Higdon invested as inaugural Dennis and Cathy Houston Professor

Students gaining skills to become technology and business leaders in Chemical Engineering

WeSTEM conference motivates, inspires women in graduate school

Two new faculty join Chemical and Biomolecular Engineering at Illinois
Dear Alumni and Friends,

At the start of the 2014 fall semester we welcomed Barbara J. Wilson, Professor of Communication, as our new Dean of the College of Liberal Arts and Sciences. She was named dean after serving as the executive vice provost at Illinois and we look forward to working with her. We also are very excited that the department’s undergraduate program passed the ABET review this past spring with flying colors. Our program has been accredited for another seven years. And, after extensive renovations, the Alma Mater statue returned to campus; look for her new appearance in this newsletter or come visit campus to see her and us!

We have had a busy fall with exciting events. During the weekend of October 3-5, we welcomed back 21 of our Ph.D. alumni for their “25 or so” reunion. The alumni, faculty, and their families enjoyed tours of the department, tailgating before the Illinois football game, and celebrated with a banquet to culminate the weekend. Then, on October 25-26, we celebrated Homecoming 2014 with our annual alumni homecoming tailgate. We were so glad that so many alumni could join us for this annual event including the judges for our 13th annual Graduate Research Symposium, Dr. Amit Kulkarni (Ph.D. ’01 Zukoski) from GE and Dr. Rahul Keswani (Ph.D. ’12 Pack) from University of Michigan, Ann Arbor. That weekend also included alumnus Bill Banholzer (Ph.D. ’83 Masel), former CTO of Dow Chemical, being recognized as one of the winners of the LAS alumni achievement awards.

In this newsletter, you also will read about the investiture ceremony of Professor Jon Higdon as the inaugural Dennis and Cathy Houston Professor. This Professorship was established through the generosity of Dennis Houston (B.S. ’74), his wife Cathy, and his family. Because of generous donations like these the department can continue to be among the premier chemical engineering departments in the country!

We also are excited to share with you our latest awards and achievements from our undergraduates, graduate students, and faculty. Assistant Professors Charles Sing and Damien Guironnet, who both started in August, share their stories about their computational and experimental research programs in the area of polymers. Furthermore, we are pleased to include a listing of our graduate students who received fellowships this year, several made possible through gifts from our generous alumni. Our faculty continue to shine with Assistant Professor Brendan Harley being named a Fellow of the AAAS and Professor Deborah Leckband being named to the BMES 2014 Fellows Class.

I also hope you will enjoy reading about two of our alumni; my first graduate student Eric Choban (Ph.D. ’04, Kenis) as well as George Nassos (B.S. ’61), who share their stories about life after graduation from Illinois. We faculty always take great pride in hearing the stories of the students we trained! I encourage you to share with us your feedback and/or your memories, photos, updates, and more so we can feature these on our website, on Facebook, and in future newsletters.

Looking ahead to the spring semester, two more assistant professors, Ying Diao and Diwakar Shukla, will join us in January (more on them in the Spring 2015 newsletter), and we hope to be able to recruit a few additional faculty. This spring the department also will host the AICHE regional student conference, in April we will have our annual undergraduate research symposium and awards event, and in May we expect to graduate a record number of undergraduates. I wish you all happy holidays, and I hope to see many of you back on campus, or on the road.

Connect with the department on Facebook to stay up-to-date on these and other events!

Best Regards,

Paul J. A. Kenis
William H. and Janet G. Lycan Professor and Department Head
kenis@illinois.edu (217) 244-9214
Higdon invested as inaugural Dennis and Cathy Houston Professor

For more than 34 years, Professor Jonathan J. L. Higdon has been a teacher and researcher in the Department of Chemical and Biomolecular Engineering at Illinois.

Professor Higdon has been named the inaugural recipient of the Dennis and Cathy Houston Professorship in Chemical and Biomolecular Engineering. On October 6, 2014, Chancellor Phyllis M. Wise presided at an investiture ceremony recognizing this award at the Illini Union. The ceremony was attended by Professor Higdon and Dennis and Cathy Houston as well as a group of friends, colleagues and students and members of the administration.

Chancellor Wise applauded the Houston’s for their gift noting that such support is akin to “feeding the heart of the university.”

“We could not recruit and retain faculty without the generous support from donors like Dennis and Cathy Houston,” Wise said. “As we see resources from the state whittling away, we need more gifts like these from donors like you.”
She also congratulated Higdon on this well-deserved honor.

Dean Barbara J. Wilson, Liberal Arts and Sciences, said she was honored and excited to be part of the celebration to recognize Higdon for his achievements. “This gift allows us to excel in LAS,” she said. “But it is also a tribute to the department’s vision and leadership.”

Making the gift possible are the Houston’s, Dennis and Cathy. Mr. Houston received his bachelor’s degree in chemical engineering from the University of Illinois in 1974. He was the first graduating chemical engineering undergraduate student to complete a co-op program that blended his academic studies with on-the-job experience which he completed at a Shell Oil Illinois refinery. It was during this time that he met his wife, Cathy, in a computer programming class.

After graduation Houston joined Exxon and was a key member of the transition team that oversaw the merger of Exxon and Mobil in 1998. He retired from ExxonMobil in 2010 after more than 35 years with the company, serving as Executive Vice President, Refining and Supply Company and Chairman and President of ExxonMobil Sales and Supply LLC.

Cathy Houston earned a degree in accounting from Louisiana State University and worked in the banking and oil and gas industry before deciding to devote her time to raising their two children, Christopher and Nicholas. Christopher, who is married to Martine, is an anesthesiologist. They have a baby girl making Dennis and Cathy first time grandparents. Nicholas is an investment banker with a private equity firm working in Washington, D.C.

“Professor Higdon you make us proud,” Houston said. “You are more than a god of chemical engineering, you are a titan.”

Houston thanked the University of Illinois Foundation and LAS for the support and guidance in helping the Houston family decide what type of gift to make to the University and to the department. Houston was recognized with the LAS Alumni Achievement Award in 2006, awarded an honorary doctorate from Massachusetts Maritime Academy, and was the Parr Lecturer in 2008.

Houston said that in the past 40 years when speaking in a business environment, he has made note of three things: his name, that he worked for ExxonMobil and that he graduated from the University of Illinois. “The University of Illinois resonates with the people that I’m speaking with no matter where I am,” he said. “The best decision I made was to come to the University of Illinois.”

As a student in chemical engineering 40 years ago, he said he was taught by a world-renowned team of scientists and educators including Professors Thomas Hanratty, James Westwater, Paul J. A. Kenis, Chancellor Phyllis M. Wise, Professor Jonathan J. L. Higdon, LAS Dean Barbara J. Wilson, and School of Chemical Sciences Director and Professor Jonathan Sweedler.
“I hope to continue for many more years, and I am grateful to enjoy the support of people like Denny and Cathy Houston.”

Jonathan J. L. Higdon
inaugural recipient of the Dennis and Cathy Houston Professorship in Chemical and Biomolecular Engineering

Professor Higdon has become an Intellectual leader and thinker in his field of fluid mechanics. He received his BES and MSE degrees in 1975 in the Department of Mechanics and Materials Science from The Johns Hopkins University. His early research focused on unsteady aerodynamics with an MS thesis about the aerodynamics of drag reduction in the formation flight of birds.

He attended Cambridge University from 1975-78 where he studied for his PhD in the Department of Applied Mathematics and Theoretical Physics, focusing his research in fluid dynamics and biomechanics. After completing a Postdoctoral Fellowship at Stanford University in 1979-80, he joined the faculty at the University of Illinois in 1980.

Higdon noted that in the 34 years he has been teaching and researching at Illinois, he continues to find things that are still fun and intellectually promising and challenging. Through the years, Higdon has collaborated with ExxonMobil on a number of research projects. He said that collaboration has enhanced his ability to “pursue new directions over the years.”

Higdon's research interests include computational fluid dynamics, the mechanics of complex fluids, geophysical fluid dynamics, and petroleum reservoir simulation.

In the coming years, he said he plans to continue building new research initiatives. “I hope to continue for many more years,” he said. “And I am grateful to enjoy the support of people like Denny and Cathy Houston.”

Department Receives ABET Accreditation

The accreditation of the Department’s undergraduate program has been renewed to 2020. Department Head and Professor Paul J.A. Kenis says the program’s Cross Curricular Design program was highlighted as a key strength in the review.

“The program integrates practical design projects throughout the undergraduate curriculum. Students complete a mini project every semester through their junior year with their design experience culminating during senior year in the two-semester capstone sequence,” the report stated. “The opportunity for undergraduates to work on design projects throughout the curriculum enhances the overall quality of the program.”

The program is accredited by the Engineering Accreditation Commission of ABET. That accreditation includes consideration of the program’s educational objectives and student outcomes and assures that this program meets the expectations for training a professional chemical and biomolecular engineer.

“The opportunity for undergraduates to work on design projects throughout the curriculum enhances the overall quality of the program.”

Paul J. A. Kenis
William H. and Janet G. Lycan
Professor and Department Head
The **Alma Mater** sculpture returned to her base at the corner of Green and Wright streets on April 9. The bronze finish of the sculpture is expected to stay intact for the next 100 years with an ongoing maintenance program that includes the regular application of a protective wax coating. Alma Mater has been on the Illinois campus since 1929; the restoration took a year and a half to complete. Alumni donations paid for the work.
State Farm Center
renovations continue

The renovation of the State Farm Center, formerly the Assembly Hall, began in March with the project being completed in phases. The first phase is focused on upgrading mechanical spaces and creating new east and west entrances. When finished, the State Farm Center will include new seats, an expanded Orange Krush student section, premium seating opportunities, and air conditioning. The renovations are expected to be finished for the start of the 2016-17 basketball season. To stay up-to-date on the project and to see more photos of the construction, visit www.fightingillini.com/statefarmcenter.

New dean named
to Liberal Arts and Sciences

Barbara Wilson has been named the new Harry E. Preble Dean of the College of Liberal Arts and Sciences. She has served as the department head for the Department of Communication as well as her most recent position as executive vice provost for faculty and academic affairs. “I have spent my academic career supporting and celebrating the merits of a liberal arts education at a major research university, and I can’t wait to continue doing that as dean,” Wilson said.
Professor Deborah Leckband elected to the Biomedical Engineering Society Class of 2014 Fellows

Reid T. Milner Professor Deborah Leckband has been elected to the Biomedical Engineering Society (BMES) Class of 2014 Fellows. Fellow status is awarded to members who demonstrate exceptional achievements and experience in the field of biomedical engineering, and a record of membership and participation in the Society. Public recognition of Professor Leckband and the Class of 2014 Fellows took place at the BMES Annual Meeting in San Antonio, Texas.

Professor Leckband was recognized for her research in two principal areas: she carries out studies of how mechanical and biochemical signals are transduced across cell membranes to regulate cell and tissue functions through simulations, single molecule studies, and biomechanical studies of proteins, cells, and tissues. She also studies fundamental molecular forces and their roles in a range of applications in biotechnology, from drug delivery to biosensors to adhesion. She has published more than 120 scientific articles.

She has received numerous other awards for her research, including a FIRST Award of the National Institute of Health and a CAREER Award from the National Science Foundation. She is a Fellow of the American Institute for Medical and Biological Engineering, the American Association for the Advancement of Science, and the American Chemical Society.

Professor Harley receives grant to continue biomaterial regeneration research

Assistant Professor Brendan Harley is the recipient of a Burroughs Wellcome Fund 2014 Collaborative Research Travel Grant. The grant allows Harley to continue his lab’s research to develop a new class of biomaterial to facilitate regeneration of injuries to the tendon insertion within the rotator cuff.

Harley honored as a Fellow of the AAAS

Assistant Professor Brendan Harley was honored as a Fellow of the American Association for the Advancement of Science (AAAS). Election to Fellow is an honor bestowed upon by their peers, and the award is given based on the recipient’s scientifically or socially distinguished efforts to advance science or its applications.

The honor recognizes Harley’s achievements for outstanding contributions to the fields of biomaterials and tissue engineering. Harley’s research focuses on developing advanced biomaterials that replicate the dynamic, spatially varying environments found in the body. Harley and his group are creating biomaterials to regenerate musculoskeletal tissues after injury and to study the onset, growth and treatment of diseases such as cancer.

The American Association for the Advancement of Science is the world’s largest general scientific society, and publisher of the journal, Science, as well as Science Translational Medicine and Science Signaling.

Two faculty named Associate Professors

Charles M. Schroeder and Mary L. Kraft have both been named Associate Professors with the Department.

Schroeder, who joined the department in 2008, applies single-molecule techniques to develop new biotechnology and to study fundamental physical and life processes. He earned his Bachelor of Science in 1999 from Carnegie Mellon University and his Ph.D. from Stanford University in 2004.

Kraft came to the department in 2007 and investigates the relationship between cell membrane organization and disease progression. She earned her Bachelor of Science in 1998 from the University of Illinois-Chicago and her Ph.D. in 2003 from the University of Illinois.
While many chemical engineering students choose to pursue a traditional course of study for a degree, some are supplementing with a minor that includes courses in business, technology, and management.

The Hoeft Technology and Management Program at the University of Illinois bridges the gap between engineering and business education. A select group of undergraduates from the Colleges of Engineering and Business learn together in an integrated environment, working toward a University Minor in technology and management. The program works closely with corporate partners and helps students to become tomorrow’s leaders in technology and business.

Among those are Kendra Gargas, a junior chemical engineering student, who says she wanted to take part in the program to have greater insight into the business field. “I felt that the Technology and Management minor would give me this exposure and it seemed greater aligned with my career aspirations than a traditional business degree,” she said. “This minor helps prepare me for a potential leadership position that requires experience from both business and engineering.”

Gargas says enrolling in the program confirmed her aspirations of pursuing a leadership role in a technical field. “Before the Technology and Management minor, I was certain that I wanted to work in the consumer products or food industry. However, after being exposed to all of my options through the minor, I am becoming interested in other fields such as the oil industry.”
As part of the program, students complete a capstone project during their senior year with a corporate affiliate such as Abbott, Walmart, BP, and Boeing. They also have the opportunity to travel to China for a business immersion experience.

Gargas says she is looking forward to that trip to learn more about global business. “This program has given me my first exposure to real life companies and case studies. This is a valuable supplement to what I have learned in my traditional engineering classes.”

Chemical engineering junior Nick Connolly enrolled in the program to learn more about how business, engineering, and technology work together. “I have entrepreneurial interests and believed that this program was the best way to gain knowledge that could help me later to start my own business.”

Connolly says from the courses he has learned how to apply creativity and monitoring feasibility to chemical engineering. “My marketing and new product development classes have expanded how I approach problems,” he said. “I look through a more creative lens, especially when beginning projects.”

Since being accepted into the program, Connolly said he has gained more interest and is more confident in pursuing an entrepreneurial venture in the energy or brewing industries. “I have always been excited by the idea of starting a company or working for a start-up but this program has showed me that with proper training and discipline, there is no reason not to go for it.”

For Carol Grzych, a chemical engineering junior, pursuing this minor is the perfect program for a business-minded engineer. “The program has given me exposure to business course work, professors, and students—exposure I would have otherwise never have had strictly within my engineering curriculum,” she said.

Focusing on case studies and presentations with the program has allowed Grzych to supplement her studies with this type of learning. “And, I have learned the most from my peers about how to stay connected in the business and engineering fields with a strong network.”

When chemical engineering junior Melanie Golden applied to the program she wanted to pursue product development for consumer brand companies, earn an MBA, and work in technical management. “The program was perfect since it gives engineering students an insight into the business industry,” Golden said.

She said the program has exceeded her expectations, helping her to see a different way of thinking and learning than her traditional technical engineering courses. “I have learned how to communicate effectively within the business world and understand the motivations and driving forces behind managerial decisions made throughout a firm.”
Because of her studies through the program, Golden says her desired career path has shifted away from the business world and toward a more technical one including the pursuit of a master’s in chemical engineering. “Yet, I still have found that everything I have learned from T&M will be incredibly useful throughout the rest of my career,” she said. “The ability to understand the business world and management structure of a company is crucial throughout every step of designing and manufacturing products.”

Michael Richards, a junior chemical engineering student, says he enjoys the program because it allows him to interact with students from engineering and business. “One of my favorite aspects of this program is the exposure it has given me to other students within the College of Engineering and the College of Business as well as industry professionals,” he said. “It has served to provide a very well-rounded education to supplement my technical degree.”

He says enrolling in the program was the right fit for him because he wants to move into management/business roles in his future career. “I felt that I could challenge myself more. And, I was interested in the professional development and relationship building that it offered alongside the business knowledge.”

Working with a diverse team on group projects has helped Richards continue to hone his skills. “And, the knowledge I have gained through this program will greatly help me during my internship with BP this summer.”

For more information about the Hoeft Technology and Management Program at the University of Illinois, visit techmgmt.illinois.edu

The Hoeft Technology and Management Program at the University of Illinois bridges the gap between engineering and business education.
WeSTEM conference motivates, inspires
WOMEN IN GRADUATE SCHOOL

Be inspired, stay motivated, and grow passionate is the message female graduate students are sending through the Women Empowered in Science, Technology, Engineering, and Mathematics or weSTEM conference.

Sponsored by the Graduate Committee in the Society of Women Engineers (GradSWE) at the University of Illinois, the group promotes diversity in graduate education in engineering and science to enable innovative and creative solutions to the future technical challenges facing society.

Several U of I Chemical and Biomolecular Engineering graduate and undergraduate students took part in this year’s conference and are active with GradSWE including Elizabeth Horstman, who is the GradSWE director for 2014-15 and served as the conference’s speaker coordinator this year.

Horstman, who is a member of Professor Paul J. A. Kenis’ research group, says one theme that was echoed during the conference was to “find something that you enjoy doing and figure out how to incorporate your passion into your career.”

She said offering a conference like this for women is important because many times pursuing an advanced degree can be isolating. “This conference gives younger women the opportunity to come together, hear from women who have faced similar challenges which inspires the younger generation to keep pursuing their goals even when times get rough.”

This was the second year for the weSTEM conference that took place in April at the I-Hotel Conference Center in Champaign, Illinois. The event brought together 120 graduate and undergraduate students from 25 disciplines and 11 universities from across the country.

Horstman, who helps to mentor graduate students and undergraduates, says through the conference as well as mentoring and networking opportunities, GradSWE is working to “increase interaction with undergraduate students since we have noticed that many of the undergraduates in SWE know little about graduate school.”

After attending last year’s conference, Rebecca A. Hortensius, a member of Assistant Professor Brendan Harley’s research group, decided to join GradSWE to continue the support and inspiration she received from the conference. “The women who came to speak were so candid about their experiences as women in STEM fields and for one of the first times, I felt that I was not alone in my thoughts and struggles regarding graduate school and my desired career path.”

While the conference is geared toward graduate students, many undergraduates also attended and are encouraged to do so. Lauraleigh Heffner, who is a senior majoring in chemical engineering and atmospheric sciences, says she went to the conference because she is interested in attending graduate school.

“It is great to have the support of other women who are driven individuals,” she said. “It’s not necessarily about ‘girl power,’ but instead having conversations including how a tenure track may be challenging for starting a family depending on the institution or how to working with a spouse/significant other so that neither is a ‘trailing spouse’. This can both be important to think about while weighing career options.”

Graduate student Megan Witzke, who is a member of Assistant Professor Dave Flaherty’s research group, said she went to the conference as a kick-off to her involvement with GradSWE and as a way to become more involved with the graduate community.
“It’s easy to feel isolated in your own research through the struggles of grad school, so it is important to have a support system,” Witzke said. “Conferences like weSTEM are important because we can often be the only females in our research groups or work place and there are certain life aspects that only other women can relate to.”

Being inspired by women in industry, academia, politics, and other walks of life was a key reason for Thao Ngo, a graduate student in Professor Hong Yang’s research group, to attend weSTEM. She says the stories she heard and the women she met exceeded her expectations.

“I learned that there isn’t a singular path to a successful career—there are women who lost themselves halfway through their Ph.D. careers but came back on top,” Ngo said. “Attending this conference truly widened my perspective and inspired me to focus more on my career so that one day I can inspire others.”

Learning about women who have successfully balanced their work and personal lives, as well as the decisions they faced to do so, was an important aspect of the conference for graduate student Danielle Mai, who was a conference volunteer.

“I have met a diverse group of driven and passionate graduate women in science and engineering, with whom I continue to have valuable discussions about ongoing research, experiences in graduate school, and future careers,” said Mai, who is a member of Associate Professor Charles Schroeder’s research group.

She says conferences and organizations like weSTEM and GradSWE provide professional development, networking, and fun. “Conferences like weSTEM are important to diversify and balance the STEM workforce by supporting and advocating for women and minorities,” Mai said. “weSTEM highlights role models to inspire women in graduate STEM programs, which are frequently male-dominated.”

The weSTEM conference will become an annual multi-institutional event with the 2015 conference on February 7, 2015 at the University of Illinois I-Hotel. For more information about the conference visit www.weSTEMillinois.com. To learn more about GradSWE, visit societyofwomenengineers.illinois.edu/about-gradswe or to learn about the Society of Women Engineers visit societyofwomenengineers.illinois.edu.
Thirteenth annual
GRADUATE RESEARCH SYMPOSIUM

The Department of Chemical and Biomolecular Engineering graduate students and members of the Graduate Student Advisory Council organized the 13th annual graduate research symposium that took place October 24.

During the symposium there were 11 poster presentations and 10 oral presentations given by students.

Those presentations were judged by two chemical engineering alumni who returned to their alma mater: Dr. Amit Kulkarni (’01 PhD, Advisor: Dr. Charles Zukoski) from GE and Dr. Rahul Keswani (’12 PhD, Advisor: Dr. Dan Pack) from University of Michigan, Ann Arbor.
2014 Graduate Fellowships

DOW CHEMICAL COMPANY GRADUATE FELLOWS
Abiodun Oki
Eitan Barlaz
Nicholas Clay
Kai-Wen Hsiao
Malek Ibrahim
Byoungsu Kim
Vivek Kumar
Ming Li
Yung-Tin (Frank) Pan
Neil Wilson

---------------------------------------------------------------------

DRICKAMER FELLOWS
Jiazhang Lian

---------------------------------------------------------------------

DUPONT SCIENCE AND ENGINEERING FELLOWS
Matt Byrne
Laura Mozdzen

---------------------------------------------------------------------

STUTZKE DISSERTATION COMPLETION FELLOWSHIP
Cartney Smith

---------------------------------------------------------------------

SURGE FELLOWSHIP, UNIVERSITY OF ILLINOIS, COLLEGE OF ENGINEERING
Laura Mozdzen

---------------------------------------------------------------------

NATIONAL INSTITUTES OF HEALTH (NIH) NCI MIDWEST CANCER NANOTECH TRAINING GRANT
Jinrong Chen

---------------------------------------------------------------------

3M
Ran Chao
Brent Denton
Sumit Verma

---------------------------------------------------------------------

GLENN E. AND BARBARA R. ULLYOT FELLOWSHIP
Arkaprava Dan
Matthew Byrne

---------------------------------------------------------------------

NATIONAL INSTITUTES OF HEALTH (NIH), CHEMISTRY/BIOLOGY INTERFACE TRAINING PROGRAM
William Grier
Yelena Ilin

---------------------------------------------------------------------

OTHER GRADUATE STUDENTS WHO PARTICIPATED IN THIS YEAR’S SYMPOSIUM ARE:
Two new faculty join Chemical and Biomolecular Engineering at Illinois

Charles Sing and Damien Guironnet joined the department in August as Assistant Professors, bringing the number of faculty in the department to 15. Two additional faculty, Ying Diao and Diwakar Shukla, will join the department in January 2015.

Both Sing and Guironnet bring with them expertise and research in polymers. “The addition of these two faculty members helps to continue to strengthen the department’s role in that field,” said Paul J. A. Kenis, Department Head and William H. and Janet G. Lycan Professor.
Charles Sing

Charles Sing, a native of Dayton, Ohio, said he is excited to be joining the department. “Illinois is the perfect place to pursue exciting scientific ideas,” he said. “I am incredibly enthusiastic for the work that I will be doing in my research and teaching, and I am confident that this is an environment in which both will thrive.”

Sing received a BSE in Polymer Science and Engineering and a MS in Macromolecular Science and Engineering, both from Case Western Reserve University. He earned his PhD in Materials Science and Engineering in Polymer Science and Technology from MIT. Before coming to Illinois, he was a Postdoctoral Fellow at the International Institute for Nanotechnology at Northwestern University.

For his first semester on campus, Sing is teaching Statistical Thermodynamics and will teach the undergraduate Thermodynamics course in the spring. “These classes are right at the heart of what I enjoy pursuing in my research so I am very excited to be sharing this material with both graduate and undergraduate students,” he said.

Sing enjoys being able to teach students and explain his enthusiasm about chemical engineering.

“I think these are classes that are often remembered with a bit of dread by most engineers, so I am looking forward to figuring out how to convey my excitement about the topic along with its power to my students,” he said. “Perhaps what I enjoy the most is being able to provide guidance to students and help them over conceptual hurdles that I remember struggling with myself.”

Sing’s research background is in polymer dynamics, biophysics, and charged polymer systems; his lab will continue that focus at Illinois. Complex coacervates are charged polymer systems that are found in nature as adhesives as well as in synthetic systems assembled by “layer by layer” technologies that are used for functional materials, Sing said. They have been used for advanced applications ranging from superhydrophobic coatings to fuel cell membranes to drug delivery vehicles, and more.

His lab also will develop physical models of these systems to manipulate how coacervates organize and move by making changes in molecular structure. “I am also interested in biophysical systems such as DNA-protein interactions,” he said. “We are going to develop new ways of using computer models to understand the large-scale molecular manipulation of the genome by associated proteins. We think that these types of computational tools will have the potential to instruct how we physically control gene expression and organization in cells, and how biology is able to dynamically express genetic information with such control.”

While at Case Western Reserve University, Sing minored in music and plays viola and piano. “I have always enjoyed music a great deal,” he said. “At some point I even contemplated pursuing a career in music. Of course, I was not even close to good enough to do so, and I enjoyed science more anyway. I still play, though, only as a hobby.”

“Single polymer chains can adsorb to surfaces. This is a series of snapshots of a globular homopolymer interacting with a surface. We will be exploring how the presence of a variety of monomer chemistries along the polymer chain (a “heteropolymer”) may result in behaviors vastly different from homopolymers.”
Damien Guironnet comes to the department from BASF Corporation in Charlotte, North Carolina where he worked as a Senior Research Scientist.

He says his experience at BASF allows him to bring real-world examples into the classroom. “I am currently teaching a Polymer Science and Engineering class,” he said. “And, I don’t think I’ve had a single class yet that hasn’t included anecdotes about my time at BASF and my interactions with our customers.”

Guironnet received his MS in Chemical Engineering from Ecole Nationale Supérieure de Chimie de Mulhouse, France and his PhD in Materials Science from Universität Konstanz, Germany.

“He says an exciting part of coming to Illinois is that the Chemical Engineering department and the Chemistry department are both part of the School of Chemical Sciences. “My training as a chemist combined with my industrial experience, shaped me into a sort of hybrid candidate,” he said. “The reputation and strength of each department make their collaboration very attractive to me.”

Guironnet’s research lab focuses on polymer science and catalysis. “Our approach is multidisciplinary and involves a diverse array of techniques,” he said. “We are designing new catalysts and catalytic processes to transform bio-based and oil-based feedstocks into valuable chemicals and to develop new sustainable polymerization techniques.”

One of Guironnet’s first projects will focus on polymer recycling. “Despite public perceptions of recycling, for the most part, recycling of plastics consists of transforming finished products into less valuable products that are typically not recycled,” he said. “This process is called downcycling. One obvious way to prevent this waste involves the development of new depolymerization methods.”

“Method development for the preparation of biomimetic stereoregular block-copolymers.”
methods (to recover the monomers) offering endless recycling cycles.”

When not in the lab, Guironnet says he is enjoying teaching and mentoring students and sharing knowledge and enthusiasm for chemistry and engineering.

“On my first day of class I surveyed the students about their knowledge in polymer science,” he says. “I asked them about how plastic water bottles are made, and even as fourth year chemical engineering students, 95 percent of them had no idea. I am excited to contribute to their education and to develop their skills.”

Guironnet and his wife, Sue, whom he met while at Chapel Hill, have two children, Maxime, age 2 and Layla, three months. While Guironnet enjoys spending time in the kitchen cooking traditional French cuisine and being in the outdoors gardening and backpacking, he says “most of my free time is spent playing with my son.”

Recycling of poly(ethylene terephthalate)

Development of new olefins polymerization catalysts and their potential application in continuous processes

From man-made polymers...

... to nature-made polymers.
Eric Choban enjoys a challenge—from majoring in chemical engineering as an undergraduate to pursuing a doctorate degree to leading a top, global initiative for DuPont.

Studying chemical engineering as an undergraduate at Villanova University was a good fit for Choban who grew up enjoying science and math.

“I was drawn to science and math, which naturally led me to an engineering career,” Choban said. “However, at age 18, right out of high school, I was uncertain which field to choose.”

During an admissions visit to Villanova, he received a handout that showed career options in engineering fields. “Chemical engineering had the most options and it was also the most difficult major at the time,” says the New Jersey native. “And, I like a good challenge."

That continued into graduate school. A personalized letter and visits with Professor Jonathan Higdon, helped Choban decide to pursue master and doctorate degrees in chemical engineering at the University of Illinois.

“At Illinois, Choban’s research focused on transport phenomena at the microscale. He co-invented the founding technology and is part equity holder in INI Power Systems, which provides portable, fuel-agnostic power solutions for deployment to austere, unimproved environments anywhere in the world.

Choban says he has many fond memories at Illinois. But an April Fool’s prank stands out for him.

“We placed nitrogen triiodide in Dr. Kenis’ office,” Choban recalls. “He showed up to the weekly seminar series with a bandage on his arm. We became all the more concerned when the department sent out an email looking to identify who played this prank on Dr. Kenis, with expulsion the most likely result. At the end of the seminar, Dr. Kenis got up in front of the class and unraveled the bandage and said April Fools.”

After receiving his doctorate in 2004 (advisor Paul J. A. Kenis), he joined 3M at their corporate headquarters in St. Paul, Minnesota. In three years, he was leading one of their top global research programs and won the company’s highest technical innovation award for his work on developing and championing microchemical systems.

In 2008, he moved his career to DuPont in the corporate research and development lab at the Experimental Station in Wilmington, Delaware. He was a senior principal investigator on the microbial enhanced oil recovery project and led a project with Qualicon focusing on pathogen detection in food.

He is now the global leader for Application Development and Product Management in DuPont’s Industrial Biosciences business and a member of the business leadership team. Before that Choban initiated, designed, and led DuPont’s Global Innovation Center initiative which included 12 facilities in 11 countries. Success during this assignment resulted in him being awarded DuPont’s top award for commercial excellence. “In the first 18 months of operation, this initiative added substantial top line growth and further built out the pipeline of DuPont,” Choban said.

Choban has authored eight peer reviewed scientific articles in leading journals and is listed as an inventor on more than 30 patents, invention disclosures, and records of invention.

Outside the office, Choban said he likes exploring local food while traveling. "Inspired by chef and foodie Anthony Bourdain, I especially like trying unique local foods such as live octopus (sannakji) in Korea and ant larvae (escamoles) in Mexico,” he said.
Wayne Howell and Patrick Thomas were two of the members of the reunion team who helped to organize the event. Richard LaRoche, Professor Emeritus Dick Alkire, David Buzza, and James Fenton celebrated the reunion together.

Amy Tomasko, David Tomasko, and Joan Brennecke visit during the reunion banquet.

Vince Coniglione, Anne Coniglione, Susanna Goheen, and Christopher Goheen attended the reunion banquet at the Alice Campbell Alumni Center.

Wayne Howell and Patrick Thomas were two of the members of the reunion team who helped to organize the event.
W.S. Winston Ho, M.S. ’69, Ph.D. ‘71 (Quinn), Distinguished Professor of Engineering, Chemical & Biomolecular Engineering at The Ohio State University, was elected to membership in the Academia Sinica as an Academician in the Republic of China in Taiwan. The election to membership as an Academician is the highest form of academic recognition in the Republic of China in Taiwan.

Ho has made outstanding and sustained, pioneering contributions to novel separations, gas treating invention and commercialization, new membranes and novel applications for energy and the environment. He has invented/developed CO₂-selective membranes for carbon capture and hydrogen purification, allowing him to be the first to produce the highest purity hydrogen for fuel cells. Ho also invented/developed the supported liquid membrane technology for treating heavy metals and radionuclides in wastewaters with zero-discharge and for recovering antibiotics.

Liangfang Zhang, Ph.D. ’06 (Granick), who is a nanoengineering professor at the University of California, San Diego, received the AIChE Allan P. Colburn Award for Excellence in Publications by a Young Member of the Institute, which recognizes significant contributions to chemical engineering by researchers under 36. Zhang is being recognized for “outstanding contributions to biomimetic nanomaterials for drug delivery to improve the treatments of cancers and infectious diseases.”

Zhang’s lab is focused on developing novel methods of coating synthetic nanoparticles in natural cell membranes to hide them from the immune system so they have time to deliver cancer-fighting drugs or inoculate the body from infection and disease. The award, which the American Institute of Chemical Engineers has bestowed on one young professor each year since 1945, is a significant honor in the field of chemical engineering. Zhang was honored at the AIChE annual conference in Atlanta in November.

Mo Jiang, M.S. ’08 (Granick), ’10 (Braatz) was selected as a Baxter Young Investigator, received the first prize for the ACS Graduate Student Symposium Award (I&EC Division) and received the AIChE Process Development Division Student Paper Award. He also received the AAPS Graduate Student Symposium Award in Manufacturing Science & Engineering from the American Association of Pharmaceutical Scientists in 2013.

Athena Theodorakis, B.S., ’96, from Cary, North Carolina, was recognized in the 2013 inaugural STEP awards, sponsored by The Manufacturing Institute/National Association of Manufacturers, a program aimed at recognizing women in manufacturing in order to promote growth of the U.S. manufacturing base. She was appointed director of operations and chain supply for LORD Corporation’s global engineered adhesives and coatings business in 2013.

Ashlee N. Ford Versypt, M.S. ’09 (Braatz), joined Oklahoma State University as an assistant professor (http://che.okstate.edu/content/ashlee_fv). She received the 2014 ASEE Chemical Engineering Division Joseph J. Martin Award and the Frederick A. Howes Scholar in Computational Science from the U.S. Department of Energy in 2013.

Lifang Zhou, M.S. ’10 (Braatz), received her Ph.D. from MIT in August 2014 in “Mathematical Modeling and Design of Novel Semi-continuous and Continuous Crystallizations.” She will start soon at the Saudi Aramco office in Cambridge, Massachusetts to work on reservoir simulations.

Xiaoxiang Zhu, M.S. ’10 (Braatz), received his Ph.D. from MIT in August 2014 in “Mathematical Modeling and Simulation of Intravascular Drug Delivery from Drug-Eluting Stents with Biodegradable PLGA Coating.” He will join Air Products in Pennsylvania to work in data analytics and controls.
A Centennial of Excellence in Graduate Education

The Department of Chemical and Biomolecular Engineering at Illinois has a tradition of providing outstanding graduate education through world-class research supervised by its excellent faculty for 100 years. The department wishes to continue to attract the best and brightest graduate students to Illinois, give them the opportunity to be a part of this world-class department, and allow them to achieve their potential in research and teaching.

The Chemical and Biomolecular Engineering Legacy Fellowships program seeks to raise a $10 million endowment to attract the nation's top students and to provide them with a fellowship during their first year of study. This investment will help train future chemical and biomolecular engineers and provide them with the skills and tools they need to change the world.

Support the Legacy Fellowships to:
• Honor the legacy of a faculty member/your research advisor
• Create your legacy at Illinois
• Bring the best and brightest graduate students to Illinois
• Sustain excellent graduate and undergraduate education at Illinois

Establishing the Legacy Fellowship endowment for first-year graduate students offers alumni like yourself a wonderful opportunity to honor the legacy of your PhD research advisor or to establish your personal legacy to celebrate your time as a graduate student.

Contact us today to arrange your gift or pledge a future gift.

Lauren E. B. Dodge
Assistant Director of Development
(217) 265-5059 (office)
(217) 766-6168 (cell)
lodge@illinois.edu

Matthew Campion
Assistant Director of Development
(217) 244-1103 (office)
(309) 360-7589
mcampion@illinois.edu

“But for century after century the university will continue, and the stream of life will pass through it, and the thinker and seeker will be bound together in the undying cause of bringing thought into the world. To be a member of one of these great societies must ever be a glad distinction...”

Giving to Chemical and Biomolecular Engineering

You can make a gift to the department online, by phone, or using the enclosed envelope in this newsletter. Your funds may be used toward specific areas and programs within the department including professorships, graduate fellowships, scholarships, and upgrades to teaching and research facilities. Your gift continues to support the department’s education, teaching, and excellence.

Lauren E. B. Dodge
Assistant Director of Development
(217) 265-5059 (office)
(217) 766-6168 (cell)
lodge@illinois.edu

Matthew Campion
Assistant Director of Development
(217) 244-1103 (office)
(309) 360-7589
mcampion@illinois.edu
Nassos, who earned his bachelor's degree in chemical engineering from the University of Illinois in 1961, pursued a degree in chemical engineering because he enjoyed math and chemistry in high school. “I decided to go into chemical engineering, although I didn’t know what a chemical engineer did,” he recalls.

Once enrolled at the U of I, he worked part-time for Emeritus Professor Thomas Hanratty. “He was conducting research on water flow in one of the labs, and he needed some help with the equipment,” Nassos said. “So, it is really great to see that Professor Hanratty is still at it.”

While at the University, he was awarded scholarships to help cover expenses. At that time, tuition was $100 per semester and room and board was $400. “Even though it was very reasonable, I still needed financial assistance and was awarded a scholarship, which covered most of my expenses,” he said. “Ever since I started working and could afford to do so, I have donated to the school to help other students just as I was assisted. I also took advantage of my employer that matched my donation 2:1.”

He said because tuition at universities has become very expensive, it is difficult for students and their families to come up with the necessary funds.
"If you feel that the education earned at the U of I has been a major factor in your success, then it should be a personal obligation to assist others to have an opportunity for a similar success," Nassos said. "Without this education, I could not have earned the salaries eventually paid to me."

After earning his B.S. from the University of Illinois, he received his M.S. and Ph.D. from Northwestern University in Chemical Engineering and an MBA from Northwestern University.

Nassos’ first job after completing his degrees was with International Minerals and Chemical Corp. (IMC), the largest independent agricultural chemical company in the world, where he worked for 16 years. His first position with the company was working in research. He later earned an MBA to learn the business side and helped run one of the company’s divisions in Cologne, Germany for three years. He was then appointed Managing Director of a Dutch subsidiary with the task of turning it around and selling it, something he accomplished in one year.

He later worked for Chemical Waste Management, the hazardous waste subsidiary of Waste Management, for 15 years. He worked several years on the Vulcanus program, which was an ocean incineration ship for organic hazardous waste liquids like PCBs and Agent Orange. He also developed a technology to convert non-recyclable fiber materials like plastic coated paper or wax coated corrugated cardboard and plastic films to a fuel pellet.

Taking early retirement from Waste Management, Nassos joined academia and became the director of the MS in Environmental Management and Sustainability program at the Illinois Institute of Technology Stuart School of Business. He served 14 years at IIT.

While living and working in Europe, Nassos had several experiences with energy efficiency and environmental sustainability that continue to fuel his passion for this field. “My first trip on the subway in Cologne required my taking an escalator down to the platforms,” he said. “The escalator wasn’t moving until I walked on the first step, and it stopped when I reached the lower level and no one else was on the escalator. This really made sense to me for the motors to run only on demand.”

Nassos continues to teach sustainable strategies for companies to create a competitive advantage without negatively impacting the environment. He is working with a professor at the National Technical University of Athens, the top technical school in Greece, to develop an executive education Masters in Sustainability Practice and Policy. This program will consist of nine one-week courses offered three courses per summer. Students will be required to work as a team to solve an existing environmental or energy problem so that the solution could be replicated elsewhere. So the solution is not encumbered by outside forces, the problem will be that of an island. Consequently, the courses will be offered on a different Greek island each summer. More information about this program can be obtained at http://super.chemeng.ntua.gr/

He also is the co-author of the book “Practical Sustainability Strategies: How to Gain a Competitive Advantage.” Nassos is married to his wife of 46 years and has two children and two grandchildren.

He said he continues his work because he remains in good health and has energy and a passion for what he does.

“I found a quote from Stephen Grellet, a French/American religious leader from the 18th century that describes my attitude: ‘I expect to pass through the world but once. Any good therefore that I can do, or any kindness I can show to any creature, let me do it now. Let me not defer it, for I shall not pass this way again.’”
In Memoriam

Joseph R. Denk, '51 BS, died June 28, 2014, at his home at Golden Mesa Independent Senior Living Community. He was born July 14, 1928. After graduating from the University of Illinois in chemical engineering, for some years he worked at laboratories in New Jersey, Delaware, and Virginia. After the death of his first wife, he entered a Benedictine monastery in North Carolina. Isolated from church politics, he left the monastery and returned to Chicago to marry Jacqueline Klein in 1969; they had two sons. He embarked on a new career, at the intersection of computing and academia. In 1980, Denk took a position as director of computing at New Mexico State University. He became active in the theatre community of Las Cruces, participating in roughly 50 productions.

Joseph L. Bearden, '33 BS, passed away at his Cape Coral, Florida home on May 31, at the age of 101. Bearden was born on November 9, 1912. He graduated from the University of Illinois with dual degrees in chemistry and chemical engineering. Following graduation he relocated to Akron, Ohio and chemical engineering degree. Hurley transferred to the University of Illinois and graduated with a degree in chemical engineering. After 26 years in the chemical industry, he joined the engineering firm J.E. Sirrine in Greenville, South Carolina. In 1992 he retired to his home on Hartwell Lake to spend his golden years with his bride of 40 years, sailing, swimming, shooting, and gardening.

William "Bill" Frederick Carlson, '43 BS, age 94, of Houston, Texas, passed away on October 3, 2014. He was born in 1920. After graduating from Moline High School, he attended Augustana College. After two years, he transferred to the University of Illinois and received a bachelor's degree in chemical engineering. He worked on the Manhattan Project in Chicago. He later worked at Vulcan Engineering, Arthur G. McKee in Cleveland, Ohio, and C.F. Braun in Murray Hill, New Jersey and retired in 1987 from M.W. Kellogg.

Owen Landis Hurley, '42 BS, age 94, passed away on October 10, 2014 at The Oaks at The Marshes on Skidaway Island, Savannah, Georgia. Landis Hurley was born in Farmer City, Illinois and grew up on the family farm. He attended college at the University of Illinois and played football for the Fighting Illini before graduating Phi Beta Kappa with a chemical engineering degree. Hurley worked for Amoco Oil/BP for more than 30 years as a refinery manager at Whiting, Indiana; Texas City, Texas; and Savannah, Georgia. Landis enjoyed fishing and golf after retirement as well as mentoring at Bethesda Home for Boys. He was named Industrial Man of the Year by the International Management Council of the YMCA in 1975.

Dr. K. Ananth "Nanu" Narayan, '57, PhD, age 84, passed away on October 9, 2014. Ananth was born in Hyderabad, India. Ananth earned his BS in Chemistry from the University of Madras, India; his MS in Chemical Technology from Osmania University, India, and his Ph.D. from the University of Illinois majoring in Food Science and Technology, and minoring in Biochemistry and Chemical Engineering. He was a Research Associate at Washington State University; Assistant Professor of Food Chemistry at the University of Illinois; and a Research Chemist at the U.S. Army Natick Research, Engineering, and Development Center. Over his career, Ananth published more than 125 scientific papers, journal articles, book chapters, technical reports, patents, and abstracts. His pioneering research and scientific innovation covered a wide spectrum including heart disease, cancer, food nutrition, serum lipoproteins, disc electrophoresis, aseptic food processing, cholesterol, fatty acids, liver disease, arteriosclerosis, and the development of special military foods for U.S. soldiers. Ananth was awarded the highly prestigious Research Career Development Award for Independent Research by the National Institutes of Health (NIH).

Bottom: Graduate student K.W. Haley, ’63 MS, ’65 PhD (Westwater) is taking high-speed motion pictures at 4,000 frames/second of different types of boiling on a copper fin heated at one end. Photo circa 1964.

Middle left: Characterizing the structure and formation of protein crystals forms a central part of the research of Emeritus Professor Charles Zukoski, shown here with members from his group, graduate students Mike Farnum, ’97 MS, ’00 PhD, and Suzanne Jogun, ’95 MS, ’98 PhD. (Photo credit: Thompson-McClellan) Photo circa 1998.
Alumni, friends, faculty, and staff enjoyed Homecoming 2014!

Connect with ChBE
Stay in touch with Chemical Engineering

Like us!
Join our Facebook page to stay up-to-date on news, events and updates about the department. facebook.com/chemicalengineering.illinois

Read the latest news and updates.
Visit chbe.illinois.edu/news

Make a gift to the department.
Visit chbe.illinois.edu/alumni-and-friends/giving

Share your news!
Complete our online alumni form at go.illinois.edu/chbe_alumni_form, mail the attached card in this newsletter, or email us at chemeng@illinois.edu
We’ll include your news in an upcoming issue of the newsletter.