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# Letter from the Chair

Dear Alumni, Friends, and Colleagues,

It is my honor to share this newsletter with you to highlight some of the contributions being made by our students, alums, staff and faculty. Dr. Janis Terpenney, who had been our department chair since 2011, left in August. Thank you Janis, for your guidance, energy and enthusiasm that helped move our department forward on many fronts. I was asked by Dean Sarah Rajala to lead the department as we conduct a search for the new department chair, and gladly accepted the opportunity.

The new chair will be the inaugural holder of the C. G. "Turk" and Joyce A. Therikildsen Department Chair in Industrial and Manufacturing Systems Engineering. I have enjoyed getting to know Turk and Joyce over the last two years when they visited our department and I visited their company in Illinois. Their generous support established this endowed chair position which will help recruit a high quality candidate for this position now, and in perpetuity. Thank you, Turk and Joyce.

On page 13, there is a list of our friends that have recently supported our department. Speaking from my 19 years of experience in the department, this support really does make a difference. It has allowed us to develop new laboratories, support student travel to conferences, award scholarships, attract high quality graduate students and kick start the careers of new faculty, to name a few benefits. Thank you.

It has been exciting to hear the entrepreneurial endeavors of our alums. Some examples include companies that build automation and software solutions, a math tutoring camp, and healthcare system improvement consultants. Another example is highlighted on page 10; CB Solar is one of the 20 largest companies in the U.S. in terms of commercial installations.

One of the biggest changes in the department has been the size of our student body. I have witnessed an increase in student numbers nearly every year since I started in IMSE in 1996. In 2000, we had 216 undergrads and 108 graduate students. By 2010, these numbers increased to 241 and 112, respectively. This semester, the official count taken on the tenth day of the semester was 514 undergraduates and 207 graduate students. As I write this letter, the undergraduate body has increased to 630 as undeclared engineering students select a major and other engineering students 'discover' industrial engineering. We have been able to accommodate this growth through more efficient scheduling, additional faculty and support staff, new laboratory equipment, larger lecture sections, more graduate teaching assistant support for faculty, and additional teaching assistants to offer more laboratory sections. Our use of graduate students to teach lecture classes is still very limited; on average of less than one section per year. Even though we are graduating more students, hiring percentages for internship and full-time positions has remained the same. There were 365 companies at the fall career fair, with about 1/3 of them seeking industrial engineers.

The increase in graduate students is due to a couple of factors. As mentioned, we are providing more teaching assistantships, as well as more research assistantships to support our growing research portfolio. The growth also originates from off campus students pursuing coursework only Master's degrees in IE, Systems Engineering, and more recently Engineering Management. We pride ourselves on delivering a high quality education, and we are striving to maintain this quality through our continuous improvement efforts.

To accommodate this growth, we have changed our model for the Senior Capstone Design Course. We are proud of the fact that all of the projects are sourced from industry to provide students with problems that have realistic constraints and expectations. However, instead of asking one or two companies to provide projects for the entire class, this semester 14 companies provided 12 projects. We have had a third party determine the impact of the projects; last year the average was well over \$100,000. If your company is interested in participating, please contact me.

This year we look forward to successful searches to fill the Department Chair position as well as a new faculty position in advanced manufacturing. We are hosting a review committee in the spring which is required by the Board of Regents. This will provide us and our new chair with valuable information on how to improve our operations.

Please open the pages to see what else has been happening, and more importantly stay in touch with your Department of Industrial & Manufacturing Systems Engineering. If you find yourself to Ames, I would be honored to show you more of what we have been working on.

Take Care,  
Frank



Frank Peters  
Interim Department Chair and Associate Professor



## On the cover

**Matt Frank**, associate professor of industrial and manufacturing systems engineering, developing a hybrid manufacturing method that combines 3D printing of metal with CNC machining.

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## ISU alumni make gift for endowed department chair

An Iowa State University alumni couple has made a generous gift to establish the C. G. "Turk" and Joyce A. Therkildsen Department Chair in Industrial and Manufacturing Systems Engineering.

An endowed department chair will have a substantial, permanent impact for the Department of Industrial and Manufacturing Systems Engineering. The position honors the holder as it provides an ongoing source of funding to support high-level priorities and emerging opportunities that fit with the chair's strategic plan.

"The timing of this gift could not be more opportune," said Sarah A. Rajala, dean of engineering and the James L. and Katherine S. Melsa Professor in the College of Engineering.

"The support and prestige represented by a named chair will help attract an exceptional new leader for the department just at a time when Janis Terpenny, who had been chair, recently left Iowa State for another position. This is an excellent example of the impact alumni can have when they choose to give back in such a generous and lasting way," said Rajala.

**Charles George "Turk" Therkildsen** graduated with a degree in industrial engineering, and **Joyce Arlene McEwen Therkildsen** graduated with majors in zoology and physical education. Graduating together from Iowa State in 1960, they have chosen to remain members of the class of 1959. Turk Therkildsen is president and CEO of Industrial Hard Chrome in Geneva, Illinois.

"When we returned to campus a year ago, we were impressed by the quality of the department, especially the hands-on laboratory opportunities, which will vastly shorten the learning curve on that all-important first employment opportunity. We applaud the administrative leadership of Janis, who played a key role in achieving that excellence," said Turk Therkildsen. "We are delighted to make a gift that will ensure the same capable leadership continues in the future."



*Left to right: Turk and Joyce Therkildsen, Janis Terpenny, former IMSE department chair; and Frank Peters, IMSE interim department chair.*

Said Terpenny, who held the Joseph Walkup Professorship in Industrial and Manufacturing Systems Engineering, "It has been my honor and privilege to work with Turk and Joyce on this transformative gift. It has been wonderful to learn about their time at Iowa State ... truly, a love story and testament to what a great education, hard work, and entrepreneurial spirit can do."

Said **Frank Peters**, who is serving as interim department chair, "An endowed position at this level will support scholarships and fellowships, innovative curriculum, new areas of research, and equipment upgrades – and help hire and retain top-level faculty. This gift will increase the department's ability to further pursue significant work and prepare leaders in our field."

Besides the ability to help attract a high-quality candidate for the chair position, the gift will provide immediate benefit as Peters will begin to use proceeds to support department innovations this year.

The endowed department chair was established with a gift made through the Iowa State University Foundation, a private, nonprofit corporation dedicated to securing and managing gifts and grants that benefit Iowa State University.

## Frank Peters serving as IMSE interim chair

College of Engineering Dean Sarah Rajala has named **Frank Peters**, associate professor of IMSE, interim chair of the Department of Industrial and Manufacturing Systems Engineering. The appointment follows the retirement of Janis Terpenny and will continue until a permanent chair has been chosen.

Peters is looking forward to keeping the department strong. "The department is on a good trajectory thanks to the leadership we've had from previous chairs," says Peters. "My goal is to keep this ship going in the right direction."

An added responsibility this year will be managing the Iowa Board of Regents Academic Program Review.

Peters has led a number of departmental improvements during his time at ISU, including the developing three of the required courses in the core IE curriculum and working with industry to create sales engineering courses and a minor program. Since 1999, he has been instrumental in sharing five manufacturing laboratories with mechanical engineering to allow both departments access to more equipment when needed.

Peters is also the program coordinator for ISU's study abroad partnership with the University of Limerick. He received the College's Superior Engineering Teacher Award in 2012.

Some of his research highlights include manufacturing systems improvements in the metal casting industry and for wind turbine blade manufacturing. Peters is also assistant director of Iowa State's Industrial Assessment Center.

*Contributed by ECR*



## Rivero honored for her contributions to manufacturing and design

**Iris Rivero**, associate professor and director of graduate education of industrial and manufacturing systems engineering, was recognized for her service in manufacturing and design at the 2015 Institute of Industrial Engineers Annual Conference and Expo. Rivero received the Manufacturing and Design Division Outstanding Service Award, which recognizes contributions to and leadership in public and community matters, the Manufacturing and Design Division, the manufacturing engineering profession or the manufacturing industry.

Rivero received the award at the Honors and Awards Banquet during the conference.

*Left: IIE President James E. Moore (left) and President-elect and CFO Michael Foss (right) present the Manufacturing & Design Outstanding Service Award to Iris Rivero.*

## Wang selected as PSI Scholar



Wang

The Plant Sciences Institute (PSI) awarded funding to investigators in three colleges, including **Lizhi Wang**, associate professor in industrial and manufacturing systems engineering, in an effort to stimulate high-risk, high-reward research in the plant sciences.

The awards are part of the Plant Sciences Institute's Faculty Scholars program. The new initiative was spearheaded by PSI director Patrick Schnable and takes a different approach than a traditional internal

seed-grant program. Instead of funding specific research projects, the program will invest \$2 million annually to provide investigators with flexible funding they may use in a variety of ways — salaries, acquisition of equipment, seminar support, consulting fees and other related expenses — to engage in innovative and high-risk research that may lead to important breakthroughs in PSI's focus area of predictive phenomics.

Predictive phenomics is a complex and rapidly emerging discipline in which scientists attempt to understand in detail the effects of plant genotype (genetic makeup) and environment, and the interaction between the two, on plant phenotype (traits). That understanding will lead to the development of better predictive models for plant breeding.

With the funding, Wang plans to increase the efficiency of plant breeding using systems engineering and optimization approaches. He says creating new plant breeding strategies will lead to faster and more affordable solutions for critical genetic improvements.

"The application of systems engineering to plant science is an emerging and potentially fruitful area," he said.

## Ryan elevated to IEEE Senior Member



Ryan

**Sarah Ryan**, professor of industrial and manufacturing systems engineering, has been selected to be an Institute of Electrical and Electronics Engineers (IEEE) Senior Member. IEEE Senior Membership is an honor bestowed only to those who have made significant contributions to the profession. Senior Members are recognized for their technical and professional excellence, and are eligible to hold executive IEEE volunteer positions and to refer and review senior membership applications.

IEEE is the world's largest professional association dedicated to advancing technological innovation and excellence. Only 7 percent of IEEE members attain the level of senior member, which requires 10-plus years of professional experience and significant contributions, achievements, publications and course development or technical direction in IEEE-designated fields.

## Ryan appointed to editorial board of IEEE journal

Ryan was also selected to be a new editor of the journal *IEEE Transactions on Power Systems*, published by IEEE. The mission of the *IEEE Transactions on Power Systems* is to serve the whole Power System community, including researchers, practitioners, educators and students, by publishing and disseminating insightful research results of lasting value. The journal is published by the Power & Energy Society of IEEE and has an Impact Factor of 3.53.

In addition to Ryan's new position on the editorial board, both Ryan and Bokan Chen, a PhD student in IMSE, were honored as Outstanding Reviewers of 2014 for the journal.

## Wind Energy Manufacturing Laboratory partners with National Renewable Energy Laboratory in nationwide advanced composite institute

Engineering researchers will provide expertise on designing wind blades for manufacturability as part of a new manufacturing innovation hub announced by the White House.

The U.S. Department of Energy recently selected a collaborative research team that included Iowa State University for a large initiative focused on advanced composites.

The White House announced the new Institute for Advanced Composite Manufacturing Innovation (IACMI) on Jan. 9, noting that the Department of Energy and a consortium of 122 companies, nonprofits, and universities will invest more than \$250 million – \$70 million in federal funds and more than \$180 million in non-federal funds – into the institute.

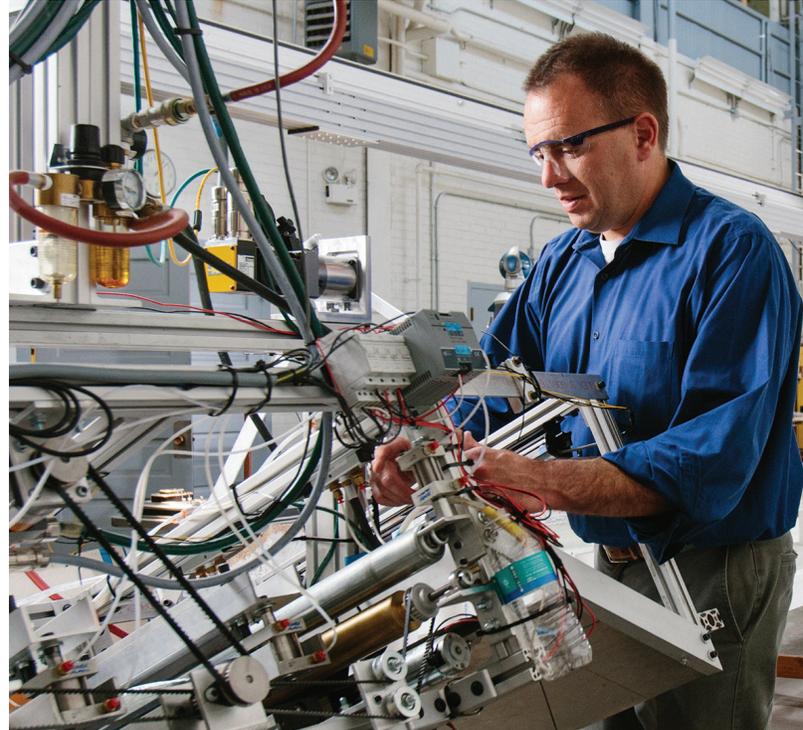
IACMI is part of President Barack Obama's National Network for Manufacturing Innovation (NNMI), which is being created to strengthen the resurgence of American manufacturing.

Advanced composites are becoming more integral to many products because of their strength-to-weight advantage.

Iowa State's Wind Energy Manufacturing Laboratory, in partnership with the National Renewable Energy Laboratory, will be researching how to incorporate advanced composites, specifically carbon fiber, into wind blade manufacturing.

**Frank Peters**, who is the interim department chair and an associate professor of industrial and manufacturing systems engineering and a lead researcher in the Wind Energy Manufacturing Lab, is looking at ways to reduce the variability in wind blade manufacturing through automated methods. While he's currently working with fiberglass, he says efforts to effectively utilize carbon fiber will be a game-changer for the alternative energy source.

"Carbon fiber will allow for blades that are lighter and eventually enable wind energy production at a lower cost," he explained.



*Frank Peters works in WEML. Photo by Dan McClanahan.*

Sarah Rajala, dean of Iowa State's College of Engineering and James and Katherine Melsa Professor of Engineering, said, "We are looking forward to working with NREL – one of the leader's in wind energy – and the other members of this multistate team. Advanced composites are going to play a significant role in the future of American manufacturing, and we're excited to be a part of that movement."

*Contributed by ECR*

## CoE faculty grants funded by Leopold Center

The Leopold Center for Sustainable Agriculture has awarded grants to 17 innovative research and demonstration projects that promise to move agricultural production toward greater sustainability while improving Iowa's soil and water resources.

One of these grants was awarded to **Caroline Krejci**, assistant professor of industrial and manufacturing systems engineering.



**Krejci**

Krejci's project will examine supply chain management for Iowa regional food systems.

Other projects will provide new knowledge on soil health, specifically how phosphorus moves under different cropping systems and how certain changes deep below the surface (given the prevalence of minimum-tillage systems) could make soils more resilient during drought or after heavy rainfall. Projects will also explore alternative systems for biomass production, growing fruits and vegetables, or providing habitat for native pollinators.

The 17 new grants, totaling \$1,031,853, fall under all four of the Leopold Center's research initiatives – Ecology, Marketing and Food Systems, Policy and Cross-Cutting.

"Natural systems are highly complex and diverse, and these projects will help us better understand this diversity so that we can use some of those principles to improve agricultural production and our food system in Iowa," said Leopold Center director Mark Rasmussen.

*Contributed by The Leopold Center*

# Cameron MacKenzie: Planning for large-scale disruptions

Twelve years ago, **Cameron MacKenzie** didn't know much about the industrial engineering field. He was in Washington, D.C., working as a consultant in the areas of defense and homeland security for former Defense Secretary William Cohen.



**MacKenzie**

At the time, MacKenzie, who is now an assistant professor for Iowa State's Department of Industrial and Manufacturing Systems, says the government was establishing the Department of Homeland Security and asking questions about how to make the best-informed decisions given the varying levels of threats to the country.

"I thought this question of thinking about all the different risks to the nation and the best ways to protect against them was fascinating," he says. "That's when I started learning more about the field of decision and risk analysis, where you use mathematical models to answer complex questions. As I started studying this area, I realized we can use good methods to make decisions, whether we are encountering organizational, government or personal decisions. Figuring out the right methods and helping people to follow them makes this field valuable."

MacKenzie's work uses operations research models to study applied problems in risk and decision analysis with a particular emphasis on large-scale disruptions. He has implemented these models to study the economic impacts of Hurricane Sandy, the 2011 Japanese earthquake and tsunami, and the Deepwater Horizon oil spill. He also develops resource allocation models to prepare for these types of disruptions and help economic regions recover from them.

His models bring together simulation, optimization, dynamic programming and multi-attribute value theory to provide decision-makers with solutions.

"We're building these plans so organizations can remain resilient in a variety of situations," MacKenzie adds. "This work really gets to the heart of what industrial engineering is about – working on practical problems to improve businesses, government, communities and healthcare systems."

MacKenzie will be teaching courses on engineering risk analysis and engineering economy. He hopes to demonstrate to students the value of having processes and step-by-step ways of making decisions so they can use that approach in their professional and personal life.

"I'm excited about interacting more with students on a regular basis, helping them learn and providing advice for their future career plans," MacKenzie says. "I am also looking forward to the opportunities to do research with students and mentor them in that capacity."

MacKenzie's educational background crosses several disciplines with each degree guiding him to his latest role in academia. Starting in 2001, he earned a B.S. in mathematics with a computer science option and a B.A. in history and French from Indiana-Purdue University at Fort Wayne. He then earned an M.A. in international affairs from The George Washington University (2003) and an M.S. in management science and engineering from Stanford University (2009). In 2012, MacKenzie completed his Ph.D. in industrial engineering from the University of Oklahoma.

Before coming to Iowa State, he was an assistant professor in the Defense Resources Management Institute at the Naval Postgraduate School. In this position, he taught analysis, decision-making, and risk management to military officers and defense civilians in the United States and allied nations.

*Contributed by ECR*

## Kimbra Bader: Finding the right fit with industrial engineering



**Bader**

When **Kimbra Bader** came to Iowa State, she knew she was going to study engineering. What she didn't know was whether she'd be able to continue her talent for music while also pursuing internships and other leadership opportunities. Now well into her senior year, she says balancing extracurricular activities led to some of her favorite memories as a college student.

As a member of the Iowa State University Cyclone Football 'Varsity' Marching Band, Bader got to attend two bowl game trips, and she also participates in Kappa Kappa Psi, a music service fraternity.

"I'm really proud of being involved in both engineering and music," she said. "Starting at Iowa State, I was unsure if I could balance all the demands of being an engineering student with staying involved in music. I am so happy I chose to participate in the marching band right away and continue to get involved with the band program here at Iowa State, all while continuing my engineering education. I have met some of my best friends in the bands, and I believe my experiences have made me a better engineer."

## Janusz named Spring 2015 student marshal

**Olivia Janusz**, industrial engineering major and concurrent master's degree student, served as College of Engineering student marshal during the Spring 2015 commencement ceremony. She was accompanied by Richard T. Stone, associate professor of industrial and manufacturing systems engineering, as she led the engineering class into the ceremony held May 8.

The Wilmette, Illinois, native has been involved in the industrial engineering department throughout her adventure at Iowa State. She has been active in the Institute of Industrial Engineers as outreach chair, executive vice president and president. She also has been an industrial engineering ambassador and a peer mentor for the freshman learning community. Other activities include Alpha Pi Mu, WiSE and being a student role model. Additionally, Janusz spent a semester studying Spanish in Seville, Spain.

Research and internships kept Janusz busy, including an honors project on potato peeler design. Her current research in the master's of science program focuses on the ergonomics and design of kitchen utensils. Her internships have spanned Frito Lay and the Boeing Company. While at Frito Lay, she researched how the shape of a Dorito affects the quality of seasoning on the chips and how to increase flat chip design in the future. Last summer, she learned about the aerospace industry working on Boeing's 787 Dreamliner production line, where she improved the vertical tail fin assembly process to be more efficient and ergonomically friendly. Janusz has also served as a teaching assistant.

"In my time at Iowa State, I have had the privilege to learn from an incredible faculty in the IMSE department and collaborate with passionate students throughout the college," Janusz said. "I am thankful for the amazing opportunities I have been given, which have taught me to never stop pursuing your dreams and always keep an open mind. I cannot wait to see what the future holds for the ISU engineering graduates of 2015, and I am truly honored to represent this group."

Janusz worked as an intern for 3M this past summer as a human factors engineering intern and is now continuing her master's studies.



*Olivia Janusz and Rick Stone at the Spring 2015 commencement ceremony.*

*Contributed by ECR*

## Swailles named Fall 2014 outstanding senior

**Aaron Swailles**, of Riverside, Iowa, was given honorable mention for the College of Engineering student marshal nomination as an outstanding senior and graduated with a degree in industrial engineering and minor in entrepreneurial studies.

While at Iowa State, he was selected to attend the Okoboji Entrepreneurship Institute in 2013 and also worked at three internships. He was a manufacturing engineer at Schneider Electric Square D Co., where he designed and installed a rework process to save more than \$75,000 annually. Swailles also worked in Southeast Asia in the Global Business and IPACT program to spearhead a new branch market analysis for a small company, and he interned for Procter & Gamble and implemented a new quality control tool for three manufacturing lines. He participated in Freshman Leaders in Engineering, Engineers Without Borders and Alpha Pi Mu honor society. He also enjoys coaching youth basketball and spending time at the Matthew House in Ames. After graduation, Swailles will be working for Schreiber Foods in West Bend, Wisconsin, as a team adviser.



**Swailles**

*Contributed by ECR*

***"The (industrial engineering) discipline focuses on the process side of engineering, where you can work and communicate with a variety of people. It seemed like a better fit for me."***

Bader also gained leadership experience in The Engineering Ambassador and Mentor Program (TEAM), where she has served as president for two years.

The program's impact on her career started her freshman year. Originally selecting the same discipline as her brother, who is an aerospace engineer, Bader says giving prospective student tours for TEAM helped her learn about other options. "During the tours, I talked about the majors in the College of Engineering, and that's when I learned about industrial engineering. The discipline focuses on the process side of engineering, where you can work and communicate with a variety of people. It seemed like a better fit for me."

After switching to industrial engineering, Bader was selected for a manufacturing engineering internship with Caterpillar. It was an opportunity she was a little unsure of until she started working on the production and factory floors.

"I loved seeing the machines being built as well as working and talking with the operators and engineers. Something was always happening, every day was different."

Bader interned at Caterpillar for two more years in various departments. During her last internship, she was given a project to build a virtual model of a wheel-loader that will be built across the world in the future. Her project outlined every step of the build process to make the build transition process easier. To conclude the internship, she traveled with her team to China to share the models.

She will continue working with Caterpillar after graduation in an operations leadership and manufacturing engineering role, which is a three-year rotational program. She looks forward to trying out three diverse jobs to figure out where she would like to end up in her career.



*Daniel Van Groningen was the first student to complete the 4+1 program with Wartburg. He is now a graduate student and teaching assistant for IE 248 at Iowa State.*

## Wartburg, Iowa State University partner on 4+1 engineering program

Wartburg College students interested in a master's degree in industrial engineering can begin earning credits toward that end the summer after their junior year, thanks to a partnership with Iowa State University.

The "4+1" cooperative program will allow students to earn a bachelor's degree in engineering science from Wartburg and a master's degree in industrial engineering from Iowa State in just five years.

"It is a real value-add for our students to have the opportunity for advanced degree study in a time frame that is not much different than what it would have taken them to get a bachelor's degree if they had gone to another institution," said Daniel Black, professor of physical science and engineering.

To make this happen, Wartburg students will begin a graduate-level research project through Iowa State the summer between their junior and senior years. Some senior-level coursework will be substituted with graduate-level online courses from Iowa State.

**Iris Rivero**, director of industrial engineering graduate education at ISU, said the partnership mirrors an internal program that has already experienced great success.

"This is a great way make students more aware of the opportunities available in STEM disciplines and introduce them to research opportunities at the critical time when they are ready to make that career decision," she added.

**Daniel Van Groningen** followed the accelerated track at Wartburg, even though the agreement was just finalized. He graduated from Wartburg in May 2015 with several graduate courses already complete.

"I jumped at the chance to knock out some graduate-level courses while finishing up my undergraduate studies and still playing basketball," he said. "My course load was fairly heavy, but I know the push I made will pay off and benefit me in the long run."

*Contributed by Wartburg College News*

## Industrial engineering graduate student learns about continuous improvement

While she was working as a quality control technician at BASF, **Cheryl Khoo** was given a major improvement project that helped her realize her interests spanned beyond chemical engineering. She says the project required her to track all non-conformance aspects of production to measure the company's operational accuracy.

"I thought learning about accuracy was really fun. I got to identify and track every point that did not go right, and then investigate and eliminate all of the root causes of the manufacturing variability."

Khoo earned her bachelor's in chemical engineering from Iowa State in 2012. She is expanding her knowledge of the continuous improvement process as a master's student in industrial engineering.

She says the program solves different problems and has introduced her to a more business-like perspective. "Industrial engineering focuses on other aspects, such as budgeting and management. We didn't talk about these things during my undergraduate degree, so it's a new challenge to take on."



**Khoo**

When she's not studying or in class, Khoo works as a graduate assistant at the Nanovaccine Initiative, where she assists with grant admissions and research compliance, coordinates researchers from across the country, plans and hosts seminars, webinars and events, and maintains the group's website.

Khoo initially came to Iowa State because she wanted a slower lifestyle than the one she experienced in her home country of Malaysia. Now in Ames, she has enjoyed meeting people from across the world, including fellow Malaysians she had never met before coming to the United States. "It's interesting to interact with so many different countries and assimilate into American life. Staying in Malaysia would not have given me this experience," she said.

In the future, Khoo plans to apply continuous process improvement in six sigma projects or in quality management. She also enjoys trying different types of coffee and brewing methods as a stress reliever, as well as home improvement projects and traveling.

*Contributed by ECR*

## Student honors and awards

### Graduate research excellence awards

#### Fall 2014

**Yonghan Feng** - *Research Excellence Award*

#### Spring 2015

**Bokan Chen** - *Research Excellence Award*

**Leilei Zhang** - *Research Excellence Award*

**Mostafa Fawzy** - *Research Excellence Award*

**Kathryne Schomburg** - *Research Excellence Award*

**Mohammad Rahdar** - *Research Excellence Award*

**Benjamin Jacobson** - *Teaching Excellence Award*

**Heidi Laabs** - *Teaching Excellence Award*

### IE student's honors presentation chosen as best in College of Engineering

Members of the College of Engineering Honors Program Committee evaluate Engineering Honors Program members' honors project poster presentations at the University Honors Program poster symposium. The best-reviewed presenter each semester is awarded a \$250 scholarship from the College of Engineering.

The Fall 2014 engineering capstone presentation selected as best among its peers was by **Michelle Voelker**, now graduate student in industrial engineering: Variations in Resume Design (mentor Dr. Charles Kostelnick, English).

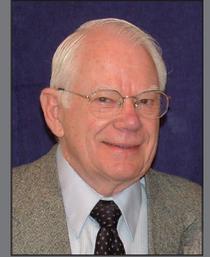
### Rufer chosen for inaugural class of Vermeer leadership program

**Arlette Rufer**, junior in industrial engineering, was one of 18 students selected by Iowa State University to make up the inaugural class of a new leadership opportunity for students for the 2015-2016 academic year, sponsored by Vermeer Corporation, a global industrial and agricultural equipment company.

Following their application, 54 students proceeded to the interview process managed by University faculty in the Leadership Studies Program, coordinated by the Catt Center for Women and Politics. The Vermeer International Leadership Program is an immersive experience that enhances academic endeavors that includes specialized coursework and training in leadership and its societal and global impact, mentoring from high-level business leaders, a visit to an international Vermeer Corporation location and a \$2,000 scholarship.

## McGee receives Order of the Knoll Faculty and Staff Award

**Thomas D. McGee** (BSME'48, BSMSE'48, MSIE'58, PhDMSE'61) received the Order of the Knoll Faculty and Staff Award from the ISU Foundation. The award recognizes individuals currently employed or retired from Iowa State University who have provided dedicated and long-term professional and volunteer service and creative leadership to the ISU Foundation and Iowa State through the advancement of philanthropy. This award recognizes those whose involvement with the university and the foundation has been lasting and made a substantial impact in promoting and expanding philanthropy that supports Iowa State.



McGee

During a career at Iowa State that spanned decades, McGee molded the minds of many in the Iowa State University College of Engineering. Throughout the years, he consistently pushed the boundaries of science to discover new ways to make a difference.

Those who knew him as Professor McGee understood his dedication to the field and to his students, and learned from him the integrity of doing good work. McGee taught both undergraduate and graduate courses, introducing new theory and concepts based on his research. He also served as a student advisor and mentor, offering guidance well past graduation. He was the faculty advisor for more than 100 graduate student committees.

McGee is internationally recognized as an expert in temperature measurement, refractories, glass science and technology, biomaterials and design with brittle materials, and has testified as an expert witness many times. Additionally, he has served as a consultant and garnered financial support for his work from the U.S. Army, the U.S. Air Force, the National Science Foundation, the Defense Advanced Research Projects Agency, and industry.

McGee continues to contribute to biomedical engineering through new advances. He invented an artificial bone – a biologically active ceramic-ceramic composite he calls an osteoceramic – equivalent to an autograft taken from a patient, and has nine granted or pending patents for surgical applications.

McGee has supported Iowa State University for nearly 25 years, impacting many areas of campus, including engineering, veterinary medicine, the arts and more. He created the McGee-Wagner Interdisciplinary Research Fund to bring together scientists from multiple disciplines to work together and push the boundaries of discovery.

Over the years, McGee has collected many accolades for his work, including the Outstanding Professor in Ceramics Engineering Council Award in 1983 and the Greaves Walker Award from the National Institute of Ceramic Engineers in 1991.

Additionally, he was named a fellow of the American Ceramic Society in 1979, a fellow of the National Institute of Ceramic Engineers in 2000, and an Outstanding Engineering Educator by the Engineering Student Council in 2001.

McGee is active in the Ames community, where he lives with his wife, Dorothy. He served as president of the Kiwanis Club of Ames from 1993-94, the Ames Choral Society from 2005-06, ACTORS community theater from 2001-03, and acted as the United Campus Christian Ministry Chair in 1969.

McGee is a member of the Order of the Knoll President's Circle and Campanile Society. He is also a lifetime member of the Alumni Association.

*Contributed by ISU Foundation*

*Tyler Bacon and Ben Wollner stand in front of solar panels at CB Solar.*



## IE alums from CB Solar add solar power to campus

The company that helped Iowa State install a couple of 8 X 60-foot solar panel arrays on the east side of campus has ties to the university's Department of Industrial and Manufacturing Systems Engineering.

CB Solar, the state's biggest solar contractor, designs and installs turnkey solar power systems for residential, commercial and agricultural uses.

Two industrial engineering graduates lead the company. **Tyler Bacon**, the company's president, graduated with a bachelor's degree in 2008, and **Ben Wollner**, head engineer, earned his bachelor's in 2009 and master's in 2011.

Wollner says both he and Bacon had experience with renewable energy before the company was formed. "There's a need, a market out there for solar power, and we wanted to lead that," he added.

With their technical engineering background, Wollner says the team thoroughly analyzes each project to determine what solutions will work best. He adds that the company is especially skilled at assessing emerging technologies.

"There's a lot of research and ideas going around about what will make solar power more affordable and available. We take the time to research these ideas and use an engineering perspective to decide which innovations are promising," he explained.

The company's willingness to try out different technologies has served it well. CB Solar has projects across the state, and it continues to grow with hopes to branch out across the Midwest.

At ISU, the solar panels CB Solar installed soon will be feeding energy into the university's electrical system. The technology will provide about 30,000 kilowatt hours annually. Standard houses in Iowa use about 10,000 kilowatt hours per year.

"It's great to see alternative, renewable sources being implemented on campus," Wollner adds. "We were excited to come full circle with our knowledge and experiences to make a difference at Iowa State."

*Contributed by ECR*

*Michael Ottaway (left) and Jake Heims with CB Solar fasten down a new array of solar panels on campus.*

*Photo by Christopher Gannon*



## Alumnus presents at annual Black History Month event about overcoming obstacles

**Dr. Petros “Pete” Gheresus**, Robert and Claire Reiss Chair of Industrial Engineering at Kettering University, has one resounding message about his journey from Eritrea (formerly a province of Ethiopia), East Africa, to the American Midwest: he didn’t get here alone.

“I did not get here by myself,” Gheresus said. “Call it the miracle work of God or the invisible hands of God. The probability of leaving Eritrea for educational opportunities was virtually unimaginable.”

Gheresus spoke about his journey at the annual Black History Month celebration at New Zion Missionary Baptist Church in Flint on February 8. The theme of this year’s celebration focused on “struggle.”

Gheresus’ struggles were plentiful at each point of his journey and now he’s dedicating his life to serving students both in his homeland of Eritrea and in the Flint and surrounding communities by sharing his time and knowledge.



Gheresus

Gheresus came to the United States as a 19-year-old with one year of English and an eighth grade education. He began his time in America by helping raise 1,000 beef cattle and baling hay “day-in and day-out.”

“That experience built my work ethic,” Gheresus said. “So today, in academia, when I see people stressed out, I say, ‘we don’t know what hard work is.’”

While working on the farm, Gheresus started high school but with limited English capabilities, which proved to be a greater challenge than he expected.

“Reading was a problem,” Gheresus said. “They placed me in 10th grade. I could barely understand English and they were reading Shakespeare. I was not with it.”

With the help of teachers and peers, Gheresus persevered and graduated from high school when he was 23 years old. Then he moved to Boone, Iowa, and attended Des Moines Area Community College with the aim of becoming a television repair man.

Why a television repair man? Gheresus was watching Sesame Street on television and realized that the show could be a powerful tool to promote and educate children in Eritrea. So he continued his education at Iowa State University, with the hope of bringing educational technology back to his country, graduating in 1975 with a degree in engineering operations. Unfortunately, due to civil unrest, Gheresus could not go back. Instead, he continued his educational journey by completing his master’s (1977) and doctorate (1979) in industrial engineering at Iowa State before coming to Kettering (then General Motors Institute). Gheresus has been a professor at Kettering University for 35 years.

*Contributed by ECR*

## Alumni making moves in industry

SAP SE (NYSE: SAP) recently announced the appointment of **Lori Mitchell-Keller** (BSIE’88) as executive vice president and global general manager of the Consumer Industries organization. Mitchell-Keller will be responsible for the Consumer Industries footprint at SAP, which covers four industries globally.

Greenwich AeroGroup announced that it has named **Austin Shontz** (BSIE’86) as Vice President and General Manager of Western Aircraft. Located in Boise, Idaho, Western Aircraft was acquired by Greenwich AeroGroup in 2007 and is one of the company’s two Maintenance, Repair and Overhaul facilities.

GPM Inc. appointed **Terry King** (BSIE’81) as the director of engineering. In this role, King will oversee all aspects of engineering and design within GPM, as well as coordinate efforts for special engineered products. He is a Certified Practitioner of Inventory Management and a member of the American Production Inventory Control Society.

**Chris McCoy** (MSSysEng’09) was named chief information officer and associate vice chancellor of Information Technology Services at the University of Arkansas in Fayetteville, AR. He reports to the interim VCFA Tim O’Donnell and Provost and Vice Chancellor for Academic Affairs Ashok Saxena.

Technology company Sparton named **Joseph T. Schneider** (BSIE’90) senior vice president of sales and marketing. Schneider has over 25 years of business experience and most recently served as vice president/general manager of a business unit within Siemens Healthcare Diagnostics Division.

## Carolyn Heising retires from IMSE after more than 20 years

The IMSE Department held a retirement reception for Professor Emeritus **Carolyn Heising** on May 5, 2015. She joined the IMSE Department in 1993.



**Heising**

Heising received her BA in applied physics from the University of California at San Diego in 1974. From there, she went to Stanford University to obtain her MS in nuclear engineering science and PhD in mechanical engineering in 1975 and 1978, respectively.

Her areas of research included safety and reliability engineering, probabilistic risk assessment, continuous process improvement, and nuclear energy.

After retirement, Heising moved to San Diego, CA.

### Heising receives honor from International Student Council

The Iowa State University International Student Council named Heising the 2015 Faculty/Staff Member most dedicated to Cultural/International Enhancement.

Throughout her years at Iowa State, she played an active role in helping Hindu YUVA establish itself as a new organization at ISU, and has been involved in international and multicultural events all over campus.

The award is given to a faculty or staff member who has assumed an active role in providing student support, served as an invaluable resource for a multicultural organization and its respective members, and has demonstrated a commitment to cultural education and awareness. Heising was presented with the award during the ISC Award Ceremony on April 24, 2015.

Heising said she was "delighted to be receiving the award."



*Kirpes (center-left) pictured holding the IIE Outstanding Early Career in Business/ Industry award with his wife, Nicole Basile (center right), the president of IIE, James Moore (far left), and the president-elect of IIE, Michael Foss (far right).*

## Kirpes receives multiple honors

**Carl Kirpes** (BSIE'12, BSME'12, MSSysEngr'14) was recognized by entities within and outside the ISU community for the incredible accomplishments he's made as a young professional.

**STATEment Maker**  
*ISU Alumni Association*

**Outstanding Early Career in Business/Industry Award**  
*Institute of Industrial Engineers*

**Ingram's 20 in Their Twenties**  
*Ingram's Business Publication*

Kirpes graduated from ISU with bachelor's degrees in both mechanical and industrial engineering in 2012. After his time at Iowa State, he went to work for GENESYS Systems Integrator, where he was quickly promoted to vice president of operations. Concurrent to his employment, he completed his master's in systems engineering remotely through Iowa State.

Outside of his work, Kirpes is heavily involved with IIE, currently serving as the chair elect for its Industrial Advisory Board. Kirpes also holds a seat on IIE's Construction Division Board and is a member of its Society for Engineering and Managements.

Kirpes says Iowa State was essential in helping him reach impressive achievements so early in his career. "Iowa State connected me with knowledge, leadership and personal development opportunities that I would not have had otherwise," he said. "I learned that individuals provide the potential but teamwork creates the results, and that lesson has helped me succeed in the field." During his time at ISU, Kirpes was an athlete on the Iowa State Football team and was involved in student organizations including Cardinal Key, Mortar Board, Alpha Lambda Delta, Phi Eta Sigma and the University Honors Program.

The award was presented at the IIE conference on June 1, 2015, in Nashville, Tennessee. Kirpes says being recognized is a great honor. "Awards such as the IIE Outstanding Early Career in Business/Industry award are milestones that recognize past successes and achievements yet to come. I cannot thank the support network enough that has helped me achieve these results to date, at Iowa State and otherwise, and I look forward to working with more individuals to build on this success in the future."

*Contributed by ECR*

# Thank you!

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Dr. Cherng-Tarng and Mrs. Marina Lin	John and Andrea Wright
Dennis McComber	Michael Youngblut
James McCarville	Daniel Zelik

## IMSE Professor Emeritus Vic Tamashunas passes away

**Vic Tamashunas**, 89, passed away August 22, 2015 at The Waterford at Ames. Vic was born September 21, 1925 to immigrant parents John and Veronica (Rozman) Tamashunas in the Greenville section of Sioux City, Iowa. He graduated from East High School in 1943 and then enrolled at Morningside College. Vic remained there until January of 1944, when he entered the service at Ft. Crook, NE (now Offutt AFB).



**Tamashunas**

After 17 weeks of artillery basic training at Ft. Sill, OK, Vic went overseas by air from LaGuardia to Karachi. With 25 others, he formed the nucleus of the 5th Field Artillery Sound-Ranging Platoon at Ramgarh. Trained in the location and direction of artillery fire, they were assigned to the Chinese First Army and joined in the Burma campaign until the fall of Lashio. In April of '45, Vic went to China and stayed there until the war was over, serving with the army group pushing toward Canton and Hong Kong. He then was mustered out as a corporal and returned to Sioux City and Morningside College.

Vic transferred to Iowa State University in Ames, graduating in 1950 with a BS degree in general engineering. His first job was as an industrial engineer in Omaha. A year later he relocated to Lincoln, where Vic joined the Goodyear Tire and Rubber Company as an I.E. with many diversified activities. He stayed there until 1956 when Vic elected to become part of the engineering faculty at Iowa State University, where he had a long and distinguished career. Vic started as an instructor, received his Master of Science in 1959, and became a full professor. Vic retired as Emeritus Professor of Industrial and Manufacturing Systems Engineering from ISU in June of 1991.

His memberships and honors were manifold and include: Registered Professional Engineer, Senior Member of the American Institute of IE's, Professor of the Year-College of Engineering, AIE Region IX Engineer of the Year and Member College Advisory Council Materials Handling Institute, Vice President Region XI, American Institute of Industrial Engineers (1977-1979) and serving with Governor Ray on the Governor's Committee on Emergency Planning & Civil Defense. He joined the Graduate Faculty in 1974 and gave thesis direction to candidates for advanced degrees from around the world. But for all of his achievements Vic valued his time with his students the most.

He will always be remembered for his pride in being from Sioux City, being past National Commander of the CBIVA (China Burma India Veterans Association), his avid support of ISU's women's basketball team, going to see plays at Actors, the Lions Club, his book of birth dates and never forgetting one, good food (especially a good breakfast), lemon slices in his water, hot soup, dancing for Red Friars at the Memorial Union, ball room dancing at Lake Robbins, big band and swing music, concerts, a love for history and travel, being Lithuanian, and most of all having fun and spending time with his family and friends.

Vic is survived by his daughter, Vicki (Meryl) Syslo and their children, Ted and Anne, of Robbinsdale, MN; his son, John Tamashunas of Ankeny and his children, Sara (Brandon) Bice and their son Parker of Grimes; Michael (Sharon) Tamashunas and their daughter, Jamie of Ames; his special dear friend, LaVonne Schumann of Ames; and his sister-in-law, Terri Hastrieter of Humphrey, Neb. He was preceded in death by his parents; his wife, Doris; four siblings; and his sisters-in-law, Anne Thomas and Bernadette Simms.

# 2015: A LOOK BACK



IMSE undergraduate students (above) and graduate students (below) who received honors and awards gathered at the IMSE Spring Awards Banquet at Reiman Gardens in April 2015.



**Kathy Weaver** and **Devna Popejoy-Sheriff**, both IMSE academic advisers, were named Exemplary Peer Mentor Supervisors for the 2014-2015 academic year by ISU Learning Communities for their dedication and service to their peer mentors. Kathy left IMSE in Fall 2015 for another advising position in the ISU College of Business.



The IMSE Industrial Advisory Council (below) met in Ames in Spring 2015. The council represents IMSE alumni and industrial engineers in the field, and members give feedback on the direction of the department.



**Kevin Brownfield**, IMSE senior ERD machinist, (above) celebrates 30 years of working at Iowa State.



Undergraduate research assistants (above) presented posters in April 2015 on their research work with IMSE faculty members.



**Jeff Eichorn**, administrative specialist and **Krista Briley**, administrative specialist and assistant to the chair, serve the food to students (left) and **Kevin Brownfield**, senior ERD machinist, grills food at the 2015 Fall Welcome Back Picnic held in the courtyard of Black Engineering Building (below).



## Grant award announcement

Principal investigator **Jo Min**, associate professor and director of undergraduate education, and co-PI **John Jackman**, associate professor, were awarded a grant through the National Science Foundation. The grant, in the amount of \$250,000, is called "Critical Life-Cycle Decision Making in Complex Engineering Projects for Engineering Economy Courses."



Min



Jackman

## New faces



Berry

**Scott Berry** joined the department as a lecturer to teach sales engineering courses. Scott has over 25 years of Sales, Marketing and Business Development experience in the automation, mobile computing and avionics industries. His current interests are in Sales Leadership and Industrial Sales Channel Management.

**Michael Helwig** is a lecturer in engineering management, systems engineering and engineering economics. His research interests include identifying efficiencies for federal agencies and the department of defense via optimization techniques.



Helwig



MacKenzie

**Cameron MacKenzie** joined the department as an assistant professor. His interests include risk analysis, multicriteria decision making, supply chain and supply chain risk management, disruption planning and response, and simulation.

**Deb McDonough** was hired as a graduate program assistant, and she will provide student support and help with graduate recruitment efforts. Deb received her B.S. in environmental science from Iowa State University in December of 2014.



McDonough



Meyer

**Quanten Meyer** is a lecturer who teaches I E 450: Technical Sales for Engineers I. The course explores sales process methodology, techniques for building professional relationships, sales automation software, prospecting and account development, market analysis and segmentation, and responding to RFQ's and RFP's in written and verbal form.

**Department of Industrial & Manufacturing  
Systems Engineering**

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Ames, IA 50011-2161

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- Funding undergraduate research assistants

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