

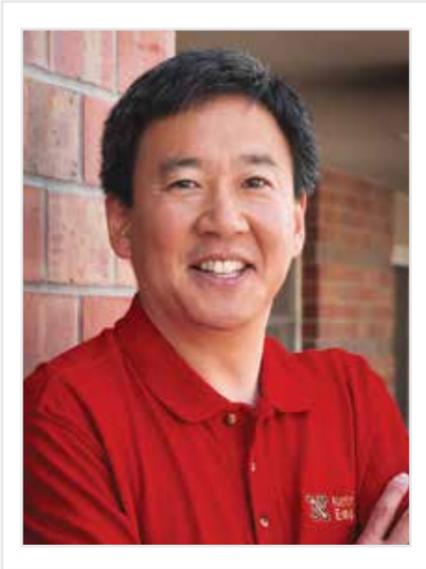
ENGINEERING @ NEBRASKA

SPRING/SUMMER 2014

MANUFACTURING PARTNERSHIPS FOR RESEARCH AND ECONOMIC DEVELOPMENT

ALSO INSIDE:
FACULTY RETIREES:
HARMON, HENDRIX AND SCHULTE
LIM EARNS NSF CAREER AWARD





FROM THE DEAN > Commencement-of graduates and growth initiatives

At Nebraska Engineering, we've just wrapped up a successful academic year, graduating more than 400 smart and eager students from our programs in Lincoln and Omaha. We're sending these new engineers and professionals into Nebraska and the world to become vibrant members of the workforce and their communities, fulfilling one of our promises to help provide our state and beyond with a highly skilled workforce.

While we celebrate their new beginnings, we are also working hard to continue our progress within the college, to enhance not only our students' educations but also to be a prominent force within Lincoln, Omaha, the state and elsewhere, as an economic driver and collaborator.

One way we believe we can make a vital impact in the state, especially, is to focus our research efforts on Nebraska's three major industries: food, civil infrastructure, and equipment/devices/components. The university has a working relationship with ConAgra at NIC and discussions are ongoing to partner with other Nebraska companies.

As you'll read in this issue, several exciting new initiatives in manufacturing have been created involving the college and the state. These are a good start, but we know we have ways to go to increase these collaborations and expertise. These partnerships will take funding and numerous resources. Our college Advisory Board is leading the way as we begin these discussions and seek funding to further the impact of the College of Engineering, both for the students and the state.

Stay tuned as these partnerships continue to develop and to see how you might become involved in these initiatives.

- Timothy Wei, Ph.D.
Dean, UNL College of Engineering



TABLE OF CONTENTS

www.engineering.unl.edu

From the Dean

Commencement-of graduates and growth initiatives

2 Front & Center

A CAREER Award, technological innovations and a NASA fellowship highlight recent accomplishments

8 Partnering with Industry

Creating manufacturing opportunities to help boost the state's economy

11 Industry-Student Networking

Students connect with industry and alumni in K.C. for annual trip

12 Touch of Class: Faculty Retirees

Paul Harmon, Jim Hendrix and Dennis Schulte recount their teaching experiences

14 Plugfest 2014

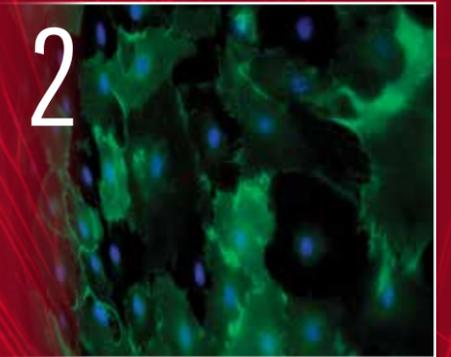
The intersection of agriculture and electronics converges in Lincoln

16 Accomplishments

19 Class Notes

20 From the Foundation

Back Cover: Students explore engineering with Learning for Life program



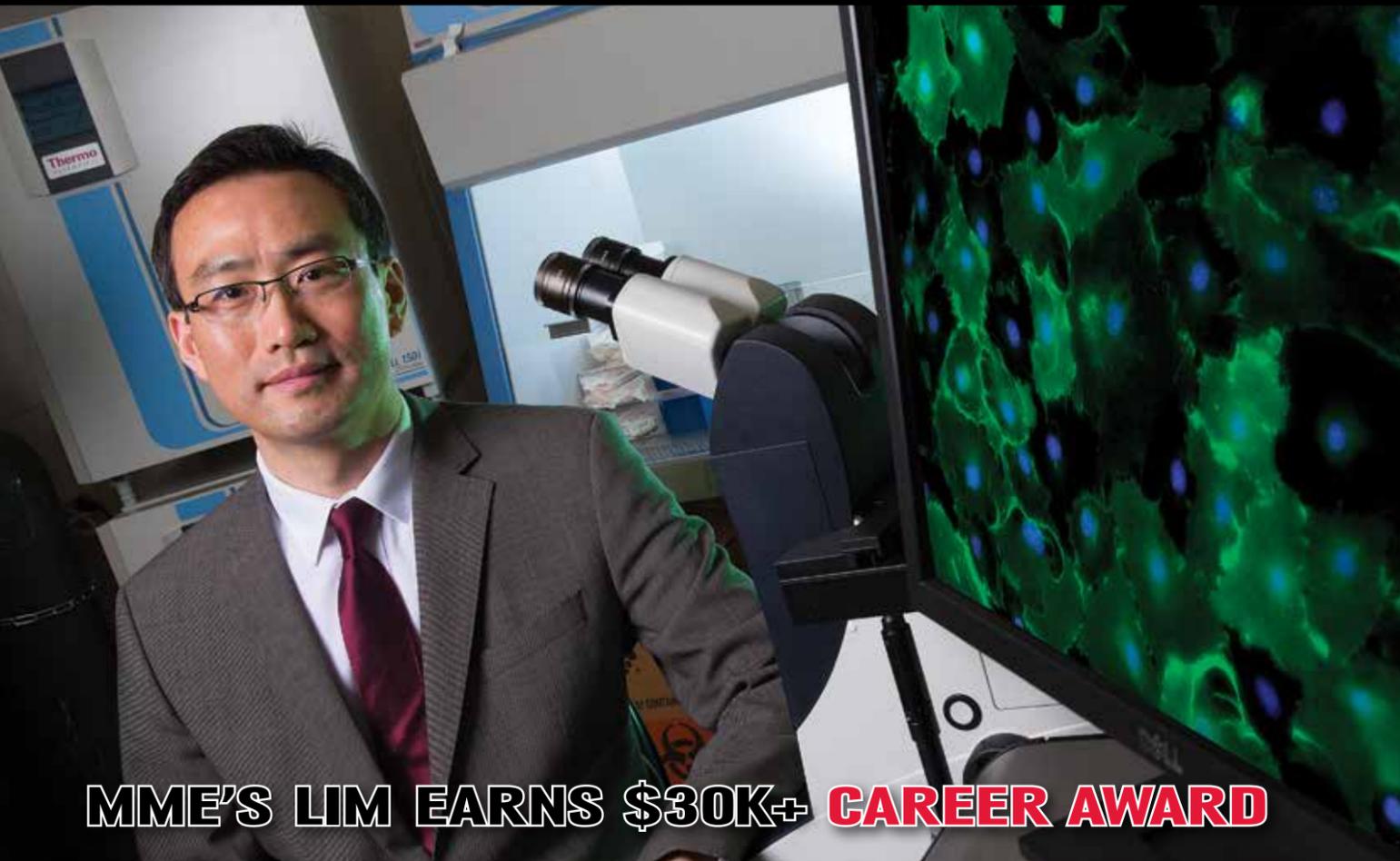
Editor: Carole Wilbeck | Designer: Clint Chapman | Contributing Writers: Gillian Klucas, Troy Fedderson

Engineering@Nebraska is published by the University of Nebraska-Lincoln College of Engineering. The University of Nebraska-Lincoln is an equal opportunity educator and employer.

Direct correspondence (including address changes) to jengebretson2@unl.edu; 203 Othmer Hall, Lincoln, NE 68588-0642; telephone (402) 472-6229, fax (402) 472-7792.

Submissions of letters to the editor, class notes, stories, photographs, illustrations, or other materials with a University of Nebraska-Lincoln College of Engineering connection are welcome. View this magazine online at www.engineering.unl.edu/publications.

©2014, The Board of Regents of the University of Nebraska. All rights reserved.



MME'S LIM EARNS \$30K+ CAREER AWARD

A type of stem cell that morphs into fat cells may hold secrets to reducing obesity, a major public health problem. A UNL engineer's research to understand that process may one day lead to therapies to control obesity.

Jung Yul Lim, assistant professor of mechanical and materials engineering, has earned a five-year, \$430,554 Faculty Early Career Development Program Award from the National Science Foundation for this research. These CAREER awards support pre-tenure faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research.

Mesenchymal stem cells (MSC) are simple, self-regenerating cells capable of turning into a variety of specialized cell types, including bone, skin, muscle and fat. Studies show that one biological process causing obesity is an increase in MSC differentiation into fat cells, a process called adipogenesis.

"This project aims to understand how MSCs choose their fate," Lim said. "If we can inhibit

in some way the MSC adipogenesis, it may be a treatment method for obesity."

Lim's preliminary research has found that "stretching" the cells suppresses adipogenesis. By seeding cells onto an elastic membrane, Lim can apply a mechanical stretching force to the cells. Then he waits to see what they do.

"That stretching motion is mimicking some of the actual stretching motion in our bodies, like walking, running," Lim said. "It varies depending on cell type and the position inside the body, but generally cells are exposed to a mechanical stretching motion every day."

The CAREER award allows Lim to further explore how different stretching conditions affect MSC adipogenesis, such as the amount of stretch or strain applied. Other conditions include a continuous versus stretch-and-relax motion, or sinusoidal stretching, as well as the frequency of that motion. He'll also investigate stretching's effect at different stages of MSC evolution into fat cells.

Lim also is investigating the molecular mechanisms underlying how stretching inhibits

adipogenesis. Finding the proteins or genes responsible may lead to future therapies, he said.

To do that, he will use molecular biology techniques to turn off, or silence, several genes responsible for producing proteins involved in allowing cells to stick to each other and their surroundings, a mechanism researchers suspect is involved. If the altered cells don't exhibit the same inhibition when stretched as normal cells, then Lim can infer that the silenced protein or protein complex is involved.

The CAREER award also allows Lim to continue developing curricula on stem cell-based bioengineering and to train graduate and undergraduate students in his lab. Additionally, Lim will continue a program he developed to help home-schooled students gain laboratory experience.

More information is available on Lim's lab homepage: <http://www.thelimlab.org>.

- Gillian Klucas / UNL Office of Research and Economic Development

NEBRASKA ENGINEERING IN TOP THREE AT MEDICAL DEVICES COMPETITION

An engineering concept designed at UNL was ranked among the top three finishers at the annual Design of Medical Devices Conference "Three in Five" competition.

Carl Nelson, associate professor of mechanical and materials engineering, presented the UNL concept, which is designed to increase the safety of traditional assistive walkers. The presentation was titled "Mobility-Enhancing Fall-Prevention Device for Physical Rehabilitation."

The adaptation — which evolved with the help of four UNL engineering graduates — adds a spring-loaded, plunger-type mechanism inside the legs of a walker. The mechanism locks the wheeled footing of the walker, adding stability when weight is applied.

The device is also cost effective, adding about \$10 to the total cost of a walker.

Nelson said the design was aided by a five-year, \$125,000 National Science Foundation grant. The award pairs UNL undergraduate mechanical engineering design teams with disabled persons or communities as clients each year. The walker adaptation is one of

several student projects benefiting from the grant for improving designs of medically assistive devices.

The walker design evolved with the help of 2013 engineering graduates Manu Vengeta Rao, Kathirgugan Kathirasan, Dingwei Zhang and Liran Kong. The students worked on the concept while in a senior-level design course led by Nelson.

"10 million Americans use walkers or canes, and 47,000 elderly experience falls with these devices."

Through the senior design course, Nelson connects student teams with Madonna Rehabilitation Hospital in Lincoln to identify clients that would benefit from design specialized devices. Judy Burnfield, director of UNL's Athletic Performance Lab and director of the Institute for Rehabilitation Science and Engineering at Madonna, has provided valuable feedback for the students.

Nelson said the students perform needs assessment, brainstorm and evaluate solution concepts, and bring their designs to fruition through analysis, prototyping, and testing. For some students, the prototyping work may be their first experience in specifying and producing components, with assistance from the college's Engineering and Scientific Research Support Facility, which includes a staffed machining shop.

A further phase emphasizes entrepreneurship and dissemination of the designs.

For the walker adaptation, Nelson said project participants learned that 10 million Americans use walkers or canes, and 47,000 elderly experience falls with these devices.

"It's a huge unmet need," Nelson said.

Nelson said he believes new assistive technologies are being created through this grant-funded process to advance engineering knowledge. He said a provisional patent has been filed for the walker adaptation, and publications with student participant authorship have also resulted.

The Design of Medical Devices Conference was April 7-10 in Minneapolis. It is widely known as the largest medical device conference in the world.



Carl Nelson displays the adapted assistive device.

MICROBUBBLES ADD 'THIRD LUNG' FOR OXYGEN DELIVERY, HEALING

Doctors could have more treatment options when a patient can't breathe, thanks to an innovative procedure from research by faculty with the University of Colorado-Boulder and the University of Nebraska-Lincoln. The Jan. 15 edition of the journal *Biomaterials* included work by UNL's Ben Terry, assistant professor of mechanical and materials engineering, and Mark Borden, CU associate professor of mechanical engineering, who collaborated to develop a new way for providing oxygen to people whose lungs cease to function.

Bacterial infection or injury can trigger acute respiratory distress syndrome, which causes a person's lungs to shut down. At hospitals when patients' lungs stop working, blood may be pumped outside the body to oxygenate it, requiring anti-coagulants that can cause harsh side effects such as hemorrhage or blood contamination.

The new method circulates oxygen microbubbles through the peritoneal cavity in the patient's abdomen, to deliver oxygen and remove carbon dioxide.

"Our system transforms the cavity into a third lung, so to speak," Terry said. "This delivers life-sustaining oxygen to the body's core, where it can be transported by the patient's circulatory system to the brain and other vital organs."

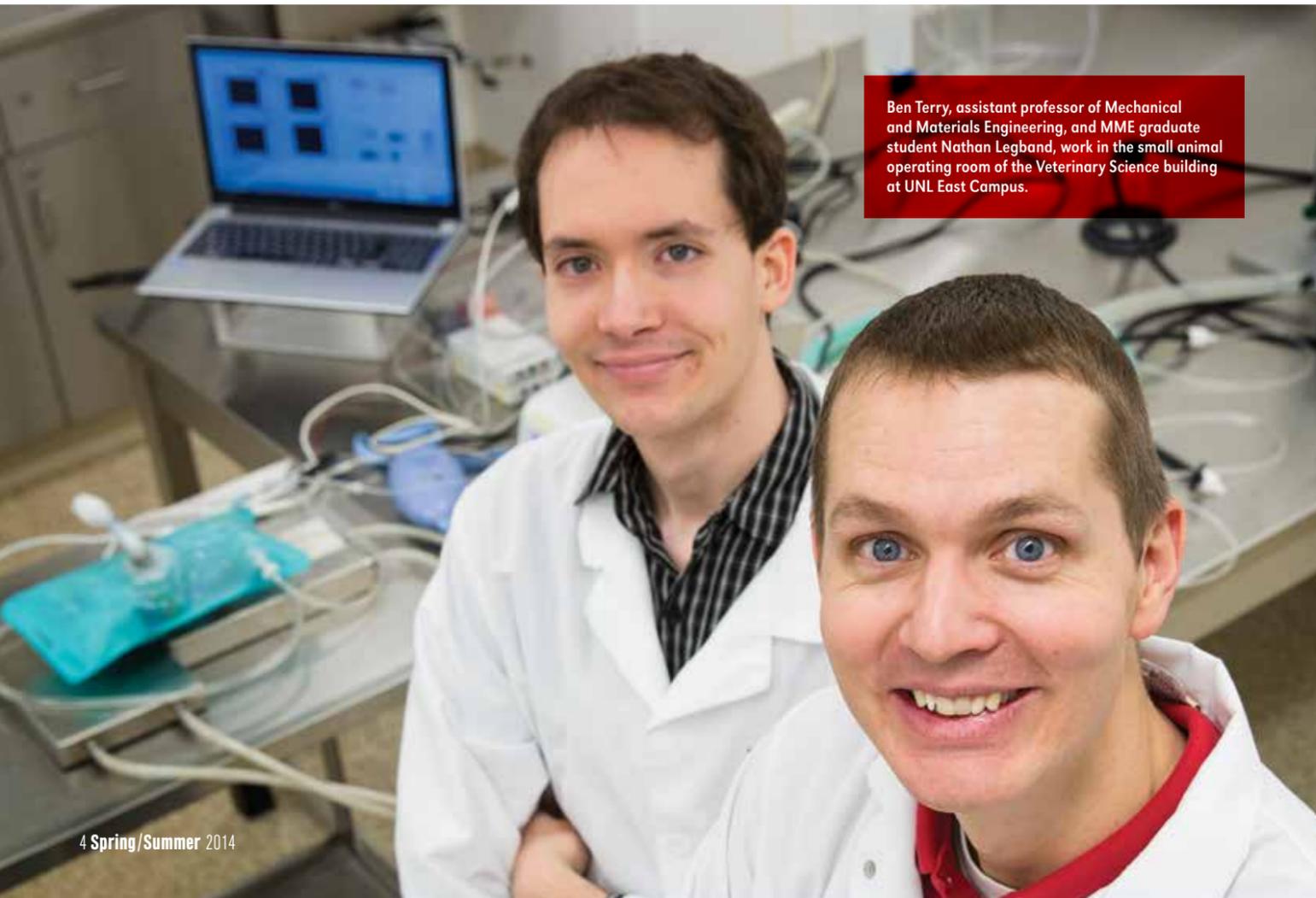
Terry, who specializes in minimally invasive surgical tools and processes, said Borden designed the oxygen microbubbles to have the properties of lung alveoli, or air sacs, with a nanoscale lipid layer that helps support a large, porous surface for enhanced gas exchange. Microbubbles, smaller than one millimeter but larger than one micrometer in diameter, have been used in medical diagnostics such as ultrasound

testing, and for delivering therapeutics—in this case, oxygen.

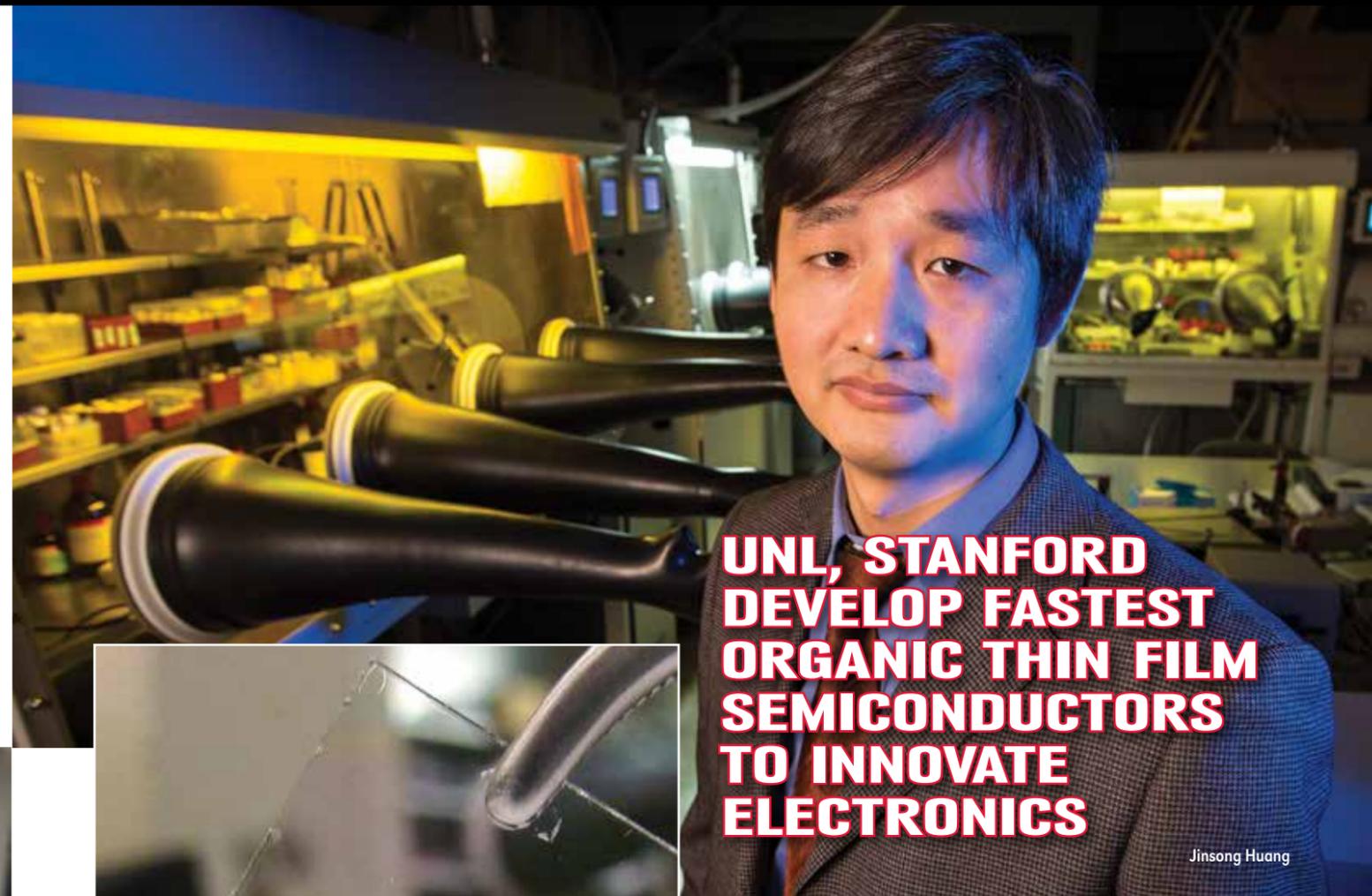
Their study documents success in a preclinical trial involving severe lung injury in small animals. The pair is now scaling the system to apply it to larger organisms, Terry said.

"Our preliminary studies show that the technology provides oxygen and allows time for the lung injury to heal – a major advance, for a much safer and simpler solution," he said. "Our next step will be to translate this technology to clinical use."

The paper was also co-authored by UNL graduate student Nathan Legband. Support for this research came from the National Science Foundation.



Ben Terry, assistant professor of Mechanical and Materials Engineering, and MME graduate student Nathan Legband, work in the small animal operating room of the Veterinary Science building at UNL East Campus.



UNL, STANFORD DEVELOP FASTEST ORGANIC THIN FILM SEMICONDUCTORS TO INNOVATE ELECTRONICS

Jinsong Huang



This "off-center spin coating method" gives a semiconductor with organic thin film transistors (OTFTs) significantly improved carrier mobility – determining how quickly electrical charges travel in the device. According to the tech website Gizmodo, "the result was a denser concentration of organic molecules in a more regular alignment, allowing electrical charges to pass through far more quickly. Five times more quickly." This advance means less costly materials could be used for electronics: a step forward in finding alternatives to silicon-based materials for transistors.

In January, the journal *Nature Communications* announced the fastest organic thin film transistors created to date, developed by engineering faculty at the University of Nebraska-Lincoln and Stanford University.

Jinsong Huang, UNL assistant professor of mechanical and materials engineering, and Zhenan Bao, professor of chemical engineering at Stanford, worked together on alternative processes for thin film coatings of semiconductor materials, with the aim to enhance both high performance and transparency for flexible flat-panel displays and sensor technologies.

In producing semiconductors for electronics, thin film coatings are traditionally silicon-based and applied from a single center point. The British website *The Engineer* described the innovation as "two important changes to this basic process: they first spun the platter faster. Secondly, they only coated a tiny portion of the spinning surface."

Huang said this is the first time the mobility of an organic semiconductor thin film reached the level of performance well within range of polysilicon materials typically used in modern high-end electronics. These new outcomes, he said, also show high transparency of more than 90 percent over the visible spectrum, indicating the potential for transparent, high performance organic electronics.

The work is funded by awards from the U.S. Defense Advanced Research Projects Agency, Air Force Office of Scientific Research and the National Science Foundation.

— Troy Fedderson, *University Communications*



Ayse Kilic, associate professor, is part of a national initiative that will use Google resources to gauge water use by vegetation.

KILIC PARTNERS WITH GOOGLE ON CLIMATE INITIATIVE

Ayse Kilic is part of the new U.S. Climate Data Initiative, a project that is using Google resources and national researchers to create tools to help provide real-time information on water consumption by vegetation around the globe. The partnership, announced by the White House in March, includes UNL, Google, University of Idaho and the Nevada-based Desert Research Institute.

For Kilic, associate professor with UNL's Department of Civil Engineering and the School of Natural Resources, the partnership means a toolbox overflowing with resources — and she's eager to connect the public with the partnership's benefits.

Kilic produces advanced high-resolution models for water use mapping and water resources management and is a leading contributor in the partnership. The maps will support water conservation and be a key factor in developing drought monitoring inside Google Earth Engine for the continental United States. She will be building on her group's experiences from applications along the Platte River of Nebraska.

Google is providing one petabyte of cloud storage to house satellite observations, digital elevation data and climate and weather model datasets drawn from government open data and contributed by scientists. Fifty million

hours of high performance cloud computing on the Google Earth Engine geospatial analysis platform will also be provided.

"It is exciting to work with the new technology of Google Earth Engine because it handles so much information about our planet," Kilic said. "Google Earth Engine is a water resources engineer's dream. The computer screen shows real-time water use information in just a few seconds, using the Google Computing Cloud. These processes once took hours on (even high-powered) computers."

Kilic's work focuses on evapotranspiration, or how water moves through the atmosphere as it evaporates from soil and water and transpires from plants. In 2013, she began a five-year term with an elite international team of 25 scientists supporting NASA's Landsat Data Continuity Mission Satellite or "Landsat 8."

She said Google has collected the entire modern Landsat archive's images of the planet, dating to 1984, which is "a tremendous and convenient resource for our application."

"Landsat satellite imagery provides us with 30 meter pixels that allow us to see inside individual agricultural fields," Kilic said. "The thermal band of Landsat is especially important. We will need even more Landsat satellites in the future for modern water management."

Other members of Kilic's UNL team include Baburao Kamble, research assistant professor; Ian Ratcliffe, a remote sensing specialist with the survey division of the School of Natural Resources; and Doruk Ozturk and Yao Ki, graduate students. The team is developing code, designing new ways to detect and contend with clouds in images and using evapotranspiration mapping to fine-tune regional weather forecasting models.

Kilic said a new project with her group will use Google resources to generate applications providing lawn water management information to homeowners and cities to support water conservation.

"This project will utilize high-resolution aerial photography available for much of the United States and couple it with continental weather data sets for the entire country plus seven-day weather forecasts to provide homeowners with up-to-date information on their watering needs," Kilic said. "(Our research) creates opportunities for educators to have extensive sets of spatial data in their classrooms to use for geographic information system instruction, remote sensing, water resources and hydrology — for college students all the way down to elementary school students."

MME'S KRUSE EARNS NASA FELLOWSHIP

Space Technology Research Fellowship includes \$68,000 in annual funding

Corey Kruse, a mechanical and materials engineering graduate student, received a 2014 NASA Space Technology Research Fellowship. The honor includes \$68,000 in annual funding, renewable up to three years.

Kruse will use the fellowship to earn a doctoral degree at UNL.

Kruse, from Hartington, applied to NASA with his work on "Heat Transfer Enhancement and Thermal Management for Space Applications Employing Femtosecond Laser Processed Metallic Surfaces with Micro/Nanostructures." Engineering faculty working with Kruse on the project include Sidy Ndao, George Gogos and Dennis Alexander.

In 2013, 65 of the NASA fellowships were awarded. UNL MME alumnus Joe Bartels, currently working on his doctorate in robotics at Carnegie Mellon University, also earned the fellowship in 2014.

In Ndao's lab, Kruse conducted experimental research on Leidenfrost temperature shifts for multiscale micro/nanostructured surfaces, with findings published in the June 2013 edition of the journal *Langmuir*. Kruse built the experimental set-up, collected the data, wrote the paper and published it with minimal supervision.

Ndao said the next phase of Kruse's research continues to break ground in heat transfer studies employing femtosecond laser processed metallic surfaces with micro/nano structures.

Kruse also leads several undergraduate students in Ndao's group and serves as adviser to the college's Baja SAE team, which builds and races off-road vehicles. As an undergraduate at UNL, Kruse's leadership on the Baja team led to a top-five team finish during his senior year.

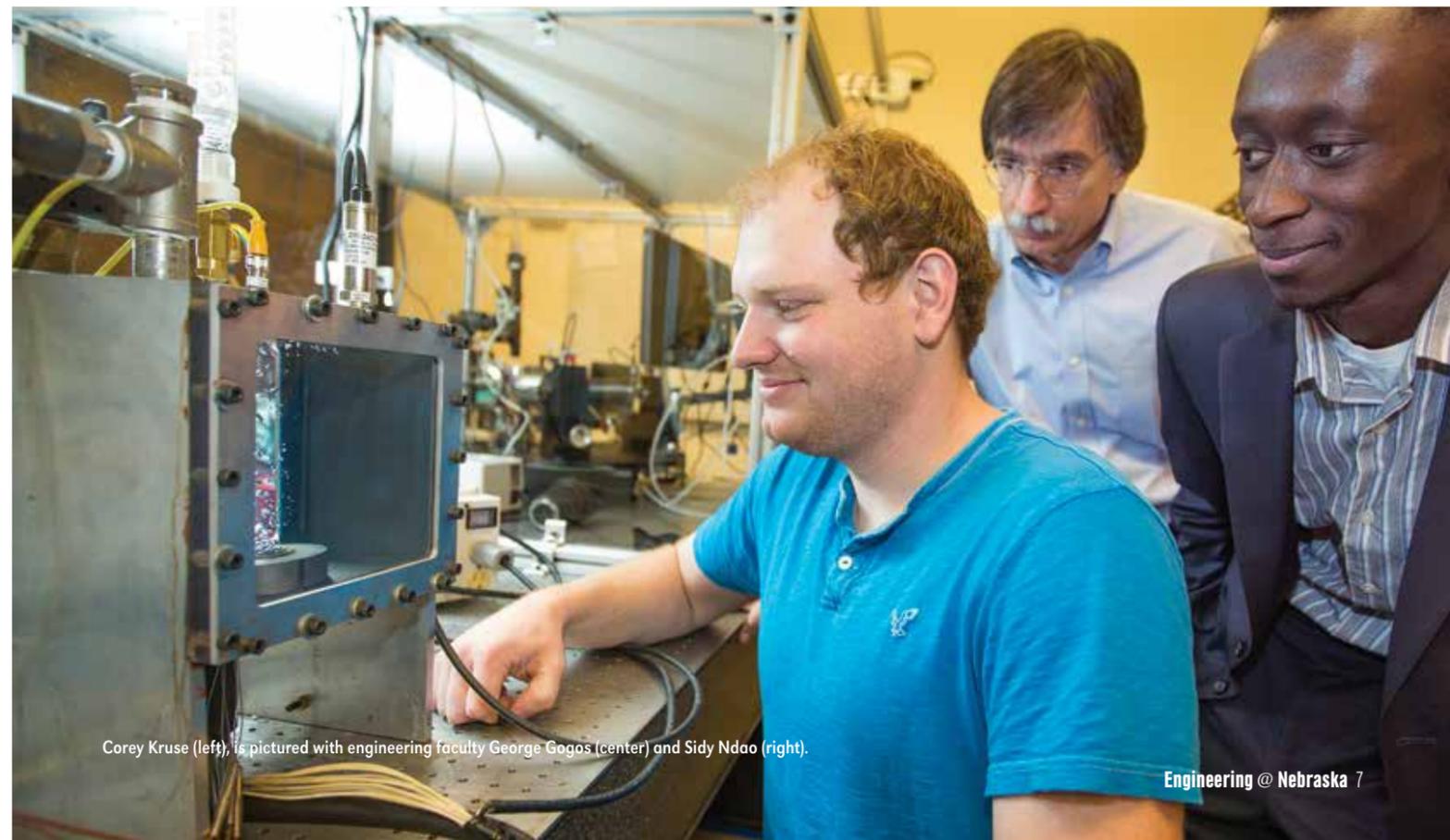
"Growing up, I was always encouraged to explore my curiosity and to work hard toward my goals," said Kruse. "The College of Engineering at UNL was a dream-come-true situation as not only was I able to learn the science behind the engineering systems ... but I also then had the tools and facilities, which allowed me to design and build real engineering systems and explore the boundaries of my imagination."

By exploring temperature shifts, Kruse aims to make energy conversion better understood as a foundation for scientific progress and space exploration.

"The success of space exploration and travel is directly tied to how we efficiently convert, transfer and store energy in systems, such as maintaining cryogenic fluids for propulsion, protecting vehicles from aerodynamic heating, and developing comfortable living conditions for crew," Kruse said.

Preliminary results in Kruse's work were presented to a group of NASA researchers, opening the door for possible collaborations with scientists at the Glenn Research Center in Cleveland, Ohio.

- Carole Wilbeck

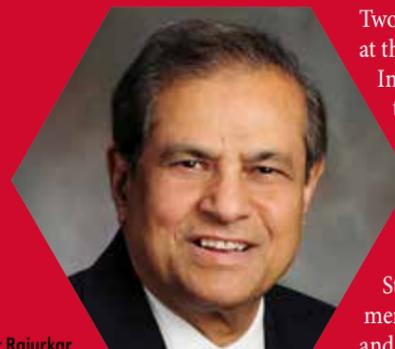


Corey Kruse (left), is pictured with engineering faculty George Gogos (center) and Sidy Ndao (right).

DIGITAL LAB FOR MANUFACTURING

UNL is a partner in a \$320 million advanced manufacturing collaboration that President Barack Obama announced Feb. 25 at the White House

NEBRASKA ENGINEERING PARTNERING WITH INDUSTRY: A NEW ASSEMBLY LINE FOR STATE'S ECONOMIC DEVELOPMENT



Kamlakar Rajurkar

Two initiatives announced in recent months put UNL's College of Engineering at the forefront in new kinds of growth for the state's manufacturing industry. In a Digital Lab for Manufacturing, UNL joins collaborators from 16 states to form "the nation's flagship research institute in digital manufacturing and design innovation," according to a White House announcement. And here at home, Nebraska Engineering is partnering with the Institute of Agriculture and Natural Resources and Central Community College to form a new Hollings Manufacturing Extension Partnership (MEP), with funding from the National Institute of Standards and Technology. The college's efforts in these areas, led by faculty members Kamlakar Rajurkar (MME) and Curt Weller (BSE), merit interest and investment as they help drive Nebraska's future.

Through the new Digital Lab for Manufacturing, UNL researchers will have opportunities to work with colleagues at 22 other universities as well as with industry, government, state and community partners in Nebraska and 16 other states. The digital lab is funded by \$70 million from the Department of Defense and \$250 million in commitments from its partners to form the \$320 million innovation hub. It was one of two major innovation hubs announced Feb. 25 as part of President Obama's investment in U.S. manufacturing.

Led by UI Labs, a University of Illinois-affiliated research and commercialization collaborative, the digital lab will be headquartered in Chicago and linked to a network of manufacturing research sites nationwide. It will be "the nation's flagship research institute in digital manufacturing and design innovation" and a first-of-its kind manufacturing

hub, according to a lab fact sheet. The aim is to harness the nation's best research and technology to reduce manufacturing time and costs, strengthen the U.S. supply chain and reduce acquisition costs for DoD.

"We're proud of our partnership in this world-class digital manufacturing consortium, which promises to transform American manufacturing," said Chancellor Harvey Perlman. "Our faculty's involvement in this national innovation hub is the latest tangible evidence of the benefits of our Big Ten membership." UNL worked with organizers on plans for the new lab. As a university partner, UNL faculty will be able to compete for funding through the lab, team with Nebraska manufacturers or other industry partners to propose research projects and work closely with colleagues and major industry partners from around the country.

"This is great news for Nebraska," said Timothy Wei, dean of engineering. "It puts us on a national stage in an area of immense importance."

Initially, more than a dozen UNL engineering faculty may be involved with the consortium but other faculty could also participate. Wei said he expects the number to grow. Manufacturing is a major component of the college's strategic plan, which calls for hiring 100 faculty in the next five years.

"Our level of success depends on how well we compete and collaborate within this consortium," he said. "With our growth initiative in Omaha and Lincoln tied to industries across the state, this kind of opportunity helps us attract top-flight faculty and strengthen our research and education programs."

UNL's strengths in areas such as materials and nanoscience, advanced manufacturing processes and systems, and computer engineering and telecommunications fit well with the lab's goal

of improving the overall competitiveness of U.S. manufacturing, said Kamlakar Rajurkar, distinguished professor in mechanical and materials engineering, who leads UNL's collaboration with the lab.

With the development of Nebraska Innovation Campus, the university is already working to foster business partnerships that eventually will translate into new jobs and economic growth for Nebraska, Rajurkar said.

Nebraska manufacturers will be able to "directly apply this innovative R&D to reduce costs and production time and, eventually, to get their workforce trained," Rajurkar said.

UNL students also will directly benefit, Wei said. The digital lab collaboration focuses on large problems across disciplines, which he said is a

great model for teaching students how to tackle complex issues. University and government partners are regionally anchored in the Midwest, spanning Illinois, Indiana, Iowa, Wisconsin, Kentucky, Michigan, Minnesota, Missouri, Nebraska and Colorado. Others include New York, Oregon and Texas. The lab includes 40 industry partners, more than 500 supporting companies and organizations, as well as government and community partners. Leading industry partners include General Electric, Rolls-Royce, Procter & Gamble, Dow, Lockheed Martin and Siemens.

"Partnering with industry is essential for transforming our research into manufacturing advances that create jobs and enhance Nebraska's economy," said Prem S. Paul, vice chancellor for research and economic development.



A new partnership involving the college and the Institute of Agriculture and Natural Resources, as well as Central Community College in Grand Island, will help small- and medium-sized manufacturers fuel Nebraska's economy.

This year, UNL will receive up to \$600,000 in federal funding through the National Institute of Standards and Technology's Hollings Manufacturing Extension Partnership, or MEP.

The Nebraska affiliate of the national partnership will be based at the university with field staff throughout the state, said Curt Weller, UNL professor of biological systems engineering and the partnership's director.

He said matching funds from within UNL and the community college would allow the new MEP to "grow the competitiveness and profitability of Nebraska's manufacturers by strengthening their position in the global market through innovative, relevant, responsive and profit-based business solutions."

"We're drawing upon resources available within the University of Nebraska system and beyond," Weller said.

According to the National Institute's website, the partnership works with small- and mid-sized manufacturers to help create and retain jobs, increase profits and save time and money. The nationwide network provides a variety of services, from innovation strategies and process improvements to green manufacturing. The partnership also works with partners at the state and federal levels on programs that put manufacturers in position to develop new customers, expand into new markets and create new products.

As a program of the U.S. Department of Commerce, it offers a range of effective resources to help manufacturers identify opportunities that will accelerate and strengthen their growth and competitiveness globally.

From within UNL, the Food Processing Center could provide testing and development expertise to food manufacturers, and the Midwest Roadside Safety Facility could provide product testing for civil infrastructure. Central Community College will provide workforce development training and business management services.

Weller said participating companies can benefit from learning and applying quality improvement methods and accessing market research to explore new products or innovative processing technologies. Other participants could work with UNL's Engineering and Scientific Research Support Facility to generate new product prototypes.

The institute has stated that funds are renewable annually, with cost share from the state center rising after three years.

An aim of this partnership is to boost the university's efforts with Nebraska manufacturers and convert innovations from researchers' labs into products for the marketplace.

Prior to UNL leading the Nebraska partnership, the State of Nebraska Department of Economic Development directed the NIST affiliate in the state.

The Food Processing Center, a UNL-based partner of the Nebraska MEP from its start, will continue in the repositioned Nebraska MEP. Weller said with this partnership in its early stages, a scorecard is taking shape to measure its impact: tracking companies served, new and retained sales, new jobs created and other cost savings found.

Manufacturers interested in services through the Nebraska MEP can connect with the program at 402-472-5993 or ne.mep@unl.edu.

NEBRASKA ENGINEERING STUDENTS EXPLORE CAREERS WITH ALUMNI IN KANSAS CITY



A group of UNL College of Engineering students traveled to Kansas City for spring break in March and connected with Nebraska alumni for future careers.

Each year Nebraska Engineering students benefit from industry visits the college coordinates. This year, 100 Nebraska Engineering students took chartered buses from the college's Lincoln and Omaha locations for the three-hour trip to Kansas City. The 2014 itinerary included J.E. Dunn, Black & Veatch, Cerner, MRI Global, Garmin, Bayer Crop Science, MMC Contractors and Burns & McDonnell. Nebraska alumni at these companies led tours and panel discussions, and students learned hiring tips and day-to-day job responsibilities as they made career contacts.



On a tour at Truman Medical Center, MMC and Burns & McDonnell representatives explained how they overcame challenges with a now-completed project: an overhaul of the hospital's physical plant. The job required use of the chilled water and boiler systems during their replacement, to sustain patient care.

Alumni and company representatives said the Nebraska Engineering students asked excellent questions. The experience "helped me understand a professional's point of view about the engineering industry, and all the pros and cons that come along with pursuing a degree in engineering," said Esteban Loza, a civil engineering student. "This trip made me realize that there are jobs out there for us."

"It's important that our alumni interact with students, to help them understand the great opportunities possible for them," said the college's dean, Tim Wei, during dinner with alumni.

Past trips had visited Atlanta, Houston and Phoenix, and "it was exciting this year to see what's just down the road," said David Williams, director of retention with UNL's Engineering Student Services team.

At Burns & McDonnell, six Nebraska Engineering alumni shared advice from working at the company's headquarters, among 4,300 employees worldwide with this leading engineering design firm. The alumni emphasized the importance of internships and co-operative work experiences during college, as well as study abroad, networking and participation in groups with leadership opportunities.

Eric Glunz, a 2008 graduate of the Construction Management program with UNL's Durham School of Architectural Engineering and Construction, is now a project manager with MMC Contractors—a company that often works with Burns & McDonnell. The Nebraska Engineering students were impressed that Glunz's first assignment with MMC was helping to build Arrowhead Stadium, home of the NFL's Kansas City Chiefs. He presented about MMC's capabilities with new construction industry technologies including Building Information Modeling (BIM), Integrated Product Delivery (IPD) and Design Bid Build (DBB).



As three leading faculty retire from Nebraska Engineering, we salute their excellence. Across several programs, they helped thousands of futures by upholding the ideals of student development, meaningful leadership and impactful research.



TOUCH OF CLASS

DENNIS SCHULTE

BIOLOGICAL SYSTEMS ENGINEERING
Prof. Dennis Schulte, Ph.D., P.E., retires this spring after more than 40 years with the college.

He began as an agricultural engineering student in the 1960s, joined the department's faculty in the 1970s and helped shape UNL's Biological Systems Engineering offerings to become a top 10 program (according to U.S. News & World Report rankings).

His memories flow across the decades: the '70s, when he started teaching; the '80s, when he was developing his research; the '90s, when the department began its BSE program; and the 21st century, when he worked on continuous improvement for the BSE major. Department chair Mark Riley said Schulte "provides both the heart and mind of our undergraduate engineering program"—from teaching (with high ratings in student feedback) to documenting the curricula for accreditation reports.

Schulte mentions several mentors. Raymond Loehr, his Ph.D. adviser at Cornell University, showed him the value of scholarly research and teaching. Bill Splinter was his first department head (later rising to leadership in UNL research and other prominent roles with the university);

in a fitting tribute, Splinter's desk resides in Schulte's Chase Hall office, where he has advised countless students. (Schulte added that Loehr and Splinter both were inducted into the National Academy of Engineering.) Jim DeShazer was another mentor with the department, who taught Schulte much about "how to do research" and set an example with his love for teaching. Don Edwards, an associate dean in the College of Engineering, and later dean of the College of Agricultural Sciences and Natural Resources, held a broad perspective that Schulte admired. Morrie Schneider and John Ballard in the Engineering Dean's office, and former BSE department heads Glen Hoffman and Ron Yoder, all shared valuable wisdom.

Foremost, Schulte's energy source has always been the students. Advising involves devoting quality time, he said, as well as connecting students with the right people for the next steps in their paths. He also gave much time and energy to professional organizations



Dennis Schulte

including the American Society for Engineering Education (which in 2013 awarded Schulte its Outstanding Teacher, Midwest section honor), along with the American Society of Agricultural and Biological Engineers (ASABE). Among many honors, he earned the University of Nebraska Outstanding Teaching Award in 1996 and 2002.

Former student Joel Stenberg, P.E., commented on the positive experience of studying with Schulte: "(He) was never too busy to guide me through a situation, took a vested interest in me as a person, and inspired me to learn and maximize my potential. Dr. Dennis Schulte inspires."

Schulte will scale back to teaching one course in Fall 2014 and will enjoy more time with his wife, Ruth, and family—including their three children: Marc, Amy and Joel—who are civil, chemical and mechanical engineers, respectively.

When asked his thoughts on the future of his "Nebraska Engineering family," Schulte simply advised: "Take care of the students, and the rest will fall into place."

Yet he arrived at Nebraska Engineering as a student in the early 1960s with some uncertainty. He found slide rules fascinating, but quickly realized being left-handed was a challenge in preparing engineering drawings. He graduated in 1969 with his Ph.D. in chemical engineering, after completing his master's and bachelor's degrees in that program.

Hendrix said he especially enjoyed teaching freshmen classes, observing "how high schoolers become college students" over a matter of weeks. It's fun to watch these kids grow, he said, and "we've really had talented students here."

On finding his path, he said, "I'm lucky: I found what I enjoy doing. I've helped 'one or two' along the way—that's the best part of what I do." Hendrix likes to keep connected with former UNL students and follows

PAUL HARMON

CONSTRUCTION MANAGEMENT

Paul Harmon's background as a project manager with the UNL Physical Plant included construction of UNL's East Campus Student Union; he also had experience as a field engineer for the Nebraska Department of Roads, plus degrees in civil engineering from UNL. In 1980 when the College of Engineering needed to fill a faculty position in the Construction Management area with an individual strong in construction industry experience, Lyle Young—former associate dean of the college—suggested Harmon "give it a try."

It proved to be a good fit, and what Harmon initially thought would be a two or three year commitment turned into a 34-year span: teaching and mentoring students pursuing careers in the construction industry. With assistance and support from like-minded colleagues, including Roy Sneddon, Mike Riley and John Ballard, Harmon developed a strong commitment to students and their success in achieving a construction management degree.

During his time in front of the classroom, Harmon taught "nearly every course offered" by the program, now part of UNL's Durham School of Architectural Engineering and Construction. Harmon said he tried to bring the "construction environment" into the classroom by calling upon his experiences in



Paul Harmon

construction and using them as examples with students. Harmon estimates he has seen nearly 2,000 students graduate from the program, and he encouraged many alumni to return and share their expertise and experiences in the classroom. A 2014 UNL Outstanding Teacher Award for Harmon attests to these efforts.

Ryan Watzke, LEED AP, is a vice president with JE Dunn Construction in Omaha and enjoyed classes with Harmon: "Professor Paul Harmon was one of my favorite professors in Construction Management. His teaching always included practical construction management information and assignments preparing us for our careers in the construction industry. Professor Harmon sincerely cared for his students' interests while maintaining high standards for his students completing work and managing their own successful careers at UNL."

It made sense that Harmon advised both students and student organizations; that "close association with students made the 34 years pass quickly," Harmon said. He was the program's welcoming face to many entering freshmen at New Student Enrollment and, beyond these commitments, he also served as interim department chair (twice), department chair and program coordinator for The Durham School.

If there was any one concept he'd hoped to instill in his students, it was that "construction management is a dynamic and rewarding career," Harmon said. "Far from the image of the 'tool belt and hard hat,' it's one that provides the education and knowledge for leadership and growth in construction."

their accomplishments with pride—often inviting them to speak at CHME gatherings and participate in the department's active industry board. His knack for engaging fellow alumni with the program—John Dunn, Rick McNeel and Larry Drbal, among others—is well-known.

Mid-career, Hendrix taught at the University of Nevada-Reno and rose to roles as dean of the Mackay School of Mines and acting dean of the engineering college (at times,



Jim Hendrix

concurrent leadership positions). He learned the challenges of both: the external-facing responsibilities of the dean and the inward-facing focus of

the chair position. Returning to UNL in 1995, this perspective helped him serve as dean of the college and as chair for the Department of Chemical & Biomolecular Engineering.

He cites the positive influence of working with Stan Liberty, a former dean of the college. He also admired leaders with the University of Nevada, including its 25-year president Joe Crowley. Ultimately, Hendrix reflects, the main thing is to take the job seriously but don't take yourself too seriously.

As he packed his UNL office for retiring to Reno (actually, he'll be doing some work for the university there), he took care to retain an award from the UNL AICHE student chapter in 2004-05, which designated Hendrix as "Person Most Likely to Host His Own Talk Show." (And if there's any question about the other Jim Hendrix, ours was born six months before the rock star.)

Hendrix said his hopes for Nebraska Engineering, going forward, are to continue bringing forth people with intelligence, energy and "room to grow."

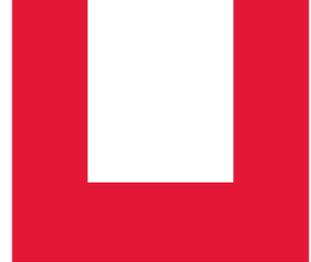


PLUGFEST

AN INTERSECTION OF AGRICULTURE AND ELECTRONICS CONVERGES IN LINCOLN EACH YEAR; LOOK INSIDE WITH NEBRASKA ENGINEERING STUDENTS WHO GET HANDS-ON EXPERIENCE AND A PEEK AT FARMING'S FUTURE



Agricultural Engineering seniors Wyatt Stubbs, Luke Stevens and Shane Forney check out a display at Plugfest 2014 in Lincoln.



nder crystal chandeliers in the ballroom of a downtown Lincoln hotel in May, the future of farming sprouted in rows and rows of green—as strings of code in text-based programming displayed against the dark soil of computer screens.

The 2014 Agricultural Electronic Industry Foundation (AEF) Plugfest convened crowds of “ag-techie gearheads” from agricultural equipment manufacturers near and far for electronic conversations between tractors and related devices. The action centered around tablet-like terminals—electronics control units that are fixtures in tractors of today and tomorrow—and new gadgets connected to

engineering. “It’s great experience here because these days you’ve really got to learn the electronics side, too.”

Forney was in a group of UNL Tractor Test Lab student workers that gained inside perspective on what farm equipment manufacturers go through to prepare for Plugfest—months of planning, testing and troubleshooting. The students got hands-on experience in prior weeks, building the event’s 36 “ISOBUS junction boxes,” to which companies attach their prototype devices.

The multi-faceted boxes are hubs, as representatives from more than a dozen companies carried totes of experimental devices to tables jittering with cords, cables and

In short, “the components must be able to talk to each other,” said Roger Hoy, professor of Biological Systems Engineering, who leads the Tractor Test Lab. With an organizing committee including Hoy and AEF leader Robert Waggoner from AGCO, Plugfest provides one-stop shopping for the device manufacturers, as the event’s schedule shifts their gear and attendants through the sequence of company pairings they’ve requested.

Triplett said after preliminary testing at Plugfest, companies often follow up with in-depth performance studies later in the season, a few miles away at the Tractor Test Lab. The Nebraska facility’s unique capabilities keep it a vital resource as the agricultural industry works to improve yields.



the ECUs in round-robin pairings. If these match-ups go well, the next few years’ crops of technology for planting, fertilizing and harvesting continue the march to market.

The semi-annual industry gatherings (another version takes place each autumn in Europe) reveal the future of agricultural technology—all to make farming more efficient, said Doug Triplett, test engineer with the Nebraska Tractor Test Lab at UNL’s East Campus.

UNL senior Shane Forney made sure his work also passed the test. Despite sunny spring weather outside with temperatures in the 90s, Forney enjoyed spending several days of his finals week at the Plugfest.

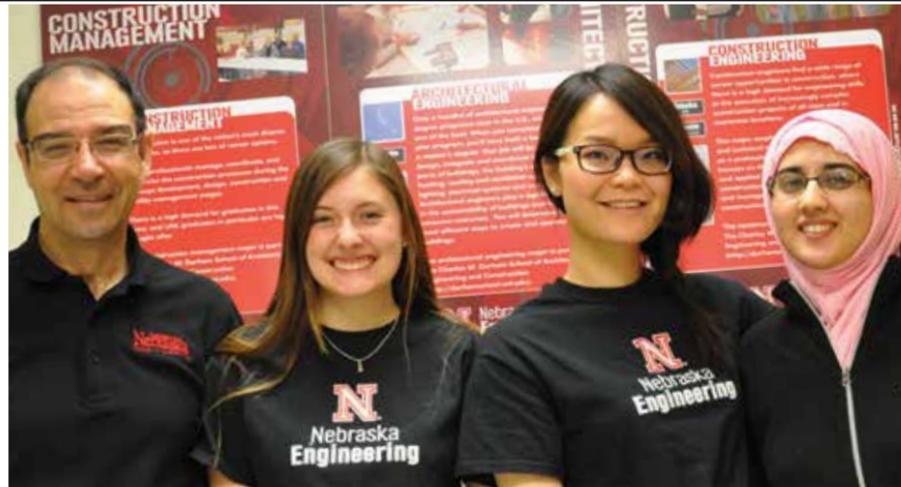
“I’m more of a mechanical guy. I like to rebuild engines,” said Forney, who studies agricultural

coffee cups. Since 2001 it’s become standard practice that specialized implements such as planters or balers operate with the hardware and software of major tractor manufacturers such as John Deere and CLAAS.

According to the Agricultural Industry Electronics Foundation, “Ag equipment manufacturers around the world have agreed on ISOBUS as the universal protocol for electronic communication between implements, tractors and computers. The primary goal of ISOBUS data technology is to standardize the communication which takes place between tractors and implements. ... The basis is the international ISO 11783 standard – “Tractors and machinery for agriculture and forestry - Serial control and communications data network.”

As a finale at some Plugfest events, participants hooked up all the equipment to make a giant “daisy chain” of devices. The “white smoke fairy” (rumored to be the magic factor behind the technology) who sometimes visits such occasions did not appear at the 2014 event, but the room hummed with the promise of greater productivity in harvests to come—just when the world needs that most.

The Durham School's **Yulia Tyukhova** was selected for the Jonas Bellovin Scholar Achievement Award. The honor includes a \$5,000 prize for outstanding performance in an established lighting program. She studies for her UNL architectural engineering Ph.D. and is advised by Dr. Clarence Waters. Her research is on discomfort glare in outdoor nighttime environments; a discomfort glare metric is necessary for comparing lighting installations (parking lots, sport stadiums, etc.), minimizing glare, and ensuring a comfortable visual environment. Proper outdoor nighttime lighting also enhances the safety of drivers on roads and people on the streets. She received the award at the LIGHTFAIR conference in Las Vegas. The Public Policy Center named CSE Professor **Leen-Kiat Soh** a Faculty Fellow for a three-year period beginning July 1. Soh's honor is a result of the outstanding work he contributed in past collaborations with the center. The Public Policy Center at UNL provides a unique opportunity for policy makers and researchers to address the challenges of local, state and federal policy. The Board of Regents established the Public Policy Center in 1998. As listed on Soh's page on the Public Policy Center's website, his primary research interests are intelligent agents, multi-agent systems, and image processing. He has applied his research findings to computer-aided education systems, survey informatics, geographic information systems, intelligent image analysis and other applied artificial intelligence research.



The UNL iTrack team includes (from left) Associate Professor Moe Alahmad with Nebraska Engineering students Katie Gilg, Yuye Peng and Sameena Khan.

UNL Durham School and Computer and Electronics Engineering students traveled to Washington, D.C., to compete in the Environmental Protection Agency's "People, Prosperity, and the Planet" P3 student competition at the National Sustainable Design Expo. The P3 competition took place at the 2014 USA Science & Engineering Festival, which welcomed more than 100,000 visitors. The Nebraska Engineering team prepared a video about their project at <http://go.unl.edu/itrack>. The Nebraska entry was among more than 40 P3 teams that won EPA grants of up to \$90,000 to conduct sustainability research this year. The students—**Yuye Peng, Katie Gilg** and **Sameena Khan**—describe iTrack as a "real-time energy node locator for the built environment" with technology to deploy at a building's electrical panel to remotely locate

where electricity is being used. "iTrack is the first integrated hardware/software that can remotely monitor and locate every active energy node without sensors at each node—making it more efficient to operate and less expensive to implement," said **Mahmoud "Moe" Alahmad**, associate professor of architectural engineering, who advised the team. "Through reflectometry, we track the unique load and distance for each appliance, and can immediately communicate the usage information remotely so that home or business owners can make better decisions about how energy is used in their buildings." According to the U.S. Department of Energy, buildings use more than 40 percent of the energy in the U.S.; Alahmad said, "With iTrack, our UNL team aims to reduce that."

Civil engineering junior **Shay Valentine** volunteers at Gomez Heritage Elementary School in Omaha and recently started a school club to get young girls interested in engineering. The club had 40 girls signed up for the 20 available slots and, since January, activities have included making pollution catchers, mini ecosystems in plastic bottles, and using dried spaghetti and tape to build structures strong enough to hoist a marshmallow.

The 2014 Durham School Construction Programs event recognized leaders in its community, including faculty service milestones for **Tom Sires** (50 years) and **Paul Harmon** (40 years).

Students from Computer Science & Engineering and Architecture hit the dance floor with the Streb Extreme Action Co. in performances at Lincoln's Lied Center in April. CSE Assistant Professor **Carrick Detweiler** added unmanned aerial vehicles to a mashup of technology, science, design

and movement. The exhibition included architectural designs created by UNL students, choreography developed by UNL dancers featuring objects and props, and flying robots from UNL's NIMBUS Lab. A video of the group's practice session is at <http://youtu.be/jQdWGPcMWc>.

Yue Zhao, a Ph.D. student in the Department of Electrical Engineering, was announced in February as the UNL Outstanding Graduate Research Assistant. Zhao received a \$1,000 check and a commemorative medal. Zhao, who earned his bachelor's degree at Beijing University of Aeronautics & Astronautics, was nominated by his faculty adviser, Associate Professor Wei Qiao. Zhao's studies specialized in power electronics and motor drives; he is pursuing plans to teach electrical engineering.

Libby Jones, professor of civil engineering, received the Peter J. Bosscher Faculty Advisor Award for Outstanding Leadership from Engineers Without Borders – USA. The honor recognizes faculty advisers who provide outstanding leadership and mentorship to their student chapter. Student chapter members praised Jones' level of encouragement and inspiration, and her ability to help them navigate both at the university level and across cultures with their community partnership in Madagascar. Jones also serves on EWB-USA's Faculty Leadership Council.

Tadeusz Wysocki has been named a "National Professor of Poland." The honor is a lifetime distinction that recognizes contributions to science and research. Wysocki is professor of computer and electronics engineering. He directs the Wireless Research Laboratory at the college's Omaha campus in The Peter Kiewit Institute. He learned of the honor after Poland's president, Bronisław Komorowski, signed a decree in June. Wysocki (below, right) received the award during an Oct. 31 ceremony in Warsaw. "This is the highest title one can get in Poland for recognition of contributions to science and research," Wysocki said.



Dr. Tadeusz Wysocki accepted the National Professor of Poland award in October.

Paul Harmon, associate professor of construction management, and **Mehrdad Negahban**, professor of mechanical and materials engineering, were chosen for UNL 2014 Distinguished Teaching Awards.

AFROTC Cadet **James Yong** earned the Nebraska Alumni Association's 2014 Shane Osborn Award, recognizing a student who demonstrates courage and integrity in daily life, similar to the award's namesake. Yong is a junior from Omaha who studies biological systems engineering and has served as AFROTC chaplain liaison, vice wing commander technician and fall 2013 flight commander for the freshman class. He is the Arnold Air Society's deputy squadron commander, secretary of the Biomedical Engineering Society and on the UNL Navigators' leadership team.

Seven from Nebraska Engineering earn 2014 NSF Graduate Research Fellowships

A senior and recent graduates of the UNL College of Engineering were among 2,000 scholars nationwide who were recognized by the National Science Foundation in 2014 as Graduate Research Fellows for "their potential for significant achievements in science and engineering research." The winners from Nebraska Engineering include:

Stephanie Berger, Sioux Falls, S.D.; she earned her bachelor's degree in Biological Systems Engineering in May 2012; she now studies at the University of Washington.

Walter Bircher, Omaha; he graduates in May 2014 with a bachelor's degree in Mechanical Engineering.

Bethany Drain, Elkhorn, Neb.; she earned her bachelor's degree in Mechanical Engineering in May 2013 and now studies Aeronautical and Aerospace Engineering at the University of Texas at Austin.

Jeff Lopez, North Platte, Neb.; he earned his bachelor's degree in Chemical Engineering in May 2012; he currently studies at Stanford University.

Jared Ostdiek, Columbus, Neb.; he graduated with his bachelor's degree in Biological Systems Engineering in December 2013; he currently studies with the University of Nebraska.

Olivia Scheideler, Lincoln; she graduated with a bachelor's degree in Biological Systems Engineering in May 2013; she currently studies at the University of California, Berkeley.

Piotr Slawinski, originally from Warsaw, Poland; he graduated in December 2013 with a bachelor's degree in Mechanical Engineering.

According to the NSF, these fellowships provide three years of support for the recipients' graduate education. GRF benefits include a \$32,000 annual stipend, \$12,000 cost-of-education allowance to the institution, international research and professional development opportunities and XSEDE Supercomputer access.

Ming Han, assistant professor of Electrical Engineering, and **Natale Ianno**, Milton E. Mohr Professor of Electrical Engineering, are leading Light in the Nano World, a Young Nebraska Scientists camp for high school students this summer in Lincoln. The learning includes how lasers and optics work and impact our lives, and addresses basic operational principles of lasers, fundamental properties of light, and the important roles they play in daily life--from sunglasses, LCD monitors and 3-D movies, to internet data transmission. Hands-on activities explore the wave nature of light, including interference, polarization, transmission and reflection. Using critical thinking skills, students address and solve problems, and set up an optical communication link to transmit music from their music players to a remote speaker using laser beams.

2014 Innovation, Development and Engagement Award recipients

The University of Nebraska announced its 2014 Innovation, Development and Engagement Award (IDEA) recipients are **Shane Farritor**, Ph.D., professor of Mechanical & Materials Engineering, and **Dmitry Oleynikov**, M.D., Joseph and Richard Still Endowed Professor of Surgery in the Department of Surgery, director of the Center for Minimally Invasive Surgery, and director of the Center for Advanced Surgical Technology at the University of Nebraska Medical Center. NU's IDEA honor recognizes faculty members who have extended their academic expertise beyond the boundaries of the university to enrich the broader community.

Farritor and Oleynikov helped create miniature surgical robots that can be inserted through a tiny incision in the abdomen and perform minimally invasive surgery that significantly reduces the patient's pain and recovery time. Their collaboration resulted in a new spinoff company, Virtual Incision Corp. The partnership between Oleynikov and Farritor has resulted in multiple patents and technology commercialization and is widely recognized as a model for cross-campus collaboration. View a video about them at <http://go.unl.edu/k0zk>.

Research Experience helps grad land MDA job



Maj. Gen. Samuel A. Greaves, deputy director of the Missile Defense Agency, administers the oath of office to UNL alumnus Matt Mitchell.

Matt Mitchell's work is classified.

The Omaha native and recent UNL graduate works for the U.S. Department of Defense's Missile Defense Agency. He credits his UNL studies with giving him the skills, engineering background and confidence the agency seeks.

Mitchell earned a master's degree in electrical engineering in 2012 and a bachelor's degree in 2010. The Missile Defense Agency selected him to join its Career Development Program, which provides recent graduates hands-on experience using cutting-edge technology as well as career mentorship.

He will work for two years in the agency's Huntsville, Ala., facility, rotating through three divisions. In his first rotation, Mitchell analyzed technology trends. Now on his second rotation in advanced technology, his work involves sensors.

Mitchell's father, an electrical engineer, encouraged his son's interest in math and science. Mitchell chose to study electrical engineering as well, assuming he'd work in industry.

Then he answered an ad to work as an undergraduate assistant for Lott Professor of Electrical Engineering Yongfeng Lu because, he admits, it sounded better on a resume than moving boxes for UPS, the other job posted at the time. Research, it turned out, was cool.

"I ended up just kind of loving it," he said. "They were all working so hard to solve these problems that didn't have a direct answer, like it wasn't something that you could just go look up in a book or Google search. You have an

idea of what the end goal is, but it's up to you to figure out how to get there."

Mitchell started out assisting others, but as a graduate student tackled his own research project: improving the synthesis of gallium nitride, a semiconductor used in Blu-ray and other devices.

He said working in Lu's lab and taking courses taught him not only engineering and computer skills, but also how to approach a new problem, justify his approach and work independently, yet within a team.

"It helps having a lab full of the smartest people ever. No one hesitated to jump in and help," he said. "Dr. Lu was great. He treated me as part of the team the whole way. He's a super busy guy, but would always take time for me."

Lu said he's fortunate Mitchell decided to stay for graduate school. "Matt is very independent, but can work with anyone and was always contributing to the group," Lu said. "He understands directions and takes action. You can't just be smart. You have to be willing to be hands-on."

Mitchell's proven skills in problem-solving and conquering complex challenges helped him land his position, which he learned about while working with Lu.

"I feel proud of my job here," he said. "The stakes are high, and it's something that affects everyone in America. As a first job, I don't think I could have asked for anything better."

A **BSE student team's** senior project gained a patent and was published for its innovation, "System and Method for Monitoring Pleural Fluid." With a chest injury, liquid and gas can leak into the space around the lungs, causing a collapsed lung; current devices to drain the space around the lungs do not objectively measure the air leak. **Abby Kelly** (now a UNL BSE graduate student), **Suzanne Higgins** and **Max Twedt** designed an inexpensive, portable and marketable device capable of objectively measuring gas within the space around the lungs, while maintaining current treatment methods. The students worked with BSE faculty and contacts at the University of Nebraska Medical Center.



Max Twedt, Abby Kelly, Suzanne Higgins

In Memoriam

Dr. Lawrence "Larry" E. Ehlers, 80, died Jan. 20 in Lincoln. He was an associate professor of mechanical engineering at UNL until he retired in 1994 and an active volunteer with the Lester F. Larsen Tractor Test and Power Museum. Born in Junction City, Kan., he received his B.S. (1957) and M.S. (1962) from Kansas State University and his Ph.D. (1969) from Oklahoma State University. He married Julia "Judy" I. Wood in 1958 and the couple had three children: twins Pamela Elaine (Ehlers) Crawford and Jeffrey Alan Ehlers, and Douglas Edward Ehlers; their family grew to include many grandchildren. He began working for UNL in 1981. Ehlers will be remembered at Nebraska Engineering for his involvement with students. He sponsored many activities, including the Order of the Engineer. Participating with numerous local organizations, he was recognized by the Nebraska Society of Professional Engineers, American Society for Engineering Education, and the American Society of Mechanical Engineers.

E-WEEK 2014

Approximately 1,000 students, faculty and guests attended the college's 101st E-week Open House April 25 in Lincoln. Electrical Engineering alumnus Curt Tomasevich, USA Bobsled Olympic medal winner, drew an overflow crowd for the keynote speech. The open house also featured diverse student projects and designs, as well as activities and demonstrations for the community and prospective students.



1980s

Larry Vandergriend, P.E., '87 CIVE, is an engineering manager at Hughes Brothers in Seward, Neb.

1990s

Mike Ostdiek, '92 MECH, is a process engineering coordinator with BD Medical in Columbus, Neb.

Darin Glenn, '94 & M.S. '96 ELEC, is an engineering manager with Vishay in Columbus, Neb.

Tom Borcharding, '95 ELEC, is an IT director with FirstData in Omaha.

Greg Fisher, '98 AGEN, is an engineering manager with MFS / York / Stormor, a division of Global Industries, in Grand Island.

Tim Schultz, '99 CHME, is an environmental coordinator with ADM in Lincoln.

Tom Weier, '99 CHME, is a superintendent for ADM in Lincoln, with its soybean processing facility.

2000s

Tony Vejraska, '00 MECH, is an engineering manager with Altec in the Digger Derricks group.

Jeremy Buckley, '01 MECH, is a continuous improvement manager with Teledyne Cetac Technologies in Omaha.

Ben Reicks, '02 CM, is a senior project manager, LEED AP, with JE Dunn Construction in Omaha.

Steve Prochazka, '03 ELEC, is a research and development manager with Teledyne Cetac Technologies in Omaha.

Drew Luebe, '04 CHME, is an ethanol superintendent with ADM in Columbus, Neb.

Matt Holthe, '05 ELEC, is a telecom engineer with NPPD in York, Neb., and works on replacing fiber-optic cable throughout the state.

Austin Story, '06 AGEN, works in design assurance and product testing with Altec.

John Hoodjer, '08 CM, is a project manager with JE Dunn in Omaha.

Jeremy Muehlbauer, '08 CENG, is a senior software engineer with Cerner in Kansas City, Mo. He works on systems management and components for electronic medical recordkeeping.

Lee Redden, '08 MECH, was included (with the company he co-founded, Blue River Technology) on Forbes "30 Under 30 – Energy & Industry" list.

Wendy Wagner, '08 & M.Eng. '10, is a manufacturing engineering leader with Altec.

Chris Lohmeier, '09 & M.S. '11 ELEC, is a research and development engineer in product development with Vishay in Columbus, Neb.

Mark Menousek, '09 CM, is a project manager and LEED Green Associate with JE Dunn Construction in Omaha.

2010s

Clark Lacy, '10 & M.S. '12 ELEC, is a product engineer with Vishay in Columbus, Neb.

Jay Carter, '11 ELEC, works on communication systems with Union Pacific in its IT department in Omaha.

Sarai Obenland, '12 IMSE, is an industrial engineer with Hormel in Austin, Minn.

Kent Gunderson, '13 ELEC, is an electrical engineer with Segal Engineering & Technical Services in Overland Park, Kan.

Marques King, '13 ELEC, is an embedded controls engineer with Altec



WHAT'S IN A NAME?

WHEN IT COMES TO SUPPORTING YOUR ALMA MATER, A LOT.

When you create an endowed fund at the University of Nebraska College of Engineering, you are investing in the next generation of engineers who would like to follow in your footsteps.

You can give to support a scholarship, fellowship or professorship in the area of your choice. You can create a lasting legacy by endowing a fund in the name of a company, a loved one or anyone you would like honored. Your gift, along with the name associated with it, will be forever associated with Nebraska Engineering.

Please consider joining the others on this page who have made an on-going commitment to the future of Nebraska Engineering.

To give, or to learn more about endowed named funds, contact Karen Moellering, kmoellering@nufoundation.org, 402-458-1179; or Amy Ferguson, aferguson@nufoundation.org, 402-458-1203.

Give online at nufoundation.org/engineering.



Harold B. Muff Memorial Student Support Fund; Richard L. McNeel Faculty Award for Excellence Fund; Donald E. & Marjorie Wiles Student Support Fund; David L. McDowell Ph.D. Engineering Excellence Fund; Roadside Safety Program Enhancement Fund; Winfred C. Zacharias Excellence Fund; Mary Y. and William W. Beck Fund; J. A. Woollam Professorship; Hoyt M. and Merdith L. Wells Scholarships & Fellowships in Engineering; David W. Olive Memorial Scholarship; Jeffrey L. Zvolanek Engineering Excellence Fund; Dr. Clyde Hyde Electrical Engineering Professorship Support Fund; Leslie D. Martin Civil Engineering Professorship; F & B Constructors Inc. Scholarship Fund; Dr. James C. and Joan R. Wolford Fellowship Fund; Steve and Jan Zuckweiler Fund; Nebraska Engineering Research Fund; Floors Incorporated Scholarship Fund; Keith N. Newhouse Scholarship Fund; Control Services Inc. & Richard and Bonnie Brasel Student Support Fund; Nebraska Hall Renovation; Dennis C. and Terri Hirschbrunner Excellence Fund; NDOR/AGC Partnering Scholarship Fund; Ray and Karen Shaw Engineering Scholarship Subfund; Lantz-Hess Fund; Miller and Associates Consulting Engineers Student Support Fund; David C. McClure Electrical Engineering Excellence Fund; Albert Schultz Civil Engineering Scholarship Subfund; Hyde Scholarship Fund; Dr. Russell C. Nelson Memorial Scholarship Fund; J. A. Woollam Electrical Engineering Support Fund; Jesse & Hisayo Graham Electrical Engineering Student Support Fund; Jesse & Hisayo Graham Electrical Engineering Student Support Fund; Louis J. Kash Scholarship; GCBAA Foundation Construction Management Scholarship Fund; Milo Stych Memorial Scholarship Fund; Architectural Engineering Alumni Fund; Arthur E. Hansmire Excellence Fund for Civil Engineering; LaMoine & Margaret Brownlee Excellence Fund - Engineering; Nebraska Section ASCE Student Support Fund for Transportation Engineers; Robert N. and Marilyn F. McDowell Scholarship Fund; Joseph H. & Cynthia J. Bryant Fund; Kenneth L. Baumert, Ph.D. Mechanical Engineering Student Support Fund; Larry and Lee Reynolds Student Travel Fund; Vaughn & Barbara Yost Scholarship Subfund Honoring John Paustian, Professor, Mechanical Engineering; Vaughn & Barbara Yost Scholarship Subfund Honoring James Blackman, Professor, Engineering Mechanics; Herbert R. and Ruth A. Yost Memorial Scholarship Subfund; Garmin ECE Scholarship Fund; George E. Hervert Excellence Fund; Kimley-Horn Student Fellowship Fund; Tutt Family Scholarship Fund; Katherine A. & Robert G. Ladd Chemical Engineering Scholarship Subfund; Edgerton Innovation Award Fund; Kerry N. McVey Memorial Scholarship Fund; David J. Miles Construction Management Scholarship Fund; Omar H. Heins Endowment Fund for Excellence in Electrical Engineering; John J. McGuire Jr. & Mary Joyce McGuire Scholarship Fund; Rodney John Brown Rames Fund; Charles E. Hirsch Sr. Fund; George B. & Betty A. Cobel Excellence Fund; Thomas E. & Mary L. Hendricks Scholarship & Fellowship Fund; Kawasaki Student Excellence Fund; Lowell E & Betty L Anderson Engineering Research Fund; NPPD Power System Engineering Education Fund; John E. McCue Memorial Scholarship Fund; AT & T Department of Computer Science & Engineering Fund; **Your Fund Here**; Dennis R. Myers Environmental Engineering Scholarship Fund; Dr. George Schade Memorial Scholarship Fund; Howard N. Ericksen Memorial Scholarship in Engineering Fund; OPPD Power System Engineering Education Fund; OPPD Education Enhancement Fund; ZNETH Project Engineering Excellence Fund; Richard V. Hensley Engineering Excellence Fund; Raymond C. 'Craig' Cole Fund for Excellence; David and Lenore Swaim Student Support Fund; Ralph S. Hyatt & Robert S. Hyatt Scholarship Fund; Lyle and Marguerite Young Educational Excellence Fund; Lester C. Krogh Scholarship & Fellowship in Chemical & Biomolecular Engineering Fund; Narvin O. Wittmann Scholarship Fund; Robert W. Brightfelt Chair of Mechanical Engineering Fund; Thomas T. Ogee, Sr. Memorial Scholarship Fund; C. Louis Meyer Memorial Scholarship Fund; Ronald F. & Maureen A. Taylor Scholarship Fund; Kiewit CM Enhancement Fund; Brian L. Halla/National Semiconductor Fellowship Fund; Biological Process Development Facility Excellence Fund; J. A. Woollam Foundation Fund; Archie and Velma Lederer Memorial Scholarship Fund; Dr. Song Ci Research Fund; Ndamukong Suh Endowed Scholarship Fund; Almond J. Gatzemeyer Engineering Scholarship Fund; Edward A. & Katherine S. Kuligowski Student Support Fund; Wilmer J. and Sally L. Hergenrader Chair in Mechanical Engineering Fund; Burns & McDonnell CoE Library Project; Scott A. Ramsey Scholarship Fund; Jim D. and Faye D. Rasmussen Student Activities and Leadership Development Fund; Jim D. and Faye D. Rasmussen CM Renovation Fund; Jim D. and Faye D. Rasmussen Durham School Excellence Fund; Norman C. Schuessler-Durham School/Omaha Section-NACE Student Support Fund; John William Mueller Excellence Fund; Johnson Controls Durham Opportunity Scholarship Fund; Nebraska ASHRAE Memorial Scholarship & Fellowship Fund; William Robert White, Jr. College of Engineering Scholarship Fund; CEEN Robotics Educational Outreach Fund; James E Lofdahl Family Scholarship in memory of parents, Fredrik Emanuel & Mabel Christenson Lofdahl; Conrad and Thomas Stahly Student Support Fund; Olsson Associates College of Engineering Physical Improvements Fund; Engineers Without Borders-USA University of Nebraska Student Chapter Fund; Olsson Associates Student Program Initiatives Fund for the College of Engineering; Husker Motorsports FSAE Competition Fund; Howard S. Wright-Balfour Beatty Howard Scholarship Fund; George L. Vlasnik Loan Fund; Annual Structural Conference Committee Fellowship Fund; Retail Contractors Association Scholarship Fund; Don D. Davis, Jr., Scholarship for Electrical Engineering Fund; Jim Pollard Memorial Scholarship Fund; Leslie Family Scholarship Fund; Union Pacific Omaha Campus Educational Enhancement Fund for Engineering; Phillip Chase Engineering Fund; John T. McGreer, IV Memorial Scholarship Fund; Society of Women Engineers Excellence Fund; Evert J. Culling Memorial Scholarship and Fellowship Fund; Larry N. and Ramona L. Reed Scholarship Fund; John H.D. Davis, P.E., Memorial Scholarship for Civil Engineering Fund; Paulsen Inc. Scholarship Fund; Gustavo Larsen Fund; Clinton H. & Patricia A. Webb Endowed Scholarship Fund; Mason C. & May H. Oong Electrical Engineering Scholarship/Fellowship Fund; William R. Ramsay Fund; Y.C. & R. Pao Excellence Fund; L & H Sprandel Student Support Fd; Richard T. & Wilma M. DeLorm Excellence Fund; J J Forman Mechanical Engineering Fund; Arthur A. Dobson II Family Fund for Construction Management

Nebraska Engineering Alumni: please share your updates at
www.engineering.unl.edu/alumni/alumniUpdateForm.shtml



FOR THE FUTURE:

Youth explore engineering with Learning for Life and the Durham School

This spring Learning for Life, providing career exploration experiences for young people, held another session of its annual Explorer Post focusing on Nebraska Engineering programs in Omaha. The five-week program meets three hours per week on engineering concepts related to architectural engineering, construction engineering and construction management. Each week begins with an interactive faculty lecture providing the framework for hands-on building activities. Explorers apply engineering principles they learned from the lectures to their models, while following strict building guidelines.

The 40 Explorers formed eight groups, each responsible for designing and constructing a new commercial building for the Omaha area. Model materials kits were designed by staff with The Durham School of Architectural Engineering and Construction, and student ambassadors helped guide the work sessions. The youth teams could request additional materials for their project but--just as in real life--the additions would increase the overall cost of their building, potentially hurting their final score. Real-world applications are used throughout the lessons, to give the Explorers a taste of the issues they could face as engineers and project managers.



Explorer Post students explained the models they built, representing new public buildings for Omaha. The activity's curriculum and materials came from UNL's Durham School of Architectural Engineering and Construction, which hosted the young people for sessions over several weeks. Durham School faculty shared their expertise and students helped advise the youth teams.

Student Hannah Harder valued the Explorer Post engineering experience; her group was awarded the best overall project and she said the experience helped her get interviews for two summer internships. "I appreciated the time student leaders invested in the Explorer program," she told Durham School's Brett Meyer, who coordinated the curriculum. "I hope to see you in the future and show you what I've been able to do because of the engineering Explorer program."

- Carole Wilbeck