

*During the month of October, NSF CBiRC Engineering Research Center Director **Brent Shanks** celebrated both being named the inaugural Steffenson Professor, and the dedication of CBiRC's facilities in the new Biorenewables Research Lab building (inset at right).*



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Letter from the Chair



Dear Friends:

The Department of Chemical and Biological Engineering (CBE) has had an exciting year, and I am delighted to share these points of pride with you. You can read more about many of these highlights in the newsletter.

Undergraduate enrollment continues to grow with a total of 495 students registered this fall, up 73 students over 2009. Our College of Engineering ranked 14th in the United States based on employer feedback in a recent survey conducted by the *Wall Street Journal*. Last year we saw a 60% increase in research expenditures to a record high of \$7.2M, much of it from federal and industrial sources, and this year is shaping up to be another record year. The establishment of the National Science Foundation (NSF) Engineering Research Center at ISU—the Center for Biorenewable Chemicals (CBiRC), led by CBE Professor **Brent Shanks**, has contributed enormously to this increase and has helped position Iowa State as the world leader in this area. The newly dedicated Biorenewables Research Lab located across the street from Sweeney Hall is home to CBiRC. We are also ramping up our online learning presence through courses and through a new online master of engineering degree program.

Our students excel in the classroom, in leadership positions, and in athletics. CBE junior **Meredith Gibson** was the only college student invited to speak at this fall's *Fortune* Most Powerful Women Summit in Washington, D.C. Last spring our AIChE student chapter organized and hosted the Mid-America Regional Conference, which was a smashing success with more than 200 participants from 13 schools. Two of our students, **Chelsea Sackett** and **Diane Brown**, received prestigious NSF Graduate Fellowships, and Diane was also chosen as student marshal for the spring 2010 commencement ceremony.

Several of our faculty members have received special honors this year. Professor **L. K. Doraiswamy** was elected to the National Academy of Engineering, the top honor in Engineering; Assistant Professor **Jennifer O'Donnell** received a prestigious Department of Energy Early Career Award; Professor **Derrick Rollins** received the AIChE Minority Action Committee Eminent Engineers Award. Professor and CBiRC Director **Brent Shanks** (BSChE'83) was named the inaugural Mike and Jean Steffenson Professor of Chemical Engineering; and Professor and Associate Dean for Research **Balaji Narasimhan** was named the Vlasta Klima Balloun Professor

of Engineering. Professor **Andrew Hillier** and Associate Professor **Monica Lamm** were promoted, and Professor **Rodney Fox** was named Anson Marston Distinguished Professor. Professor **Kenneth Jolls** retired this summer, but will continue to teach the summer lab program in Oviedo.

We are also very proud of the many accomplishments of our alumni. At the recent 2010 homecoming festivities, **Mike Steffenson** (BSChE'59), president and chairman of Parr Instrument Company in Moline, Illinois, received the Anson Marston Medal, the college's highest honor; and **Umit Ozkan** (PhDChE'84), chemical engineering professor at Ohio State University, received a Professional Achievement Citation in Engineering award. Last April **R. Kirk Thompson** (PhDChE'99), R&D leader, Dow Solar Solutions, Dow Chemical, and **Russell Gorga** (PhDChE'02), associate professor of textile engineering at North Carolina State University, each received the college's Professional Progress in Engineering award.

The CBE awards banquet, which traditionally has been held in the spring, has been moved to Family Weekend in the fall. Turnout was excellent, and several donors were able to attend and meet scholarship recipients and their families. More than 30% of our students received scholarships this year—that is in large part due to the generosity and support of our alumni.

We are very pleased to announce that **Mary Jane** and **Randy Hagenson** have kicked off a fundraising drive to honor **Richard C. Seagrave's** legacy through a lead gift. Over the next three years, we will seek individual contributions to fully fund the Richard C. Seagrave endowed professorship to honor Seagrave's enormous contributions to the university and his impact on generations of Iowa State students.

We are very excited to receive a \$2M academic research infrastructure grant from NSF, which will be used to renovate the research laboratories in the 1964 wing of Sweeney Hall. This will help us make these laboratories state-of-the-art facilities and replace aging fume hoods with more energy efficient ones in time for the departmental centennial in 2013.

Your successes help the department continue to build its outstanding reputation. Please keep us informed about your career news, (see form on page 18), and we invite you to stay in touch with what is happening in the department by visiting www.cbe.iastate.edu. Thank you very much for your continued support and interest.

With best regards,

Surya K. Mallapragada
Chair, Department of Chemical and Biological Engineering
Stanley Chair in Interdisciplinary Engineering

Cover photo credits:

Full page photo of Brent Shanks at Steffenson ceremony: David Gieseke;
inset of Biorenewables Lab building dedication photo: Bob Elbert

Gift creates Steffenson Professorship, engineering scholarships

Iowa State University's College of Engineering has received a gift commitment of \$700,000 from **Mike and Jean Steffenson** of Davenport, Iowa.

The Iowa State graduates have established funds for a variety of uses within the College of Engineering, including the Steffenson Professorship in Chemical Engineering. The couple will provide \$125,000 over the next five years to initially fund the professorship before eventually creating an endowment for the named faculty position.

Brent Shanks, professor of chemical and biological engineering, will be the inaugural recipient of the Steffenson Professorship. Shanks also serves as the director of the National Science Foundation Engineering Research Center for Biorenewable Chemicals at Iowa State.

A 1983 graduate of Iowa State, Shanks also holds master's and PhD degrees from the California Institute of Technology. Prior to joining the Iowa State faculty, he was a research engineer and department manager for the Shell Chemical Company. He is the recipient of numerous teaching and research awards, and his research interests include the catalytic conversion of biorenewable feedstocks.

In addition, the Steffensons have committed \$25,000 to provide up to five \$5,000 scholarships in the College of Engineering's Department of Chemical and Biological Engineering (CBE) for the next academic year. Recipients will be CBE students who are involved in major leadership roles within the college and Iowa State. Another \$50,000 has been gifted by the couple to the College of Engineering for a use to be determined at a later date.

"The educational and research programs in the Department of Chemical and Biological Engineering have been greatly strengthened by the generosity and commitment of Mike and Jean Steffenson," says Jonathan Wickert, dean of the College of Engineering. "Positions such as the Steffenson Professorship in Chemical Engineering enable the college and department to further develop the careers of our elite faculty members."

Mike Steffenson is the president, chairman, and CEO of Parr Instrument Company, a privately held corporation that engages in the design, manufacture, and sale of laboratory instruments and apparatus for testing fuels and for conducting chemical reactions and tests under heat and pressure. He is a 1959 graduate of Iowa State with a degree in chemical engineering.

Jean Steffenson is a 1960 zoology graduate of Iowa State and the daughter of **Manley R. Hoppe**, who established the Manley R. Hoppe Professorship in Chemical Engineering at Iowa State through his estate. That position is currently held by **Jacqueline Shanks**, professor of chemical and biological engineering.

"This is an opportunity for us to make an immediate impact on the Department of Chemical and Biological Engineering, its faculty, and students," Mike Steffenson said.

The gift is part of Campaign Iowa State: With Pride and Purpose, the university's \$800 million fund-raising effort.

Pictured at the October 29th reception:

Engineering Associate Dean for Research

Balaji Narasimhan, President Gregory Geoffroy,

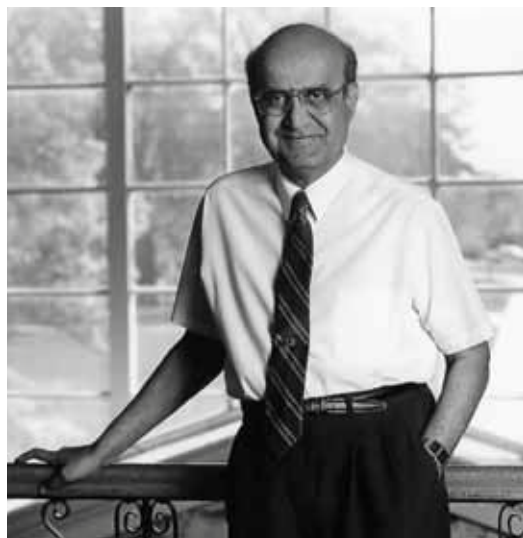
Jean Steffenson, Brent Shanks, and Mike

Steffenson.



Doraiswamy elected to National Academy of Engineering

L. K. Doraiswamy, Anson Marston Distinguished Professor Emeritus, has been elected to the National Academy of Engineering.



The NAE class of 2010 includes 68 new members and nine foreign associates. Doraiswamy becomes one of eight NAE members with Iowa State affiliations.

"I feel greatly honored to be elected a foreign associate of the National Academy of Engineering," Doraiswamy said upon receiving the honor. "This has been made possible by the contributions of my students in the chemical and biological engineering department at Iowa State University and at the National Chemical Laboratory in Pune, India. My colleagues in CBE at ISU and former colleagues at NCL have been a source of great help. I wish to express my gratitude to all of them

for the honor I received today. I would like, in particular, to thank the CBE department chairs—**Terry King, Charles Glatz, Jim Hill, and Surya Mallapragada**—for the facilities and support extended to me."

Doraiswamy is acknowledged as one of the founding fathers of modern chemical engineering in India. In 2007, the Indian Institute of Chemical Engineers presented him with its inaugural IChE Diamond Award. Earlier that year, he was honored at two sessions of the American Institute of Chemical Engineers (AIChE) annual meeting.

"Election to NAE membership is the pinnacle of an engineering faculty member's career," says Surya Mallapragada, Stanley Professor and chair of CBE. "This is a great testament to the outstanding impact and quality of Professor Doraiswamy's work in reaction engineering. We are extremely proud and honored to have him as a colleague."

Doraiswamy joined the CBE faculty in 1989. He earned a BS in chemical engineering from the University of Madras in India in 1946 and a PhD in chemical engineering from the University of Wisconsin–Madison in 1952. He joined India's National Chemical Laboratory in 1954 and retired in 1989 as the first nonchemist director before coming to Iowa State. His research centered on theoretical and experimental studies in catalytic reactions and reactors, modeling gas-solid reactions, and sonochemical reaction engineering.

He is the recipient of numerous awards, including the Padma Bhushan (India's renowned national award), the Jawaharlal Nehru Award for lifetime achievement in engineering and technology, the AIChE Richard H. Wilhelm Award for chemical reaction engineering, and the AIChE William H. Walker Award for excellence in contributions to the chemical engineering literature.

"While this honor is first and foremost about Doraiswamy's prominence and research excellence, it's another point of pride for our faculty and further testament to the strength of the CBE department and the college," says Jonathan Wickert, dean of the College of Engineering at Iowa State.

About the NAE (from www.nae.edu/About.aspx): "The NAE has more than 2,000 peer-elected members and foreign associates, senior professionals in business, academia, and government who are among the world's most accomplished engineers. They provide the leadership and expertise for numerous projects focused on the relationships between engineering, technology, and the quality of life."

ChE student speaks at national summit of influential women

Meredith Gibson, junior in chemical engineering, was a guest speaker at the *Fortune* Most Powerful Women Summit in Washington, D.C.

Gibson says she was eager to speak at the summit and wants to use the opportunity to spread knowledge and excitement to future generations. "I love impacting the youth," she says. "It's a very important cause for me. I want to convince youth and kids to get excited about math and science."

Gibson was chosen to speak because of her involvement in engineering at Iowa State and her participation in the National Math and Science Young Leaders Program (NMSYLP) last July. Gibson is one of only two college women from the NMSYLP invited to the summit and the only college student guest speaker.

The Most Powerful Women Summit is a celebration of the honorees that were named as *Fortune's* 50 Most Powerful Women. The summit draws together female leaders from throughout the world in business, government, academia, philanthropy, and the arts.

At the summit, Gibson shared her experiences working with the NMSYLP, a national mentorship program that partners female college students that are majoring in STEM (science, technology, engineering, and math) fields with female executives working within a STEM-based business.

Gibson's mentor was **Brenda Thornton**, human resources manager at Archer Daniels Midland (ADM) and Iowa State alum (BSChE'96). Gibson visited ADM's corn plant in Cedar Rapids, Iowa, and participated in the NMSYLP conference in New York City last July.



This year's summit was held October 4-6. This is the 12th year for the summit and the first time it was held in Washington, D.C. Participation in the summit is by invitation only.

CBE wins NSF award to renovate research labs

A nearly \$2 million project to renovate 20 research labs in the '64 wing of Sweeney Hall will soon start. The process to win funding for the project began early in 2009. That is when the National Science Foundation (NSF) announced a one-time call for proposals for research infrastructure projects in universities, community colleges, and museums with the funds coming from the American Recovery Investment Act. Only one project per institution was accepted.

Surya Mallapragada, CBE department chair worked with Iowa State's university architect Dean Morton and chief engineer **Brian Dangelser** (BSCHE'78) to develop the project proposal. Iowa State sent the CBE project forward to NSF where it was reviewed centrally in October of 2009 by a panel of scientists, researchers, and facilities people. The panel shortlisted projects to be sent on to individual NSF directorates for the final selection.

Mallapragada received word that the proposal had been approved in late September. The total project is for \$1.98 million with \$1.76 million from NSF and the remainder in matching funds from the university. The university's support is in the form of facilities planning and management (FP&M) personnel such as Morton and Dangelser and a loan from Iowa State's Live Green Fund since a major part of the project involves replacing aging fume hoods with much more energy efficient hoods. The loan is repaid with money saved from being more energy efficient.

The proposal is to renovate a 7,695 square foot wet laboratory research facility that is focused on biological materials and processes. Fourteen CBE faculty members are part of this focus area. The renovation project is much needed, according to Mallapragada. "This wing of Sweeney Hall was completed 46 years ago, in 1964," she explains. "One of the major issues is with the fume hoods. There are newer styles available now that are much more energy efficient. New hoods will be installed in most of the labs."

Electrical upgrades will also be done in all of the labs, and each lab will be equipped with deionized water. Currently deionized water, which is important for the biological research CBE researchers are doing, has to be transported in bottles from the '64 wing.

Another aspect of the renovation involves lab size. Currently each lab is about 400 square feet. In 1964 that met the department's needs because most researchers worked independently. To

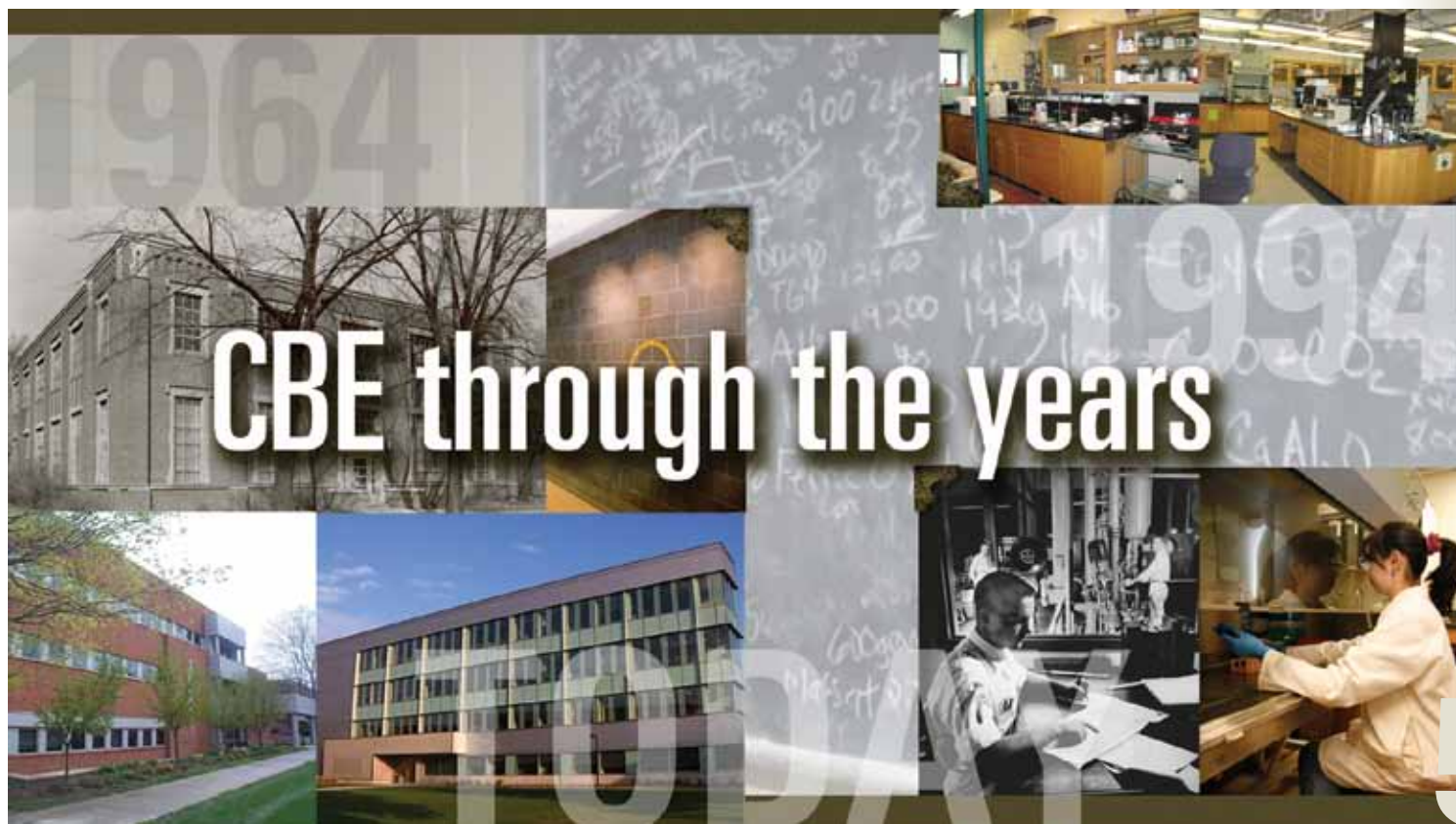
facilitate today's interdisciplinary research that often has multiple groups working together, walls will be knocked down to double the size of some of the rooms. These larger labs will have more than fume hoods, which will make it easier and safer to have multiple tasks going on simultaneously.

Eight of the labs, which were assessed to be in the worst shape, will get a total renovation including such things as new countertops.

Mallapragada is very excited about what this project will do for the department. "This renovation represents a huge improvement for us," she says. "It will help in the recruitment of faculty and both graduate and undergraduate students. All of our graduate students and about 60 percent of our undergraduates do research. Plus students come here from all over the country as part of the Research Experience for Undergraduates program, and we want to be able to attract them back here for graduate school. It's important that all of these students are able to work in state-of-the-art facilities."

With funding for the renovation approved, the project has a quick timeline. Work is currently being done on the final plan. When that is complete, a call will go out for bids from external contractors. The goal is to have actual construction begin in April with completion by spring of 2012.

The work will be done in stages to minimize disruption in the department. The opening of the Biorenewables Research Laboratory on the west side of campus last summer should facilitate the process since several of the labs to be renovated were recently vacated.



Benefactors kick off fundraising drive to honor Richard Seagrave



Iowa State alum **Mary Jane Hagenson** doesn't mince words when it comes to one of her former Iowa State professors, **Richard C. Seagrave**. "Dr. Seagrave had a tremendous impact on me as a graduate student," says Hagenson, who completed her MS in 1976 and PhD in 1980 in biomedical engineering and is now vice president for research and technology for the Chevron Phillips Chemical Company. "He is an inspirational teacher and an exceptional individual. His devotion and service to students and the university are second to none."

Seagrave, who is an Anson Marston Distinguished Professor Emeritus in chemical engineering, has a long and very distinguished record of service to Iowa State. He arrived in Ames in 1957 as a chemical engineering graduate student. After earning his MS in 1959 and PhD in 1961, he began his academic career at the University of Connecticut and also served on the faculty at the California Institute of Technology before joining the Iowa State ChE faculty in 1966 as an associate professor. He quickly established a reputation as a truly dedicated engineering professional inspiring students and colleagues alike to view engineering with a broad perspective. His vision led to the establishment of the biomedical engineering major in the 1970s, long before it became a routine part of the chemical engineering field. Seagrave led this interdisciplinary program from 1974-1980. While Seagrave had a profound effect on students in the classroom, he was also an excellent researcher and administrator. His research focused on life-support systems, biothermodynamics, and transport phenomena in living systems, and he has published more than 50 technical papers, as well as a textbook. He chaired the chemical engineering department from 1983-1990 and also served as interim chair in 1997.

When Iowa State called on him to serve in the university's top administrative roles, he responded both willingly and ably. These roles included interim president in 2000-2001, interim provost in 1999, and interim director of the computation center in 1990-1991. Even as he tackled these roles, Seagrave continued to meet with and advise his students.

While Seagrave has directly impacted many Iowa State students and faculty, he has also impacted engineering education across the country through his record of service to ABET, a federation of professional and technical societies that is the accreditor of college and university programs in applied science, computing, engineering, and technology. Named an ABET Fellow in 1999, Seagrave served ABET in many roles including as president and on the board of directors.

In an effort to honor Seagrave's legacy and impact, Hagenson and her husband Randy (BSEE'72/MSNucE'73/PhDNucE'78) have provided an initial gift to launch efforts to establish the Richard C. Seagrave Professorship in Chemical and Biological Engineering.

This professorship is a fitting way to honor Seagrave and his legacy, according to **Surya Mallapragada**, CBE chair. "Endowed chairs and professorships play a very important role in helping departments recruit and retain the best faculty members," she says. "The individuals who are named to endowed positions receive earnings from the funds to support their teaching, research, and outreach, and so through this professorship, Seagrave will continue to impact students. We are most appreciative to the Hagensons for helping to launch this effort."

The goal is to raise \$500,000 within the next three years to establish a permanent endowment for the Richard C. Seagrave Professorship. Gifts designated to the Richard C. Seagrave Professorship can be made through the Iowa State University Foundation or the College of Engineering (fund #2702879). To learn more about gifting options for supporting the Seagrave Professorship, please contact the College of Engineering Development Office at 800-239-7494 or 515-294-2416. Email: jmseke@iastate.edu

O'Donnell receives Early Career Research award



Jennifer O'Donnell, assistant professor of chemical and biological engineering, has been awarded \$750,000 over five years as part of the U.S. Department of Energy's new Early Career Research Program.

O'Donnell's research project was one of 69 funded through the new program, which is designed to bolster the nation's scientific workforce by providing support to exceptional researchers during their crucial early career years. The total funding of \$85 million originated from the American Recovery and Reinvestment Act.

"Five years to get my research program going here, and the guarantee of two graduate students for that five years, is just amazing,"

O'Donnell says. "I couldn't be happier."

To be eligible for an award, a researcher must be an untenured, tenure-track assistant professor at a U.S. academic institution or a full-time employee at a DOE national laboratory. O'Donnell is in her second year at Iowa State.

O'Donnell's research project, under the title "Templating of Liquid Crystal Microstructures by Reversible Addition Fragmentation Chain Transfer Polymerization," involves the design and synthesis of polymer nanoparticles with internal microstructures identical to those of liquid crystals.

Such nanoparticles, O'Donnell explains, could be used for catalysis or for drug delivery, and even have implications for renewable energy. "We're looking at putting the internally structured nanoparticles into a larger microstructured domain for capturing solar energy," she says.

O'Donnell, who did her postdoctoral work at the prestigious Key Centre for Polymer Colloids at the University of Sydney (in Australia), describes the work as a "new direction" for her and her research group.

"We actually started the work this summer, and I was really incredibly lucky," O'Donnell says. "I have an undergraduate student, **Todd Thorson** (ChE), who has been phenomenal in the lab. He collected all the preliminary data for this project, so that helped a lot."

By the end of the five-year project, O'Donnell says, "we're really looking to have some chemically and mechanically robust internally structured nanoparticles that we can try loading with a drug, or that we can perform a reaction in and study the confinement effects on the reaction mechanism."

O'Donnell is also a research associate with the DOE's Ames Laboratory on the Iowa State campus. She earned her BS in chemical engineering from Bucknell University in 2001 and a PhD in chemical engineering from the University of Delaware in 2007.

Campbell discusses his exchange program experience

Kerry Campbell, who received his PhD in January 2010, took part in an academic exchange program at the National Polytechnic Institute of Toulouse (INPT) in France. While there, his research project was developing a water-based process for extracting oil from sunflower seeds. Below is a Q/A with Campbell.

Q Why did you decide to study at Toulouse?

A I chose Toulouse for two reasons. First, there was a group there doing very similar research to my thesis research. Second, because I wanted to bring my French up to speed. I did a study abroad in France as an undergrad, but my language skills were eroding badly, so this looked like a really good chance to bring things up to speed. Oh, and I guess a third reason was because how often do you have a chance to live in the south of France?

Q How did you work with your faculty advisor to plan five months away from your program at Iowa State?

A Well, part of my preliminary exam was a research plan for completing my dissertation. So, I included a plan that I thought could be reasonably executed in my time frame at France. I had to work more closely with researchers in France than my advisor to do this, because I needed to know what capabilities they had in their lab. My advisor at ISU gave some high-level advice on the project scope, but mostly he just gave the final yes or no, depending on whether or not he was satisfied with my plan (and it took some time to get his approval!)

Q Did your work at Toulouse help you with your research at Iowa State?

A Definitely. The research ended up being an entire chapter of my dissertation. Also, I presented my research at a conference last spring, where I met someone who passed my resume on to someone who ended up making me a job offer that I accepted. So, you could really argue that participating in this exchange program is what led me to my current career.

Q Any additional comments about your academic exchange experience?

A I feel very grateful to have had this opportunity. Although, with enough initiative, I may have been able to make something like this happen without the exchange program, it definitely provided me the network contacts to make the possibility into a reality.



Lamm among researchers preparing for Blue Waters

They can't wait to do computational chemistry at a quadrillion calculations per second.

But it's not all that computing power that's driving three Iowa State University and Ames Laboratory researchers as they develop computational chemistry at the petascale. Driving their project is the ability to run complex calculations and do better science.

"Petascale power is required for accuracy," says **Monica Lamm**, assistant professor of chemical and biological engineering and associate scientist at the U.S. Department of Energy's Ames Laboratory who studies complex molecular binding. "Now we have to use methods that are less accurate and less reliable."

The source of the new and improved computing power is Blue Waters, a supercomputer that's being developed as a joint effort of the University of Illinois at Urbana-Champaign, its National Center for Supercomputing Applications, IBM, and the Great Lakes Consortium for Petascale Computation, which includes Iowa State.

Blue Waters is expected to be the most powerful supercomputer in the world for open scientific research when it comes online in 2011. It will be the first system of its kind to sustain one petaflop performance—one quadrillion calculations per second—on a range of science and engineering applications.

Blue Waters is supported by the National Science Foundation and the University of Illinois.

Lamm is one of three researchers leading Iowa State's work to develop computational chemistry software that can be scaled up to petascale computing systems. The research team also includes another Ames Lab scientist and the software development manager for the Blue Waters project at the National Center for Supercomputing Applications.

The researchers' work is supported by grants of more than \$1.6 million from the National Science Foundation.

The Iowa State researchers are working to scale up two computational chemistry software codes for use on Blue Waters and its thousands of parallel processors and high-speed connections. The computing power of Blue Waters is expected to help the software deliver better, more accurate answers to three specific research problems that have been too computationally demanding to do full-scale calculations with current research tools.

Lamm is studying how dendrimers (large polymers with many branches) bind to ligands (smaller molecules that bind with other molecules to form larger complexes). A better understanding of the binding could have applications in health technologies such as drug delivery and water treatment.

Lamm says she's hoping the Blue Waters project will help the Iowa State researchers move their projects ahead.

"A problem of computational chemistry has been asking what computing power is available and how can we simplify the science for the computer," she says. "Now we have a chance to do our problems the right way."

Photo credit: Bob Elbert



Iowa State University faculty members Theresa Windus (Chemistry), Monica Lamm (CBE), and Mark Gordon (Chemistry) are working to scale up their computational chemistry tools for the Blue Waters supercomputer being developed at the University of Illinois and its National Center for Supercomputing Applications.

Ken Jolls retires

Something is different in Sweeney Hall this fall—Professor **Ken Jolls** isn't on the teaching roster. Jolls, who arrived at Iowa State as an associate professor in 1970, is now professor emeritus having retired in 2010.

"Ken has been an integral part of the department for 40 years," says CBE Chair

Surya Mallapragada.

"He has impacted the department positively in so many ways from his wonderful teaching to his passion for scientific visualization and thermodynamics, to his great musical talents, and most recently to his work in the undergraduate teaching labs here and at the University of Oviedo in Spain."

Jolls has indeed had many accomplishments in his career at Iowa State. He is perhaps best known for his efforts to help students understand the very complex subject of thermodynamics through computer visualization. **Dan Coy**, who earned his BS in ChE in 1986 and then returned to Iowa State to earn his PhD under Jolls, says, "Since my first class in thermodynamics in 1984, I recall being very impressed with the extra steps that he would take to help us understand the initially abstract principles of thermodynamics. Ken has a lifetime of experience creating relevant tools to help transform information into understanding." (See article about Coy on p. 16.)

For the last eight years, Jolls has also been very involved in international teaching. He and a colleague from the University of Wisconsin have accompanied junior and senior students from both schools to the University of Oviedo in Spain each summer. The students are immersed in the Spanish culture while taking an intensive, five-week laboratory course in unit operations that includes experiments and writing reports.



While Jolls' expertise in computer visualization of thermodynamics has gained him national honors, he also has a storied career as a professional musician. Jolls, who in addition to his degrees in chemical engineering holds a BA in music from Duke University, plays the vibraphone, a percussion instrument that looks like a xylophone but is constructed

with metal instead of wooden bars. His resume includes performances across the United States, and he has been featured in many newspaper articles for his talents as both a musician and a professor.

On October 24, 2010, Jolls was inducted into the Des Moines Jazz Hall of Fame for his significant contributions to the jazz community in the Greater Des Moines Metropolitan Area.



Rover is Cyclone legacy



For Iowa State distance runner **Brittany Rover** the term "student-athlete" takes a literal definition. A native of Ames, Iowa, Rover walked on to the Iowa State cross country and track teams in 2006. Over the years, she has been a contributor not only to Iowa State cross-country and track, but also the Iowa State engineering program.

Science has always been an interest of Rover's, so when it was time to pick a major she knew she wanted to do something within that field. The balance that all students have to create between their social, extracurricular, and academic activities in order to succeed had to include athletics for Rover. As a chemical engineering major, she has learned how to create this balance between her academics and athletics.

"I have always wanted to do something in science, and my choice has changed over the years," Rover says. "It's kind of interesting because I never really liked math until I got to college. It takes a lot of focus. You have to stay committed to school and doing well on the team. I definitely have to devote a lot of time each day to studying and homework and group projects for class. But I think in a lot of ways being on the team makes me more productive because I have to be more focused."

Staying focused is not always easy; however, Rover's love for her sport keeps her motivated to do well in school. She runs in distance events such as the 5,000-meter run, the 3,000-meter run, and in cross country, the 6,000-meter run.

"I'm not sure if I enjoy any event particularly the most," Rover says. "I really enjoy cross country as a whole. Cross-country racing is really fun. The 6K is a good distance for me because I like a little bit longer stuff and I love trail running. I'd say in general I just love running. I love the nature of our sport and how it just becomes a lifestyle. I feel so lucky to be able to go out to practice every day and spend time with friends running."

The love of running flows through the Rover family. Craig Rover, Brittany's father, also ran for the Iowa State track and cross-country teams from 1981 through 1983. After going through his Iowa State experience, Craig enjoys watching Brittany follow a similar path.

"Watching Brittany compete in an ISU uniform on some of the same courses that I ran as a Cyclone nearly 30 years ago has brought back many good memories," Craig Rover says. "She has had the full college experience. As she heads into her last year, it's very satisfying to see her enjoying her studies and her genuine excitement for her future career."

Coping with a challenging major while participating in a competitive varsity sport requires a support system. Rover has found it in family, friends, and team members.

"My dad planted the seed and the running interest in me," Brittany Rover says. "He's always really encouraged me in my running, helping me train and giving advice and support. I'd also say that the team in general—the coaches and my teammates—have been a big source of support. I feel like I have really been shaped as a person in college as a result of being on this team. The friendships that I have made and the opportunities I have been given will last a lifetime."

Craig Rover explains some of Brittany's goals for the season. Entering her senior year, she plans to continue her contributions to the team through setting new personal records and being an active team leader.

"She has set some goals for herself this year and for the team, and we hope she reaches those," Craig Rover says. "Above all else, she wants to be a good leader and mentor."



Iowa State hosts AIChE Mid-America conference

Iowa State's Beyer Hall is typically kind of quiet early on a Saturday morning. April 10, 2010, however, proved to be an exception. That's when 12 collegiate teams outfitted in lab coats, goggles, and gloves participated in the annual Chem-E car competition sponsored by the American Institute of Chemical Engineers (AIChE).

The competition was the featured event at the AIChE Mid-America student conference hosted by Iowa State's AIChE student chapter.

For the competition the teams had to assemble the chemically powered vehicles they had designed and constructed during the past year, pass a rigorous safety inspection, give an oral presentation, and then see which cars could travel a specified distance and then stop closest to the designated finish line.

While Iowa State's car finished in the middle of the pack, the AIChE student chapter gained a wealth of experience as the conference host. Some 200 students and advisors traveled to Ames from universities in Arkansas, Iowa, Kansas, Missouri, Minnesota, Nebraska, and Oklahoma for the conference, which rotates among the member institutions. Iowa State last hosted the event in 1999.

In addition to the car competition, activities included a Friday night social, research paper competition, presentations that showcased Iowa State's graduate program and NSF Research Center for Biorenewable Chemicals, and a Saturday evening banquet featuring Alex King, director of the U.S. Department of Energy Ames Laboratory.

"Our student chapter did a nice job," assistant professor and AIChE student chapter advisor **Aaron Clapp** says. "**Elliot Combs**, ChE4, is the chapter president and under his leadership, the major tasks were assigned to committees. They figured out the logistics, negotiated contracts, raised funds, and recruited volunteers." With sponsors such as Dow Chemical and 3M the chapter was able to achieve its goal of keeping costs low for the student participants.

Clapp noted that guidance came from several sources. "The University of Missouri, Columbia, chapter, which hosted the 2009 regional meeting, gave us 'best practices' kind of information," he explains. "Plus on campus, **Linda Edson**, CBE program assistant, helped us get through university rules, and Facilities Planning and Management played a big role in ensuring that all the chemicals for the car competition were properly transported and that the Beyer Hall basketball floor was well protected."

With the 2010 conference behind it, Iowa State's student chapter can now share its 'best practices' with 2011 conference host, the University of Arkansas.



Chapter president Elliot Combs and advisor Aaron Clapp



CBE students Horaleo Ukpan and German Parada



CBE Faculty Update

Anson Marston Distinguished Professor **Robert C. Brown** and colleagues **Brent Shanks** (CBE) and **Stu Birrell** (ABE) are members of a team of researchers led by the National Renewable Energy Laboratory who won a \$34 million contract from the U.S. Department of Energy to establish the National Advanced Biofuels Consortium to develop cellulosic biofuels. This spring he and other researchers affiliated with the Bioeconomy Institute and the Center for Biorenewable Chemicals moved into the new \$32 million Biorenewables Research Laboratory (BRL) across the street from Sweeney. Brown, who chaired the first Symposium on Thermal and Chemical Sciences for Biofuels and Biobased Products held at Iowa State this past September, was named this year by Biofuels Digest as one of the "Top 100 People in Bioenergy."



Distinguished Professor **George Burnet** has been retired since 1995 and continues to live in Ames, remaining active on the campus and in the community. His work at the university deals primarily with alumni relations and development. On the technical side, he is pleased by the continuing interest from the United States and beyond in the work done in his group at the Ames Lab beginning in about 1980 on the utilization of coal solid wastes, especially development of the Ames lime soda sinter process. He welcomes hearing from former students and colleagues.

Aaron Clapp, assistant professor, works on quantum dots. He presented two talks at last year's AIChE annual meeting in Nashville.



Eric Cochran, assistant professor, gave an invited talk at the spring 2010 ACS meeting in San Francisco related to his work with block copolymer/layered silicate nanocomposites. Other emergent areas of interest include stimuli responsive colloids and catalytically active polymer nanowires for energy applications (with **Kurt Hebert**). In collaboration with Glenn Fredrickson (UCSB) and Accelrys, he continues to develop the Mesotek molecule of Materials Studio for field theoretic simulations of complex polymer formulations.

Liang Dong, assistant professor, has continued his research with nanophotonic and plasmonic sensors, drug delivery devices, microfluidics for single-cell and organism study, and MEMS. He has recently been recognized with an NSF CAREER Award supporting his research on dynamic nanophotonics for smart sensors applications.



Rodney Fox, the Herbert Stiles Professor in Chemical Engineering, has been named an Anson Marston Distinguished Professor.

Chuck Glatz had two PhD students and one MS student complete their degrees working on projects for "green" processing of soybeans and purification of recombinant proteins from corn. Those projects continue with a new emphasis on producing biosurfactants by fermentation of plant feedstocks. An intended use of the surfactants is as dispersants of oil in the Gulf. He continues to develop the Bioengineering Unit Ops Lab and has started teaching a graduate course, Professional Conduct of Research.



Larry Hanneman, adjunct associate professor and director of the Engineering Career Services office, was recently named to the Collegiate Employment Research Institute Advisory Board. He continues his research efforts related to competency- and ability-based employer expectations of entry-level and early-career professionals in the STEM (science, technology, engineering, and mathematics) workforce. The Iowa State Engineering Career Services office continues to deliver the largest career fairs in engineering education and supports the experiential education experiences of 600–800 engineering students at over 250 employers annually.

Professor **Kurt Hebert** is actively engaged in teaching transport courses, and in his research on electrochemical materials science. Specifically, his research focuses on the fundamental surface chemistry processes controlling degradation and corrosion of metal structures and on the formation of self-ordered nanoporous metal oxide layers.



University Professor **Jim Hill** continues his research on turbulent mixing. He also stays involved with AIChE at the national level and is co-chair of the meeting program committee for the 2011 Annual AIChE meeting. He is also district director for Tau Beta Pi and advises the solar car team.



Andy Hillier is professor of chemical engineering and director of the W. M. Keck Laboratory for High Throughput and Atom-Scale Analysis. He was also recently appointed as associate chair of the department. His research group is pursuing projects in electrocatalysis, optical sensing, and nanomaterials, funded by grants from the National Science Foundation, the National Institutes of Health, and the Department of Energy. Andy has been teaching various courses in the department, including thermodynamics, reaction engineering, and process control.



Laura Jarboe, assistant professor, has moved her research program into the new Biorenewables Research Laboratory. Laura attended the "Metabolic Engineering for Green Growth" conference in Korea in June and supervised Iowa State's student Engineers Without Borders chapter on a trip to Belize in March.



Duane Johnson recently joined the department as the F. Wendell Miller Professor of Energy Sciences, coming from the University of Illinois at Urbana-Champaign, and is the chief research officer of Ames Laboratory. He is an expert in theoretical materials physics and chemistry and computational materials science, working on surface and nanoparticle catalysis, materials discover and design, material characterization, and phase stability, as well as developing new computational methods and algorithms for ab initio and multiscale prediction of properties. He brings a group of five postdoctoral researchers and students with him to Iowa State. He holds many awards and for more than ten years ran the NSF-supported Materials Computation Center, which created a well-known series of summer schools attended by researchers worldwide, and whose materials continue to be used by thousands.



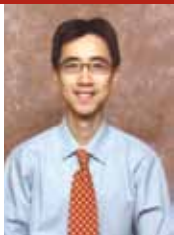
Professor **Kenneth Jolls** is interested in visual representation of ideas in chemical science, especially in thermodynamics. He and his students have created computer software for generating displays of thermodynamic functions, both for teaching and research. His work has been reviewed by *Science Magazine*, and a recent paper (with co-author and Iowa State PhD **Daniel Coy**) was

featured in a Festschrift issue of *Industrial and Engineering Chemistry Research*. His most recent presentation was at a Beckman Institute Conference at the University of Illinois—"Imaging Without Boundaries." Jolls is an enthusiastic advocate of sound, computer-assisted teaching in engineering and has written frequently on that subject in the national press. He has also been a prime mover in the CBE department's summer unit operations program at the University of Oviedo in Spain.

Monica Lamm, Monica Lamm, associate professor and director of graduate education, continues to lead a five-member team that is developing computational chemistry software for the NSF-funded, petascale supercomputer Blue Waters, which will go online in the summer of 2011. Lamm will use the allocation to study how dendritic polymers bind water contaminants. She is currently teaching Material and Energy Balances. In the summer, Lamm and Professor **Balaji Narasimhan** codirect an NSF Research Experiences for Undergraduates site with the theme Biological Materials and Processes (BioMaP).



Zhiqun Lin, associate professor, recently received the ISU Award for Early Achievement in Research. He participated in the 2010 Frontiers of Engineering symposium organized by the National Academy of Engineering. His research focuses on organic/inorganic bulk heterojunction solar cells, nanocrystal sensitized solar cells, copper zinc tin sulfide-based solar cells, polymer-based nanocomposites, block copolymers, multifunctional nanocrystals, metal oxide nanotubes, hierarchical structure formation and assembly, and surface and interfacial properties.



Michael Olsen, an associate professor in mechanical engineering, has a courtesy appointment in CBE.



Distinguished Professor **Pete Reilly's** group has continued to work on enzyme structure and function, especially on enzymes that attack cellulose and hemicellulose. This includes research to find three-dimensional structures and kinetics of two members of a cellulase family as well as quantum mechanics computations to determine reaction pathways of other enzymes. His group also is constructing a major database of amino acid sequences and three-dimensional structures of the enzymes involved in synthesizing fatty acids, as part of the National Science Foundation Engineering Research Center for Biorenewable Chemicals.



Reilly continues to coordinate Iowa State's exchange program with the Swiss Federal Institute of Technology—Lausanne and the University of Lausanne in Switzerland, as well as chairing Iowa State's Committee on Honorary Degrees and Library Advisory Committee and coordinating the College of Engineering's bioengineering minor.

Derrick Rollins transitioned to a new role of professor in charge of community-based recruitment and transition programs. He initiated a new program called SPEED in the College of Engineering to increase the pipeline of underrepresented minority students in the undergraduate program. He also serves as diversity director for the NSF Engineering Research Center for Biorenewable Chemicals.



Stephanie Loveland, senior lecturer, continues to teach the undergraduate laboratory courses in the department. She also teaches one or two other courses each semester as needed. She is cochair of the department's Safety Committee and is a member of the Curriculum Committee for this academic year as well. She and her husband,

Brian, are the parents of five-year-old twin boys and a three-year-old girl.

Surya Mallapragada was named Stanley Chair of Interdisciplinary Engineering. She was elected fellow of the American Association for the Advancement of Science and received the Distinguished Service Award from the AIChE Food, Pharmaceutical, and Bioengineering Division.



Professor **Balaji Narasimhan**, who serves as associate dean of research in the College



of Engineering, was named the Vlasta Klima Balloun Professor of Engineering. This year, his group received new grants from NIH, NSF, the U.S. Army, the Roy J. Carver Foundation, and the Health Research and Services Administration, totaling in excess of \$14 million, for his work on biodefense vaccines, nanotechnology, and designer biomaterials.

He continues to lead the NSF Biological Materials and Processes (BioMaP) REU program. This past summer, the BioMaP program provided research experiences for 16 students.

Jen O'Donnell, assistant professor, received a Department of Energy Early Career Award for her research on templating liquid crystal microstructures by reversible addition-fragmentation chain transfer polymerization. She presented the preliminary results of this research at the American Chemical Society Colloid and Surface Science Symposium as well as the Polymer Physics Gordon Research Conference. In addition, Jen is continuing her collaboration with Dr. Thomas Epps (University of Delaware) to investigate the synthesis and self-assembly of lithium ion-conducting block copolymers for use as battery membranes and has recently begun collaborating with Dr. **Balaji Narasimhan** to synthesize polyanhydride nanoparticles for drug delivery applications.



Ian Schneider, assistant professor, is currently working on projects aimed at understanding molecular and cellular mechanisms of cancer metastasis. He hopes to take two graduate students in the fall, including both a chemical engineering student and a cell biology student. The past summer he hosted a freshman through the SPEED program, a middle school teacher from Thailand, and an undergraduate student through the REU program. He plans to present data at the BMES, AIChE, and ASCB annual meetings this fall.



Professor **Brent Shanks** was recently named the Mike and Jean Steffenson Professor. He serves as director of the National Science Foundation Engineering Research Center for Biorenewable Chemicals (CBiRC) and has moved with his group to the newly dedicated Biorenewable Research Laboratory, which also serves as the administrative headquarters for CBiRC. In February 2011, he will be presenting an invited talk at the 1st International Symposium on Chemistry of Energy Conversion and Storage in Berlin, Germany.

Jackie Shanks, Manley R. Hoppe Professor, serves as thrust leader for the Microbial Metabolic Engineering effort in CBiRC. Shanks was selected to give the Division 15c Plenary Lecture at the 2010 Annual AIChE Meeting.

Cory Stiehl continues to serve as lecturer in the department, teaching Engineering 160 and ChE undergraduate courses.

Dennis Vigil recently organized the 17th Larson Workshop of the Association for Crystallization Technology. The workshop was held at the Busch Campus Center at Rutgers University and hosted by Bristol-Myers Squibb.

As an emeritus member of the faculty, **Thomas Wheelock** serves on the department's Honors and Awards Committee and continues to guide research on the development of a unique material for reforming methane to produce hydrogen.

Wheelock also enjoys serving on the advisory council and several committees for the Green Hills Retirement Community where he and his wife, Edra, reside.



Basak Cinlar receives 2010 G. W. Carver award

Basak Cinlar, who received her doctoral degree in chemical engineering with a minor in biorenewable resources and technology in May, has been awarded the 2010 George Washington Carver Prize for Outstanding Student Achievement in Biorenewables.

Currently in its third year, this award is funded by the Bioeconomy Institute (BEI), the NSF ERC Center for Biorenewable



George Washington Carver

Chemicals (CBiRC), and the Biotechnology Industry Organization (BIO) to recognize the research contributions of a student in the Iowa State University Biorenewable Resources and Technology (BRT) graduate program.

The award was established as a memorial to the original vision of George Washington Carver, who pioneered the creation and commercialization

of sustainable biobased products from renewable agricultural feedstocks.

Brent Shanks, professor of chemical and biological engineering and director of CBiRC, nominated Cinlar for the award. "In her doctoral work, Basak developed a comprehensive research strategy for examining carbohydrate dehydration, which successfully reconciled apparently conflicting reports from the literature. This work allowed her to develop a high-yield process for converting glucose to hydroxymethylfurfural in an aqueous system," states Shanks.

With her involvement in CBiRC, Cinlar quickly realized how much more work is still needed, especially in chemical synthesis. "I am honored to receive this award and glad to see that the efforts in the biorenewables area are recognized," says Cinlar. She plans to continue in the field of biorenewables, applying to both industrial and academic positions. She was recognized for this award at the BIO World Congress in Washington, D.C., last June, where the \$2,000 prize was presented.

Due to the high caliber of students nominated for the 2010 award, the BEI has selected three students as George Washington Carver Scholars in recognition of their research efforts in biorenewables. They are Debjani Mitra, food science and technology major with a minor in BRT; **Raj Padwardhan**, chemical engineering major with a minor in BRT; and Micky Vincent, BRT major. They were each awarded a \$500 prize.

Rollins takes on new recruitment duties

Derrick Rollins, who had been serving as assistant dean for diversity in the College of Engineering, is transitioning to the new role of professor in charge of community-based recruitment and transition programs. In this position, he is focusing directly on actively recruiting underrepresented students from Iowa and other states, as well as on facilitating their academic success once enrolled in the college.



Having already established relationships with high schools and teachers in Kansas City and Omaha, Rollins is expanding strategic recruiting efforts to other regions as well. Also, in recognition of the growing importance of transition and mentoring programs for underrepresented students, he leads summer and academic-year transition programs, such as SPEED (Summer Program for Enhancing Engineering Development). His work in this area is supported through the collaborative efforts of faculty and staff in academic departments, as well as the college's undergraduate student service unit.

"The college continues to respond to important opportunities in student recruitment and retention," says Jonathan Wickert, dean of the college, "and this move involves some key priorities. . . . Derrick has fulfilled a significant role as a member of my cabinet, and I look forward to his continued contributions in recruitment, teaching, and research."

Rollins received the 2010 American Institute of Chemical Engineers Minority Affairs Committee Eminent Engineer Award at the AIChE annual meeting held in Salt Lake City, UT this month. This honor is given to chemical engineers who belong to an underrepresented minority group who have served as mentor and role model to underrepresented minorities in engineering and other related areas in education or business environment. Recipients must have outstanding technical accomplishments and distinguished service to the profession.



Basak Cinlar checks test results in a Sweeney Hall lab

Dedication takes place for Phase I of Iowa State's Biorenewables Complex

Dedication ceremonies for Iowa State University's new Biorenewables Research Laboratory (BRL) building were held Friday, September 17, at 3 p.m.

The new facility is a visible "front door" to the university's many diverse and broad-reaching programs in biorenewables and is located on the west side of campus between the College of Design and Howe Hall. Construction was made possible through a \$32 million appropriation from the State of Iowa.

The BRL complements and replaces labs and offices previously located across the Iowa State campus and provides affiliated faculty and staff a physical environment that promotes interdisciplinary, systems-level research and collaboration. It houses the administrative offices and research labs of the Bioeconomy Institute, the National Science Foundation Engineering Research Center for Biorenewable Chemicals, and the Biobased Industry Center.

The facility has achieved LEED-Gold certification under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification system. The "green" aspects of the building include ample natural lighting, rain water recovery and reuse, a chilled beam cooling system, doors and cabinetry made from bamboo, a partially vegetated roof, and landscaping that includes native plantings and biomass crop specimens such as switchgrass.

The BRL building completes Phase I of the university's two-phase, \$107.1 million Biorenewables Complex. Phase II, which will be funded through a combination of state appropriations and private gifts, will add two buildings to the site and provide a new home for Iowa State's top-ranked Department of Agricultural and Biosystems Engineering.

From left: Cassidy

LeClaire, Quyen

Truong, Mark

Wright, President

Gregory Geoffroy,

State Senator John

P. (Jack) Kibbie, Iowa

Lt. Gov. Patty Judge,

Keenan Deutsch



Fox named Anson Marston professor

Rodney Fox was honored as an Anson Marston Distinguished Professor at the university convocation in September. He has distinguished himself in computational fluid dynamics, transcending the boundaries of chemical, mechanical, and aerospace engineering. He is perhaps the world's leading figure in the special area of fluid mechanics of chemically reacting systems and made groundbreaking contributions to that field. Fox has been the recipient of many invited professorships and lectureships in the United States and abroad. He has been on doctoral committees not only at Kansas State and Iowa State, but at Stanford University and in France, the Netherlands, Denmark, Sweden, and Australia.

Fox is currently the Herbert Stiles Professor in Chemical Engineering.



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Alum lends hand in Gulf oil spill clean up

In his day-to-day job **Dan Coy** (BSChE'86/PhDChE'93) supports technology development as a program manager in BP's Refining and Logistics Technology unit in Naperville, Illinois. The purpose, he says, is to analyze technologies that are being developed in a variety of industries to determine which ones might be used in the refining process to make BP more competitive.



Coy took on a new assignment last spring when the Deepwater Horizon oil rig explosion caused oil to spill into the Gulf of Mexico. "BP is divided into two major areas—exploration and production, that is, finding oil and getting it out of the ground, and refining and marketing, which is turning crude oil into products and selling them," Coy explains. "The oil spill started in exploration and production, but the response has involved the entire company. BP has more than 100,000 employees, but at the peak of the response some 46,000 people were involved in the effort

to preserve the environment. Many of the respondents were government employees or contractors, but BP maintained a strong presence in the response using employee volunteers." Coy and his wife **Kay** (BSChE'89), who is also a BP employee, talked it over and decided he would join the volunteer effort.

From mid-May through the first week of August, Coy served four 14-day rotations in Mobile, Alabama. The U.S. Coast Guard coordinated the response effort using what is called an incident command system (ICS). "The ICS is a specialized system developed to coordinate the efforts of a large number of entities," Coy explains. "You have a unified command that sets the objectives, and everybody works to meet those objectives."

The Alabama group responded to off-shore (in the water but not out to the actual site of the incident), near shore, and shore cleanup in Alabama, Mississippi, and the Florida Panhandle. The Coast Guard did most of the off-shore work, which involved skimming oil off the water. A group called Vessels of Opportunity conducted much of the near-shore work. These were fishing boats hired by BP. Their role included oil recovery, wildlife rescue, transportation, and boom deployment and recovery.

Each shore effort involved a team working with a natural resources adviser to determine exactly what environmental issues needed to be addressed and how best to address them. One specific issue, for example, involved sea turtles that lay their eggs on the beaches. Before any work could be done there, a "turtle observer" had to check to make sure the turtles and eggs were identified and not disturbed.

The command center was divided into five areas—finance, logistics, operations, planning, and safety. Coy served as a resources data manager in the planning group. His team was charged with tracking equipment and other assets and basically making sure needed equipment was available and deploying it to where it needed to be.

While the work was grueling, Coy says it was a very interesting to work in that kind of environment. "The people were fantastic. The attitude was that something bad had happened, but we're doing what we can to get something good done and make the situation better."

CBE starts masters of engineering in chemical engineering program

The Department of Chemical and Biological Engineering has started a coursework-based master of engineering in chemical engineering degree in which students take all of the courses online. The first course, CHE 583 XE Advanced Thermodynamics, will be offered this spring through Iowa State University's Engineering Online Learning.

This master's degree is aimed at professionals who want to advance their technical knowledge in the chemical engineering field. The 30-credit degree program requires 6 credits from the core curriculum and 24 credits of technical electives, 14 of which must be chemical engineering courses.

"Students will customize their degree programs to suit their specific needs and interests," says **Monica Lamm**, CBE associate professor and director of graduate education.

"Electives are offered in a number of areas such as biomedical engineering, biochemical engineering, catalysis, metabolic engineering, and polymers. A person working in the biorenewables field, for example, will be able to focus on courses related to that area. Students may also take up to three elective courses outside of CBE."

A key advantage of the new master's program is flexibility. Students will decide how many courses to take each semester (one or two is recommended) and how many to take each year. And with the courses offered online, they can choose when to fit their coursework into their daily schedules.



An academic advisor (CBE's director of graduate education) will work closely with each student to help him or her plan a program of study over several years. While core courses are offered each year, some electives are just offered every other year. Because the online master's program is just getting started, not all courses will be available online immediately so careful planning is required.

CBE is excited to offer the new master's program, according to Lamm. "We have had a number of alumni working in industry who have expressed interest in a part-time master's program like this," she says. "It is a great opportunity for full-time professionals to further their education. Students can view lectures at home or work, and they aren't required to come to campus at all. Engineering Online Learning provides technical support for viewing lectures and obtaining course content, and they also provide logistical support for submitting assignments and obtaining exam proctors."

Lamm encourages anyone interested in the master of engineering in chemical engineering degree to contact her at mhllamm@iastate.edu or 515 294-6533. For general information about Engineering Online Learning, please see www.eol.iastate.edu or 515 294-7470.

Iowa State's Engineers Without Borders student chapter helps a village in Belize



Laura Jarboe, EWB faculty advisor

If all goes well with an Iowa State Engineers Without Borders (EWB) project, dried fruit may soon become a resource that helps fund books and supplies for students in rural Belize.

Over spring break in March, eight EWB members visited the country to implement their prototype design of a solar fruit dehydrator. In addition, they worked on several secondary projects including constructing a town sign, implementing two cook stove designs, providing a hygiene program to villagers that emphasized the importance of hand washing, and assessing soil quality to determine the feasibility of a school garden.

Sustainability is key

The visit was a follow-up to an initial site visit that took place last summer, during which EWB members met with people to assess the community's needs. The project, which originally sought to provide healthier snack options in the school system, has now led to a potential income opportunity.

"Schools are given a bi-annual ration of dried fruit for snacks that is typically gone within a few weeks," says Tom Cooper, a senior in mechanical engineering and EWB member who made the trip. "With a fruit dryer on-site, students have access to nutritious snacks and schools could sell any fruit surplus to help pay for educational supplies."

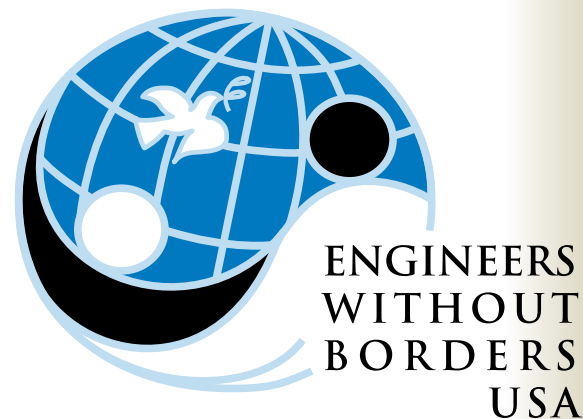
The solar fruit dehydrator is made from wood, a resource easily found in Belize. The initial prototype is a simple design that combines a sheet of plywood, some 2x4s, screws to hold it all together, and a polycarbonate material such as Plexiglas. "The whole idea is to keep the project sustainable," Cooper says. "We want to make sure people in the community are able to build it, understand how it operates, and know how to repair it and keep it clean."

Before leaving, students constructed two dehydrators and were able to test one in the Department of Horticulture's greenhouses. But the real test took place when they started working on it in the community.



"The materials on-site were a little different from what is available in the U.S.," explains **Laura Jarboe**, assistant professor of chemical and biological engineering and an EWB faculty advisor. "Belize is known for its excellent

The EWB solar fruit dryer in action



hardwood, which ended up being much harder than what was used in Iowa, and sizes of the materials were less standard. But the students adapted their design and were able to construct two working solar fruit dryers."

Building confidence

Another prominent challenge for the group was ensuring the community understood what EWB was trying to accomplish, and that villagers were invested in the work being done. To help increase confidence in their efforts, the students held several discussions with families throughout the community and spoke with community leaders. The response was favorable.

"Students and staff were excited about their dryers and eager to give them a try, and the Rotary Club in [nearby tourist destination] Orange Walk was also interested in the dryers and building more units," Jarboe says. "We will keep in contact with them to receive updates on changes and improvements we may need to make, and then we'll go back to evaluate the projects, implement any necessary changes, and possibly expand the program."

For Cooper, working on the project was also a welcome opening to a new culture. "The people of Belize were kind, hospitable, and unbelievably accepting and excited about our ideas to help their communities," he says. "We experienced challenges with communication and cultural tendencies, but that provided us with a new perspective to approach life with.

"The entire trip was so wonderful," he adds, "it's hard to describe."

For more news about Iowa State's EWB abroad, see the article in March's *Innovate Online*. Additionally, read the Belize section of Laura Jarboe's blog (<http://laurajarboe.blogspot.com/2010/07/belize-trip.html>) to get a personal feel for the research and the trip.

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Alumni in the news

Cory Berkland (BSChE'98), professor at the University of Kansas, has been appointed founder and advisor of Orbis Biosciences, Inc. He works with a variety of industrial partners to design particles and control release profiles.

Russell Gorga (MSChE'97/PhDChE'02), associate professor of textile engineering at North Carolina State University, received the Iowa State University College of Engineering Professional Progress in Engineering Award in 2010.

James Katzer (BSChE'64) presented the keynote address at the 21st International Symposium on Chemical Reaction Engineering, June 13, 2010, in Philadelphia, Pennsylvania.

Edward Maginn (BSChE'87), professor at the University of Notre Dame, received the inaugural AIChE Computational Molecular Science and Engineering Forum Award for outstanding research. His research focuses on computational statistical thermodynamics and is devoted to environmental and energy-related applications.

Mike Maxwell (BSChE'68) has been appointed engineering manager at Sly, Inc., Strongsville, Ohio. Previously he was vice president of engineering/manager of applications with Griffin Filters LLC and director of engineering with Flex-Kleen Corporation.

Umit Ozkan (PhDChE'84), chemical engineering professor at Ohio State University, received a Professional Achievement Citation in Engineering Award in fall 2010.

William Schroeder (PhDChE'01) has been appointed the research and development director at Kemin in Des Moines, Iowa. He also serves as president and CEO of Blue Sky Creamery, Ames, Iowa.

Michael Steffenson (BSChE'59), president and chairman of Parr Instrument Company in Moline, Illinois, received the Anson Marston Medal, the college's highest honor fall 2010.

Haley (Aduddell) Stomp (BSChE'97) has been promoted to senior marketing manager at Kemin Agrifoods North America. She began her career at Kemin in 2003, and held the positions of Agrifoods global enzyme product manager and product manager at North American Agrifoods.

R. Kirk Thompson (PhDChE'99), R&D leader, Dow Solar Solutions, Dow Chemical, received the Iowa State University College of Engineering Professional Progress in Engineering Award 2010.

Nick Wilson (BSChE'67) has been elected chairman of the Packaging Machinery Manufacturers Institute Board of Directors beginning January 2011.

Death Notices

James Iliff (BSChE'46) passed away December 11, 2009. Iliff helped refine pure uranium from uranium ore for the Manhattan Project. After working several years as a chemical engineer, he retired from his second career as a contractor.

John Minert Sharf (BSChE'31) passed away March 8, 2010. He invented and patented over one dozen systems for transporting and protecting food and beverages, including synthetic champagne stoppers. His professional career began at the National Soft Drink Association in Washington, D.C. He then joined Armstrong World Industries (previously Armstrong Cork) in Lancaster. Later he was a scientist-on-loan to the Atomic Energy Commission's Mercury Flats atomic test site in Nevada analyzing food and drug products exposed to radiation. Sharf retired as director of research for the Glass Packaging Institute in Washington, D.C.

Owen Albert Heng (BSChE'61) passed away August 14, 2010. Heng was employed by Dow Corning from 1965 to 1999 and worked 19 years as a manufacturing consultant for the Hemlock Semiconductor Corporation (subsidiary of Dow Corning Corporation).

James Zorn (BSChE'49) passed away September 8, 2010. He worked in the electronics of the atomic bomb (Manhattan Project) and was a member of the U.S. Army Air Corps. He also worked for the Morton Company, Westinghouse, and the Atomic Energy Commission in Washington, D.C., until his retirement. SChE, 1998), Professor at the University of Kansas, has been appointed Founder and Advisor of Orbis Biosciences, Inc. He works with a variety of industrial partners to design particles and control release profiles.

Please stay in touch at 515 294-7642 or cbe@iastate.edu

We want to hear about your career and personal news for future issues of *ACTIVEsite*. We also need your help with donations to the department. If you're making a contribution to Iowa State, please consider designating it for the Department of Chemical and Biological Engineering using the form below. Enclose it with your pledge or gift and mail it to the Department of Chemical and Biological Engineering, 2114 Sweeney Hall, Iowa State University, Ames, IA 50011-2230.

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The Department of Chemical and Biological Engineering is now offering a master of engineering in chemical engineering degree

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—*Daqian Wu*, a student pursuing a master of engineering in chemical engineering degree, who works full time at Pella Corporation in Pella, Iowa

For professionals seeking additional education beyond a bachelor's degree to become an outstanding engineer, the Department of Chemical and Biological Engineering is now offering a master of engineering in chemical engineering (MEng ChE). This program provides a diverse offering of technical courses and will help you compete in today's ever-changing work environment.

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- For details about the coursework-only MEng ChE, contact Monica Lamm, Director of Graduate Education at mhلام@iastate.edu or 515 294-6533.
- For general information about chemical and biological engineering, visit www.cbe.iastate.edu.
- For graduate programs, visit www.cbe.iastate.edu/academics/graduate-program.
- Engineering Online Learning, visit www.eol.iastate.edu.

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CBE Awards Banquet held in September



Michael Steffenson
(BSCHE'59),
awards banquet
keynote speaker



Elliott Combs,
scholarship recipient and
AIChE chapter president.

