed Bateni

Judson M. Harper Graduate Fellowship in Chemical and Biological Engineering, Frederick Martinson Chemical Engineering Scholarship Fund

Yifu Chen

Loren & Donna Luppes Graduate Fellowship

Marco Dell'Anna

Provost Fellowship

Shailja Goyal

Sweeney Family Memorial Fellowship, Frederick Martinson Chemical Engineering Scholarship Fund

Geet Gupta

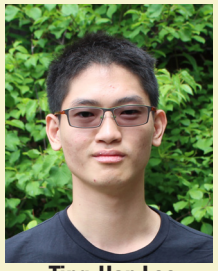
George W. Parrott Centennial Graduate Fellowship

Aziz Ilgun

George W. Parrott Centennial Graduate Fellowship

Md Monirul Islam

James Katzer Energy Fellowship



Ting-Han Lee

Reginald & Jameson Baxter Fellowship

Luman Liu

Reginald & Jameson Baxter Fellowship

Jaeryul Park

Frederick Martinson Chemical Engineering Scholarship Fund

Deon Ploessl

National Science Foundation Graduate Research Fellowship

Utkarsh Ramesh

Provost Fellowship

Sean Rollag

Provost Fellowship

Bradley Ryan

Presidential Scholars Fellowship

Kartik Srivastava

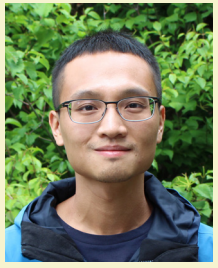
Lanny A. Robbins Endowed Graduate Fellowship

Mohsen Torabi

M.A. Larson Fellowship in Chemical Engineering

Sahararaj Daniel Vincent

James Katzer Energy Fellowship



Tung-Pin Wang

M.A. Larson Fellowship in Chemical Engineering

ISU AIChE teams fare well in regionals, Chem-E-Car team headed for nationals

Members of CBE's contingent at the AIChE regional conference, along with faculty adviser Prof. Stephanie Loveland, show off some of their plaques and certificate won in competitions.

For the second consecutive year, a team of Iowa State students is going "racing" at the American Institute of Chemical Engineers (AIChE) national conference in the organization's Chem-E Car competition.

In the group's Mid-America Student Regional Conference for chemical engineering undergraduates at the University of Tulsa, ISU's "Lime-E Lanterns" team took first place in the Chem-E-Car poster competition and took second in the Chem-E Car distance competition. The well-known event requires a scratch-built vehicle powered and stopped by a chemical reaction to travel the furthest distance on a course.

The team's performance qualified its members to compete in the AIChE Annual Student Conference in Minneapolis in October, 2017. Last year an ISU team also qualified for the national competition. "Team Chris" also represented Iowa State in the Chem-E Car competition at the Tulsa regional event.

The Lime-E-Lanterns Chem-E-Car team took second in the distance competition at the regional conference and earned a spot to compete at the AIChE national student conference.

The Lime-E Lanterns team consisted of Gabi Ampuero, Michelle Ampuero, Brett Bobko, Derek Bruun, Trang Hong, Joe Musielewicz, Alex Sazenski and Austin Weiser. The Team Chris lineup included Jonah Brown, Josh Potvin and Alvin Wong.

In other results, a team of Michelle Ampuero, Carolyn Jennrich, Josh Potvin, and Sazenski placed third in the ChemE Jeopardy competition. Seth Baetzold and Viktoriia Kriuchkovskaia participated in the student research presentation competition. Other conference participants included Nicholas Brown, Gavin Hellmich, and Quinn Hanson-Pollock.

Oviedo summer lab offers "once in a lifetime experience" to 11 CBE undergrads

Both sides of the Oviedo experience are shown with this year's participants, with sightseeing and lab work all part of the program.

Eleven Department of Chemical and Biological Engineering students took part in the annual summer lab experience at the University of Oviedo in May and June of 2017.

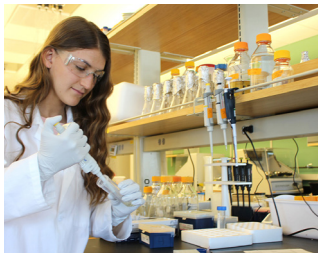
The five-week undergraduate course is a cooperative endeavor between the Spanish university, Iowa State University and the University of Wisconsin. Students are immersed in the annual intensive laboratory research program that allows ISU participants to earn seven academic credits in two chemical engineering courses, in addition to three credits with options for use. It also features advantages such as on-site plant visits, as well as time for sightseeing, social functions and enjoying the local culture.

The ISU students are joined by their counterparts from Wisconsin on a sightseeing tour.

Iowa State CBE students participating this year were Dan Bell, Abbie Bruen, Jose Maldonado-Olvera, Ian Mathur, Jenny Matz, Mia Merritt, Kendall Neuberger, Erica Peterson, Chris Rogers, Katie Sullivan, and Zhanyi Yao. The faculty leader was senior lecturer Stephanie Loveland.

Comments from participating students included "It has pushed me more than any class I have taken and has greatly improved my knowledge on a wide variety of subjects and writing skills;" "I really enjoyed this once in a lifetime experience and very much appreciate all the work the staff puts in to make this a great experience;" and, "I really felt that all faculty were very involved and very helpful. I got thorough and constructive criticism from everyone. Professors were always willing to help with all questions."

CBE's BioMaP REU summer research program welcomes nine participants



Julia Craft of Brigham Young University works on her BioMaP research project.

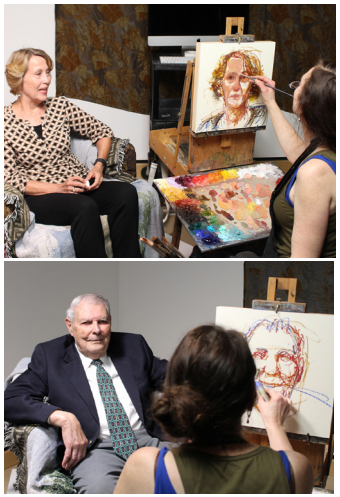
"Loved the program. Well-organized and everyone was extremely helpful." "A great way to see what graduate school is really like." "Really appreciated the way the graduate students and faculty were so involved."

With positive reviews and an expanded portfolio of research experience under their belts at the end, nine undergraduates from around the nation took part in the department's BioMaP REU program in the summer of 2017.

The Biological Materials and Processes Research Experience for Undergraduates (BioMaP REU) program brings college students to the Iowa State campus to work under the mentorship of ISU chemical and biological engineering faculty to gain hands-on research experience in topics that match their educational interests and goals. This year's nine participants were chosen from more than 250 applicants. They included Matthew Burroughs, chemical & biomolecular engineering, North Carolina State University (mentors Qun Wang/Andrew Hillier); Julia Craft, microbiology, Brigham Young University (mentor Laura Jarboe); Mai Doan, biomedical engineering, University of Utah (mentor Kaitlin Bratlie); Darren Loh, chemical & biomolecular engineering, Johns Hopkins University (mentor Balaji Narasimhan); Marjem Mededovic, biomedical engineering, Illinois Institute of Technology (mentor Surya Mallapragada); Logan Morton, chemical engineering, University of Missouri (mentor Balaji Narasimhan); Ricky Robinson, bioengineering, Rice University (mentor Thomas Mansell); Shawn Van Bruggen, chemical and biological engineering, Iowa State University (mentor Ian Schneider); and Jie Hao Wu, chemical & biomolecular engineering, University of Maryland (mentor Nigel Reuel).

The 2017 BioMaP REU participants are shown at their research poster presentation session at the conclusion of the program.

New "Faces of Iowa State" portrait series features three CBE supporters



Mary Jane Hagenson and George Burnet are shown in their portrait sittings with artist Frantzen.

Three individuals with ties to the Department of Chemical and Biological Engineering were featured in the latest round of Faces of Iowa State portraits painted by artist-in-residence Rose Frantzen at Iowa State University.

CBE Anson Marston Distinguished Professor Emeritus **Dr. George Burnet**, biomedical engineering alumna and CBE supporter **Mary Jane Hagenson** and ISU electrical engineering alum and CBE supporter **Ed McCracken** all had sittings with Frantzen.

Burnet has been part of the CBE faculty since 1956. During his tenure he served as head of the department from 1961-1978. He also served as chief of Ames Laboratory's chemical engineering division for many years and was an interim dean of the College of Engineering. He still serves the department in advisory roles.

Hagenson received a B.S. in physics from Iowa State in 1974; an M.S. in biomedical engineering in 1976; and a Ph.D. in that curriculum in 1980. She is retired vice president of research and technology for Chevron Philipps Chemical. She is a past chair of the Department of Chemical and Biological Engineering's Advisory Council, and is a charter member of the department's Hall of Fame. In 2015 she and husband Randy, an Iowa State alumnus with a B.S. in electrical engineering and M.S. and Ph.D. in nuclear engineering, helped establish CBE's Richard C. Seagrave Associate Professorship in the Department of Chemical and Biological Engineering.

McCracken holds a B.S. in electrical engineering and is a recipient of the Distinguished Alumni Award. He and his wife, Ana, who holds a B.S. in fashion merchandising from Iowa State, provide the Ana & Ed McCracken Engineering Scholarship, which assists undergraduate engineering students. He is retired CEO of Silicon Graphics, Inc. His leadership spurred the development of computers specifically designed for the creation and manipulation of 3-D images, which have been used extensively in the movie and television industry. He was presented with the National Technology Medal award by President Clinton.

Artist Rose Frantzen is a native of Maquoketa, IA, where she became known for a series of painted portraits of local residents. Her works became a display at the National Portrait Gallery at the Smithsonian in Washington, D.C. In 2016 she did 19 similarly-styled portraits of Iowa State faculty and staff during the Iowa State Fair, which included Anson Marston Distinguished Professor and Carol Vohs Johnson Chair Surya Mallapragada. A total of 13 portraits were done on campus in 2017 during a nine-day residency. The portraits will become part of a permanent collection on campus.

The finished portraits of (left to right) McCracken, Burnet and Hagenson from April, 2017 are shown, with the portrait of Surya Mallapragada that was done at the Iowa State Fair in 2016. They will be part of the permanent Art on Campus collection.

Griswold Internship offers practical research focus

Through the generosity of Gary (a Department of Chemical and Biological Engineering alumnus) and Mickie Griswold, the department is pleased to now offer a unique internship opportunity to ten CBE undergraduates each semester.

The Gary and Mickie Griswold Research Internship Program was launched in January of 2017 and offers students the opportunity to participate in "real life" hands-on research at Iowa State as undergraduates during the course of a semester.

In addition to research, all students and faculty involved in the Griswold program participate in intellectual property training, which deals with rights and regulations regarding the protection of research, discoveries and ideas in the scientific world, often through patents and copyrights. The internships also offer an hourly salary for all participating students.

A recent accomplishment in the still-young program involves Jake Nelson, a CBE senior who is performing research work in the laboratory of Professor Jean-Philippe Tessonnier. He is listed on a recently submitted patent application for work he has performed in that lab.

Students who have participated in the program so far include Kelci Coates, Noah Deroos, Kyle Jackson, Sarah Jacobson, Jeremy Jacoby, Joseph Koelbl, Sydney Knight, Viktoriia Kriuchkovskaia, John Lavey, Andrew Mettry, Samuel Miller, Jake Nelson, Thomas Roberts, Anna Patterson, Saniya Shetty, Payton Van Beek and Jenna Willenborg

A group of participants in the Griswold Research Internship pose with benefactors Gary and Mickie Griswold at a department function. The internship program offers research and intellectual property training to CBE undergraduates.

UNDERGRADUATE SCHOLARSHIPS

Congratulations to our 2017-18 scholarship recipients and thank you to all who make our scholarships possible!

Mohamed Abdennadher
Chemical Engineering Scholarship Fund

Sparsh Agarwal
Tau Beta Pi Scholars Program

Suryatej Akavaram
Chemical Engineering Scholarship Fund

Michelle Ampuero
Renewable Energy Group, Inc. Engineering Scholarship

Austin Angel
Engineering Student Leadership Development Scholarship, Tau Beta Pi Scholars Program

E. Anglarill Matamoros
Chemical Engineering Scholarship Fund

Martin Asama
Langerhans Chemical Engineering Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Mitchell Atneosen
Edwin John Hull Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Jenna Averhoff
Kenneth L. Garrett Scholarship in Chemical & Biological Engineering, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Ahmed Awad
Chemical Engineering Scholarship Fund

Shelby Baker
Ross White Engineering Scholarship

Ethan Bauer
Mike and Jean Steffenson Scholarship

Andee Beierle
Eugene Devere Travis Scholarship

Kari Beine
Chemical Engineering Scholarship Fund

Mason Berg
Eugene Devere Travis Scholarship, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Victoria Bertram
Gudron Cummings Student Support Fund

Kayla Besthoff
Manley R. Hoppe Scholarship

Mitchell Biehl
Chemical Engineering Scholarship Fund

Kia Birnbaum
Skogen-Hagenson Scholarship

David Boorom
Skogen-Hagenson Scholarship

Hannah Bouvin
Nicholas L. Reding/Monsanto Scholarship in Engineering

Alexandrea Bragdon
Skogen-Hagenson Scholarship

Kelsey Brandt
Mike and Jean Steffenson Scholarship, Ana and Ed McCracken Engineering Scholarship

Ethan Brown
Ralph S. Millhone Endowed Presidential Scholarship

Jonah Brown
Chemical Engineering Scholarship Fund

Nicholas Brown
Engineering Undergraduate Scholarships-International

Anna Buchholz
Engineering Student Program Support Scholarship

Kaitlin Burdick
Manley R. Hoppe Scholarship

Charles Byrd
Engineering Student Program Support Scholarship

Yee Chan
Nicholas L. Reding/Monsanto Scholarship in Engineering

James Chen
College of Engineering Scholarship Fund

Jia Choong
Eugene Devere Travis Scholarship

Trenton Cornell
Robert O. and Marie E. Dierks Scholarship

Andrew Costic
Building a World of Difference Renewable Energy Scholarship in Engineering

Weile Dai
Barbara L. Feroe Scholarship

Jonathon De Kam
Lucille E. Buol Scholarship

Alexis Derk
Chemical Engineering Scholarship Fund

Noah Deroos
Chemical Engineering Scholarship Fund, Donald H. Beisner in Honor of Dr. Morton Smutz Scholarship

Shannon Dewitte
Chemical Engineering Scholarship Fund

Nolan Dickson
Ralph S. Millhone Endowed Presidential Scholarship

Hannah Dietrich
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Maxsam Donta
Chemical Engineering Scholarship Fund

Ethan Dunn
Eugene Devere Travis Scholarship

Breanna Dykstra
Cleo Cowell Engineering Scholarship

Matthew Eckert
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Emily Edwards
Engineering Student Program Support Scholarship

Jonathan Eiden
Mary and Axel Peterson Scholarship

Taner Eiswald
Engineering Student Program Support

Grace Elonen
Gerald and Barbara Montgomery Scholarship in Chemical and Biological Engineering

Samantha Eltze
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Jacob Ernste
Mary and Axel Peterson Scholarship

Dakota Even
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Alexander Fiscu
Engineering Student Program Support Scholarship

Elizabeth Frank
Chemical Engineering Scholarship Fund

James Frank
Thomas D. and Edra S. Wheelock Endowed Scholarship

Tyler Franke
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Matthew Frankenhoff
Chemical Engineering Scholarship Fund

Bryce Frey
Engineering Student Program Support

Nathan Fuentes
A. Douglas & Helen Steffenson Scholarship

Mason Furnish
Chemical Engineering Scholarship Fund, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Brett Gallens
Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Tyler Gathman
Chemical Engineering Scholarship Fund

Andrew Gilbertson
Ross White Engineering Scholarship

Chloe Gossling
Clayton H. Cooper Scholarship

Nicholas Gossling
Manley R. Hoppe Scholarship, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Joseph Graves
Nicholas L. Reding/Monsanto Scholarship in Engineering, Building a World of Difference Renewable Energy Scholarship in Engineering

Mason Green
Chemical Engineering Scholarship Fund

Haley Greiman
Ralph S. Millhone Endowed Presidential Scholarship

Katherine Gruman
Mary and Axel Peterson Scholarship

Marissa Gustafson
Engineering Student Program Support Scholarship

Alex Hall
Kenneth & Mary Heilman Scholarship

Samuel Hamilton
Chemical Engineering Scholarship Fund

Saneil Harchekar
Engineering Student Program Support Scholarship

Adam Harith
Chemical Engineering Scholarship Fund

Ashley Harris
Johnson-Engel Scholarship Endowment in Engineering, Bestmann Family Scholarship in Engineering

Maya Harris
Chemical Engineering Scholarship Fund

Lee Ho
Eugene Devere Travis Scholarship

Maxwell Holland
Manley R. Hoppe Scholarship

Beatrice Hosier
Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Brett Hostert
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Kyle Jackson
Manley R. Hoppe Scholarship, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Sarah Jacobson
Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Megan Jameson
Mike and Jean Steffenson Scholarship

Nicole Japp
Chemical Engineering Scholarship Fund

Qiao Jee
Chemical Engineering Scholarship Fund

Carolyn Jennrich
Chemical Engineering Scholarship Fund

Grant Johnson
Robert and Ardith Wilkens Engineering Scholarship

Sydney Johnston
Jack and Dilla Cosgrove Scholarship

Rachel Junck
Engineering Student Program Support

Nadia Karl
Engineering Student Program Support, Donald H. Beisner in Honor of Dr. Morton Smutz Scholarship

Mckayla Karr
Lois and Manley Hoppe Scholarship

Kaylin Kartaly
Vander Linden Scholarship Fund

Matthew Kelly
Chemical Engineering Scholarship Fund, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Seonghyun Kim
Chemical Engineering Scholarship Fund

Nathan Klein
Nicholas L. Reding/Monsanto Scholarship in Engineering, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Ethan Kluesner
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Cassandra Knecht
Erwin and DeLoris Whitney Scholarship

Robert Knudsen
Erben A. & Margaret H. Hunziker Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Joseph Koelbl
Chemical Engineering Scholarship Fund

Abigail Koep
Stuart M. Totty Scholarship

Georgia Kolf
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Emily Kramer
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Tommy Krohn
Shepard Family Scholarship in Chemical Engineering

Atharva Kushare
Chemical Engineering Scholarship Fund

Weston Laake
Engineering Student Program Support Scholarship

Siew Lam
Eugene Devere Travis Scholarship

James Lanasa
Chemical Engineering Scholarship Fund

John Lavey
Larry J. McComber Scholarship

Brittany Lende
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship, Jane and Rod Crowley Chemical Engineering Scholarship

Matthew Lentner
Donald H. Beisner in Honor of Dr. Morton Smutz Scholarship

James Lichty
Dr. Owen A. Heng Chemical and Biological Engineering Scholarship Fund

Heather Macmurdo
Ralph S. Millhone Endowed Presidential Scholarship

Shridharshna Mailachalam
Chemical Engineering Scholarship Fund

Stephen Majors
Engineering Student Program Support Scholarship

Omer Malik
Hans Buehler Scholarship, Conrad N. Muzzy Scholarship Fund

Alec Maloney
Thomas D. and Edra S. Wheelock Endowed Scholarship

Mikayla Masching
Engineering Student Program Support Scholarship

Sophia Masters
Dr. Thomas D. Wheelock Scholarship

Ian Mathur
Chemical Engineering Scholarship Fund

Benjamin Matlock
Engineering Student Program Support

Emily Matts
Lyle J. & Marcia L. Higgins Scholarship

UNDERGRADUATE SCHOLARSHIPS

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Logan Mayberry
Nicholas L. Reding/Monsanto Scholarship in Engineering

Molly McCunn
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Austin McFall
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Logan McKim
Engineering Student Program Support Scholarship

Wesley Metcalfe
Lyle J. & Marcia L. Higgins Scholarship

Andrew Mettry
Sullivan Scholarship in Chemical and Biological Engineering

Kelvin Miskowiec
Larry J. McComber Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Akash Mitra
Chemical Engineering Scholarship Fund

Abdalla Mohamed
Mike and Jean Steffenson Scholarship

Branden Moreau
Manley R. Hoppe Scholarship, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Zachary Moritz
Chemical Engineering Scholarship Fund

Alexandria Mullally
Terry Marie Denny ISU Alumni Association Cardinal and Gold College of Engineering Scholarship

Joseph Musielewicz
Chemical Engineering Scholarship Fund

Charles Neff
Chemical Engineering Scholarship Fund, LyondellBassel Futures in the Chemisphere Scholarship

Jake Nelson
Skogen-Hagenson Scholarship

Thi Nguyen
Gerald and Barbara Montgomery Scholarship in Chemical and Biological Engineering

Jasmin Okuzono
Engineering Student Program Support Scholarship

Jaret Olderbak
Ralph S. Millhone Endowed Presidential Scholarship

Karla Ortega
3M Endowed Scholarship in Engineering

Alan Owusu-Poku
Bob and Jacklyn Lane Scholarship

Urvi Pai
Nicholas L. Reding/Monsanto Scholarship in Engineering

Tyler Pasut
Robert and Ardis French Scholarship

Luke Pater
Kenneth L. Garrett Scholarship in Chemical & Biological Engineering, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Megan Peters
Chemical Engineering Scholarship Fund

Erica Peterson
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Daniel Phalen
Chemical Engineering Scholarship Fund

Nicholas Piento
Nicholas L. Reding/Monsanto Scholarship in Engineering

Aimee Pierce
Manley R. Hoppe Scholarship

Joshua Potvin
Mike and Jean Steffenson Scholarship

Jamie Pryhuber
Chemical Engineering Scholarship Fund

Grace Rapp
Chemical Engineering Scholarship Fund

Brittney Reding
Manley R. Hoppe Scholarship, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Austin Reedy
Chemical Engineering Scholarship Fund, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship, Lois and Manley Hoppe Scholarship

Emily Remlinger
Chemical Engineering Scholarship Fund

Brennen Reynolds
Chemical Engineering Scholarship Fund, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Finlan Rhodes
Ralph S. Millhone Endowed Presidential Scholarship

Nathan Rider
Ralph S. Millhone Endowed Presidential Scholarship

Thomas Roberts
Skogen-Hagenson Scholarship

Nathan Roby
Ralph Luebbers Scholarship, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Jacob Rogers
Nicholas L. Reding/Monsanto Scholarship in Engineering

Elizabeth Rohde
Engineering Student Program Support Scholarship

Kaitlyn Roling
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Tyler Roling
Mary and Axel Peterson Scholarship

Alex Roop
Engineering Student Program Support Scholarship

Luke Rustin
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Logan Ryerson
Donald H. Beisner in Honor of Dr. Morton Smutz Scholarship, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway

Anna Sacchetti
Engineering Student Leadership Development

Sean Sao
Professor Eugene H. Wissler Scholarship

Matthew Schaschwary
Engineering Student Program Support Scholarship

William Schatz
Ralph S. Millhone Endowed Presidential Scholarship

Joseph Schiller
Lawrence E. Burkhart Scholarship

John Schomers
Chemical Engineering Scholarship Fund

Andre Schultz
Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Rahul Seshappa
Chemical Engineering Scholarship Fund

Tyler Shelby
Edwin John Hull Scholarship, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Saniya Shetty
Chemical Engineering Scholarship Fund

Kristian Shipley
Engineering Student Program Support Scholarship

Hannah Shirar
Johnson-Engel Scholarship Endowment in Engineering

Kara Sims
John and Sue Sorensen Women in Engineering Scholarship

Joshua Slagle
Nicholas L. Reding/Monsanto Scholarship in Engineering, Tau Beta Pi Scholars Program

Jonathan Slobidsky
Engineering Student Program Support Scholarship

Drew Smith
Chemical Engineering Scholarship Fund, Edward W. & Joyce C. Backhaus Scholarship in Chemical & Biological Engineering

Evan Snaverdt
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Laura Snyder
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Magellan Southwick
Chemical Engineering Scholarship Fund, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Rae Stephenson
Chemical Engineering Scholarship Fund

Jeremy Stoll
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Catherine Sullivan
Chemical Engineering Scholarship Fund

Mark Sutija
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship, H. Stuart Kuyper Scholarship

Bryce Swanson
Chemical Engineering Scholarship Fund, Roderick Seward, Flossie Ratcliffe & Helen M. Galloway

Austin Sympson
George R. & William G. Bathe Scholarship

Joel Thiessen
Roderick Seward, Flossie Ratcliffe & Helen M. Galloway Scholarship

Dustin Thomas
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Engineering Student Program Support Scholarship

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Jaret Olderbak
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Nathan Rider
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Maurice & Ruth Larson Fund, Chadwick Ethan Morris Memorial Scholarship (for participants in Oviedo, Spain Summer Lab Program)
Daniel Bell
Abigail Bruen
Jose Maldonado-Olvera
Ian Mathur
Jennifer Matz
Emilia Merritt
Kendall Neuberger
Erica Peterson
Christopher Rogers
Catherine Sullivan
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