ENGINEERING FOR THE COMMON GOOD

This issue:

- New dean for the college
- A passion for polymers
- Undergraduates in the lab
Scranton named college dean

Alec B. Scranton has been appointed dean of the University of Iowa College of Engineering, effective April 2. Scranton had served as interim dean of the college since Oct. 1, 2010, while continuing his duties as University of Iowa Foundation Distinguished Professor of Chemical and Biochemical Engineering.

Scranton, 48, joined the UI faculty in 2000, after earning his bachelor of science degree from the UI in 1984 and his doctorate in chemical engineering from Purdue University in 1990, both in chemical engineering.

“I am excited and honored to become the dean of engineering at the University of Iowa,” Scranton says. “It is inspiring to work with the talented and dedicated faculty, staff, students, alumni and friends of the college. The college is well positioned to continue its leadership role in engineering education and discovery.”

P. Barry Butler, University of Iowa executive vice president and provost, who preceded Scranton as engineering dean, welcomed Scranton’s continued leadership.

“Alec Scranton is a proven leader with a clear vision for the future of the College of Engineering,” Butler said. “He is a well-respected leader who will work closely with faculty, students, staff, alumni, and the broader UI community to advance the college and university. I also admire his vision for partnering with Iowa businesses. Alec was my top choice, and I am pleased he accepted the offer.”

“I am delighted that Alec Scranton is our new dean of the College of Engineering. His experience and leadership provides the college with both continuity and momentum. In areas such as flooding to sustainability to biomedical imaging, the College of Engineering provides critical education, research, and service to the people of Iowa, the nation, and the world. Those contributions will be continued and enhanced under Dean Scranton’s vision and leadership,” says UI President Sally Mason.

Scranton served as associate dean from 2003 to 2010, successfully leading the college’s academic side through a multitude of initiatives, including completion of a critical ABET (Accreditation Board for Engineering and Technology) accreditation review, major strides in K-12 outreach and engagement, and innovative living/learning programs. Previously, he served as departmental executive officer of the Department of Chemical and Biochemical Engineering.

He is also director of the National Science Foundation Industry-University Cooperative Photopolymerization Research Center at the UI. The center represents a collaboration of scientists from the UI and the University of Colorado, as well as industrial representatives.

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“It is inspiring to work with the talented and dedicated faculty, staff, students, alumni and friends of the college. [It] is well positioned to continue its leadership role in engineering education and discovery.”

Alec B. Scranton, Dean, UI College of Engineering

He received a Regents Award for Faculty Excellence in 2007. In addition, Scranton is a researcher at the UI Optical Science and Technology Center.

He has published more than 100 papers, has been granted 10 patents, and has given more than 70 invited talks and presentations at professional meetings. His research awards include the Dow Chemical Company Environmental Enhancement Award, the 2003 University of Iowa College of Engineering Research Award, and the Cooperative Research Award from the American Chemical Society. Scranton’s teaching awards include the American Institute of Chemical Engineers’ Outstanding Professor Award, the Withrow Teaching Excellence Award, and the Michigan State University’s Teacher-Scholar Award. His development of a web-based version of the sophomore-level core course on material and energy balances received the J.J. Martin Award from the American Society for Engineering Education.

He is a member of the American Institute of Chemical Engineers, American Chemical Society, American Society for Engineering Education, and Omega Chi Epsilon.
Unraveling the complex mechanisms of global warming will require the collaborative effort of generations of scientists and engineers around the world. And as global warming has raised the temperature of the earth’s environment, it also has heated up political rhetoric. While most engineers focus on identifying and solving technical problems and leave social and political activism to others, Marcelo Mena is not among them. For Mena, the solution of environmental problems through improved technology is inextricably related to the solution of social problems through the enhancement of social capital.

“The applied sciences have a considerable impact on society, and therefore on public policy,” says Mena, who earned Master’s and PhD degrees in civil and environmental engineering at The University of Iowa in 2003 and 2007. “And, of course, the reverse is also true: public policy has a tremendous impact on the interaction between technology and human behavior.”

Mena cites an example from his own air quality research, which he began at Iowa and continues in his native country. Chile suffers from a form of air pollution that occurs when aerosol pollutants created by smelters drift offshore and then become trapped in the atmosphere along the coast. The resulting bright clouds reflect the sun’s heat back into the atmosphere, which then cools the coastline.

“This process demonstrates the complexity of global warming, which doesn’t necessarily warm a local region,” Mena says. “It underscores why we must look at the regional and global mechanisms that together drive climate change.”

In an attempt to improve local air quality and public health, the Chilean government regulates smelter emissions and also attempts to accurately forecast air quality. When air quality is expected to reach certain critical levels, citizens are told to use only public transportation and not to use wood-burning stoves.

“But the forecasting model they employ just reacts one day to the next,” Mena says, “and can’t really account for the cumulative effects of pollution as it builds up over a period of days.” Consequently, citizens in megacities such as Santiago are told not to drive on days that are relatively pollution free, and on days when the government mistakenly forecasts clear skies, dozens of children may end up in the hospital from pollution-triggered asthma attacks.

To help public policy makers refine their decision making effectiveness, Mena and UI civil and environmental engineering doctoral candidate Pablo Saide have spent the last year testing a new air pollution prediction model whose reliability has been enhanced by improved weather forecasting in Santiago. The researchers now plan to apply the model in other Chilean cities, and hope it eventually will help unravel the sources and predict the magnitude of megacity pollution in other countries.

“Marcelo is one of those people who is out to change the world,” Associate Dean of Engineering and Karl Kammermeyer Professor of Chemical and Biochemical Engineering Greg Carmichael says. “He is impatient with the status quo and has a passion for the concepts and practice of sustainability.”

Carmichael, who supervised Mena’s dissertation research and collaborates with his former student to tackle air quality issues in Chile, adds that Mena has the rare ability to translate his bona fide research skills into social and political action.

From early childhood, Mena evidenced a deep social awareness as well as an interest in science and environmental issues. He grew up in Villa Alemana, a “lower-income” suburb of the coastal town Viña Del Mar, and remembers playing as a young child in a nearby field that served as a local refuse dump near a stream that contained wastewater.

“I could imagine even then that these were problems that could be solved,” he says, “and when we moved to Iowa City so my father could work on his PhD in Mathematics, I realized it wasn’t normal to have polluted streams and that environmental issues were attracting the attention of the people in the United States.”

Mena completed high school in Chile and remained to earn a degree in biochemical engineering. He then returned to Iowa...
Mena on the top of a building in the middle of a measurement campaign, with his solar photovoltaic system.
and earned a doctorate in civil and environmental engineering at the UI. He originally intended to study water quality, but after meeting Carmichael and hearing about the research conducted by the Center for Global and Regional Environmental Research—co-directed by Carmichael and Jerry Schnoor who holds the Allen S. Henry Chair in Civil Engineering—Mena decided to focus on the relationships between airborne pollutants, weather, and climate, and work to improve air quality forecast models for his native country. Carmichael, Schnoor, and Mena’s father inspire and mentor Mena, and he and Carmichael have forged a strong research partnership that has resulted in the enhanced air quality forecast system—provided gratis to the Chilean government—that Mena and Saide are testing.

At the University of Iowa, Mena seized many opportunities to exercise his community activism. He co-founded the UI student chapter of Engineers for a Sustainable World, and he and Assistant Professor of Civil and Environmental Engineering Craig Just led groups of engineering students to the Mexican state of Puebla where they carried out service projects to enhance water quality in local schools. Mena also became something of a household name in Eastern Iowa, where, as the music director for the local “sound alternative” radio station KRUI, he leveraged his talents as music director and disc jockey.

With his newly minted PhD degree, Mena began his academic career in 2007 as the chair of the new Environmental Engineering Department at Universidad Andres Bello Santiago, one of Chile’s most prestigious institutions of higher education. He now directs the school’s Center for Sustainability Research, and was a visiting Fulbright Fellow at California State University at Fresno for six months. He recently added a new position to his portfolio when he agreed to serve as an Energy and Climate Specialist for Fundación Chile, a private nonprofit corporation whose mission is to “introduce high-impact innovations and empower human capital,” thereby enhancing Chile’s global competitiveness.

Mena understands well the social, economic, and political impacts on local environmental quality and global climate change, and in his professional career he has linked his technical expertise with an understanding of the decision-making process in public and private institutions.

He is a member of the UI Water Sustainability Advisory Board and has written op-ed articles for the Huffington Post. In Chile, he is pondering whether to become a candidate for the Chilean Congress. His platform would focus on ways to help improve the lives of those who live and work in the country’s polluted cities.

Mena says that too often when politicians fail to improve the welfare of society, they lay the blame on a scientific model. “But often the science is there,” he says, “and we must also continue to develop our economic foundation, social capital, and political will.”

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The Mena family has earned eight degrees at The University of Iowa. In addition to Marcelo, his father Jaime earned an MS in 1984 and a PhD in 1988, both in mathematics; his uncle Arturo Lorca earned an MS in mathematics in 1984; sister Paulina earned a PhD in biology in 2009; brother Fernando earned a BA in social work in 2010; and his wife Loreto earned an MS in urban and regional planning in 2004. Mena hopes his own children, who were born in Iowa City, will attend The University of Iowa someday.
Julie Jessop has a passion for polymers.

With encouragement from an excellent high school chemistry teacher and through research for her 10th-grade career report, Jessop decided relatively early that she wanted to be a chemical engineer. Through her talented teaching, creative research, and dedicated professional and community service, the University of Iowa associate professor of chemical and biochemical engineering now inspires similar passion and commitment in her undergraduate and graduate engineering students.

Jessop is intrigued by both the ubiquity and complexity of polymers. “Polymers are everywhere in our lives,” she says. “Most people think of these chemicals in the context of recyclable milk jugs, but they also are in shampoos, clothing, CDs, and food. And changes in chemical or manufacturing processes can create polymers with different properties and therefore different uses. They are just amazing molecules.”

Jessop adds that because most polymers are based on petrochemicals, researchers need to find other, renewable raw materials to serve as the basic feedstock for the creation and production of these vital chemicals. She believes the public would be more concerned about the need for new sources if they realized that the chairs they sit on, the DVDs they watch, the medical devices that keep them healthy—all these items and thousands more are petrochemical-based polymers.

In the classroom and the lab, Jessop tries to similarly situate engineering in a broad context for her students. She talks about the history of polymer chemistry, describing how some of the first human-made polymers were created in the late 19th century to replace ivory billiard balls, and discussing how the need for “artificial rubber” during World War II sparked a boom in polymer research and development that continues today. Although her main interest is polymers research, with three graduate and three undergraduate students working on these projects, she shares her interest in the processes of materials degradation in the environment and guides research on this topic conducted by a graduate student jointly advised with professor of chemical and biochemical engineering Tonya Peeples. She also collaborates with assistant professor
of chemical and biochemical engineering Jennifer Fiegel on a project that focuses on the potential use of polymer nanoparticles as drug delivery vehicles.

Jessop collaborates with graduate and undergraduate students who work in her lab as well.

“Dr. Jessop directs research rather than dictates it,” says Brian Dillman, a PhD candidate who has worked in her lab for four years. “She points us in the general direction but leaves it up to the graduate students to decide the details that need to be addressed. She has an open-door policy for her students, meets with us weekly, and listens to our ideas for new research.”

Dillman’s role in the lab is to determine how to maintain the polymerization reaction after the light which starts the process is turned off or in areas where light can’t reach, such as the juncture between the airplane wing and the fuselage where a sealant is being applied. Dillman intends to use his experience in Jessop’s lab to launch a private sector career studying photo-polymerization.

Jessop’s impact on students extends beyond the lab and the classroom, however. In 2010 the Graduate College recognized her as an Graduate College Outstanding Faculty Mentor nominee, and as the chief faculty advisor for the UI student chapter of Tau Beta Pi since 2002, she has served as both a mentor and “the memory of the organization.” In that role, Jessop has worked with around 50 students each year, helping them plan symposia, gain organizational and leadership skills, and perform outreach and service. And her impact extends to younger students, too. For the last five years, she has served as an affiliate professor for Project Lead the Way, a national program that helps train high school teachers to incorporate rigorous principles of engineering, civil engineering, and architecture into their course curricula.

Jessop also is recognized as a leader among her peers. During her tenure as chair of the American Chemical Society Division of Polymeric Materials: Science & Engineering—a professional organization of almost 5,000 members—the division strategically enhanced its professional role and effectiveness by developing a new Internet and social media presence.

The College of Engineering recognized Jessop’s considerable dedication to her students, the University, and the profession by awarding her the 2011 Collegiate Faculty Excellence Award for Service.

The Michigan native knows firsthand the positive impact a teacher can make on a student. During her eighth-grade algebra class, she “fell in love with equations,” and when a high school chemistry teacher wrote data on the board and made the class tease out Boyle’s Law, she relished the opportunity to wrestle with a real-world problem and figure out the answer herself. But while she excelled at both math and chemistry, it wasn’t until poring through a career handbook for a tenth grade report that she heard of something called “chemical engineering.”

“At that point I decided, ‘OK, I’ll become a chemical engineer,’” Jessop says. “There were no engineers in my family, so it was sort of a leap of faith, although I already knew I wanted a PhD. My maiden name was ‘Pepper,’ and who wouldn’t want to be called ‘Dr. Pepper?’”

After two years at Oakland University, a commuter school in Rochester, Michigan, Jessop transferred to Michigan State University, where she took her first chemical engineering course from Alec Scranton, a course she loved and now teaches at Iowa. She earned a BS degree with High Honors in chemical engineering in 1994 and a PhD degree in chemical engineering in 1999. As an undergraduate and graduate student at MSU, she conducted research in the lab of Scranton, then a Michigan State chemical engineering faculty member and now the Dean of the UI College of Engineering. Jessop, Scranton, and MSU Professor of Chemistry Gary Blanchard have co-authored publications and jointly hold two patents for methods and apparatus related to curing polymers.

Shortly after arriving at Iowa in August 2000, Jessop began seeking research collaborators. At that time, researchers in the Department of Chemical and Biochemical Engineering were located in the Chemistry Building.

“One day I was sitting in my office over there,” Jessop recalls, “and someone was wandering down the hall and asking everyone he met if they knew anything about polymers. I rushed out into the hall and said, ‘I do!’ That ‘wandering someone’ was Steve Armstrong.”

Like Jessop, Armstrong was new to the University; today he is an associate professor and chair of operative dentistry. Thanks to Jessop’s polymer enthusiasm, that encounter between two newly minted faculty members has resulted in more than a decade of collaborative research and close to a dozen publications on how to enhance the bonds between teeth and the polymers used in fillings.

And just as her interest in chemical bonding has driven her scholarly work, Jessop’s ability to connect with students and colleagues—as well as seamlessly link the various facets of academic life—has been a hallmark of her time at Iowa.

Plots taken with the Raman (laser) system. The top plot is looking at a (photo) polymerization of a dental resin in real time. The peaks decrease as more material is incorporated into the polymer system. The bottom plot is looking at a cross-section of a dental polymer bonded to a tooth. The tallest peak indicating the tooth material decreases as we step across the bond into the polymer filling (and the smaller peaks associated with that material increase).
Real-time Raman monitoring

Raman spectra across hybrid layer
While she felt the University of Iowa might be a perfect fit, it was a comment from College of Engineering director of admissions Jane Dorman that sealed the deal.

“She told me that engineering students at Iowa are encouraged to become involved in more than just engineering,” says Westerhof, who in addition to a stellar academic career, has participated in a social sorority, the Society of Women Engineers, and the student chapter of the American Institute of Chemical Engineers. And as if that weren’t enough, the chemical and biochemical engineering senior also has devoted much of her time since January 2011 to researching the fate and effect of a variety of commercially produced nanoparticles on the growth of poplar trees. The preliminary results have surprised and intrigued Jerald Schnoor, Allen S. Henry Chair in Engineering, professor of civil and environmental engineering and the director of the lab where Westerhof works.

“WESTERHOF” CONTINUES ON THE NEXT LEFT-HAND PAGE
According to Sean Plenner, in Bill Eichinger’s lab you learn by doing—and sometimes that means you learn by failing.

Since spring semester of his sophomore year, Plenner has conducted research in an IIHR-Hydroscience & Engineering lab where he designed and built a simple, effective, and relatively inexpensive laser instrument that can measure river sediment deposition and scour patterns with millimeter precision. Along the way, Plenner also co-authored two papers, presented a poster at the 2011 American Geophysical Union (AGU) national conference, and was mentored by the lab director, William D. Ashton Professor of Civil Engineering William Eichinger.

On the first day of Plenner’s sophomore civil engineering practice course, Eichinger briefly discussed his laser research. By the final day in the semester, Plenner was intrigued enough to ask his professor if he needed any help in the lab. Eichinger’s response: “When do you want to start?”

Plenner jumped at the chance to do undergraduate research, and today, the graduating senior says working in the lab was transformative and fun. But it wasn’t easy.
Through years of research and real-world applications, Schnoor has demonstrated the ability of poplar trees to help clean up Superfund and other polluted sites by degrading organic pollutants and stabilizing some toxic metalloids like arsenic. His current nanomaterials research is funded by an Environmental Protection Agency/National Science Foundation joint program. Westerhof heard about Schnoor’s research and decided it would be a good fit for her given her academic trajectory and environmental commitment.

“I’ve always been environmentally conscious and interested in issues of sustainability, and this process of phytoremediation by poplar trees really intrigued me,” says Westerhof, whose two grandfathers, two uncles, and mother are engineers. “I was looking for a job and wanted something related to environmental issues, so I emailed Professor Schnoor to see if he had any openings in his lab. He emailed me right back and asked when I could meet with him.”

Schnoor gave Westerhof major responsibility for examining the impact of nanoparticles such as cerium oxide, iron oxide, and silver on poplar trees. Often contained in sunscreens, cosmetics, and other household products, these metals can eventually find their way into the soil and runoff water. Poplar trees have proven to be superb “research subjects” because they grow quickly, can be examined in the lab or the natural world, and take up and store some chemicals.

Westerhof begins each experimental cycle by planting poplar cuttings in large plastic tubs, two dozen cuttings to a tub. After three weeks, the foot-tall seedlings are exposed to various concentrations of elements. A week later, Westerhof cuts up the leaves and stems, dries them in an oven, and uses a mass spectrometer to determine concentrations of elements as low as one-part-per-trillion in each seedling. She and Schnoor agree that the preliminary results have been quite surprising.

“Dissolved silver nitrate kills the trees within 48 hours,” she says, “but every nanoparticle actually seems to have helped the plants.”

“The preliminary results are fascinating,” Schnoor agrees, “because it appears that at low concentrations, the particles actually stimulate the growth and transpiration of the plants. Now we’re trying to understand the mechanism of this phytostimulation, which would be a major finding.”

Westerhof presented her findings at the 2011 American Institute of Chemical Engineers meetings where she won first place in the student environmental poster division. Although she says “there have been a few research hiccups” that required her to change some protocols, she has come to love lab work.

“Professor Schnoor has given me a lot of freedom to work on my own,” she says, “and working in the lab has been a fantastic opportunity. Before, I never even considered graduate school. Now I’m going to spend the summer applying to graduate schools. And of course Iowa is on that list.”
“For quite a while, I didn’t know what to do or how to do it,” he says. “I wasn’t familiar with the lab equipment and really had no idea how to do research. But Professor Eichinger would rather have you try and fail than just tell you the answer. It was really hard, but he seemed to have confidence in me, so I kept pushing myself.”

“If I’d known the answers, I would have told him,” chuckles Eichinger, who believes students learn to be creative by doing the hard work of problem solving, “The key thing in engineering is to figure out why something doesn’t work as well as we hoped and then improve it. With each iteration of the instrument, we learned to do it better.”

“Sean came up with clever, innovative ways to make the laser instrument faster, lighter, more accurate, and more capable,” Eichinger says. “When coupled with his data analysis software, the instrument is far more capable than anything I had envisioned when we began.”

The “candy-store” nature of the lab also enhanced the experience for a young engineer. “The labs in IIHR have every tool anyone could ever need,” Plenner says, “as well as the people to help me build the equipment. I’ve had a ton of fun working there.”

For his laser mapping instrument, Plenner developed analytic software capable of scanning underwater to create three-dimensional topographic images. IIHR director and Edwin B. Green Chair in Hydraulics Larry Weber and research engineer Marian Muste have applied Plenner’s mapping device to study scour effects below a dam and around a bridge pier. Although private companies have built similar devices, Plenner’s instrument is considerably less expensive and more robust. He estimates his two-laser system would cost around $20,000, compared to the least expensive commercial alternative, which costs five times more. Recognizing the cost value of Plenner’s instrument as well as how easily a researcher can set it up, scan a target subject, and process the incoming data, engineers at other institutions have inquired whether it is available for purchase.

Plenner, however, is more interested in continuing his research at Iowa as he begins graduate work toward a Master’s degree in the fall. In addition to the academic life, he also is very interested in partnering with communities around the world to help improve water quality and enhance environmental sustainability. He has participated in a three-week winter term course that visited an area in India where overexploitation of aquifers has resulted in salinization of the soil. During a recent “alternative Spring Break” trip to Costa Rica, he and other UI students built a bus stop and worked to mitigate flooding that frequently washes out a local road.

The range of Plenner’s undergraduate liberal arts courses helped situate his engineering life in a cultural and historical context. He is living proof of the value of an education for “engineering…and something more.”
Grants and Contracts

Nandita Basu, assistant professor of civil and environmental engineering and assistant faculty research engineer at IIHR—Hydroscience & Engineering, received a $190,735 research grant from the Iowa Economic Development Authority to study the hydrologic impacts of drainage systems.

Christoph Beckermann, professor of mechanical and industrial engineering and director of UI’s Solidification Laboratory, received a $300,000 research grant to study casting optimization for ductile iron castings. The grant is being matched by Clipper Windpower and North American Ductile Iron Co (Nadicon).

Reinhard R. Beichel, assistant professor of electrical and computer engineering, received a two-year, $411,611 National Institutes of Health (NIH) grant for medical image analysis studies. Titled “Computer-aided analysis of mechanisms matching ventilation and perfusion in rats,” the project utilizes advanced imaging and computer-aided analysis methods to explore the mechanism responsible for efficient gas exchange in the lungs.

K.B. Chandran, professor of biomedical engineering and faculty research engineer at IIHR—Hydroscience & Engineering, received a $122,588 subcontract from The University of Texas Health Science Center at Houston for “Mitril valve dynamic analysis and potential clinical applications.”

Yong Chen, associate professor of mechanical and industrial engineering and researcher at The Center for Computer-Aided Design, received a $187,469 research grant from the National Science Foundation. He will conduct “GOALI/collaborative research: modeling, monitoring, and analysis of spatial point patterns for manufacturing quality control.

George Constantinescu, professor of civil and environmental engineering and faculty research engineer at IIHR—Hydroscience & Engineering, received $100,488 for “Modeling scour in cohesive soils and smart scour countermeasures.”

Pavlo Krokhmal, associate professor of mechanical and industrial engineering and researcher at the Center for Computer-Aided Design, was awarded $117,470 from the United States Department of Defense, Air Force, for “Combinatorial optimal stopping problems.”

Ibrahim Ozbolat, assistant professor of mechanical and industrial engineering, has received a $100,000 research grant from the Electric Power Research Institute. He will research, develop, and demonstrate the technology to leverage the limitations of virtual test and predictive remaining lifetime analysis of printed circuit boards (PCBs) to provide support to electromechanical engineers in nuclear power plants worldwide.

Zachary Rasmussen, biomedical engineering student, is the recipient of a Research Internship in Science and Engineering (RISE) through the auspices of Deutscher Akademischer Austausch Dienst (DAAD) for Summer 2012.

Fred Stern, professor of mechanical and industrial engineering and faculty researcher at IIHR—Hydroscience & Engineering, received $120,000 from the US Department of Defense for “CFD based system identification for maneuvering in waves.”

Larry Weber, Edwin B. Green Chair in Hydraulics, professor of civil and environmental engineering and director of IIHR—Hydroscience & Engineering, was awarded a $30,000 research contract from Excelon Generation Company, LLC, to study hydroacoustic measurements and sediment coring on the Upper Mississippi River near the Quad Cities Generating Station.

Recognitions

Thirty-four UI College of Engineering undergraduate students were among some 220 students at the University of Iowa named to the President’s list for the fall 2011 semester. The Engineering students on the list represent 15.5 percent of the total, while engineering undergraduate enrollment on campus represents 7.7 percent of all UI undergraduates students.

There were 386 Engineering undergraduate students among 4,000 UI students named to the Dean’s List for the fall 2011 semester.

Tyler Beduhn, junior majoring in civil engineering, was selected as a recipient of the 2012 Samuel Fletcher Tapman ASCE Student Chapter Scholarship. The ASCE Educational Activities Committee awards twelve $4,500 scholarships nationally. This is the first national ASCE scholarship award for a University of Iowa civil engineering student.

Allen Bradley, Jr., professor of civil and environmental engineering and faculty research engineer at IIHR—Hydroscience & Engineering, has been named one of the winners of the 2012 UI President and Provost Award for Teaching Excellence.

Sue Chrysler, director of research at the National Advanced Driving Simulator, was honored with the D. Grant Mickle Award for outstanding paper published in the field of operation, safety, and maintenance of transportation facilities.

Diana Harris, IT project and communication manager in the College of Engineering, received the Jean Y. Jew Women's Rights Award at the University of Iowa's annual Celebration of Excellence and Achievement Among Women, April 3. Harris is a longtime member of the UI Council on the Status of Women (CSW). She has pressed for renewed efforts to address sexual harassment on campus, and helped develop the CSW Herstory initiative and...
the UTV series “Women at Iowa” to document women’s experiences.

**Hosin “David” Lee**, professor of civil and environmental engineering and a member of the UI Public Policy Center, has been elected as a member of The National Academy of Engineering of Korea (NAEK). The NAEK acknowledge and honors engineers with outstanding achievements in technological development as well as contributions to a national welfare. Lee also serves as the 40th President of the Korean-American Scientists and Engineers Association (KSEA).

**Ibrahim Ozubolat**, assistant professor of mechanical and industrial engineering, was one of four University of Iowa scholars to receive an Innovations in Teaching with Technology Award. The $25,830 award will be used for “Internet-controlled cell printing platform for interactive biomaterials in engineering curriculum.”

**Presentations**

**Gregory R. Carmichael**, Karl Kammermeyer Professor of Chemical and Biochemical Engineering, associate dean of graduate studies and co-director of the Center for Global and Regional Environmental Research, made the case for more research and better-informed policy makers when he spoke Feb. 19, at the 2012 Annual Meeting of the American Association for the Advancement of Science (AAAS) in Vancouver, British Columbia, Canada.

**Sue Chrysler**, **Tim Brown** and **Dawn Marshall** of the National Advanced Driving Simulator (NADS) led human factors workshops at the 91st Transportation Research Board Meeting, held January 22-26 in Washington, D.C.

**Jerald L. Schnoor**, Allen S. Henry Chair in Engineering, testified before the U.S. House of Representatives Subcommittee on Energy and Environment, which has oversight responsibility for the Environmental Protection Agency (EPA), on Friday, Feb. 3, in Washington, D.C.

**Appointments**

**P. Barry Butler**, executive vice president and provost at the University of Iowa and professor of mechanical engineering, has been appointed to the board of The Wind Alliance, a nonprofit organization consisting of representatives from the energy industry, academia, and the federal government.

**Publications**

**K. B. Chandran**, Lowell G. Battershell Chair in Biomedical Engineering and professor of biomedical engineering, co-authored the second edition of *Biofluid Mechanics—The Human Circulation*, a new text for use in coursework in the application of fluid mechanics to the study the human circulatory system.

The January 2012 issue of *Mechanical Engineer* magazine featured the research of **Ibrahim Ozubolat**, assistant professor of mechanical and industrial engineering, in the area 3-D printing of living organs for transplant.

**Graphene Nanoelectronics: Metrology, Synthesis, Properties and Applications (NanoScience and Technology),”** edited by **Hassan Raza**, assistant professor of electrical and computer engineering, and written by a global team of experts who combine their current knowledge to present all aspects and known properties of graphene and its nanostructures, was published by Springer Science Business + Media.

**The arts of the Seamans Center**

An exhibit of more than 150 pieces of art created by Iowa City public school students in kindergarten through sixth grade was displayed January 7–15 in the Seamans Center for the Engineering Arts and Sciences. The exhibit honored Candace Carmichael, long-time art educator in the Iowa City School District who died in August. The exhibit culminated with a reception attended by the artists and their families. Photos courtesy of Lisa Hildebrand.
**1960’s**

Thomas Daniels, a member of the college’s Distinguished Engineering Alumni Academy, and his wife, Maxine, were inducted February 26 into the Asbury Park-Neptune, NJ, NAACP Hall of Fame. They also received a service honor from their church, St. Stephen AME Zion Church, Asbury. In addition, Daniels was inducted into the Hall of Fame by his high school, Central High School, Louisburg, KY. For more on Daniels, go to http://www.engineering.uiowa.edu/honor-wall/alumni-academy/members/daniels.php.

1960’s

George Seaberg (BSME 1960), president and CEO of Seaberg Industries, Rock Island, IL, is the author of “Where Angels Fear to Tread: One Man’s Journey in Starting His Own Business.” The book tells how he built a successful business based on biblical principles.

1950’s

Helmut Gramberg (BSCE 1955) shared his story in the Lutheran Campus Ministry Newsletter about his arrival in Iowa City as an immigrant in 1951. To read his story, go to http://www.uiowa.edu/~lcmecla/alumni.html.

1950’s

Lilia Abron (PhD 1972) was a speaker at the American Chemical Society Press Conference held March 27 in San Diego.

1980’s

Drexel University has named Dr. Joseph B. Hughes (MS 1989, PhD 1992) as dean of the University’s College of Engineering effective January 15, 2012. Hughes currently is the Karen and John Huff School chair and professor of civil, environmental and materials science engineering at the Georgia Institute of Technology.

Hong-Yuan Lee (MS 1982, PhD 1984) has been named Minister of Interior for Taiwan, Republic of China.

1990’s

Dillon Ashton (BSE 1993) has joined the management team of Nextronex, Inc., Toledo, OH, as Vice President and Technical Director. During his professional carrier Ashton has significant experience in design engineering of power product electrical components, digital and analog circuit design, software design, packaging, and certifications. Prior to joining Nextronex, Inc., he served as a Senior Design Engineer for a solar panel manufacturer and is a technical expert in solar array optimization. Ashton is currently listed as inventor on six patents.

2010’s

Avery Bang (BSE 2007, BA 2007), executive director of Bridges to Prosperity, was on campus December 8 to conduct a seminar. Rachel Collier Herold (BSE 2008) is a process engineer with Intel.

Nicole Hollopeter (MS 2011) is human factors/biometrics engineer at Apple, Inc., Cupertino, CA.

Vinnie Wagner (BSE 2011) was featured in the Iowa City Press-Citizen on January 13. Wagner is a current first year medical student and wrestles for Iowa. To read the complete article, go to http://www.engineering.uiowa.edu/news/newsDetail.php?newsID=871.

Alumni present seminars in Spring 2012

**Chemical Engineering Process Design II**

- Doug Livermore (BSE 1991) provided a design challenge for the class.
- Brian McWhorter (BSE 2001) and Tom Marriott (BSE 1968) discussed their international engineering experiences.

**Chemical and Biochemical Professional Seminar**

- Tyler Gunn (BSE 2009), University of Iowa MD/JD candidate, on “Medical school: the admissions process and becoming a physician.”
- Rachel Crome (BSE 2011), General Mills, on “The Light at the End of the Tunnel: the First 12 Months in the World of Manufacturing.”
- Kelsey Coulter (BSE 2010, MS 2011), Barr Engineering, on environmental consulting.

**Civil and Environmental Engineering Professional Seminar**

- Ronald G. Kaminski (BSE 1992), HBK Engineering, LLC, on “Using Your Engineering Degree to Succeed with a Difficult Economy.”
- Gregory Scott (BSE 2007), John Deere Product Engineering Center, on an overview of John Deere and how the company uses plant modeling in its design and analysis processes.

**Mechanical Engineering Graduate Seminar**

- Amy Asselin (BSE 1997), Deere & Co., on the company’s product support organization.

**Electrical and Computer Engineering Graduate Seminar**

- Nate Horn (BSE 2002, MS 2004) is the vehicle dynamics group leader for the NASCAR team of Earnhardt, Ganassi Racing. He supervises a team of six that “directs development and validation of vehicle dynamics simulations as well as any physical testing related to vehicle dynamics.” To learn more about Horn, go to http://www.engineering.uiowa.edu/news/newsDetail.php?newsID=874.

Ken Sigman (BSE 1997) has been appointed Director of Sales & Marketing, North America at Novelis, Inc., Atlanta, GA.

Jennifer Dempsey Gersten (BSE 2004, MS 2006), is a certified clinical engineer (CCE). The CCE certification is considered the PE-equivalent for engineers who work in healthcare and requires five years of healthcare engineering experience, certain educational requirements, an extensive written exam, and an oral exam.

**2000’s**
Alumni Return for Homecoming Activities

1960’s
Mel Holubar (BSME 1960, MS 1969), Marion, IA
Emil Koval (BSME 1967), Marion, IA
Gary (BSCE 1969) and Diana Phelps, Grand Terrace, CA

1970’s
Denny Gannon (BSCE 1973), Iowa City, IA
William (BSCE 1979), Ames, IA and Karan Haman (BSE 2009), Minneapolis, MN
Maggie Hickel (BSIE 1975), St. Paul, MN
Steve Hoambrecker (BSCE 1974, MS 1986), Junction City, KS
Theodore Hradek (BSME 1971), Des Moines, IA
Gil Janes (BSCE 1972), Cedar Rapids, IA
Jim Kalina (BSME 1974, MS 1976, MS 1977), Cedar Falls, IA
Deb (BSCE 1976) and Stan (BSCE 1975, MS 1976) Keely, Longwood, FL
Glenn Kimball (BSCE 1970, MS 1971), Cedar Rapids, IA
Terry Martin (BSME 1971) and his wife Marcia, Des Moines, IA
Stephen Poma (BSCE 1978)
Debra Simoff (BSCE 1977), Simsbury, CT
Ed Slattery (BSCE 1976, MS 1978), Des Moines, IA
Barbara Wollmershauser (BSME 1975), Tulsa, OK

1980’s
Margaret Annett (BSIE 1980), Chicago, IL
Jay Brady (BSCE 1989, MS 1990), Muscatine, IA
Robert Curnyn (BSCE 1981), Washington, DC
Ken Smith (BSME 1985) and his wife Patricia, Long Grove, IA
Todd Steinberg (BSE 1981 biomedical engineering), Des Moines, IA

1990’s
John Cummings (BSE 1993), Cedar Rapids, IA
Nicholas Taiber (BSIE 1999), Cedar Falls, IA
Mike Nelson (BSME 1990) and his wife Jodi, Newton, IA
Dan Rest (BSE 1998), Chicago, IL

Make plans to attend Homecoming 2012!
Go to www.engineering.uiowa.edu/events/homecoming.php
“The engineer and something more.”

The University of Iowa College of Engineering has educated many distinguished engineers (www.engineering.uiowa.edu/honor-wall/alumni-academy/members.php). Several became renowned in realms outside engineering. For example, Dr. Himie Voxman earned a degree in chemical engineering in 1933 but his career focus was music. Most who have taken up the clarinet are familiar with the standard of clarinet instruction, the blue-covered “Rubank Advanced Method for Clarinet Vol. 1 and 2,” by William Gowe and Himie Voxman. Voxman served as director of the UI School of Music from 1954–1980.

The best part of engaging with alumni is listening to stories graduates tell of their student experience. When compiling “In Memoriam” for this issue, the name Michael J. Flanders was sadly on the list. It brought to mind a story Mike told at the celebration of Professor Ed Mielnik’s 85th birthday celebration in 2001.

“I was taking Material Science second-grade-option as I had taken the class before with less than satisfying results. I had heard that your class was unique in that you got hands-on experience through labs—in fact, you get to mix concrete and smash it afterwards.

It was the first day of class and I was in a large lecture with well over 100 students. You welcomed us and then asked if Mike Flanders was present. You asked me to stand up. You asked me if I knew Raymond Flanders. I said he was my father.

You went on to tell the class that Raymond sat in this same class 30 years earlier. He sat in the back and never said much, but always got A’s on his tests. You indicated that you expected no less from me. Wow—how embarrassing!

Well, I did get A’s on my tests, thanks to your encouragement and assistance. In fact, I became a Teaching Assistant for the same class for two semesters.

Thank you for being such a meaningful and wonderful influence during my college years. There isn’t a year that goes by where I don’t think of you and grin.

By the way, today I brought my dad.”

Mike, Raymond, and Ed, there isn’t a year that will go by that those who knew you won’t think of each of you, and grin as Mike did in 2001.
As I visit with our alumni, I hear amazing, motivational stories about their time here as a student in the College of Engineering. I also hear from people who are trying to figure out the best way to give back to the college, one that would have the greatest impact on an area of philanthropic interest. One way this may be accomplished, if available, is through a matching gift program. Through corporate matching gift programs, you can double or triple the value (and the impact) of a gift. In addition to matching charitable donations of their employees, some companies will also match donations made by spouses and retirees.

John Corcoran (BSEE 1968) has been supporting the college through his company matching gift program for more than 30 years. John has an exceptional appreciation for his education and takes great pride in supporting the college. John shares that he “believes that support of science and engineering education is important to our country’s economic future” and adds “when I utilize my employer’s 1:1 match on University donations and include the benefits of the tax deduction, the University gets almost 3 dollars for every dollar I donate. That kind of leverage is hard to beat.”

Here is one example of how a donor can make the most of his or her company’s corporate match: The minimum gift commitment to establish an endowed, named scholarship in the College of Engineering is $50,000. This may sound daunting to the average contributor, but if an employer will match 1:1, a donor can make a $25,000 pledge, spread out over five years, and use the company match to complete the $50,000 gift required to endow a scholarship. This is an excellent option for alumni and friends who want to give a lasting gift to the college prior to retirement or estate planning. Corporate matching gifts are often overlooked, yet they are an exceptional way to maximize a gift.

We would like to thank those alumni and friends that are currently using their company match programs to provide support to the College of Engineering. We are extremely grateful to the corporate employers and their philanthropic support for education. To research your employer’s matching gift policy, check your company website or human resource guide.

To learn more about The University of Iowa Foundation, and how gifts from alumni and friends support students and faculty in the UI College of Engineering, please visit uifoundation.org/engineering or contact me at amy-brainard@uiowa.edu, (319)467-3750 or toll-free 800-648-6973, ext. 790.

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By the Numbers

2011 College of Engineering Alumni Survey

87.3%
rate the quality of education received as positive

180 are on Facebook
228 are on LinkedIn
59 are on Twitter

IOWA ENGINEER

Influential People

Karl Kamermeyer
Ralph Stephens
Barry Butler
Victor Rodgers

have started their own companies

219

have a pilot’s license.

51

% of alumni that expressed an interest in:

46.1% Advising students about careers
30.2% Recruiting prospective College of Engineering students
25.3% Participating in the Leadership Program
7.7% Coordinating alumni events
27.6% Serving as an evaluator of a student design project
16.4% Serving as an evaluator at a K–12 event
20.4% Participating in a research study
30.9% Mentoring an undergraduate in their major

>500 patents are held by engineering alumni

Due to rounding of numbers, the total may not equal 100%