

MISSOURI  
**S&T**  
MAGAZINE

SUMMER 2016 VOL. 90 NO. 2

6 HIGH SCHOOL  
TEACHER LEADS  
THE WAY

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MINERFEST

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**EXPERIENCE**

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MISSOURI S&T MAGAZINE

EXPERIENCE NECESSARY

SUMMER 2016 VOL. 90 NO. 2

MISSOURI S&T'S 2016

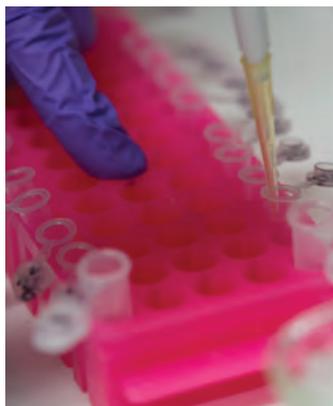
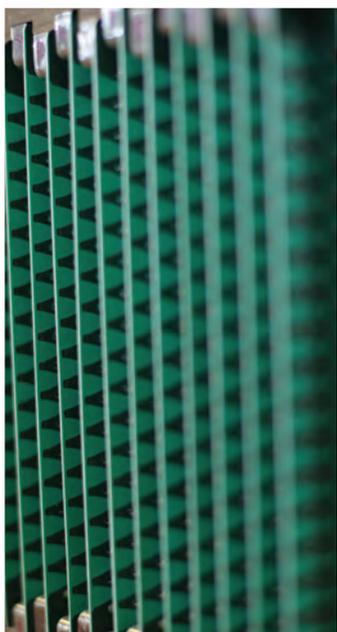
# ALUMNI **OF** INFLUENCE

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Join us for a celebration of innovation, exploration, leadership and impact as we honor 10 Miners for their lasting contributions to our university and the wider world.

The 2016 Alumni of Influence Gala  
Saturday, Nov. 5, 2016  
Hasselmann Alumni House  
Rolla, Missouri

Seating is limited. To reserve tickets, contact Sarah Jones at [jonessarah@mst.edu](mailto:jonessarah@mst.edu) or visit [influence.mst.edu](http://influence.mst.edu).



## CORRECTION

The late **Robert C. Mitchell**, ChE'61, was incorrectly identified as a member of Sigma Phi Epsilon fraternity in the Spring 2016 issue. He was not a member of that fraternity. We regret the error.

## AROUND THE PUCK

**4 Miner memories**  
Meet Bill Bennett, ME'49, former editor of the *Missouri Miner*.

**6 High school teacher leads the way**  
This alumna shares her passion for STEM with her high school students.

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Imagine a camera that could diagnose skin cancer, scan luggage and find hidden cracks in bridge supports.

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We remember our classmates and friends.

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Clay Melugin, EE'84.

# 16

College and university teams from around the world were chosen to compete in the 2017 Solar Decathlon. For the seventh time, Missouri S&T will be one of those teams.

# 2050

The year Missouri S&T plans to be carbon neutral as part of the Second Nature Climate Commitment charter, which S&T signed this past spring. S&T plans to reduce greenhouse gas emissions by 20 percent by 2020, and by 40 percent by 2035.

## MISSOURI S&T BY THE NUMBERS

# 2

S&T's rank among U.S. colleges and universities in Value College's 2016 list of Top 50 Best Value Big Data Graduate Programs.

# 441

Seventh-grade girls who learned what's cool about science, technology, engineering and math at Missouri S&T's STEM Day in March.

# 2.9

Percentage increase in first-day enrollment for the Spring 2016 semester. There were 7,931 students enrolled on the first day of classes in January.

# MISSOURI S&T MAGAZINE

Missouri S&T Magazine is written, edited and designed by the staff of the Missouri S&T Marketing and Communications Department and the Miner Alumni Association.

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#### ASSOCIATE ALUMNI EDITORS

Logan Campbell Joe McCune Travis Sewell

#### DESIGN AND PRODUCTION

Jake Otto Lishia Stevens

#### STAFF PHOTOGRAPHER

Sam O'Keefe

#### CONTRIBUTORS

Arielle Bodine Greg Katski

Jesse Cureton Aimee Whitmire

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#### Send letters to:

Darlene Ramsay

Miner Alumni Association

1100 N. Pine St.

Rolla, MO 65409-0650

Phone: 800-JO-MINER

Fax: 573-341-4706

Email: alumni@mst.edu

#### News & features:

Phone: 573-341-4328

Fax: 573-341-6157

Email: news@mst.edu

[magazine.mst.edu](http://magazine.mst.edu)

## LEACH THEATRE TURNS 25

For 25 years, Leach Theatre has hosted Broadway shows, orchestra concerts, comedy acts, universitywide addresses and film festivals — even events like freshman chemistry safety classes. The theater has touched many lives throughout its history but its No. 1 priority has always been to serve the students of Missouri S&T.

“The theater brings in talented performers who we believe will enrich the students’ experience while here,” says **Emily Brickler**, director of Leach Theatre. “We bring the arts to the local community and provide an opportunity for people to see performances that they would not have easy access to otherwise.”

Named after **Thomas**, MinE’20, and **Frances Leach**, the 650-seat theater is located in Castleman Hall and hosts dozens of professional events throughout the year. The annual list of shows is varied to try to appeal to as many people as possible, with performances ranging from *Mamma Mia!* and STOMP to Arlo Guthrie and the Celtic Tenors.

“To provide students access to the quality shows Leach hosts, we give away 50 free student tickets to each performance in our performing arts series,” says Brickler. “We are the only stop in the state for some artists, so it is important to give students a first chance to see them.”

Students perform on stage throughout the year, with orchestra, band, choir, theater and dance performances taking place each semester. The stage is also the setting for the annual St. Pat’s Coronation the Friday night before the parade.

This fall, Leach Theatre will kick off its 25th anniversary season with an opening gala event featuring a performance by the Saint Louis Symphony Orchestra on Wednesday, Sept. 7. It is a callback to its inaugural opening gala in 1991, when the Bolshoi Ballet performed to a sold-out audience.

For more information about the theater’s upcoming season, visit [leachtheatre.mst.edu](http://leachtheatre.mst.edu).



CASTI

Charles W. "Bill" Bennett edited the *Missouri Miner* in the '40s.  
Photo by K.C. Alfred

By Mary Helen Stoltz, mhstoltz@mst.edu



# MINER MEMORIES

In a letter published in a June 1945 issue of the student newspaper, the *Missouri Miner*, then-Dean **Curtis Laws Wilson**, Hon'46, wrote to editor **Charles W. "Bill" Bennett** to speak up for disgruntled faculty members who felt they were being treated unfairly in the *Miner*. Believing the university would run more smoothly if the faculty and students got along, the faculty voted to require the editor to report directly to the faculty through Wilson.

By that time, Bennett, ME'49, had been running the *Miner* for over a year. And he was only a sophomore. Bennett took over the paper as a freshman, just two months into his college career. When he started, the paper was printed as a center section of the *Rolla Daily New Era*, but Bennett and **Carl Finley**, EE'45, took over full management in partnership with a local printer.

"I have to admit that I didn't know too much about running a newspaper, so I decided that in addition to routine campus activities, I'd see if I couldn't stir the pot and find interesting

"I HAVE TO ADMIT THAT I DIDN'T  
KNOW TOO MUCH ABOUT  
RUNNING A NEWSPAPER."

things to write about," Bennett says. "The results were quite memorable."

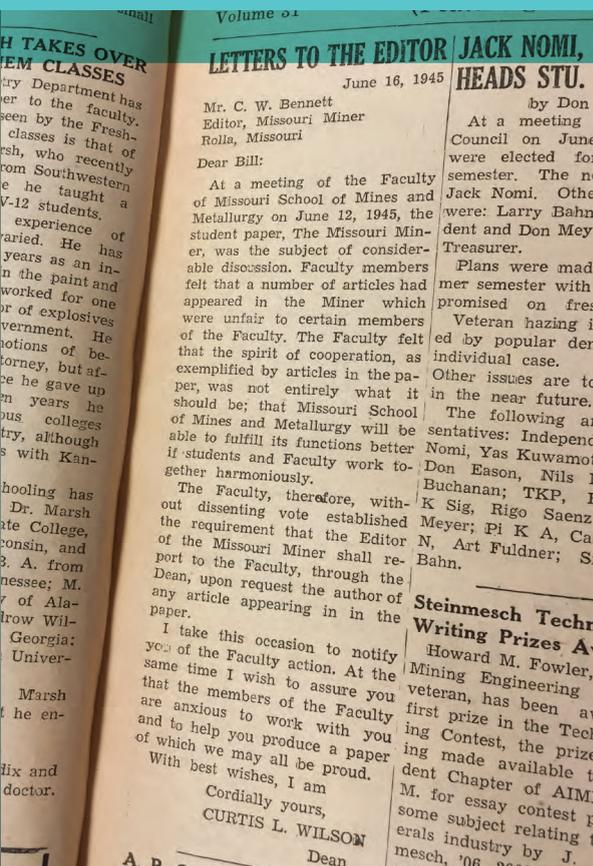
Wilson's letter isn't surprising, in light of some of Bennett's articles.

"We began exploring the quirks and foibles of the faculty," Bennett says. "In one instance, my English professor made some remarks deleterious about Rolla. I printed a Frisco Railway schedule on the front page and pointed out that there were four trains leaving daily.

"But what really got to him was when he sent in a letter to the editor and I made corrections, graded it and sent it back."

For a brief period, the *Missouri Miner* was banned by the Rolla postmistress, Bennett says.

"I was unskilled at laying out the paper for publication," he says. "Sometimes the copy did not exactly fit the column and would leave two or three line gaps at the bottom. I began to fill these gaps with small jokes — some with a



double entendre. I thought it was humorous; the postmistress thought it obscene, and she banned the newspaper from the mail.”

Bennett soon learned the skill of writing or rewriting copy to fit exactly in the space allotted, and he succeeded in getting the ban removed.

“I also learned to read galley proofs upside down and backwards and to rapidly spot typos and misspellings,” Bennett says. “In later life, I used to drive my secretaries nuts when I would pass the desk behind their typewriters and causally spot errors as they were typing.”

Despite a two-year stint in the Army, Bennett graduated in just 4½ years. He regularly took between 24 and 27 hours each semester. Bennett’s mechanical engineering degree combined with radar repair experience from the Army landed him a job at IBM, and, following various career moves, he retired as an engineer with TRW Inc., then known as Space Technology Labs.

“I was hired for a specific job requiring special clearance that was so sensitive it required almost a year’s worth of investigations. The knowledge and expertise at that company was unbelievable,” Bennett says. “Many, many years later, after I retired, I was invited to a meeting in which I learned that the project was still ongoing, and a top government official announced that it was the most successful government project, ever.” □



## SMALLER BODIES, LONGER LIVES

Do little dogs live longer than big dogs? **Chen Hou** says they do, and the reason lies in a complex relationship between energy usage and lifespan.

The S&T biological sciences researcher is using the principles of energy conservation and allometric scaling laws to measure aging on the basis of energy expenditure. His research shows that energy used during growth is key to understanding longevity.

Hou compares the birth mass of a greater Swiss mountain dog to that of a silky terrier as an example. A greater Swiss is born at only 1 percent of its final weight, but the terrier already weighs in at 8 percent of its final weight at birth. That means that the greater Swiss has to use more energy to grow to full adulthood, leaving relatively less energy for health maintenance and therefore a shorter lifespan than the terrier.

“If you were able to suppress or manipulate growth to maintain a smaller stature, the animal would live longer and have more energy for health maintenance — the way the body repairs itself,” says Hou. He says the energy needed for individuals with low birth weight to reach or exceed normal weight later in life can adversely impact adult health outcome and lifespan.

## BREATHE EASY: CAMPUS GOES TOBACCO FREE

Missouri S&T became a tobacco-free campus on Aug. 1, 2016, joining over 1,000 other colleges and universities in the U.S. that have chosen to go tobacco-free or smoke-free.

The decision follows months of deliberation on campus, including open forums, online feedback, revisions to a proposed policy by a campus work group, and reviews by the Missouri S&T Chancellor’s Council and Chancellor’s Cabinet.

“Since initiating a policy proposition last fall, our campus community has discussed and debated the merits of becoming a tobacco-free campus,” says Chancellor **Cheryl B. Schrader**. “We have heard from many students, faculty and staff who attended our open forums, submitted comments online or signed petitions in support of a tobacco-free campus on one hand or supported designated smoking areas on the other hand. After considering all feedback, we have moved forward to make Missouri S&T a tobacco-free campus.

“It is in the best interest of our students, faculty, staff and visitors to promote a healthy environment for all,” Schrader adds. “While the use of tobacco is a personal choice, the health hazards related to tobacco use are well-documented.”

The tobacco-free policy will prohibit the use of any tobacco-derived or tobacco-containing product on property owned or controlled by Missouri S&T, including property under lease and vehicles owned, leased or rented by the university. The policy also extends to privately owned or leased vehicles while on campus property.

Products prohibited under the policy include cigarettes, electronic cigarettes and vapes, cigars and cigarillos, hookah-smoked products, pipes, and oral and nasal tobacco products. The use of products intended to mimic tobacco products or the smoking of any other substance are also prohibited. See [tobaccofree.mst.edu](http://tobaccofree.mst.edu) for more details.

# HIGH SCHOOL TEACHER LEADS THE WAY

**CHELSEA DIESTELKAMP** WAS ALWAYS WILLING TO LEND A HELPING HAND, SO IN HINDSIGHT IT'S EASY TO SEE WHY SHE BECAME A TEACHER.

Cor Jesu is the 500th Project Lead The Way program in Missouri. The school will begin incorporating PLTW curriculum this fall.





As a high school student at Lindbergh in St. Louis, Chelsea Diestelkamp, Math'15, was the person her classmates turned to when they had problems with a subject.

"I was always helping friends with their homework — the one kids looked to for help," she says.

When she came to Missouri S&T, however, Diestelkamp originally planned on becoming an engineer. Fortunately for the students at the all-female Cor Jesu Academy in St. Louis, Diestelkamp ultimately decided against pursuing an engineering degree.

With her background in math and her experience helping classmates, Diestelkamp switched to math with a secondary education focus.

"It was always kind of in the back of my mind," she says of teaching.

And she got plenty of practice while at Missouri S&T.

"During my time at S&T, I tutored privately over the summers," Diestelkamp says, "and I was also a Peer Learning Assistant for the LEAD (Learning Enhancement Across Disciplines) program for 2½ years, as well as a tutor in the Student Success Center."

In the spring of 2015, Diestelkamp student-taught at Cor Jesu, where she started full-time in the fall last year. With that foundation, Diestelkamp completed the pre-service Project Lead The Way (PLTW) training after she graduated.

Her experience with PLTW led her to encourage the prep school administration to sign up for the program, which they adopted, becoming the 500th PLTW program in Missouri.

"The fact that many colleges recognize PLTW classes and give credit for completing them made the program attractive to the administration here," Diestelkamp says. "Most of all, I tried to push the fact that I believe that this is a program that can help Cor Jesu boost its efforts to inspire young women to choose education and career paths that incorporate STEM."

In her first year, she taught one class of Honors Geometry and four classes of Honors Algebra II/Trigonometry.

"What I love most of all is the relationship I have developed with the students," she says. "In the midst of all the tests, projects and homework, we still laugh every day because life is too short to take seriously." □



Photo by Hulton Archive/Getty Images

## ELVIS ONCE FLOPPED IN VEGAS

Elvis Presley reigned as Las Vegas' top nightclub act from 1969 through the mid-'70s. But his first attempt to win over fans in that city 60 years ago was "a painful setback" for the young performer, says S&T historian **Larry Gragg**, an expert in the history of Las Vegas.

Presley was a pop sensation on the rise, but Las Vegas nightclub audiences were not accustomed to his gyrations and raucous style, says Gragg, Curators' Distinguished Teaching Professor of history and political science and the author of two books and numerous articles about Las Vegas in popular culture.

Encouraged by Presley's success in concerts and TV appearances, his manager, Colonel Tom Parker, "decided that the next critical step in building a national presence for Elvis was for him to appear in a nightclub," Gragg writes in "They Weren't My Kind of Audience: Elvis Presley's First Appearance in Las Vegas in 1956," published in the Winter 2015 issue of *Nevada in the West*.

"It quickly became apparent that Elvis was ill-prepared for a nightclub crowd." The crowd wasn't prepared for Presley either.

On opening night, the nervous Presley "began with his hit 'Heartbreak Hotel,' which he mispronounced as 'Heartburn Hotel,'" Gragg recounts. Almost immediately, one man near the front leaped to his feet, shouting expletives about "all this yelling and screaming" and resolving to "go to the tables and gamble."

The rest of the audience "sat in stony silence for several minutes not knowing how to react," Gragg writes, but eventually "a few people were tapping their toes and snapping their fingers as others offered polite applause, and as they left ... most were talking about Elvis."

Reviews of Presley's performance that night were mixed. A writer for the *Las Vegas Sun* said the singer "failed to hit the promised mark," and *Newsweek* said he was "like a jug of corn liquor at a champagne party."

Presley was less than enthusiastic about returning to Las Vegas and its nightclubs, but he did so 13 years later. In July 1969, Presley — backed by two quartets and a 35-piece orchestra — "returned in triumph" to Las Vegas, performing at the new International Hotel "before a sold-out crowd that included a glittering array of Hollywood stars and Las Vegas luminaries," Gragg writes.

Already associated with the city thanks to the success of his 1964 movie *Viva Las Vegas*, co-starring Ann-Margret, Presley's dazzling performance on "that electrifying night in July 1969" firmly established him as "a true Las Vegas icon," Gragg notes.



The Miner baseball team made a run at an NCAA Division II Midwest Regional title in May, winning four consecutive elimination games to reach the championship round against Southern Indiana. It was the third time in school history and first time in five years the Miners were selected for the eight-team regional field. The 10-5 loss ended the Miners' best season in school history with a 39-19 record as S&T — the champion of the Great Lakes Valley Conference's West Division — reached the regional title game for the first time.

# CHAMPI



ONSHIP

RUN



# SEEING IT THROUGH AND SEEING THROUGH IT

By Arielle Bodine, news@mst.edu

At 7 a.m. on a weekday, many college students are still asleep. Others hit the snooze button and struggle to get out of bed for an 8 a.m. class. But **Matt Horst**, EE'14, is usually already at work in the Applied Microwave Nondestructive Testing Laboratory (AMNTL) at Missouri S&T.

Horst, a graduate student pursuing a master's degree in electrical and computer engineering at S&T, spends most of his time in the lab, running simulations, fabricating circuit boards or reading literature related to his research.

The winner of a coveted spot in the 2015 National Science Foundation (NSF) Graduate Research Fellowship Program, Horst is working to develop a 3-D real-time wideband microwave camera that can produce images.

"This camera will hopefully have applications in engineering, biomedical and security endeavors," Horst says. "It can image through backpacks and luggage for security purposes or detect flaws in manufacturing by imaging through materials like wood, concrete and rubber. But, this camera is really the proof-of-concept for a camera that I will eventually be developing as part of my Ph.D. work."

Horst says he plans to stay at the university to complete his Ph.D. He hopes to develop a new cell phone-sized camera capable of analyzing the depth of skin burns and possibly diagnosing skin cancer.

"I'm excited about this biomedical application," says Horst. "This will be the first microwave medical camera. My hope is that it will be used in doctor's offices as an alternative to skin biopsies."

Though Horst now has experience designing and fabricating 3-D real-time microwave cameras, he says that this new camera will require a great degree of interdisciplinary work — which he loves.

"To be able to make this camera, we have to understand properties of the skin. So, I have to rely on research from other fields as well as work in cooperation with doctors and dermatologists,"

he says. "I like interdisciplinary work because it puts me in the position of being an expert for a certain field, and at the same time, I get to collaborate with others to solve a problem."

Horst has been getting a taste of interdisciplinary research since his second semester as an undergraduate at S&T.

One of his electrical engineering professors, **Reza Zoughi**, the Schlumberger Distinguished Professor of Electrical Engineering, encouraged Horst to take part in research. He jumped at the chance, and today Zoughi is Horst's advisor.

"At first, I was just working on civil engineering problems," Horst says. "I was working mostly on properties of materials. Then, when the project with the 3-D camera came up, I was qualified to work on it."

Horst will see the completion of the original 3-D microwave camera through. Then, he will begin research and fabrication of the new cell phone-sized skin cancer-detecting camera.

Though getting up to be at the lab at 7 a.m. is sometimes a tough task, Horst's work is exciting enough to keep him coming back day after day.

"The hope that I'm working on something important keeps me going," he says. "I love the days when I get to run simulations in the field or do strange tests that are out of the ordinary."

## ENGINEERING EDUCATION GOES GLOBAL

The Missouri S&T Engineering Education Center in St. Louis is now called Missouri S&T Global-St. Louis. The name change reflects the growing role of S&T in the global market and a broader array of degree programs beyond engineering.

Since its founding in 1964, the facility has graduated more than 2,700 master's and Ph.D. students. Missouri S&T Global-St. Louis offers programs in 17 graduate disciplines.

A new education center in the Kansas City, Mo., area — called S&T Global-Kansas City — will begin offering classes soon. For more information visit [global.mst.edu](http://global.mst.edu).

## PEER TO PEER HELPS S&T UNDERGRADS PUBLISH RESEARCH

This spring, Missouri S&T launched its first-ever peer-reviewed journal, called *Peer to Peer*. It includes research articles written by undergraduates who were enrolled in English 1160 and covers topics ranging from the promotion of computer science to high school students to an argument against smart watches. Check out the inaugural issue at [scholarsmine.mst.edu/peer2peer](http://scholarsmine.mst.edu/peer2peer).

## IN PRINT

Diana Ahmad, Curators' Distinguished Teaching Professor of history and political science, published *Success Depends on the Animals: Emigrants, Livestock and Wild Animals on the Overland Trails, 1840-1869*.



## WISH: GRANTED

Sunday, April 10, was Joey's Day in Rolla when the S&T athletics department helped Make-A-Wish Missouri grant an 8-year-old cancer patient's wish to go to Disney World.

The Make-A-Wish Foundation is the official charity of NCAA Division II and its national Student-Athlete Advisory Committee. Student-athletes from all 16 institutions in the Great Lakes Valley Conference, which includes Missouri S&T, take part in fundraising efforts for that organization. Last year, Missouri S&T raised the most money of any team in the conference for the Make-A-Wish Foundation.





# DIVING IN

**A**rmaja LaRue-Hill says that if it weren't for a crown and sash, she would still be the shy, introverted student she was in fall 2014 when she started classes at Missouri S&T. Back then, her introversion kept her from joining campus activities. Now a junior in computer science, LaRue-Hill can't cross campus without stopping to chat with someone.

In her first semester, LaRue-Hill stepped out of her comfort zone and decided to participate in the Miss Black and Gold Scholarship Pageant hosted by Alpha Phi Alpha fraternity.

"I was just hoping to win the \$1,000 scholarship," she says. "But I ended up having to work on my soft skills like meeting and talking to people. I learned how social I could be."

To her surprise, she won the pageant and was crowned Miss Black and Gold that October.

LaRue-Hill credits her success at Missouri S&T since then to her decision to dive into activities.

"I turned the skills I learned on the road to the crown and sash into real progress," LaRue-Hill says. "After that, I had the courage to start study groups, talk to new people in my classes and pursue many other things I wouldn't have considered before."

The simple yet sometimes hard-to-employ code LaRue-Hill now lives by is to "dive in." When she begins a project or homework for a class, she immerses herself in it to produce the best results she can. She also jumps into volunteer activities that allow her to advocate for causes she is passionate about.

"I learned through the pageant that I like to promote events and things I believe in," she says. "I like to spend time getting the word out for charitable events."

When LaRue-Hill isn't in class or working in the leadership and cultural programs office, she enjoys roller skating. A member of the

"I TURNED THE SKILLS I LEARNED ON THE ROAD TO THE CROWN AND SASH INTO REAL PROGRESS."

National Society of Black Engineers and Voices of Inspiration choir, she is vice president of the Association of Computing Machinery-Women and a 2015 Sue Shear Fellow.

After graduation, LaRue-Hill wants to improve human-computer interaction.

"Computers are a work of art because of all the things they can do seamlessly and quickly," she says. "I want to dive into bridging the gap between the art and the science of computers."

# NEW TOOLS OF THE TRADE

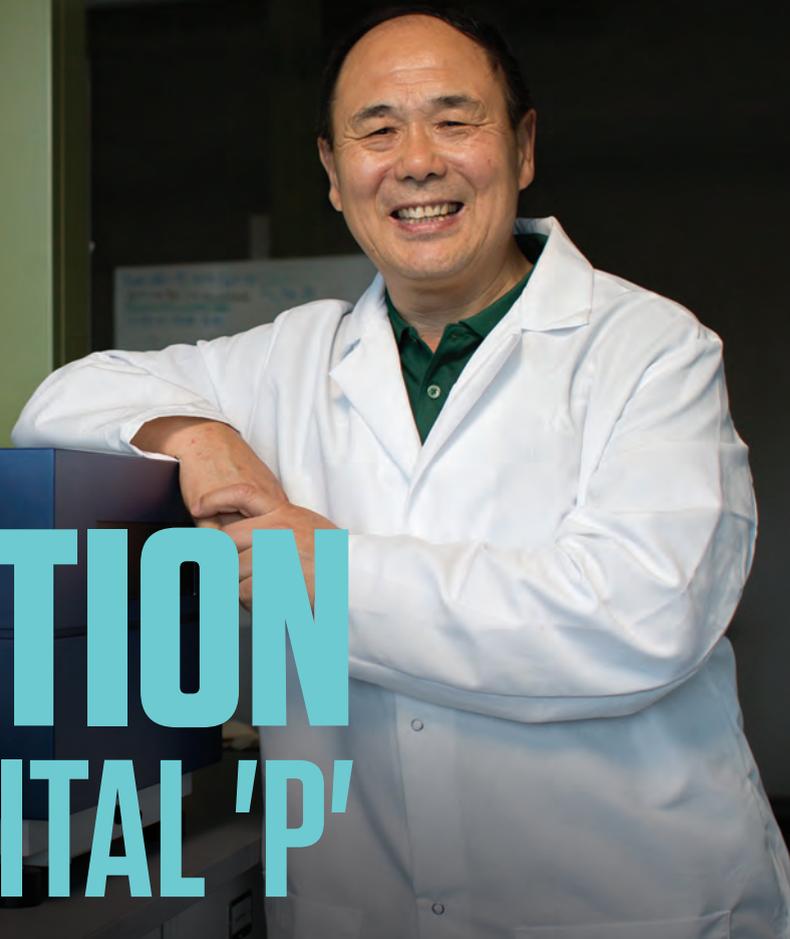
Mining engineering students now have a better understanding of how barometric pressure and air flow can affect mine ventilation, thanks to a donation from The Doe Run Co.

Doe Run donated \$37,724 in technical equipment, including four digital barometers, three digital anemometer kits with temperature gauges and three mechanical anemometer kits, each of which are critical to predicting and measuring changes in mine ventilation air flow and pressure.

"These tools are a part of every underground mine's basic tool kit and help in collecting ventilation data," says **Randy Hanning**, MinE'87, Doe Run's mine operations manager. "It is important that mining students know how to use these tools effectively and understand how differences in barometric pressure and airflow can affect ventilation. We're fortunate to have one of the nation's best mining engineering programs located in our own backyard, and anytime we can assist with educating the next generation of miners, we're happy to help."



Yinfa Ma, Curators' Distinguished Teaching Professor of chemistry at Missouri S&T, has patented a device that can diagnose breast cancer using a urine sample.



# PREVENTION WITH A CAPITAL 'P'

The early detection of cancer through screening techniques such as mammograms saves thousands of lives annually. **Yinfa Ma** is out to save thousands more through an easier and less costly approach.

## Innovative Approaches

Ma, Curators' Distinguished Teaching Professor of chemistry and associate dean for research and external relations in the S&T College of Arts, Sciences, and Business, developed the "P-scan," a fast, point-of-care method for checking urine samples for pteridine biomarkers. Ma's research shows that higher levels of certain pteridine metabolites occur in urine samples from women who have been diagnosed with breast cancer.

"Cancer cells grow much faster than normal cells," Ma explains, "so they release more waste into the urine and we begin to see a rise in certain metabolite levels."

Last winter, Missouri S&T entered into an agreement with Cancer.im Inc. to commercialize the P-scan. Cancer.im is a Viratech Corp. company and social network for cancer patients, survivors and caretakers.

Ma hopes his invention will soon replace — or at least supplement — the mammogram for early detection of breast cancer. He also believes that the variety of biomarkers his device can identify could translate into screening for other types of cancer.

"The mammogram is not perfect," Ma says. "Many early cancers cannot be detected by the mammogram, while other benign tumors are falsely detected. The P-Scan technology will help alleviate this problem by using molecular biomarkers in a detection method that can be easily integrated into a routine physical screening.

"A patient donates urine, and 10 minutes later she has a result," Ma adds. "This will be an amazing diagnostic tool."

## How it works

The P-scan works by passing the urine through a small capillary and detecting the fluorescence

given off by the pteridine biomarkers. The advantage of this technique is that it delivers excellent sensitivity without the need for costly instrumentation. The P-Scan can detect over 70 unique compounds in urine, many of which Ma believes may also be indicators of specific cancers. He hopes to study some of these compounds in future clinical trials.

Ma's research suggests that two of these pteridine metabolites, "isoxanthopterin" and "xanthopterin," were elevated in the urine of women with newly diagnosed breast cancer. New clinical trials are underway at Missouri S&T to verify these findings and to test whether pteridine biomarkers can be used to detect other types of cancers.

"We will go cancer by cancer until we know," Ma says.

The National Cancer Institute estimates that over 1.6 million people will be diagnosed with cancer this year. Nearly one in eight women will develop invasive breast cancer during her lifetime. Around 85 percent of women diagnosed with breast cancer have no family history of the disease.

"I am very excited about this project," Ma says. "It will save lives. That's my motivation."



# FOOTBALL + TAILGATES SILVER + GOLD ROLLA + YOU

**MinerFest**  
Miner Homecoming Fall Festival

COME BACK TO YOUR ROLLA HOME OCT. 13-16 FOR AN OLD-FASHIONED WEEKEND OF FUN, FRIENDS AND FOOD.

*Reunite with friends, explore today's campus and celebrate your S&T pride as the Miners take on the Blue Tigers from Lincoln University during Homecoming 2016.*

# HOME COMING 2016 SCHEDULE

## Thursday, Oct. 13

**Geology and Geophysics Banquet**  
6–9 p.m. | Havener Center

## Friday, Oct. 14

**Homecoming Registration**  
10 a.m.–7 p.m.  
Hasselmann Alumni House

**Miner Alumni Association  
Committee Meetings**  
9 a.m.–4 p.m.  
Hasselmann Alumni House

**Order of the Golden Shillelagh  
Executive Committee Meeting**  
10–11 a.m.  
Castleman Hall, Room 107

**Miner Legends Luncheon**  
noon–1:30 p.m.  
Hasselmann Alumni House,  
Kinyon-Koeppel Grand Hall

*Help us honor some of our most  
distinguished alumni as they  
receive awards from the Miner  
Alumni Association.*

*Tickets: \$20 general admission.  
Complimentary for Miner Alumni  
Association board members and  
Missouri S&T academy members.*

**Biological Sciences Picnic**  
noon–2 p.m. | Outside Schrenk Hall  
facing Parking Lot A

**Department Open Houses**  
3–4 p.m.

- Air Force ROTC, *Harris Hall, second floor*
- Army ROTC
- Arts, languages, and philosophy
- Business and information technology, *Room 114 Fulton Hall*
- Chemical and biochemical engineering
- Civil engineering
- English and technical communication
- Electrical and computer engineering, *Emerson Electric Co. Hall, first-floor lobby*
- History and political science
- Physics
- Psychology

**Kennedy Experimental Mine  
Building Dedication**  
4:30 p.m. | Experimental Mine  
*Take Bridge School Road  
to Spencer Road*

**Silver and Gold Gathering**  
5–9 p.m.  
Hasselmann Alumni House  
Reception 5 p.m.  
Dinner Buffet 6–8 p.m.

*Tickets: \$25 for adults. \$10 for  
children ages 6–12. Free for  
children under age 6.*

**SUB Laughfest**  
8 p.m. | Gale Bullman Building  
*Tickets: \$10 for students. \$15 for  
alumni. \$25 general admission.*

## Saturday, Oct. 15

**Homecoming Registration**  
10:30 a.m.–1 p.m. | Alumni Tent,  
Gale Bullman Building parking lot

**Coffee and Doughnuts**  
8–10 a.m. |  
Curtis Laws Wilson Library

**Miner Alumni Association Board of  
Directors Meeting**  
8–11 a.m. | Hasselmann Alumni  
House, Kinyon-Koeppel Grand Hall

*The association's annual meeting  
will be held in conjunction  
with this event.*

**Homecoming Parent  
Meeting and Reception**  
9:30 a.m. | Havener Center,  
St. Pat's Ballroom

**Homecoming Parade**  
10:30 a.m. | Havener Center  
*Parade follows State  
Street to 11th Street past  
Hasselmann Alumni House.*

**Miner Alumni  
Association Tailgate Party**  
11 a.m.–1 p.m. | Alumni Tent, Gale  
Bullman Building parking lot  
*Join us for an authentic tailgate  
party with grilled hot dogs and  
hamburgers, beverages and  
other tailgate goodies. A special  
section will be reserved for  
engineering management alumni  
as part of the department's  
anniversary celebration.*

*Tickets: FREE for those who pre-  
register online or call by Oct. 9, 2016  
Tickets purchased at the door: \$10  
for adults. \$5 for children ages 6–12,  
Free for children under age 6.*

**Missouri S&T Athletic Hall of Fame  
Room open to visitors**  
11:30 a.m.–12:30 p.m.  
Gale Bullman Building

**Football Game: Miners vs.  
Lincoln University**  
1 p.m. | Allgood-Bailey Stadium

*Tickets: \$8 for adults. \$5 for students  
(K-college) and seniors age 65+.  
Free for children under age 6 and  
S&T students with a valid ID.*

**Miner Alumni Social**  
6–8 p.m. | Public House Brewing Co.,  
600 N. Rolla St.

*Wrap up your Homecoming  
weekend with a pint and some  
down time with fellow alumni. We'll  
serve complimentary Alex's Pizza.  
Come and go as you please.*

**Jackling Jocks Annual Banquet and  
Business Meeting**  
6–9 p.m. | Havener Center,  
Carver/Turner Room

## Sunday, Oct. 16

**Chancellor's Advisory Committee  
on African American Recruitment  
and Retention Meeting**  
noon–3 p.m. | Havener Center,  
Carver/Turner Room

## Anniversary Celebrations

**Jackling Jocks  
19th Annual Reunion**  
5 p.m. Friday, Oct. 14  
Hasselmann Alumni House

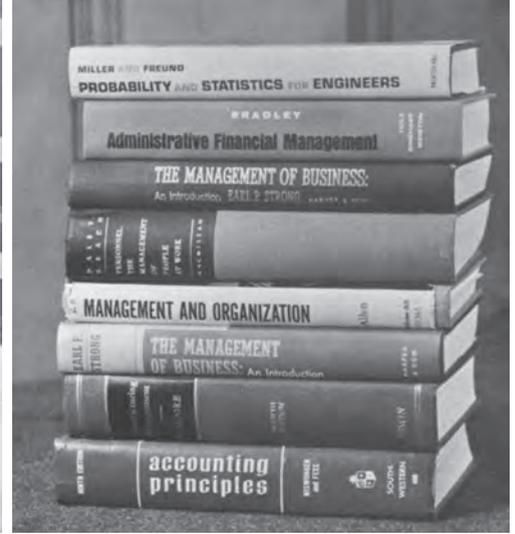
*The Jackling Jocks Dinner at the  
Silver and Gold Gathering. For  
more information contact Delbert  
Day: 573-364-5569, day@mst.edu  
or Newton Wells: 979-690-3650,  
mnwells1@verizon.net.*

**Engineering Management and  
Systems Engineering Golden  
Anniversary Celebration Banquet**  
6 p.m. Thursday, Oct. 13  
Matt's Steak House

**Engineering Management and  
Systems Engineering 50th  
Anniversary Reception**  
3–5 p.m. Friday, Oct. 14  
Engineering Management Building

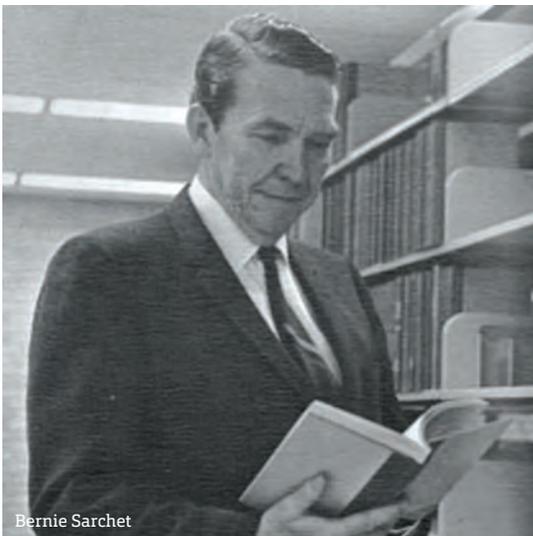
**Mechanical and  
Aerospace Engineering  
Centennial Open House**  
3–4 p.m. Friday, Oct. 14  
Toomey Hall Atrium

*Mechanical and aerospace  
engineering celebrates its  
centennial anniversary. For more  
information on events contact Debi  
Willy at 573-341-4772.*



# A GOLDEN YEAR FOR ENGINEERING MANAGEMENT

By **McKenzie Scott**, senior in engineering management



Bernie Sarchet



Crowd gathers for the Engineering Management Building dedication in 1988

In 1966, the first university department in engineering management was founded at Missouri S&T, and this year the campus celebrates the department's 50th anniversary during Homecoming, Oct. 13–16.

Chancellor **Merl Baker** and alumni were confident in the engineering education students received in 1966. However, their discussions highlighted the university's need to help engineering students develop social and management skills. So **Bernie Sarchet**, the department's founding chair, and others proposed a new program, "engineering administration," later known as engineering management, a program rich with management content and industrial experience. It quickly expanded with off-campus programs in St. Louis and Fort Leonard Wood, Mo. Other universities have followed Missouri S&T's example, and engineering management is now a globally respected field.

Sarchet also founded the American Society for Engineering Management in 1979 at S&T. ASEM is recognized globally as a leader in engineering management knowledge.

In his 14 years as chair, Sarchet oversaw 1,700 bachelor's and master's degrees.

"All who hold a degree in engineering management owe Professor Sarchet a debt of gratitude for his vision and his leadership," says **Suzanna Long**, Hist'84, Phys'84, MS EMgt'04, PhD EMgt'07, interim chair and associate professor of engineering management and systems engineering. "EMSE is proud to know that we are standing on the shoulders of a giant."

## Banquet at Matt's Steak House, Thursday, Oct. 13

The celebration starts Thursday evening with a social hour followed by a program and dinner. Invitation only for engineering management alumni, academy members, students, faculty and staff. At the banquet, the Bernie Sarchet 50th Anniversary Scholarship Fund, funded through alumni donations, T-shirt sales and a silent auction, will be announced.

## Reception at the Engineering Management Building, Friday, Oct. 14

All of Missouri S&T is welcome to join alumni, students, faculty and staff for beverages and light appetizers. Attendees will receive a custom EMAN cup filled with "Sarch-ale," a specialty brew created by Public House Brewing Co. in Rolla.

## Tailgate party at Gale Bullman Building parking lot, Saturday, Oct. 15

Join the Miner Alumni Association at its annual tailgate celebration before cheering the Miners on to victory.

*For more information about the engineering management 50th anniversary celebration or to share thoughts, contact **McKenzie Scott** at [msszq8@mst.edu](mailto:msszq8@mst.edu).*



## 2016 MINER ALUMNI ASSOCIATION AWARDS

### ALUMNI ACHIEVEMENT

- 1. **Jorge Ochoa**, ME'85, principal engineer, Exponent Inc.
- 2. **Craig Barnes**, CE'78, executive director of technology strategy, Cummins (retired)

### DISTINGUISHED YOUNG ALUMNI

- 3. **Xiaoliang Cheng**, PhD Chem'10, president, Wuhan Quality Life Technology Co.
- 4. **Kate Wasem**, MetE'99, vice president, G&S Foundry

### ALUMNI MERIT

- 5. **John Lovitt**, CSci'70, chief executive officer, Pattern Insight (retired); adjunct professor, Missouri S&T

### ROBERT V. WOLF ALUMNI SERVICE

- 6. **Pamela Leitterman**, Math'75, marketing program manager, Hewlett-Packard Co. (retired)

### FRANK H. MACKAMAN VOLUNTEER SERVICE

- 7. **Tom Feger**, CE'69, special consultant, Hanson Professional Services Inc.

### HONORARY LIFE MEMBER

- 8. **Bill Kennedy**, president and CEO, Kennedy Metal Products & Building Inc.

### CLASS OF '42 DISTINGUISHED TEACHING AWARD

- 9. **Jillian Beth Schmidt**, assistant teaching professor, mechanical and aerospace engineering

# Academy Events

## Academy of Computer Science

**Banquet**  
6 p.m. | Thursday, Oct. 13  
Location TBD

**Meeting**  
8:30 a.m.–3 p.m. | Friday, Oct. 14  
Location TBD

## Academy of Engineering Management

**Meeting**  
Time and location TBD,  
Friday, Oct. 14

## Academy of Mechanical and Aerospace Engineers

**Board of Directors Meeting**  
12:30–4 p.m., Thursday, Oct. 13  
Havener Center,  
Silver and Gold Room

**Reception and Banquet**  
5–11 p.m., Thursday, Oct. 13  
Havener Center,  
St. Pat's Ballrooms B and C

**Annual Membership Meeting**  
9 a.m.–1 p.m., Friday, Oct. 14  
Havener Center,  
Carver/Turner Room

**Spouse and Guest Event**  
9 a.m.–1 p.m. Friday, Oct. 14  
Location TBD

**Student Design Team Presentations**  
1:45–3:30 p.m., Friday, Oct. 14  
Toomey Hall, Brewer Family Atrium

**Centennial Open House**  
3–4 p.m. Friday, Oct. 14  
Toomey Hall, Brewer Family Atrium  
*Mechanical and aerospace engineering celebrates its centennial anniversary. For more information on events contact Debi Willy at 573-341-4772.*

## Academy of Mines and Metallurgy

**Homecoming Meeting**  
8:30 a.m.–3 p.m., Friday, Oct. 14  
Havener Center,  
Missouri/Ozark Room

## Academy of Miner Athletics

**Annual Membership Meeting**  
3–5 p.m., Friday, Oct. 14  
Gale Bullman Building,  
Hall of Fame Room

**Induction Ceremony**  
7:30–9 p.m., Friday, Oct. 14  
Carver-Turner  
Room, Havener Center

## REGISTRATION INFORMATION

Register online at [mineralumni.com/homecoming](http://mineralumni.com/homecoming) or call 800-JOMINER (800-566-4637). Alumni should pick up their registration packets at the Homecoming Welcome Table:

### Friday, Oct 14

10 a.m.–7 p.m.  
Hasselmann Alumni House

### Saturday, Oct. 15

10:30 a.m.–1 p.m.  
Alumni tent, Gale Bullman Building parking lot



# A CENTURY OF MECHANICAL AND AEROSPACE ENGINEERING

Mechanical Hall, early 1900s



Mechanical Engineering Building, constructed in the 1940s



Mechanical Hall, early 1900s

## Academic year 2016–17 marks an exciting time for mechanical and aerospace engineering at Missouri S&T, as it celebrates the department's 100th anniversary.

**Harold Shields Dickerson** was chair when the department was formed in fall 1916. Before then, course work in the field was available, but it was called the department of shopwork and drawing.

The department grew rapidly after 1920, and new courses were added in refrigeration and air-conditioning in 1924. By 1938, aeronautical engineering came on board when aerodynamics and airplane structures were taught. In 1968, the department name was officially changed to mechanical and aerospace engineering.

During the coming year, MAE will celebrate the milestone with its alumni, faculty, students and staff and look toward the next 100 years. Here are a few of the MAE Centennial activities planned:

**Academy of Mechanical and Aerospace Engineers induction dinner and annual meeting** — The annual celebration will emphasize the milestone.

**Centennial Open House** — Held during Homecoming weekend, the event will feature lab tours in Toomey Hall.

**Centennial Seminar Series** — Throughout the year, leading alumni will present a series of seminars in addition to the graduate seminar series.

**Endowments** — The department will celebrate the centennial by creating opportunities for students and to add value to the department for the future. These opportunities include endowed professorships, endowed graduate fellowships and endowed seminar series.

**Student activities** — The four student organizations — the American Society of Mechanical Engineers, the American Institute of Aeronautics and Astronautics, Pi Tau Sigma and Sigma Gamma Tau — and MAE will provide many opportunities for students, alumni and friends to celebrate, including contests, trivia night, a picnic and many more activities throughout the year.

*Watch for more information at [mae.mst.edu](http://mae.mst.edu).*



# SUPER-COOL SUPERCONDUCTORS

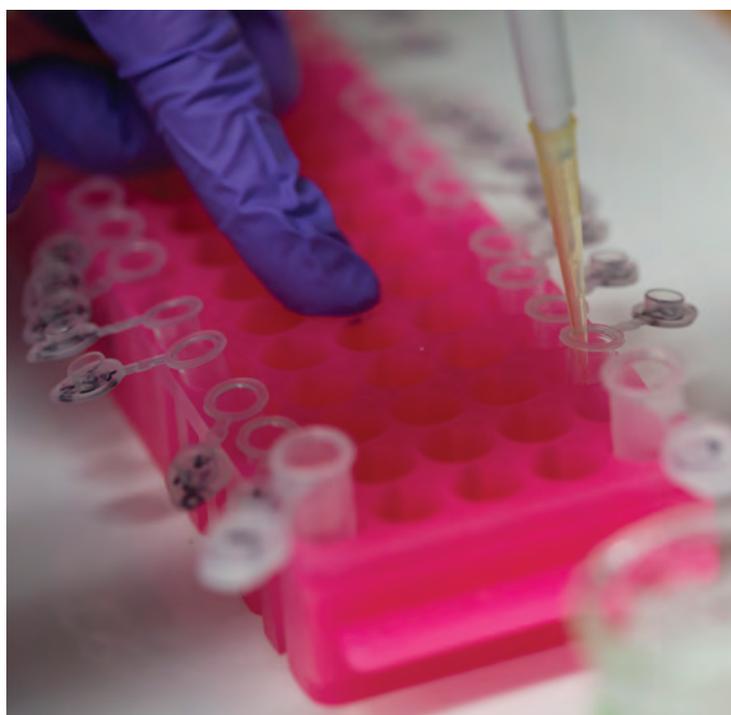
By studying how materials change at ultra-low temperatures, theoretical physicist **Thomas Vojta** hopes to discover new states of matter.

Funded by a \$229,000 grant from the National Science Foundation, Vojta, a professor of physics, is researching how slight alterations in the chemical composition of materials can dramatically change their properties.

“My research looks at quantum phase transitions — transformations of materials occurring near absolute zero — and how they take place,” says Vojta. “In connection with these transformations, exotic new quantum states of matter can appear — for example, superconductors that can carry electric current without any losses.”

These transitions are “similar to the changes that occur when you boil water,” says Vojta. “These abrupt transformations directly affect superconductivity, and we want to find out exactly how and why.”

Vojta uses a supercomputer he built with his colleagues and students to model these quantum phase transitions and to compute various materials’ properties. Called the Pegasus IV High-Performance Computing Cluster, the custom-built PC cluster is made up of 156 quad-core computer nodes that are used for computational research in condensed matter and statistical physics.



## STUDYING BLOOD FOR THE GREATER GOOD

**Elizabeth Bowles** wants to eliminate drug side effects in patients with conditions like diabetes or cystic fibrosis.

She's working with Phelps County Regional Medical Center in Rolla to test blood samples from willing patients to see what effect the release of adenosine triphosphate (ATP) has on blood vessel dilation. She also wants to see if ATP levels tie in with different medical conditions.

ATP is the chemical energy within cells that powers metabolism. Patients with diabetes, hypertension, cystic fibrosis and a host of other conditions have reduced ATP release.

"We are looking to improve ATP release and correct some of the adverse effects of the condition patients have," Bowles says.

Bowles says FDA-approved drugs that stimulate ATP release exist, but they are known to have severe adverse side effects. She hopes to help reduce the problem of side effects with a new drug-delivery system.

"If you package the drug in a liposome — a spherical vesicle — you can deliver the drug directly to the red blood cell and stimulate ATP release without causing other side effects," Bowles says. "The liposomes are FDA-approved, but not for this use."

Bowles says her goal is to correct both the problem of reduced ATP release and the adverse side effects with this one new approach.

# EXPERIEN NECESSARY

BY ANDREW CAREAGA, ACAREAGA@MST.EDU

**T**he term experiential learning may be a recent invention, but our reputation for preparing students for the real world through a hands-on approach to education extends back to our founding nearly 150 years ago.

One of our earliest graduates — **R.A. Grabill**, class of 1878 — described this method well when he wrote that our students “work not only with their heads, but with their hands” as they “unravel the mysteries and solve the problems which nature lay before us.”

In Grabill’s day, that combination of traditional education and application was essential for a nation recovering from the Civil War and expanding its industrial capacity. As a product of the land-grant movement in

the 19th century, our campus was created to educate the engineers and scientists the nation needed to rebuild and advance industrially and technologically.

Today’s Missouri S&T graduates are no longer fueling westward expansion or an industrial revolution. But the philosophy that drove applied learning in the 1870s is as essential and relevant to Missouri S&T today as it was in our formative years.

### **Strategically experiential**

Today’s approach to experiential learning is more strategic than inherent. This type of applied learning is now a formal part of the S&T student experience. In fact, it’s so integral to our educational philosophy that it is right at the top of our strategic plan. Theme 1, Lever 1 of *Rising*

# CE

The Steel Bridge Design Team earned second place at the American Society of Civil Engineers' 2016 Mid-Continent Student Conference and earned a berth to nationals. During the competitions, the team raced to construct its bridge as quickly as possible. The bridge was scored on its weight and rigidity, construction speed, and the number of team members building the bridge. It was the first time S&T hosted the conference in nearly 20 years.

to the Challenge: Missouri S&T's Strategy for Success calls on all S&T students to take part in at least one experiential learning project before they graduate. This requirement began with the fall 2015 entering class.

Of course, experiential learning is more than a graduation requirement — it's a way to prepare students for the world beyond college. Employers are eager to hire graduates who have put in extra effort beyond their classroom studies and lab assignments, and students who engage in experiential learning offer tangible proof of that effort. Plus, the fact that a student has studied overseas, led a design team or served in student government looks terrific on a resume.

But what, precisely, constitutes "experiential learning"? And how does it differ from other hands-on learning tasks, such as a lab course? For the S&T requirement, the difference lies in a single word: *significant*. The strategic

plan calls for students to "participate in some significant experiential learning activity before they graduate."

That means students must go beyond mastering basic skills and knowledge when applying what they're learning. Experiential learning involves collaboration (with other students, faculty, third parties such as businesses or organizations, or any combination of those), reflection (through journaling their experiences, for example), and learning in a way that fits their style and aptitude.

Also, "hands-on" learning shouldn't be taken literally when it comes to experiential learning. While some students love to work with their hands on student design teams, others may prefer analyzing data as members of those same teams — or as part of an undergraduate research project. Still others may prefer to experience the world outside the U.S. by studying in another land, while others will

Experiential learning is more than a graduation requirement; it's a way to prepare students for the world beyond college.

want to get work experience through a co-op or internship. All are examples of experiential learning activities.

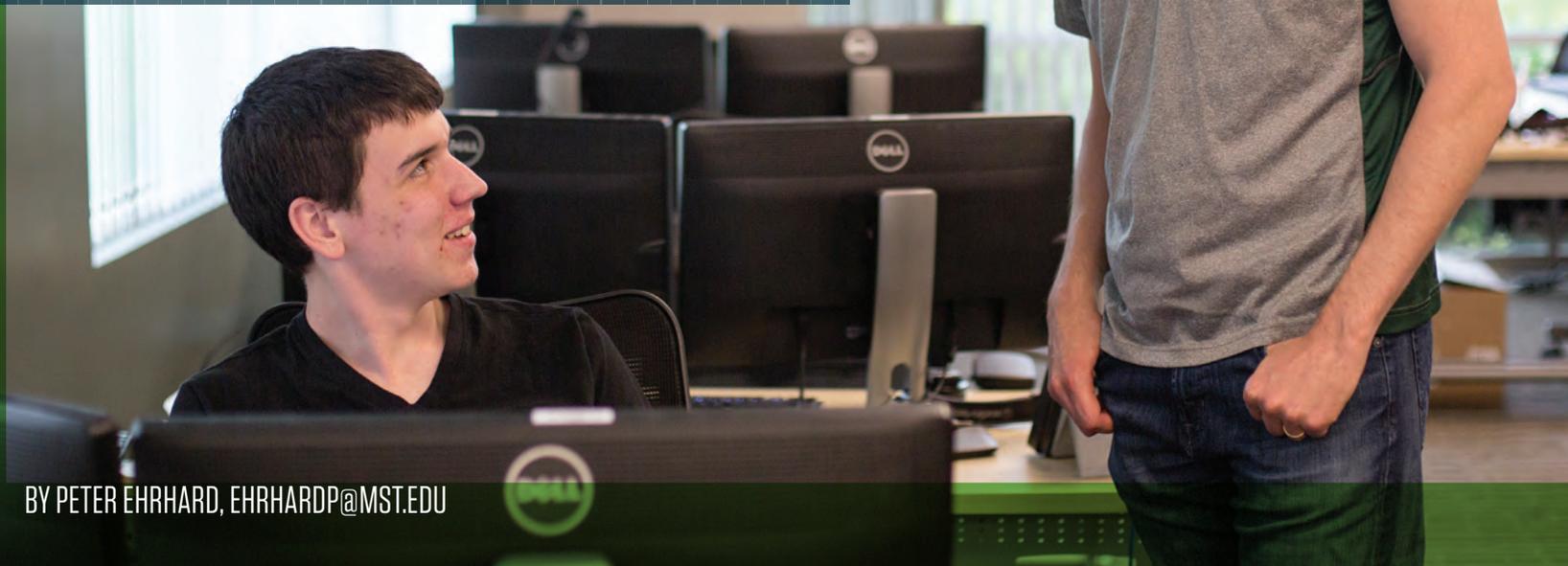
Ultimately, it's up to students to work with their academic programs and faculty advisors to decide what approach works best for them. It's clear that S&T's heritage as a place where students "work not only with their heads, but with their hands" will continue to position the university and its alumni well with the world beyond campus. □

Below left: Students in the Introduction to Engineering Design course work together to solve a challenge, building a machine from concept to prototype. Right: **Jacob Greek**, an electrical engineering major and past member of the Chancellor's Leadership Academy, spent his spring semester studying in Malaysia. Below right: As part of her OURE research, **Montana Long**, IST'16, studied how people visualize data on mobile devices.



# ROBERT BUEHLER

## MAPPING A PATH TO SUCCESS



BY PETER EHRHARD, EHRHARDP@MST.EDU

Robert Buehler (above right) has managed Garmin's software engineering facility on the S&T campus since it opened in December 2012.

**When Garmin International Inc. opened its branch office at Missouri S&T's Technology Development Center in Innovation Park in December 2012, the company was simply looking for students interested in software engineering to take part in semester-long part-time internships.**

And where better to find engaged computer science and engineering students than at a university?

What the company did not predict was that Missouri S&T would focus the foundations of its undergraduate education on experiential learning.

Today, the office produces skilled employees for both Garmin and the industry at large.

Interns help develop aviation and automotive products, including embedded software, verification testing and internal tools. They work hand-in-hand with Garmin engineers to develop innovative GPS products and technologies.

"Our interns are able to take what they learned in the classroom and apply it to solving real-world problems," says **Robert Buehler**, CSci'05, MS CSci'09, a software engineering

team leader with Garmin and manager of the facility. "They are completing the same type of work that they would be doing if they were full-time employees. They work under very little supervision and are responsible for meeting the same deadlines as their team members."

Students work independently on various projects. They video chat with their respective managers, who may be in Garmin locations around the nation, to keep them informed of project statuses and any necessary changes.

Twenty-nine students have interned at Garmin's S&T location, some for just one semester and some for as long as five semesters. Many have gone on to be a part of Garmin's full-time staff.

"New employee positions are highly competitive, especially in the computing industry," says Buehler. "If you have one candidate with this type of hands-on learning that S&T is promoting, and one candidate who has simply completed coursework, you will hire the one with the more experience every time."



# BONNIE WILT

# THE SCIENCE OF SOFTBALL

BY GREG KATSKI, [KATSKIG@MST.EDU](mailto:katskig@mst.edu)

**Softball is a sport of nuances. The slightest shift in a batter's stance or in the angle of a pitcher's arm can have a profound impact on an at-bat, a game — and sometimes, a season.**

Subtle changes in mechanics can be the difference between a batter striking out and lacing a home run to win the game.

Engineering is a discipline of nuances. Much like softball, the smallest tweak in design can be the difference between a project as important as a new bridge enduring or crumbling.

**Bonnie Wilt**, a senior in engineering management, had a chance to meld her

engineering studies and love of softball during a co-op with Rawlings Sporting Goods in Chesterfield and O'Fallon, Mo., from May to December 2015.

Wilt worked with S&T's Cooperative Education Program, which gives students practical work experience in their field of study before they graduate. The program is designed to give students a break from studies to work

full time for one semester or a combination of semesters, allowing eight to nine months of work experience versus the three summer months allowed for internship positions.

Wilt's role at Rawlings included quality assurance and product development, two skills she had honed at Missouri S&T.

"It was kind of like the engineering side of sports," she says. "Which was really cool because I've played softball since first grade." Wilt played on the Missouri S&T softball team for two seasons.

During her co-op, Wilt tested Rawlings baseballs and helmets and helped design the company's 2017 fastpitch softball glove line. Her most demanding assignment was a five-week-long durability project at Rawlings' testing center in O'Fallon. There she tested major



“It was kind of like the engineering side of sports. Which was really cool because I’ve played softball since first grade.”

league, minor league and NCAA baseballs for deficiencies. She checked the weight, size and compression of each ball to ensure they met standard specifications.

Balls that met specifications were further tested using a contraption affectionately called the “Mother of All Cannons,” or “MAC.” MAC shot the balls approximately three feet at 120 mph toward a curved metal plate that simulates a baseball bat. Wilt fed each ball to the MAC 100 times or until the ball failed.

Although the fastest pitch ever recorded by a radar gun was clocked at 105.1 mph by current Major League Baseball relief pitcher Aroldis Chapman, Wilt says Rawlings goes above and beyond to test their products. “You want to test it pretty much worst case scenario so you see how the product will hold up,” she says.

Wilt also consulted with a team developing Rawlings’ 2017 fastpitch softball glove line, which was introduced to the public this summer, according to Denny Whiteside, senior project manager at Rawlings. Whiteside, a member of the glove development team, says the team pulled in Wilt because of her softball and engineering experience.

“With her history of playing, she was just a really great resource to give us some feedback on prototypes we had made,” he says.

As part of the experience, Wilt was asked to try on fastpitch softball gloves made by Rawlings, as well as other brands, and critique them. She was joined by a handful of her colleagues that were also former college softball players.

“We would point out different things we liked about them and what we didn’t like,” she says. “We had to be super specific. They were taking our advice and rolling it into the new glove line.”

Her contribution didn’t go unnoticed.

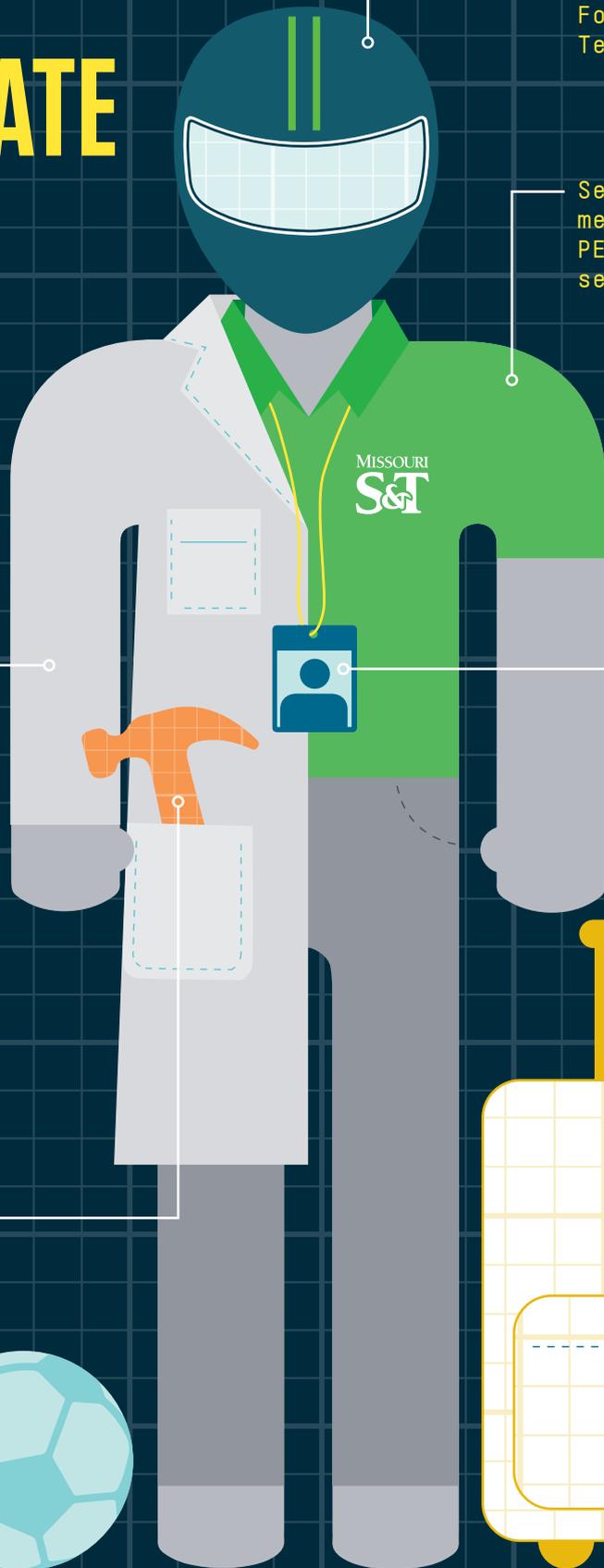
“Bonnie was very helpful from that standpoint,” Whiteside says. “She was a great asset to the company.” □



Bonnie Wilt, a senior in engineering management and former varsity softball player, spent two semesters on co-op with Rawlings Sporting Goods, which manufactures and sells competitive sports equipment and apparel. The company’s headquarters is in St. Louis.

# MEET THE 2020 GRADUATE PROTOTYPE

The 2020 graduate will already have experience with many of the same challenges faced by those in the workforce. We know students can't take advantage of every experiential learning option, but they can choose an opportunity that best fits their interests — or even come up with their own. That's how every student will complete at least one significant experiential learning activity before crossing the stage at graduation. And it's what gives Miners a competitive edge in the marketplace.



Member of the Formula SAE Design Team for two years.

Served as a mentor for Joe's PEERS for two semesters.

Completed two semesters of co-op at GM.

Studied abroad for one semester in Europe.

Conducted two years of research with the OURE program.

Spent two winter breaks in Nicaragua for Miner Challenge.

Co-captain of the Miner soccer team for two seasons.

## EXPLORE THE WORLD

There are many study abroad options for S&T students to choose from (options are highlighted in yellow).



## A DESIGN-CENTERED APPROACH

S&T students have **more than 20 teams and clubs** committed to putting classroom theory into action through design.

## A GOOD JOB

Co-ops, internships and externships are a deeply rooted part of the S&T experience.

**363** Total reported co-op hires for the 2015–16 academic year.



Total interns during the 2015–16 academic year. **500**

## A CALL TO SERVE

**315** 

Students who participated in Miner Challenge and Engineers Without Borders during the 2015–16 academic year.

## STEPPING UP

Students plan, make decisions, communicate and work as a team through involvement in student governing boards, yearlong leadership programs, sports teams and weekend workshops.

## RESEARCH

Applicants for the Opportunities for Undergraduate Research Experience (OURE) program have doubled in the past 10 years.



**200**

Applicants in 2015–16.

## A GOOD MENTOR IS EASY TO FIND

Peer-to-peer mentorship is available from Student Success coaches, Opening Week mentors, resident assistants, Chancellor's Leadership Academy advisors and Joe's PEERS, to name a few.



# JOSH PRIBE

# LEADING BY EXAMPLE

BY MARY HELEN STOLTZ, MHSTOLTZ@MST.EDU

## Josh Pribe, ME'16, spent three years of college knee-deep in residential life leadership. He wouldn't trade the experience for anything.

"It is a lot of work," Pribe says, "but it is also a lot of fun. I had a great time."

He also gained valuable communication, conflict resolution and project management skills that will serve him well in graduate school and his career beyond.

Pribe started work as a resident assistant in the Residential Commons his sophomore

year, thanks to encouragement from his own freshman-year RA. He moved up to senior RA the following year and graduated this past spring as head resident.

He learned a few things along the way. "Being organized is an underrated skill," Pribe says. But he has no trouble in that area. A member of Tau Beta Pi and National Residence

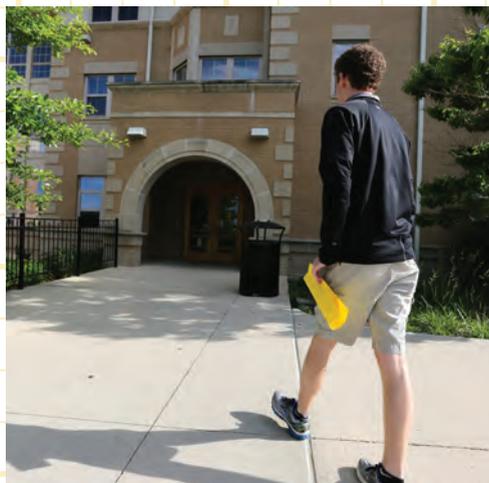
Hall Honorary, he also conducted research in strengthening 3-D printed metal parts, using different frequencies to try to find weaknesses without breaking them.

"You also have to be a good listener," says Pribe, who found that fellow students routinely sought him out as a sounding board. "I can sit and talk to anyone about anything. One of my supervisors once told me that I could find common ground with a wall."

That is a useful skill in a job that begins with a daunting task — building a community among a large group of people who have never met. Pribe found the best way to accomplish that task was to let each group develop its own identity.



“You learn how to trust people, how to inspire trust in others and, maybe most importantly, you learn how and when to approach people when you need help.”



“Some groups are into video games, some like intramurals. Last year my floor was a bunch of goofballs,” he says. “They created their own anime and modeled the God character after me.”

Sometimes groups start out as friends but members can become annoyed with each other and rifts can develop. RAs are trained in conflict resolution to help those students move past their problems.

“You learn how to trust people, how to inspire trust in others and, maybe most importantly, you learn how and when to approach people when you need help,” Pribe says.

Being an RA is a lot like living in a fish bowl — you’re always being watched. So Pribe says being a role model for other students is essential.

“We talk a lot about how students notice what we do both inside and outside of our floors or communities, so it’s important for us to model responsibility consistently,” Pribe says. “This means doing things like going to class, setting aside time to study and getting homework done. If we’re not making good decisions both within and outside of our direct responsibilities as res life staff, we can have a negative influence on the students we’re supposed to be helping.” □



In his role as head resident, Josh Pribe supervised first- and second-year staff members and assisted with training, occupancy reporting and other administrative processes.

# A BETTER CAMPUS

Students involved in the Better Campus Competition worked throughout the 2015–16 academic year to create and prototype the next great campus innovation. Six teams made it to the final round, including Food Finder, which was named grand champion. Team Food Finder's idea was a mobile app that would inform students when different dining options on campus are open. Team members included **Ian Roberts**, **Hassan Kaous**, **Brandon Huttzell** and **Logan Green**. The competition was hosted by Research Support Services, a team within information technology.





BY ARIELLE BODINE,  
NEWS@MST.EDU

# JUAN REMOLINA MASTER MENTOR

As a success coach, Juan Remolina worked with students on setting goals, time management, organization and other skills.

When he wasn't studying for his own classes, **Juan Remolina**, Econ'16, Math'16, Phys'16, spent much of his academic career at S&T mentoring others. Instead of sleeping in, the triple major got up early to open the Burns and McDonnell Student Success Center or the student ID office. Twelve-hour days on campus were the norm for Remolina, who plans to start work this fall on a graduate degree in astrophysics at the University of Michigan in Ann Arbor.

Originally from Bogota, Colombia, and now a U.S. citizen, Remolina helped guide dozens of students to success as a student success coach and coordinator and as a PRO Leader. But, one fruitful mentorship experience sticks out to him.

"A senior in biology came to the Student Success Center and said he wanted to graduate in May, but he was struggling in his classes," says Remolina. "Together, we worked every week of the school year on time management and study skills. In the end, he graduated without a problem."

Remolina never studied biology extensively, but he says that did not matter.

"I'm not a master in any subject," he says. "But, I know how to study, no matter what the subject is. The sciences have a particular way that you can approach them

and gain understanding. As a mentor, I was there to give tips on studying and learning and guide students to success, not do the studying for them."

Though Remolina became a master at mentoring others, he says he learned something new from every student he helped.

"Even though the reason I was there was to guide the student, I gained more from the experience than they did," says Remolina. "The whole experience of mentoring someone is incredible. I was able to share all I had learned through past mentoring experiences. On top of that, being influential in someone's life, not for your own benefit, is rewarding."

Through every positive and negative mentoring experience, Remolina says he was striving to attain his own goals as a human being.

"I'm a firm believer that the experiences I've had, whether they are positive or not, all helped me to learn something," he says. "So I learn from every experience, and for me, the way to live is to share those experiences through mentoring others."

Remolina didn't just learn from his experiences being the mentor. He also learned from the other side of the equation.

"I've had amazing mentors who were willing to listen to me, and who only had my best

**"I learn from every experience, and for me, the way to live is to share those experiences through mentoring others."**

interest at heart," Remolina says. "They were great mentors to me because they led me to a solution and stayed objective while I talked a problem through with them."

But for Remolina, it wasn't just about objective problem-solving or good discussions with his mentors. He says he was never afraid to ask professors or friends to help put things in perspective on tough days.

"My mentors, like my bosses and academic advisors, pushed me to do things that were sometimes out of my comfort zone with the idea of giving back to others in some way," he says. "I'm certain that was purposefully done to help me become a better person with a better understanding of my strengths and weaknesses."

Photo courtesy of GM

JASON NOLTE

# SPARKING INNOVATION

BY JOE McCUNE, [MCCUNEJ@MST.EDU](mailto:MCCUNEJ@MST.EDU)

## It was hot. Really hot. Desert hot. And Jason Nolte, ME'05, MS ME'07, was hot. Really hot. Desert hot.

As a driver for the Missouri S&T Solar Car Team in 2003, Nolte piloted *Solar Miner IV* for 220 miles from Kingman, Arizona, to Barstow, California, as it raced toward the American Solar Challenge title.

"The team really liked me a lot," Nolte says. "They gave me the leg through the Mojave Desert."

Their winning time when they reached the finish line in Claremont, California, was 51 hours, 47 minutes, 39 seconds, traveling 2,300 miles in six days — and nearly 5 hours faster than the runner-up.

Nolte parlayed that education and experience with the Solar Car Team into a fast-track career at General Motors, starting with three internships while he was at Missouri S&T. After graduation, he worked on Corvettes and helped create the battery and power electronics system controls on the Volt plug-in hybrid car. Along the way, Nolte worked on teams that had two patents granted and seven others applied for, and he won a "Boss" Kettering Award, the highest level of recognition for innovation and invention at GM.

The knowledge he gained on the Solar Car Team was instrumental in charting his career path.

"That set me apart — the hands-on, real-world experience," he says. "It helped distinguish me from the crowd when I talked to career fair recruiters and enabled career opportunities I would not otherwise be considered for."

After three years as a Solar Car Team member, he became the team's vice president, and in graduate school he became president. In the latter roles, he honed "soft" skills such as team development and operations to become a well-rounded engineer.

### Training wheels

Nolte's infatuation with cars began early. When he was 14, he bought and restored a 1968 Mustang that became his high school car in Germantown, Tenn.

"I've been a car guy since fourth grade — at least that's what my mom tells everybody," he says. "I always had my head in car magazines."



Jason Nolte works on the 334-pound *Solar Miner IV*. Made of blue foam, Kevlar and epoxy, the vehicle's lightweight composite body sat upon a chassis made of mostly aluminum tubes. Photos courtesy of the *Springfield (Mo.) News-Leader*

His interest in the Solar Car Team began early, too, when he read about it in high school. So Nolte came to a Missouri S&T summer camp after his junior year and met the team. Before camp was over, he was "sanding away" on the solar car, making his choice of college a foregone conclusion.

"Mechanical engineering gave me a fundamental understanding of cars from the ground up and was a big benefit in my career," he says.

The Solar Car Team gave him an understanding of electrical, mechanical and battery systems — skills he has used at General Motors.

"I've pretty much had a parallel path from the Solar Car to all the work I've done at GM," he says. "Much like with the Solar Car, I got plenty of experience in those systems."

After his work on the Volt, Nolte put his mechanical engineering training to use in GM's performance line of current-generation Cadillacs — the ATS-V and CTS-V — and on the 2014–15 Camaro Z/28.

### A new adventure

In October, Nolte left the drawing board and became an investment manager with

"I've pretty much had a parallel path from the Solar Car to all the work I've done at GM."

GM Ventures LLC, the corporate venture capital arm of General Motors, drawing on the soft skills he honed in leadership roles with the Solar Car Team.

He's on a plane about every three weeks to meet with potential GM partners, seeking out investable companies with products or ideas that could help General Motors stay on the cutting edge of vehicle design and performance. Nolte's experience on the production and design side gives him valuable insight, he says, into what makes a good partnership.

If he identifies a company that works out, it's a victory for everyone involved.

"Venture capital investment is a way to drive innovation, in people, in companies, in technology," Nolte says. ■



The St. Louis Section showed the true spirit of Miner Pride on May 21 as alumni and their families landscaped the grounds of the Thomas Dunn Learning Center (TDLC) in St. Louis. TDLC offers free or low-cost programs in education, enrichment, cultural, supportive and life-skill categories for people of all ages.

## ADVICE FROM THE CORPORATE WORLD

Missouri S&T made a commitment to building stronger relationships with its corporate partners when **John Eash** joined the S&T staff last August as executive director of corporate relations.

Eash, AE'79, MS EMgt'90, has now taken that pledge a step further with the formation of the Missouri S&T Corporate Advisory Board. The group, which gives guidance on industry needs and challenges, helps connect S&T with industries and companies for mutual benefit. Members held their first meeting in April at Hasselmann Alumni House.

"The Corporate Advisory Board members have made great strides in their field of work, and their input will broaden the spectrum of corporate relationships at Missouri S&T," Eash says.

The group plans to meet twice a year — once in the fall and again in the spring.

Members of the Corporate Advisory Board are:

- **Matt Daniels**, senior manager of education relations at Boeing
- **Linda Harrell**, CerE'88, research manager for advanced materials technology at Caterpillar
- **Perrin Roller**, GeoE'80, principal at Upstream Forensics LLC
- **Lisa Sombart**, ME'84, president and chief executive officer at William Tao & Associates Inc.
- **Jeff Steinhart**, EMgt'79, retired vice president of engineering and environmental affairs at Anheuser-Busch
- **Rick Szevery**, MetE'02, manager of iron and steel producing, quality assurance at ArcelorMittal.

# LET YOUR VOICE BE HEARD

Your opinion matters to the Miner Alumni Association, which represents nearly 60,000 alumni. If you have comments, questions or ideas, please share them with your elected representatives listed below.

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To contact your representatives, go to [mineralumni.com](http://mineralumni.com).

# MAKING DOUGH

Beer and pizza have always been a popular late-night pairing, but what about beer *in* pizza? Leave it to a Missouri S&T graduate to start a pizza business that uses spent grains from breweries to prepare its dough.

During the brewing process, malted grains are cracked and mashed to extract sugars, proteins and nutrients for the beer. The leftover grains are called “spent” grains and can constitute up to 85 percent of a brewery’s total by-product. Often, breweries donate their spent grains to local farmers to use as livestock feed. But they can also be used to enrich the flavor of baked goods such as cookies, doughnuts and — you guessed it — pizza.

**Jon Leek’s** Pulse Pizza uses spent grains, yeast and three types of flour, including barley flour, to make its pizza dough. The spent grains and barley flour bring a subtle, slight sweetness to the finished pizza’s crispy, baked bronze dough.

The St. Louis-based pizza company gets its spent grains from a number of area breweries, and the dough they make differs depending on the type of grains used.

“Darker, heavier beer makes a darker, heavier crust,” says Leek, Psyc’09.

Leek came up with the idea to make “beer pizza” over drinks with friends at an annual holiday gathering they call Beers-giving.





“The rule for Beers-giving is when you come, you have to bring a beer-infused dish,” he says. Leek and his two roommates “were trying to think of different things we could do for Beers-giving. I was like, ‘Let’s do beer pizza. Spent grains are a thing. Beer bread is a thing. Let’s make a beer bread-style crust.’”

The beer pizza was such a hit among their friends that Leek and his roommates formed an LLC, called Pulse Pizza. Leek also has a full-time day job as a technical success analyst at Gainsight: Customer Success Software. He credits his studies in psychology at S&T, where he conducted research focused on influence and group behavior — “what makes stuff addictive” — with the success of Pulse. “If you want to get customers, you have to stand out, you have to do something different,” he says.

Pulse started out catering parties and events and soon struck a deal with Orbit Pinball Lounge in Maplewood, Mo. Pulse now serves pizzas there from 6 p.m. to close every Monday and Thursday. Leek and his partners eventually want to get a small storefront somewhere in St. Louis where they can operate a delivery and take-out-only restaurant. “We’re talking to investors and working on our business plan,” he says.

The pizzas that Leek and his partners make are almost as distinctive as the dough they prepare them with. Their offerings include a jalapeno popper pizza and a baked potato pizza. Perhaps their most interesting pizza is inspired by the made-up holiday that gave birth to the company: the Beers-giving pizza. Offered every November, this pizza uses gravy instead of sauce and is topped with beer-brined turkey, beer-steamed green beans, beer-candied sweet potatoes, dried cranberries and Gruyere cheese.

“It’s about having fun and doing something interesting,” says Leek. □

“IT’S ABOUT  
HAVING FUN  
AND DOING  
SOMETHING  
INTERESTING.”



## ELGIN'S BOOK REFLECTS ON VIETNAM EXPERIENCES



Far from his usual books on surveying, **Dick Elgin's** latest work, *Shoulda Played the Flute*, is a memoir of his time in Army aviation, including a year flying helicopter combat missions in Vietnam.

Elgin, CE'74, MS CE'76, an adjunct professor of civil engineering at Missouri S&T, washed out on his first try at S&T, so he volunteered for the Army rotary wing flight school. After graduating from flight school, he was sent to Vietnam in 1969 and assigned to the Americal Division in Chu Lai. Within the Americal, he flew the Hughes OH-6A out of the 196th light infantry brigade on a wide variety of missions.

Through humorous, serious and sad vignettes in the book, Elgin describes the missions he flew.

Long before Vietnam, Elgin played the flute in his high school band. During basic training in Fort Polk, La., the post band director made him an offer: He could fulfill his Army obligation — guaranteed — playing the flute in the Fort Polk Army Band. Elgin declined.

There were missions in Vietnam when he remembered the offer, thinking he “shoulda played the flute.”



Pictured left to right: Suzanna Long, Cynthia Tang and Chancellor Cheryl B. Schrader

## SUZANNA LONG IS S&T'S 2016 WOMAN OF THE YEAR

**Suzanna Long**, Hist'84, Phys'84, MS EMgt'04, PhD EMgt'07, was named Missouri S&T's 2016 Woman of the Year in April during a ceremony held on campus.

This annual award recognizes efforts to improve the campus environment for women and minorities. The award comes with a \$2,000 stipend funded by **Cynthia Tang**, Econ'85, founder and former chair of Insight Industries Inc.

Long is interim chair and associate professor of engineering management and systems engineering at Missouri S&T.

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## S&T ALUMNA EARNS PRESIDENTIAL AWARD

**Melissa (Malone) Teague**, CerE'06, MS CerE'08, was one of 106 researchers to earn the Presidential Early Career Award for Scientists and Engineers. The award is the highest honor bestowed by the government to engineering and science professionals in the early stages of their research careers.

"It's a really big honor," Teague told the *Columbia Daily Tribune*. "The things I work on are pretty specialized. It's kind of nice to get recognition for the work I do in a small area of science."

Teague, who earned a Ph.D. in materials science from Colorado School of Mines, works at Sandia National Laboratories under funding from the U.S. Department of Energy. She studies how ceramic materials age and their properties, and her research has applications in nuclear weapons, Teague says.

"These early career scientists are leading the way in our efforts to confront and understand challenges from climate change to our health and wellness," President Barack Obama said.

## TWO ALUMNI HONORED FOR PROFESSIONAL ACHIEVEMENT

Missouri S&T presented two Awards of Professional Distinction during commencement ceremonies in May. The awards recognized the following graduates for professional achievement:

**Craig A. Barnes**, ME'78

**Gail (Dolan) Hahn**, ChE'82

## HONORING NEW ACADEMY MEMBERS

In April, 26 alumni and friends were inducted into Missouri S&T academies. Academy membership recognizes careers of distinction and invites members to share their wisdom, influence and resources with faculty and students. Some academies hold induction ceremonies in the spring, others in the fall.

### ACADEMY OF CIVIL ENGINEERS

**Neil Brady**, CE'95  
**Genda Chen** (honorary member)  
**Sean C. Henry**, CE'95  
**Jim Kirby**, CE'63  
**Larry Mays**, CE'70, MS CE'71  
**Rocky Miller**, CE'88  
**Steve Starrett**, CE'89  
**Gregg Wilhelm**, CE'83  
**David Wisch**, CE'75, MS CE'77

### ACADEMY OF CHEMICAL ENGINEERS

**Arthur Bell**, ChE'75  
**Martin Berutti**, ChE'84  
**Steven Block**, ChE'82  
**Rick Eklund**, ChE'86  
**David Sextro**, ChE'82  
**Linda Wright**, ChE'88

### ACADEMY OF ELECTRICAL AND COMPUTER ENGINEERING

**Sean J. Bentley**, EE'95, MS EE'97  
**Alan G. Erickson**, EE'75  
**Vincent J. Kunderman**, EE'75

### ACADEMY OF ENGINEERING MANAGEMENT

**Dale Spence**, EMgt'97, MS EMgt'05  
**Patricia Ruma Spence**, EMgt'94, MS IST'05

### ACADEMY OF MINES AND METALLURGY

**Kurt Benton**, MinE'85  
**Karl Burgher**, Econ'84, PhD MinE'85  
**Terry Donze**, GeoE'71  
**Linda R. Harrell**, CerE'88  
**Timothy L. Hildebrand**, GeoE'80  
**Matthew J. O'Keefe**, MetE'85



## GOLDEN ALUMNI REUNION

On May 17–18, the Miner Alumni Association and Missouri S&T welcomed back 54 alumni from the Class of 1966 to celebrate their Golden Alumni Reunion. With over 100 alumni and guests who traveled back to campus for this special event, it was the largest reunion hosted in recent history. Guests visited the Kummer Student Design Center and the hot glass shop during their campuswide tour. Sarah Jane and the Blue Notes performed evening entertainment while alumni and guests danced and reminisced about their memories from college. Alumni also toured their academic departments and heard a campus update from Chancellor **Cheryl B. Schrader**. The culmination of this two-day event occurred when the graduates re-enacted their commencement ceremony and officially earned the title of Golden Alumni.

# HANDS-ON WORK IS THE REAL TEACHER



Photo by K.C. Alfred

Electronics has been a passion for **Clay Melugin**, EE'84, since the fourth grade, when he built a metal detector using a classic Heathkit. Today he's building connections he couldn't have imagined 40 years ago.

He credits his Missouri S&T education with transforming a childhood passion into a career path at the cutting edge of technology.

"My Rolla education stimulated my mind to think bigger," says Melugin, who also holds a master's degree in engineering management from Southern Methodist University and an executive MBA from San Diego State University. "Without it, I would have been on a much different career trajectory."

After graduating from S&T, Melugin joined Motorola and developed a radio navigation system for fleet tracking. His next career step took him to Emerson Electric, where he helped design one of the first remote devices for metering electricity — a forerunner of the smart meter, which records energy consumption at various intervals and communicates the

data to the utility company for monitoring. He eventually landed in southern California, working for Infineon Technologies' Wireless Solutions division and Intel Corp.

In every position, Melugin has blazed a trail on technology's frontier; for example, the smart systems made possible by integrating the physical and the virtual. "We took the first steps toward connecting the world through a movement now called the 'internet of things,'" he says.

Today, as founder of RMAC Technology Partners, Melugin continues to advance the possibilities of wireless technology. He also makes it a priority to inspire future innovators, both as a volunteer teacher in the San Diego area public schools and through his outreach to prospective S&T students on the West Coast as an alumni admissions ambassador.

"Many promising students are stressed about the cost of education and the competitive nature of getting into college," says Melugin. "I tell them that Rolla offers an affordable, top-tier engineering education in a great environment."

"MY ROLLA EDUCATION  
STIMULATED MY MIND  
TO THINK BIGGER."

Telling the S&T story to Californians is only part of Melugin's mission. He is also an investor in the future of that story. Through a deferred gift to the Kummer Student Design Center, Melugin and his wife, **Janet**, will establish an endowment that will support innovation for generations to come.

"Hands-on work is the real teacher," says Melugin. "Design teams teach students to solve hard problems." For this trailblazer, the three words that describe what it means to be a Miner come straight from experience: "capable, confident, engaged."

## PHOTO FINISH: GO ASK ALICE

Missouri S&T hosted the American Society of Civil Engineers' 2016 Mid-Continent Student Conference for the first time in 20 years April 21-23. Teams had to design a "lightweight" concrete canoe that could float while holding several paddlers for races. The S&T team's canoe was named *Alice*, after a former St. Pat's tradition.



# MISSOURI S&T

Miner Alumni Association  
1100 N. Pine St.  
Rolla, MO 65409-0650

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