Inside:

- Team Illinois Shines at Solar Decathlon with the Re_Home
- Paulausky Gains New Perspective in Ireland
- Yuanhui Zhang named Innoventor Professor in Engineering
- K.C. Ting Named Recipient of Academic Leadership Award
- U of I Facility Will Demonstrate Innovative Technology in Biomass Conversion to Crude Oil
Greetings from Agricultural and Biological Engineering

It's with great pleasure and much excitement that we are presenting you with another issue of ABE@Illinois. Members of our ABE@Illinois family have been doing wonderful things. We have heard from many of you expressing how pleased you are to be connected with our department through this form of communication. We have also had the pleasant surprise of receiving news from many of you who had not been in close touch with us for many years. Receiving information from you always brightens our day.

I have had the honor to represent our department and share the recent highlights of our activities and accomplishments to audiences close to home, in the U.S., and around the world. It makes me very proud to let people know that our activities are relevant, impactful, significant, and exciting (RISE).

In addition to the news and stories covered in this issue, I would like to share with you several unique developments in our department:

- Two new undergraduate scholarships sponsored by BP have been awarded; one to a student who is interested in the biological engineering concentration and one to a student who will explore international opportunities in water resources.
- Our new graduate program in Technical Systems Management currently has five students pursuing their thesis-based M.S. degrees and four students studying for their M.S. degrees with the Professional Science Master concentration.
- We have completed Part Two of our history book for the period of 1997 – 2009. Part One was published in 1997 to cover the period of 1921 – 1997. I would like to invite you to read about our department’s history by visiting http://abe.illinois.edu/ABE_Publications.
- Professor Ralph Hay, faculty member in our department from 1932-72, was selected to receive, posthumously, the first-ever highly prestigious Mason Vaugh Agricultural Engineering Pioneer Award by the Indian Society of Agricultural Engineers (ISAE). The award ceremony was held in late February 2012 at the 46th ISAE Annual Convention at G.B. Punt Agricultural University, Panntagar, India. Several of us from the department attended the Convention to receive the award on behalf of Professor Hay and his family.

I think you know we are very excited to stay connected with you. We will continue to keep in touch with you by publishing these newsletters. We will also continue to update our website and hold events like the Alumni and Friends Reception during the annual ASABE meeting, ABE Spring Awards Banquet, Celebrate ABE@Illinois, Pulling for ABE@Illinois, the weekly retirees’ coffee, and our annual pancake breakfast. We look forward to seeing and hearing from you often.

Best regards,
K.C. Ting
Professor and Department Head
ABE@Illinois

Goering Enjoys Retirement in Seattle

There has been a number of interesting side roads along Carroll Goering’s path to Professor Emeritus.

Goering attended the University of Nebraska for his bachelor’s degree in agricultural engineering, but he said, “In the middle of that degree, I wasn’t sure about my career, so I decided to join the Army.” Goering served from 1954 to 1956. He trained in Texas and then spent 19 months in Korea. “The first cruise ship I ever got on took me to Korea,” said Goering, “and I didn’t get back for 19 months. The war was over by the time I got there, but now I have a thing about cruise ships. I haven’t gone on one since.

“School looked a lot better after being in the Army for two years,” he continued with a laugh, “so I finished my bachelor’s degree in 1959 and took a job with International Harvester in Chicago.”

Goering’s job was in advanced machinery design. “We were looking five-to-ten years ahead, trying
Goering Enjoys Retirement in Seattle

continued from page 2

to convert ideas into a piece of hardware that we could test out.” Although Goering was able to get a patent on part of the work he did for IH, he felt the job was “confining. You couldn’t just take off when you wanted to, you had to get permission, and you couldn’t bring your family in to show them what you were doing because [IH] was very concerned about industrial espionage.”

One of the best things about his time with IH, said Goering, was meeting his wife, Carol. She was working for the Burlington Northern Railroad, and they met when they both attended a night school class to learn German.

After two years at IH, Goering decided to go back to graduate school at Iowa State to earn his master’s in Agricultural Engineering. He was on leave from IH at the time and could have returned, but a professor asked him to consider going on for a Ph.D. “I had never thought about that,” he said, “so I discussed it with Carol, and we decided to do it.” Goering earned a doctorate in Agricultural Engineering and Engineering Mechanics in 1965.

Upon graduation, Goering took a position with the University of Missouri at Columbia. When he was eligible for a sabbatical six years later, he applied for an opening at Illinois, working for Jack Butler in the Department of Agricultural Engineering. “Because I was in this department for my sabbatical, when a permanent position opened up here a few years later, they asked me to fill it,” said Goering. “That’s how I got to Illinois.”

After joining the faculty at Illinois, Goering initiated research which focused on finding alternative fuels for compression ignition engines. He developed a procedure for measuring engine cylinder pressures and to infer the rate of energy release from fuels. His publication on the procedure won an ASAE outstanding paper award.

During his career, he also served as advisor to more than forty graduate students, and he advised and taught hundreds of undergraduate students.

“One of my responsibilities, which I really enjoyed, was working with undergraduates on research projects,” said Goering. “At one time, every student was required to do one, and it was fun to work with them and show them how to do research. Nine of those projects were good enough to get into national publications, so that was really rewarding.”

Professor as author

Goering also devoted significant time to writing textbooks in his field. “At one point,” he said, “I was teaching the course for non-engineers in engines and tractors. They complained bitterly about the textbook, which was the best one on the market at the time. So I thought I’d try to write a new one. I wrote it long-hand, and it eventually became one of the best sellers in the ASABE textbook series.”

Engine and Tractor Power has been used across the country and translated into Arabic. It has gone through four editions, with Alan Hansen, another ABE professor, as a co-author on the last edition. Goering has co-authored two other textbooks, Engineering Principles of Agricultural Machines, and Off-Road Vehicle Engineering Principles, both of which are still being used.

After retirement, Goering ventured into the area of fiction writing, and has published two mystery novels, Terrorists Meet Professor Grimes, and Professor Grimes in the Cross Hairs.

“Of course, Professor Grimes is an ag engineer,” said Goering. “I never made any money on the novels, but they were still fun to do.”

After retirement, Goering continued to contribute to the department in substantial ways. He worked on the second edition of Agricultural Engineering on the Prairie: Illinois Style, a history of the department, and he served for several years on the ABE Futures Committee, helping to develop Celebrate ABE@Illinois and the ABE@Illinois news magazine.

The Goerings have three children, Laurie, Dan, and Sara. Laurie and her husband Simon live in London with their two children, Grace and Noah, where they work as correspondents for Reuters. Dan is an aeronautical engineer with Boeing in Seattle, Washington. Their daughter Sara and her husband live in Seattle as well, with their two children, Ella and Graham. Sara is a professor at the University of Washington.

The Goerings moved to Seattle in August to be closer to some of their children and grandchildren. “We miss our friends and

continued on page 15
Ehrhardt is Technical Services Manager for Davenport Works with John Deere

Jeff Ehrhardt ’99 AgM has been with John Deere his entire career. Today he is the Technical Services Manager for Davenport Works, but Ehrhardt has worn a number of hats in the company since his graduation from Illinois.

“I came to John Deere Construction as a marketing intern with an international emphasis in 1999,” said Ehrhardt. Shortly afterwards, he left for the University of Nebraska to earn his master’s in Mechanized Systems Management, then came back to Deere and took a position in wholesale finance in a marketing development program.

“After nine months of that, I hopped over to the factory as a manufacturing engineer for about three years,” he said. “Then I went back to marketing, did another marketing rep development rotation.

“After that, I became a territory sales manager for Hitachi. John Deere Construction markets Hitachi-branded construction products in the Americas, so I had sales territory in the northeast third of the United States.”

Career (and family) blooms in Singapore

In late 2005, Jeff and his wife Jenny [Reason] ’02 HDFS moved to Singapore, where Ehrhardt was the manager of commercial operations for Southeast Asia, Oceania, Australia and Southern Africa.

“One of my main projects was delivering 40 motor graders and 40 dozers that were specially modified for the Australian Defence Force,” said Ehrhardt. “I visited bases all over Australia to do operator, maintenance and technical training. I was also in South Africa, Tanzania, and Namibia on a monthly basis for much of the time we lived in Singapore,” he continued. “We were there a little over two years, and we had a great experience.”

The Ehrhardt’s first child, Alexandra, was born in Singapore. “We were really impressed with the medical community,” said Ehrhardt. “They took great care of my wife and daughter. It was so good that when our son, Aiden, was born a few years later, my wife joked about going back to Singapore for his birth. Still,” Ehrhardt admitted, “it was tough being that far away from home with an infant, no close friends, no family, and a fourteen-hour time difference.”

When the Ehrhardts returned to the States, Jeff became the division manager of product support for Hitachi in the Americas, focusing on the mining industry. In his current position with Davenport Works, Ehrhardt leads a team that is responsible for all technical support for Davenport Construction products.

“We’re responsible for product design - making sure that products are designed with the capability to be serviced. We have to be prepared to support them in terms of training, having parts on the shelf and service tools ready to go. After the product launches, we’re responsible for all the technical support in the field.”

Ehrhardt said one of the best parts of his job is working with other Illinois ag mech and ag engineering alumni, including Mark Lemke ’97 AgM, Andy Greenlee ’99 AgE, Ryan Goss ’07 AgE and Derryn Pikesh ’03 AgE.

Ehrhardt said his time at Illinois was “really very practical. I appreciated the agmech focus on accounting, business and technical writing. I enjoyed the core classes the most, but frankly, I probably use the non-core classes more frequently.”

Ehrhardt also appreciated the wisdom Phil Buriak (professor emeritus) shared with his students. “Phil was so focused on real-world experience,” he said. “He pushed me to get an internship, which was not something I’d thought about. And he encouraged me to

continued on page 15
David Larson ‘77 AgM is the Vice President for Product Portfolio Management at CNH (Case New Holland), but he began his career on the family farm. Larson Farms is a large grain and cattle farm located in northern Illinois.

“I graduated from Illinois with a degree in agricultural mechanization and I had a job offer from Monsanto,” said Larson. “I came from a fairly good-sized farm, so I also had the option of going back to work with the family. In addition to Ag Mech I completed flight school at Illinois and graduated with commercial and instrument pilot ratings, so I also thought about a career in flying. At that time my wife and I debated the different options and we decided to go back to the family farm.”

Dave and his two siblings returned to the farm and formed Larson Farms Partnership with their parents. Dave’s brother Norm earned ag related degrees from Illinois and Dave and Norm both have their MBAs from Northern Illinois University. Dave’s sister Lynn and her husband Mike earned ag related degrees from the University of Wisconsin and Mike also has a graduate degree from Illinois.

“I served as manager of financial and equipment operations for a number of years,” he said. “The operation is one of the larger feedlots in the state of Illinois. My time on the farm was spent doing business planning and financial analysis, managing equipment purchases and maintenance as well as managing a number of facilities design and construction projects. We feed out about 7,000 head of cattle and the grain operation is a little over 6,000 acres.”

So how did he end up where he is today? “DeKalb County is a very progressive ag county with a number of large family operations. One of those operations, JP Faivre Farms, was also a family partnership that we often got together with for picnics. Our farm was east of DeKalb, and theirs was west. Four of them attended U of I, and one of them, Steve, was an ag engineer. Through the years, Steve and I would talk about how we could improve our farms through the development or redesign of equipment and software. It went from brainstorming new ideas to actually starting to change things on our two farms.”

Larson and Faivre became founding partners in a number of businesses focused on the development of integrated hardware and software systems which capture, analyze, and utilize data to control and manage field-based machine operations. They did a number of contract development jobs for both CNH and John Deere. For Larson, this work eventually led to a variety of positions at both companies. At John Deere, Larson served as Vice President of Services Development for John Deere Agri Services, Director of Strategic Agri Business Initiatives, and steering committee core member for Deere’s Advanced Technology Group. At CNH, he served as Director of Advanced Farming Systems, General Manager of AFS Services and Vice President of Ag Product Management and Innovation.

Today, as Vice President for Product Portfolio Management for ag and construction equipment at CNH, Larson oversees a team that is “scattered around the world,” he said. “My team helps coordinate between the six product brands that we have in the company, and the multiple engineering teams, to deliver the mix of products that fit the individual brand needs, the region needs, our distribution network, and most importantly, our customer needs. Hopefully, we do this in a way that provides the best return on investment for our company, for our dealers and for our customers.”

In 2011, Larson was chosen as an ABE “Professor for a Day” and he spoke to the faculty, staff, and students on “The Future Global Equipment Market.” Larson addressed a variety of issues, including the requirements for growth in South America, Asia, Eastern Europe and Africa, how the role of an engineer changes in large manufacturing companies, what skills will be required of an engineering manager of the future, how to prepare to be that engineer, and what students can do to prepare for the global market of the future.

Larson said his years as an undergraduate in agricultural mechanization at Illinois had a tremendous influence on him. “I worked for the ag engineering department, and that probably had the most influence on me,” he said. “Since I was going to school full-time, it taught me how to balance my time. I worked on graduate students’ projects, so I learned a lot about research, design, structure,
This year, nine teams of freshman participated in the ABE 100 engineering challenge. A poster competition and presentation was held Thursday, December 15 in the AESB building. Judges from the ABE community ranked each team in a number of categories, and the top teams were recognized with a certificate after their formal presentations in the Monsanto Room.

**Best Poster**
1st place: tie - Teams Aedro and Element 86
3rd place: Energy Efficiency Squad

**Best Presentation**
1st place: tie - Teams Aedro and Veggie-Might
3rd place: tie - Teams Element 86 and the Blue and Orange Commando Squad

**Best Team Name and Logo**
1st place: Element 86
2nd place: Tie - Teams Energy Efficiency Squad, Aedro, Veggie-Might and Tech-9

**Best Overall**
1st place: Aedro
2nd place: Blue and Orange Commando Squad
3rd place: Acetyl-CoA-Team

Special recognition goes to the undergraduate Engineering Lab Assistants (Kim Heinecke, lead ELA; Serena Brodsky and Ryan Gieritz) for their excellent work, and to Anne Marie Boone, who provided key continuity throughout the course. We would also like to thank the College of Engineering for providing additional funding, and our appreciation goes out to all the judges, faculty, staff and graduate students who participated in the competition.

**Following is a brief description of the teams and their projects.**

**Nantechs** (Exploring Nanotechnology in Agriculture) Kwanho Kim, Erica Mui, Latrice Tynes, Dan Wolinsky
Understand fundamental concepts of nanotechnology and investigate its role in agriculture, as well as the societal implications that come along with its use. Spark interest in the field of nanotechnology within the realm of agriculture. Learn about current research on the detection of soybean rust spores.

**Team Smooth Flow** (Rheology of Ground Corn) Jay Alangar, John Altobelli, Doug Blanton, Ary Zhang
Examine the deviations in viscosity with different concentrations of ground corn during an eight-week time period. Analyze the variability in viscosity with a change in speed of the viscometer.

**Element 86** (Radon and Indoor Air Quality) Ashley Jiang, Xi Rao, Niki Adelaja
Identify and analyze radon concentration levels in various locations on campus and recommend mitigation options in the event of unacceptable levels of radon.

**Blue and Orange Commando Squad** (Traction Evaluation) Eric Douglas, Eric Dahlke, Steven Myers, Brian Rife
Determine the ideal distribution of weight by percent for the greatest traction determined by distance on a single pull of a four-wheel drive hydrostatic quarter scale tractor.

**Acetyl-CoA-Team** (Yeast Fermentation) Cory Shyma, Isiah Ramos, Megan Kramer, Pelle Oberg, Sam Ratty
Measure the effects of varying temperature on fermentation of glucose and sucrose in a solution of pre-determined sugar, yeast and nitrate concentrations over a 72-hour period at three different temperatures. Determine the optimum temperature for maximum fermentation of both glucose and sucrose.

**The Energy Efficiency Squad** (Where did the Heat Go?) Sydney Schmidt, Larissa Olson, Lauren Anderson, Timothy Acuff, Elizabeth Bohne
Determine the heat loss due to air infiltration through windows, doors and cracks at a pressure

*continued on page 13*
K.C. Ting Named Recipient of Academic Leadership Award

K.C. Ting, head of the Department of Agricultural and Biological Engineering (ABE) at the University of Illinois, is the first recipient of the James R. and Karen A. Gilley Academic Leadership Award. This award was established to recognize a member of the American Society of Agricultural and Biological Engineers (ASABE) who is currently providing outstanding academic leadership while serving as department head/chair of an ABET-accredited agricultural and biological engineering program in the United States.

Ting’s career has spanned more than 30 years and four prestigious universities, including the University of Houston, Rutgers University, The Ohio State University, and Illinois. Ting has served as department head/chair of the agricultural engineering department at each university and successfully shepherded the transition of all of these programs to include biological engineering. He has also been instrumental in advancing the development of technical systems management programs at both Ohio State and Illinois.

Ting’s international influence is seen in his leadership efforts in helping to connect U.S. institutions and colleagues with their counterparts in Europe, Taiwan, Japan, India, Israel, China, Brazil, and Africa. He has hosted international visiting scholars and served on eight external review teams, chairing three, to evaluate academic and research programs at the college and departmental levels in the U.S., Japan, Taiwan, and China.

Since his hiring as department head of ABE at Illinois in 2004, the ABE undergraduate program has been ranked by US News and World Report as one of the top three programs in the country seven times (including four consecutive years as the top program). The ABE graduate program is currently ranked #1 for the second consecutive year.

As part of his current work at Illinois, Ting leads a team to develop and provide engineering solutions for biomass feedstock production within the Energy Biosciences Institute, a 10-year, $500 million initiative funded by BP.

Ting has received many awards and honors for his work, including Cook College, Rutgers University, Alpha Zeta Professor of the Year; Zhejiang University, Hangzhou, China, College of Biosystems Engineering and Food Science, Guest Chair Professor; and various Best Paper honors and Certificates of Appreciation. Ting is a past recipient of ASABE’s Kishida International Award and was named a Fellow in ASABE as well as the American Society of Mechanical Engineering. His other professional memberships include the American Society of Engineering Education, American Society of Mechanical Engineers, and seven honorary societies.

Yuanhui Zhang named Innoventor Professor in Engineering

The College of Engineering and the College of ACES announced the Investiture of Professor Yuanhui Zhang as the Innoventor Professor in Engineering. Dr. Zhang is a professor and associate department head in the Department of Agricultural and Biological Engineering at the U of I as well as an affiliate professor in the Department of Mechanical Science and Engineering.

The Innoventor Professorship in Engineering was established by Kent and Carol Schien. Kent Schien graduated with a mechanical engineering degree from the U of I, and the University has been the benefactor of the Schiens’ generous support for over twenty years. Mr. Schien founded Innoventor in 1996, and the company is a four-time recipient of the St. Louis Region Top 50 Company award.

Dr. Zhang is internationally known for his innovative research in biomass conversion to energy. Zhang was the first researcher to develop a hydrothermal liquefaction reactor and process that converts 70 percent of swine manure into a crude oil. His work has been widely published in numerous prestigious scientific publications and featured in national and international media.

continued on page 11
The 2011 Solar Decathlon competition was held September 23 through October 1 in Washington, D.C. The Solar Decathlon is a biennial competition sponsored by the U.S. Department of Energy (DOE), which provides the opportunity for universities around the world to participate in one of the most challenging and high profile competitions available.

The University of Illinois was one of twenty collegiate teams chosen for the 2011 competition. Team Illinois designed the Re_Home, a rapid-response solution for a family affected by natural disaster. Re stands for react, respond, reconsider, rebuild, renewable, reinvest.

The University of Illinois participated in the competition in 2007, 2009 and 2011. Xinlei Wang, associate professor in ABE, has served as a faculty advisor in all three competitions. A number of ABE faculty, staff and students were involved in the 2011 competition. Joe Harper, professor in ABE and Steve Ford, ABE research engineer, gave their time and expertise to the project. Two ABE students, Chris Cirone and Sean Denny, were instrumental in the development and construction of the home.

Cirone, a graduate student in ABE, was one of the student leads, acting as project engineer. Cirone was also part of the 2009 team, but said, “This time I played a critical role in management. That was a new hat for me to wear. It was a great experience to work with so many disciplines. We had to work with the architects and the industrial design majors and try to understand what was important to them and what types of things they wanted to incorporate. It was a challenge to blend our design strategies and figure out how to implement them.”

Denny is a senior in ABE and said involvement in the project was an incredible learning experience. “I took Engineering 491, where we started hammering out details of the house. [ENG 491 is a year-long class devoted to the design and development of the solar home. Wang is the professor for ENG 491, and Cirone was his teaching assistant.] But I learned the most during the summer, after the class was done, and work actually began on the house. The majority of us working on the project had never built a house before, so there was a very steep learning curve. It was basically, ‘Here are the specifications and the materials for a fully solar-powered home. You have three months to build it. Go.’”

Denny said one of the main challenges in building the home was knowing that “much of what you build can’t be permanent when you build it the first time. Everything has to be built so that it can be disassembled in a week.”

Re_Home draws largest crowd

The Re_Home is based on the principles of sustainability, flexibility, and ease of construction. It consists of two modules that can be transported on one trailer. Interior spaces include a large central living area that offers natural lighting and innovative storage spaces. The living room leads to a small flexible space for an office that could transform into a bedroom space.

Some of the exterior features of the home include photovoltaic panels that act as a shading canopy across the southern face of the house to protect it from overheating, and exterior paneling made from 60% rice husks, 22% common salt, and 18% mineral oil that can be personalized with different finishes. In addition, the garden space surrounding the exterior allows the family to produce its own food.

The home also employs readily available technological solutions for increased efficiency and comfort. These include a centrally located air-source heat pump with a forced air distribution system to heat and cool the two zones of the living space, and conditioning system fans that exchange interior and exterior air while energy is recovered across the heat-pump refrigeration cycle.

continued on page 9
Team Illinois Shines at Solar Decathlon with the Re_Home

continued from page 8

Like the Olympic decathlon, the Solar Decathlon consists of 10 contests. Five of these (architecture, engineering, market appeal, communications and affordability) are subjective and evaluated by jurors who are experts in their fields. Five are measured (comfort zone, hot water, appliances, home entertainment and energy balance) and the homes must perform to specified criteria. Team Illinois placed first in appliances and tied for first in energy balance. Overall, Team Illinois placed seventh.

“We finished very well,” said Wang, “and we’re very proud of our students. It’s a great project for them, and it’s very good for our campus. Our home was the most popular one. We had more than 22,000 people visit during the eight-day competition, and that’s a statistic recorded by the DOE, not us.”

The DOE provides each school with $100,000 in seed money. Team Illinois raised an additional $480,000. Wang estimates that in-kind support was approximately $90,000, so the total cost for the project was $670,000.

The 60+ member team included students from the College of ACES, the College of Business, the College of Engineering, and the College of Fine and Applied Arts. Other faculty advisors included Mark Taylor, assistant professor in architecture; James Anderson, professor and associate dean in architecture; David Weightman, professor in industrial design; and Sarah Taylor Lovell, assistant professor in crop sciences.

For more information on the competition and a complete list of sponsors, visit the Team Illinois website at www.solardecathlon.illinois.edu.

Larson a Leader for Case New Holland - CNH Global

continued from page 5

and innovation, because that’s what we’d do every day. Someone would come up with some futuristic concept, and then we had to figure out if we could actually build it.

“I also worked with Ag Engineering professor Dr. Jim Curtis. He was one of those individuals who had great attention to detail. He taught me that the little things matter. It did not matter how small the project was that we were working on; I had to do it the right way. It was a great experience.”

Larson’s wife, Robin, is an ACES graduate in fashion retailing and design. She earned her master’s degree in education from Northern Illinois University and taught 2nd grade. She is currently working on a degree in landscape design. They have two daughters, Nikki and Kelly, and a son, Tyler. Nikki works in Denver as financial analyst for Marsh and McLennan, a global insurance brokerage firm. Kelly is a civil engineer and works for the National Highway Administration in Colorado. Tyler is a senior in civil engineering at Illinois.
Faculty, Students and Alumni Honored at ASABE International Meeting

The 2011 ASABE Annual International Meeting was held August 7th through the 11th at The Galt House in Louisville, Kentucky. More than 100 faculty, students, staff and alumni from the Department of Agricultural and Biological Engineering (ABE) at the University of Illinois participated in the event.

K.C. Ting, department head of ABE, was the first recipient of the James R. and Karen A. Gilley Academic Leadership Award. The award was established this year to recognize an ASABE member who is currently providing outstanding academic leadership while serving as department head/chair of an ABET-accredited agricultural and biological engineering program in the United States. Ting was recognized for his outstanding accomplishments and exceptional leadership at both the academic and professional society levels.

Yuanhui Zhang, professor and leader of the Bioenvironmental Engineering Section in ABE, was named a 2011 ASABE Fellow. A Fellow is a member of unusual professional distinction, with outstanding and extraordinary qualifications and experience in the field of agricultural, food or biological engineering.

Jeff Arnold, MS ’83 AgE, was named a 2011 ASABE Fellow. Arnold is a Research Agricultural Engineer at the USDA Agricultural Research Service Grassland Soil and Water Research Laboratory in Temple, Texas, and he was the recipient of the 2011 Distinguished Alumni award in the Department of ABE.

Tony Grift, associate professor in ABE, received a Presidential Citation for extraordinary service and invaluable contributions to the Society, through his visionary and discerning contributions as guest editor of a special “The Farm of the Future” issue of Resource magazine, January/February 2011.

Curtis Weller, Ph.D. AgE ’87, along with Ernest W. Tollner, received a Presidential Citation in recognition of his dedication to the profession as demonstrated by his leadership in authoring and validating questions for the Fundamentals of Engineering examination. Weller is a professor of biological systems engineering at the University of Nebraska-Lincoln and was also named a 2011 Jefferson Science Fellow.

Chad Yagow AgE ’01, was recognized for providing leadership as Chair of the Agricultural Equipment Technology Conference, held in Atlanta, Georgia in January 2011.

Rabin Bhattachari, a Ph.D. graduate student in ABE, was one of three finalists for the Boyd-Scott Graduate Research Award. Bhattachari presented his paper, “Development of a Process-Based Model to Understand Fate and Transport of Cryptosporidium Parvum in the Environment.”

Patricia Paulausky, a junior in ABE, was the winner in the Undergraduate Project Poster Competition. Paulausky’s poster was titled “Work Analysis and Data Collection for Passageway Preference Chamber.” Jason Motsinger, Alexandra Knicker, Ian Moses and Su Jung Lee, all students in ABE, also participated in the competition.

Kimberly Heinecke, a senior in ABE, received the William J. Adams, Jr., and Marijane E. Adams Scholarship. Heinecke is also the 1st Vice President of the 2010-2011 International Preprofessional Council.

The University of Illinois chapter of Alpha Epsilon, the honor society of agricultural, food and biological engineering, was named the Most Outstanding Chapter for 2011.

The Department of ABE was well-represented in the International ¼ Scale Tractor Design Competition, the Robotics Competition and the Fountain Wars Competition.

continued on page 11
There were 11 presentations given at the Conference which were technical papers researched and written for the Energy Biosciences Institute on "Engineering Solutions for Biomass Feedstock Production."


Concurrent Science Engineering and Technology (ConSEnt) for biomass feedstock production decision support: Tung-Chen Liao, Luis Rodriguez, Yogendra Shastri, Alan Hansen, K.C. Ting.


Aeration of baled and chopped Miscanthus in a covered test facility: Tariq Iqbal, Steven Eckhoff, Mary-Grace Danao, K.C. Ting.


Cutting energy for selected bioenergy plant stalks: Phillip Johnson, Clairmont Clementson, Sunil Mathanker, Alan Hansen, Tony Grift.

Biomass yield prediction based on multispectral imagery from a standalone tower remote sensing system: Yu Zhao, Lei Tian, Bin Zhao, K.C. Ting.

Performance evaluation of tower remote sensing system based on simulation and field test: Bin Zhao, Yu Zhao, Lei Tian, F. Gao, K.C. Ting.

Yuanhui Zhang named Innoventor Professor in Engineering

Zhang has made major contributions to indoor air quality research. His team has developed and continued research on aerodynamic filter-less air cleaning and on three-dimensional, near-real-time volumetric particle tracking velocimetry for room air-flow measurement and modeling.

Zhang is also an active and highly motivated teacher. Fifteen doctoral and 14 master’s students have completed their degrees under his supervision, and his textbook, *Indoor Air Quality Engineering*, is widely used in this area of engineering.

Dr. Zhang has received numerous awards, including Fellow of the American Society of Heating, Refrigeration and Air-conditioning Engineers; Henry Giese Structure and Environment Award from the American Society of Agricultural and Biological Engineers; and the Bliss Faculty Scholar and the Everitt Teaching Excellence Award from the College of Engineering at the University of Illinois.
Paulausky Gains New Perspective in Ireland

It took some nudging from her professors, but Patricia Paulausky finally took the International Freshman Engineering Scholarship she received in 2010 and spent a semester abroad in 2011, studying at University College Dublin, Ireland.

“I came to Illinois knowing I wanted to study abroad, so I applied for the scholarship when I was a freshman,” said Paulausky, now a junior in agricultural and biological engineering. “I put off going for a long time, because I'm involved in an ongoing research project and I was very hesitant to leave it.”

But when her professors found her in the lab at 11:00 on a Friday night, “They told me I needed to get away from this place for a while and step away from my research,” she said with a laugh.

According to Paulausky, her professors were right. The semester she spent in Ireland was just what she needed. She traveled extensively around the country and spent two weeks with the family of Eoin White, an Irish exchange student who had been to Illinois to study in Paulausky’s home department of ag and bio engineering.

In her studies, Paulausky worked with a Ph.D. student at Dublin to develop a literature review on anaerobic digestion of food waste systems and took basic engineering classes. “It’s a different learning system there,” she said. “There’s no homework, although you might have one or two projects throughout the semester. The final exam counted for about 80 percent of your grade. You’d think that would be more stressful, but because I didn’t have the pressures of homework and mid-terms, I was better able to learn the material. By the time we got to the final exams, I felt completely prepared, and I went in and aced them all.

“It’s a good system for people who are interested in their work and want to learn,” she continued. “It caters to people who are passionate about what they do.”

continued on page 13
Paulausky Gains New Perspective in Ireland

And Paulausky is definitely passionate about her work. She came home from Ireland and continued her research, designing a system that would detect and record hen movement and direction of movement through test passageways. She won the 2011 Undergraduate Project Poster Competition given by her professional society (ASABE) for her research.

But Ireland has given her a new, more relaxed, perspective on her work. “We're a top engineering school,” said Paulausky, “and it's easy to get caught up in trying to compete. I think Ireland helped me understand it's really about learning. I'm typically a high-strung person and easily stressed out, but now I'm trying to take things one step at a time. I know I can succeed and still maintain my sanity.”

Left: After hiking around the Giant's Causeway in Bushmills, County Antrim, Northern Ireland, Paulausky looks out over the North Atlantic Ocean.

ABE 100 Provides Challenges for Freshmen

difference of -50 Pa in a local house on a given day in the fall season. Evaluate the thermal performance of the house to identify the weak insulation areas and provide recommendations to reduce heat loss in the house.

Veggie-Might (Vegetative Buffering) Savana Savage, Marissa Kastner, Zachary Schneeweis, Matt Stoklosa

Research various erosion control products to understand their applications, how they vary from one another, their installation, and their use. Decrease erosion along the bank of the pond using current supplies of seed and erosion control blankets.

Tech 9 (Photoluminescence using Ramen Spectrometer) Michael Louie, Alvaro Rodriguez, Joe Ward and Ashley Young

Discuss the potential of nanotechnology and explain its applications in multiple fields. Use photoluminescence system on silicon and III-V material to demonstrate material characterization ability applicable for potentially new glucose sensors.

Aedro (Evaporative Cooling Systems) Charles Murray, Kendra Zeman, Joe Kline and Olivia Webb

Build a self-hydrating evaporative cooling demonstration unit with a streamlined design that can be moved as a single unit. Determine cooling of the building evaporative cooling unit at various airflow rates, based on temperature and relative humidity.
Researchers at the University of Illinois are preparing to develop an educational and research facility that will be used to demonstrate the process of converting swine manure and algae into crude oil.

Lance Schideman, an assistant professor in the Department of Agricultural and Biological Engineering (ABE) at Illinois, has done significant research in the area of integrated algae systems for water purification and biomass production. Yuanhui Zhang, also a professor in ABE, has spent almost a decade researching the conversion of swine manure into crude oil. Now they have combined their efforts to develop a system that will use biowaste such as swine manure to grow algal biomass, purify wastewater, recycle nutrients, capture carbon dioxide and produce biofuels.

"With this system, we will first convert swine manure into crude oil in a hydrothermal liquefaction (HTL) reactor," said Schideman. During HTL, high moisture biowaste is subjected to elevated temperatures and pressures in order to break down and reform the biowaste into a crude oil. The conversion mimics the natural geological processes that produced our current fossil fuel reserves and allows for the conversion of a wide range of feedstocks.

"The resultant wastewater contains nutrients, such as nitrogen and phosphorus, which can be used to grow algae," said Schideman. "These fast-growing algae will remove the excess nutrients and capture carbon dioxide. The algae will then be fed back into the HTL reactor to be converted into additional biocrude oil." Schideman said that the first stage of the project should allow them to produce up to two gallons of crude oil per day, using manure and algae grown on site. A second phase is also being planned that will produce up to two or barrels of oil per day.

Schideman said that while they have shown that all parts of this process are viable, "we haven't brought them together in one continuous process, so that's the main goal of the current project."

**E² Energy both viable and sustainable**

Zhang said the research theme is called Environment-Enhancing Energy, or E² Energy, because it is an effort to meet the challenge of energy production in a way that is both economically viable and environmentally sustainable. "This synergistic process is extremely advantageous," said Zhang, "because it brings together two rivals, energy production and environmental protection, to complement rather than compete with one another."

The new facility will be located at the Swine Research Center (SRC) on the U of I South Farms, where they will renovate the currently unoccupied swine isolation building. It will be developed in collaboration with the Department of Animal Sciences.

"Right now, Animal Sciences has about 3,000 pigs at the SRC, and the manure lagoon is currently discharged to the local sanitary sewer at significant expense," said Schideman. "One immediate benefit for them would be a substantial reduction in their sewer bill, but hopefully, the longer term benefit would be value-added co-products from their residuals management systems."

Ultimately, Schideman said they hope the laboratory will become a cutting-edge facility for applied research and education on novel processes that convert agricultural residuals into valuable bioenergy and biochemical resources, while also providing significant environmental benefits. "We are developing strategic partnerships with stakeholders including producers, equipment manufacturers, academics, extension specialists and co-product end users, to maximize the impact of this new research and extension facility," said Schideman.

Schideman and Zhang are co-PIs on a grant sponsored by the Illinois Sustainable Technology Center (ISTC) for characterizing water quality impacts of algal wastewater treatment combined with hydrothermal liquefaction. Additionally, Schideman has received a Focal Point grant from the UIUC graduate college for building interdisciplinary research capabilities in algal biomass and bio-products.

For more information, please visit Environment Enhancing Energy, or UIUC Illini Algae.
Goering enjoys retirement in Seattle

continued from page 3

activities in Urbana, but we try to stay in touch by e-mail,” said Goering, “and we also signed up for the Big Ten network, so we’ve been able to keep up with Illini sports. Some Illinois friends have come to visit,” he continued, “including the Paulsens and the Coddingtons. We hope others will come from Illini country to see Seattle. We always have a spare bedroom to accommodate them!”

Carroll, with three of his four grandchildren

Erhardt is Technical Services Manager for Davenport Works with John Deere

continued from page 4

study abroad. I was fortunate to spend a semester in Argentina and take a trip to South Africa over Christmas break. That certainly influenced my career, as much of it has involved foreign travel. And my favorite Buriak-ism? “It’s far better to beg for forgiveness than ask for permission!”

Outside of work, Ehrhardt says his main focus is spending time with his family. They are very involved with their church, where Jenny is the volunteer coordinator of the children’s ministry. They live outside of Moline, a mile from the Mississippi River, and enjoy boating and wakeboarding.

Jeff and Ali in Singapore

Save the Date for Celebrate ABE@Illinois 2012 on September 7th & 8th. Keep an eye on our website for updates.
Agricultural and Biological Engineering
338 Agricultural Engineering Sciences Building
1304 W. Pennsylvania Avenue
Urbana, IL 61801

Integrating life and engineering for the enhancement of complex living systems

- Soil & Water Engineering
- Off-Road Equipment Engineering
- Bioenvironmental Engineering
- Food & Bioprocess Engineering
- Biological Engineering