

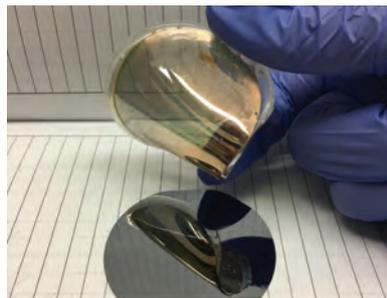
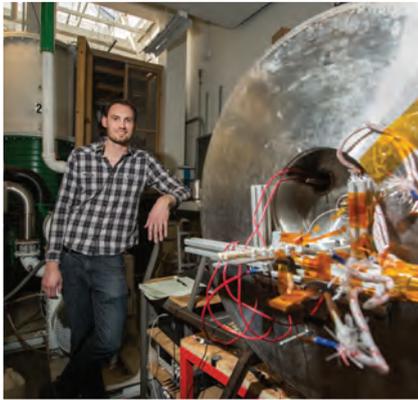
GLASS PIONEER



RECORD GIFT
FOR EWB 6

FUELING SPACE
FLIGHT 8

MINERFEST:
HOMECOMING 2017 16



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Missouri S&T's rank among colleges in Missouri for best value, according to SmartAsset.com. S&T ranks as the seventh-best value in the nation.

20

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#8

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MISSOURI S&T BY THE NUMBERS



Times the Missouri S&T Women's Mucking Team has won the Intercollegiate Mining Competition, most recently this past March. The Men's B Team recorded its first overall first-place finish and an alumni team placed first. The Men's A Team finished sixth.

25

Years Missouri S&T has been in the solar car racing business.



Missouri S&T faculty who have been named Woman of the Year since the award's inception in 1997. **Audra Merfeld-Langston**, associate professor of French and chair of arts, languages and philosophy, is the 2017 Woman of the Year.

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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Q&A

The best of times...

In his novel *A Tale of Two Cities*, Charles Dickens wrote, "It was the best of times, it was the worst of times." What was the "best of times" for you in Rolla?

Historian **Larry Gragg**, Curators' Distinguished Teaching Professor emeritus of history and political science, recently posed this question to our readers and on social media. Here are a couple of your answers.

I enjoyed the hands-on classes in ceramic engineering, but some of the best times were saving the Dairy Queen coupons so **Shelly Lewis**, CSci'84, **Dave Wilson**, EE'83, **Chuck Palmer**, EE'82, and I could pool our money and go get ice cream sundaes!

Or sometimes we would pool our money and hit Mr. T's on Thursday for Ladies' Night and dance on the steel dance floor under the disco ball. I have lots of good memories about Fulton Hall, the professors, friends, throwing clay on the potter's wheel, mud wrestling and ... well, it was all good!

Erica Skouby, CerE'84
Nevada, Mo.

My best of times at Rolla was the fall of 1956 when I met my wife-to-be, Evelyn, at a Radio Club (WOEEE) meeting on campus.

We are both still going strong. Go Miners!

Chuck Schneider, EE'59
Derby, Kan.

CORRECTIONS

The incorrect photo was published with the memorial for **Walter A. Rhinehart**, ME'59, in the Spring 2017 issue. His memorial appears with the correct photo on page 45 of this issue. We regret the error.

CELEBRATING SILVER, AIMING FOR GOLD

In July, the Solar Car Design Team commemorated 25 years of racing with an eighth-place finish in the Formula Sun Grand Prix, held on the Circuit of the Americas Formula 1 track in Austin, Texas. Team members say this race sets them up for an even more successful season next year, when the team returns to the cross-country American Solar Challenge race. While the course has yet to be decided, the team is already preparing for its next challenge.

"In 2016, we earned fourth place at the American Solar Challenge," says team president **Conner Kostelac**, a senior in engineering management from Platte City, Mo. "We want to keep that momentum going and continue to compete at the highest level. In the past four years, the team has gone from being on the bottom to being one of the best teams in the country and on any given day we can beat the best competitors."

To learn more about the team or donate, visit solarcar.mst.edu.



Photos courtesy of Bob Phelan

Travis McVey

Student leader today, ALUMNUS TOMORROW

By Hannah Ramsey



When **Travis McVey** came to Missouri S&T he knew he wanted to get involved. The petroleum engineering senior found the type of involvement he was looking for with STAT (Students Today, Alumni Tomorrow).

"It's the student portion of the alumni association," McVey says. "Our goal is to have students become functioning and active alumni once they graduate. Part of that is exposing them to the alumni association while they're still students."

Beginning in the fall of 2016 McVey moved from active membership to leadership as STAT's executive board president.

"This year we decided we wanted to really improve the way the organization was run," he says. "We wanted to take more

responsibility for planning and organizing meetings and speakers."

In the past STAT's executive board met and discussed ideas, but didn't handle a lot of the planning. McVey and his fellow 2016-17 executive board members wanted to change that.

"In the past our advisor, through the alumni association, handled most of the behind-the-scenes work. They did the budgeting, contacted the speakers, and set up all the food," he says. "Now we're trying to put more of that responsibility on ourselves. Our treasurer is in charge of contacting speakers or alumni

and asking if they would be interested in giving a presentation."

McVey has been involved with STAT since his first semester at Missouri S&T in 2013. Once he finishes his degree in the fall of 2018 he knows what he hopes his legacy will be.

"The thing I would like to be remembered for is being one of the first groups to start taking responsibility as executive officers, the first group that started being a more self-sufficient organization," he says.

In his four years as a STAT member, McVey has seen the impact of Missouri S&T's alumni. He would like for those contributions to be better known around campus.

"I believe STAT is important because it helps spread the word that we have an active alumni base," he says. "I know a lot of students realize that scholarships come from alumni, but I'm not sure how many realize how many things around campus are possible because of alumni contributions, such as several computer labs and lab equipment. I think it's important for us to spread that and to be thankful for those donations."

MILLION-DOLLAR GIFT SUPPORTS SCHOLARSHIPS

Steve Wunning, ME'73, has established a \$1 million scholarship endowment at Missouri S&T: the Steven H. and Lyneve C. Wunning Scholarship Fund.

Wunning is a member of the Missouri S&T Board of Trustees, an advisory and advocacy group for university leaders.

"Going to Rolla was one of the best decisions I ever made," says Wunning, a native of Farmington, Mo. "I received an outstanding engineering education, but also much more.

Pi Kappa Alpha got me involved on campus, and taught me how to study, live and work with others from entirely different backgrounds. My parents, my college experience, and my fraternity all had an enduring impact on my personal values and beliefs."

Wunning retired from Caterpillar in 2016 as a group president and member of the executive office after 41 years with the company. He met his wife, **Lyneve**, shortly after he joined the company in 1973.

In a career spanning the globe, Wunning found that colleagues worldwide were familiar with his alma mater.

"People you meet almost always ask where you went to school," he says. "I would just say Rolla, and they invariably knew exactly where I went to school. This was true whether I was in North or South America, Europe or Asia — in places like Johannesburg, South Africa; Piracicaba, Brazil; and Perth, Australia."



NEW BIO SCI CHAIR BEGAN AUG. 1

David Duvernell, former chair and professor of biological sciences at Southern Illinois University Edwardsville, began his term as chair of biological sciences at Missouri S&T on Aug. 1. Associate professor **David J. Westenberg** and professor **Yue-wern Huang** each served a term as interim chair following the 2015 departure of **Robert Aronstam**.



A new grant from the National Endowment for the Humanities will give students a chance to earn course credit while learning about the cultures of countries they visit for service projects or study-abroad trips.

The \$100,000 Humanities Connections grant will help Missouri S&T's history and political science, English and technical communication, and arts,

languages and philosophy departments develop a new minor in Latin American Studies. Courses include History of Science in Latin America, Sustainable Foods in Latin American Literature, Sustainability as Trope and Theme in Latin America, and Contemporary Latin America. The first course will be offered on campus this fall.

Faculty say the minor will help S&T students who volunteer for service projects or study in Latin America gain a deeper cultural understanding that will allow them to connect to these communities and better understand their needs.

The new humanities courses will encourage that cultural understanding and increased communication, as well as involve humanities students in technically based experiential learning opportunities.





RECORD GIFT FOR EWB

Photo by George Bridges

“EWB STUDENTS
GAIN THE OBVIOUS
BENEFITS OF LANGUAGE
SKILLS AND CULTURAL
IMMERSION, BUT THEY
ALSO GAIN A BETTER
UNDERSTANDING OF THE
WORLD AND ITS PEOPLE.”

From clean drinking water to flood control, Missouri S&T students participating in Engineers Without Borders (EWB) are changing lives in Central and South America.

Now, a \$500,000 challenge grant from the Houston-based Montana Cahill Foundation will provide funding for EWB while encouraging other donors to make a difference.

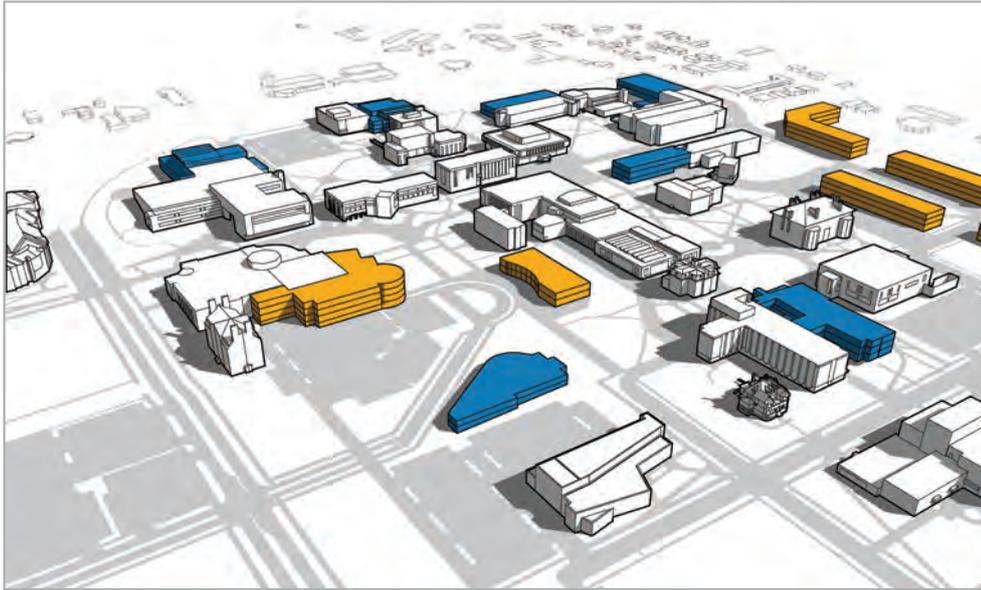
“EWB students are a different breed and we are lucky to have them,” says **Duane Montana**, CE’75, foundation director and retired executive with Brown & Root. “EWB students represent something of our higher nature and better selves. They make a commitment, often over multiple years, that goes beyond the classroom. It is a commitment to a community to provide its people with a basic life necessity: clean water.”

The foundation’s challenge grant — the largest gift in EWB chapter history — will

match every dollar contributed to EWB up to \$500,000 to create a \$1 million fund. **David Heikkinen**, ME’93, and his wife, **Ann**, stepped forward in response to the challenge with a \$250,000 gift (see story on page 48). With challenge funds remaining, contributions are still needed.

“As directors who have lived and worked globally, Duane and I believe there is much to be gained from international exposure,” says foundation director and Missouri S&T trustee **Peggy Cahill Montana**, ChE’76, retired president and CEO of Shell Midstream Partners. “EWB students gain the obvious benefits of language skills and cultural immersion, but they also gain a better understanding of the world and its people.”

For more information on how you can help meet the Montana Cahill Foundation’s challenge, contact **Tory Verkamp**, executive director of development at Missouri S&T, at verkampv@mst.edu or 573-341-4490.



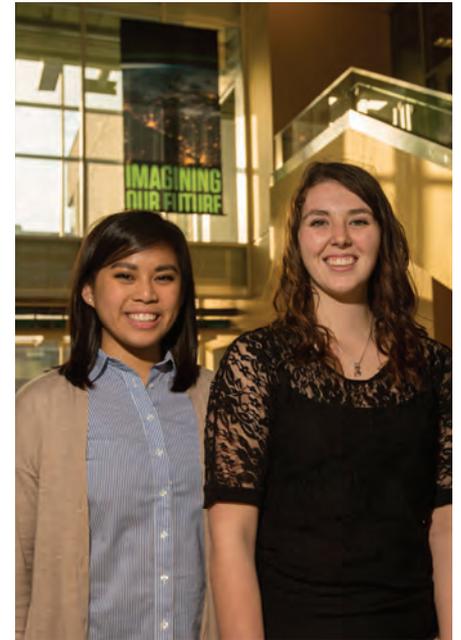
CURATORS APPROVE MASTER PLAN UPDATES

By next spring Missouri S&T should once again have a driving range on the former golf course property. That change, as well as additional improvements to athletics facilities, were part of an updated Campus Master Plan approved by the UM System Board of Curators in April.

The plan is designed to guide S&T's long-range physical development over 20 years. It also focuses on improving safety along U.S. Highway 63, renovating and improving use of existing facilities, and reducing deferred maintenance.

The plan also calls for a new "arrival district" that involves redirecting University Drive to connect with Miner Circle to create a front door to the university. That project is in the planning phase now, but thanks to funding from a new transportation development district in Rolla, work could begin within five years.

Read more about the updates to the S&T Campus Master Plan at rol.la/campusmasterplan.



NOT SO LOST IN SPACE

Missouri S&T teacher education students **Marisa Tompkins** (above, right), a sophomore in multidisciplinary studies and elementary education, and **Frances Manahan**, a junior in applied mathematics and secondary education, learned how to incorporate the study of outer space into lesson plans at the Space Foundation's Space Symposium, held in April in Colorado Springs.

Tompkins, who plans to teach third, fourth or fifth grade, knows that if she teaches fifth grade, she'll have to do a curriculum section on career planning. She wants to be able to tell her students that they can be anything they want, even an astronaut.

"I want to say, 'When I was in college, I met all these astronauts. And you can be one too if you try hard enough,'" she says.

Manahan was chosen to join the Space Foundation's Teacher Liaison Program. She will serve as an advocate for space-themed education and use Space Foundation training resources to integrate space principles into her future classroom.

IN PRINT

Michael Bruening, associate professor of history and political science, edited *A Reformation Sourcebook: Documents from an Age of Debate*, published in April by the University of Toronto Press.

LEACH THEATRE

crowdfunding.mst.edu

LIVE LONG, PROSPER AND SEE SHATNER

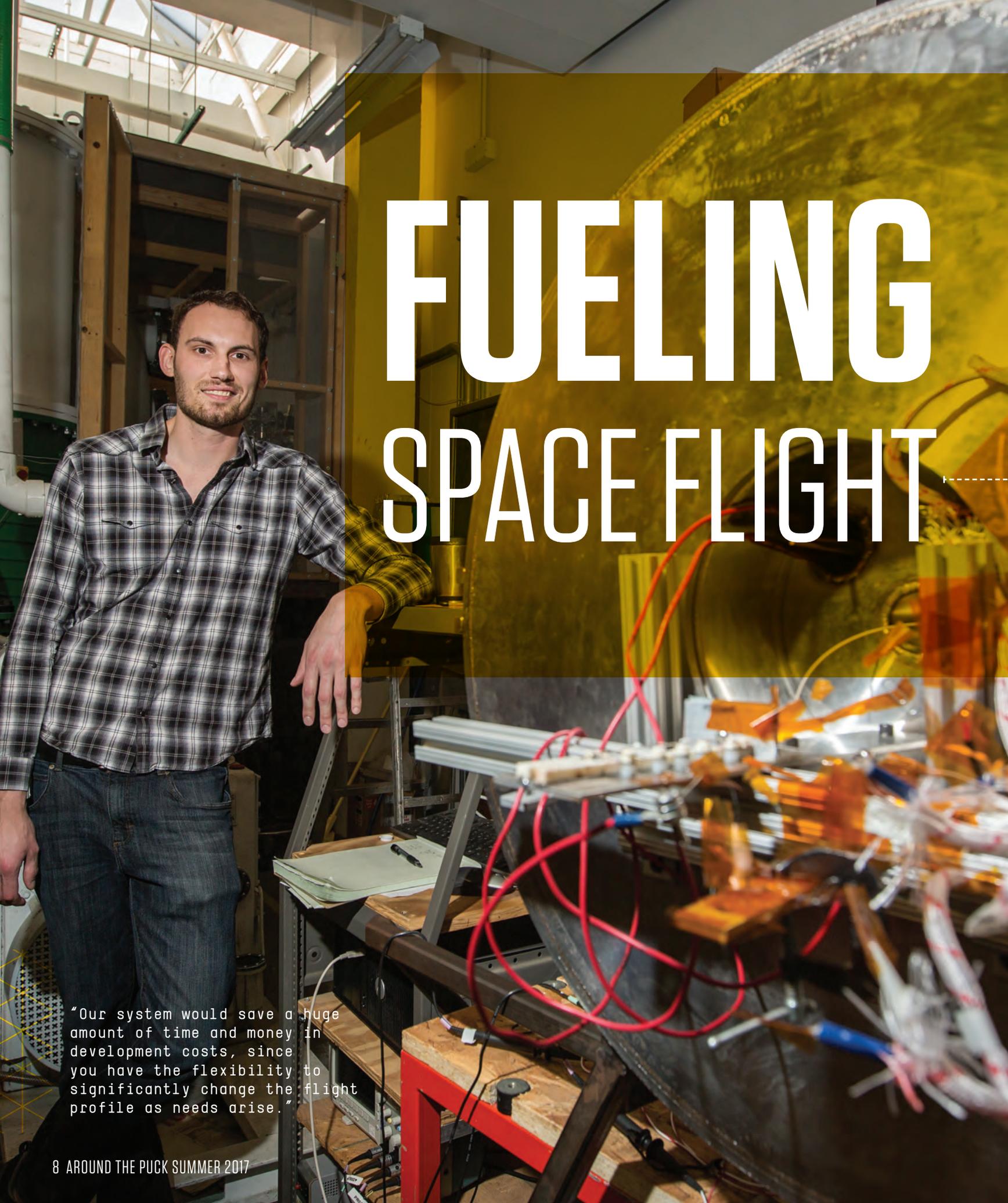
Help support another 25 years of performing arts at Missouri S&T by funding Leach Theatre renovations.

Based on contribution level, donor perks include:

- Tickets to see **SHATNER'S WORLD** at Leach Theatre Oct. 29 (Homecoming Weekend)
- Meet-and-greet photo op with William Shatner
- Naming recognition for lobby furniture purchases

Missing your opportunity to get the best seats before tickets go on sale would be highly illogical.

Visit crowdfunding.mst.edu for details.



FUELING SPACE FLIGHT

“Our system would save a huge amount of time and money in development costs, since you have the flexibility to significantly change the flight profile as needs arise.”



Steven Berg hopes to advance spacecraft propulsion by combining its two traditional systems, chemical and electric, into one. "Our propulsion system does both in a single package: one propellant, one tank, one feed line and one thruster."

It started with a boyhood dream of becoming an astronaut fueled from watching the 1995 Hollywood portrayal of the ill-fated *Apollo 13* lunar mission.

It ended — or rather, took a detour — after a teenage growth spurt propelled **Steven Berg** beyond NASA's 6-foot-4 height limit for space travelers. The federal agency's loss is Missouri S&T's gain, as Berg's fascination with space led to a postdoctoral fellowship in the Aerospace Plasma Laboratory under the supervision of associate professor **Josh Rovey**, his thesis advisor.

After nearly a decade in the department, Berg, AE'10, MS AE'12, PhD AE'15, joined SpaceX in 2015 as a propulsion engineer and test engineer working on the *Falcon 9* rocket's second stage in Texas and southern California.

The SpaceX gig was heavy stuff for a 20-something engineer, admits Berg, who spent two years as a hurdler and high jumper for the S&T track team. But just months into

the new job, when Rovey offered his former pupil the chance to return to Rolla as a postdoc to continue research into multi-mode micropropulsion — and hopefully spin off those efforts into a commercial venture — he didn't hesitate to trade lunches at Manhattan Beach for a windowless office in the basement of Toomey Hall.

"This may be my only chance to do this," he says.

With the help of several graduate student researchers, Berg is seeking to advance spacecraft propulsion by combining its two traditional systems, chemical and electric, into one that can tap into either, depending upon circumstances.

"Traditionally, propulsion systems have been either one of those separately, but not both.

"THIS MAY BE MY ONLY CHANCE TO DO THIS."

Our propulsion system does both in a single package: one propellant, one tank, one feed line and one thruster."

The advantage of such a system? Its ability to change course on the fly and react to unforeseen circumstances, from shifting weather patterns to unexpected military maneuvers.

"Our system would save a huge amount of time and money in development costs, since you have the flexibility to significantly change the flight profile as needs arise, or requirements change, without adjusting the propulsion system hardware," Berg says. "You wouldn't have to retest all the components you design, or redesign all the components you already tested." ■



S&T researchers have developed a way to “grow” thin layers of gold on single crystal wafers of silicon, remove the gold foils, and use them as substrates on which to grow other electronic materials.

SOLID GOLD

Someday, your smartphone might completely conform to your wrist, and when it does, it might be covered in pure gold, thanks to the work of Missouri S&T researchers.

In the March 2017 issue of the journal *Science*, S&T researchers described a new process to “grow” thin layers of gold on single crystal wafers of silicon, remove the gold foils and use them as substrates on which to grow other electronic

materials. The discovery could revolutionize wearable or “flexible” technology research, greatly improving the versatility of such electronics in the future.

According to lead researcher **Jay A. Switzer**, the Donald L. Castleman/FCR Endowed Professor of Discovery in Chemistry, the majority of research into wearable technology has been done using polymer substrates, or substrates made up of multiple crystals. “And then they put some typically organic semiconductor on there that ends up being flexible, but you lose the order that (silicon) has,” says Switzer.

Because the polymer substrates are made up of multiple crystals, they have what are called grain boundaries, says Switzer. These grain boundaries can greatly limit the performance of an electronic device.

Most electronics on the market are made of silicon because it's "relatively cheap, but also highly ordered," Switzer says. "Ninety-nine point nine percent of electronics are made out of silicon, and there's a reason — it works great. It's a single crystal, and the atoms are perfectly aligned. But when you have a single crystal like that, typically, it's not flexible."

“SO WE CAME UP WITH THIS TRICK WHERE WE COULD PHOTO-ELECTROCHEMICALLY OXIDIZE THE SILICON, AND THE GOLD JUST SLIDES OFF.”

By starting with single crystal silicon and growing gold foils on it, Switzer is able to keep the high order of silicon on the foil. But because the foil is gold, it's also highly durable, flexible and nearly transparent. Switzer and his team have peeled foils as thin as seven nanometers. (A nanometer is one billionth of a meter.)

Switzer says the challenge his research team faced was not in growing gold on the single crystal silicon, but getting it to peel off as such a thin layer of foil. Gold typically bonds very well to silicon.

“So we came up with this trick where we could photo-electrochemically oxidize the silicon,” Switzer says. “And the gold just slides off.”

Photoelectrochemical oxidation is the process by which light enables a semiconductor material, in this case silicon, to promote a catalytic oxidation reaction.

Switzer says thousands of gold foils — or foils of any number of other metals — can be made from a single crystal wafer of silicon. □

BEAM ME UP, ROLLA



“We think he is the perfect person to cap off our anniversary celebrations with one last hurrah — or laser blast, in this case.”
— Emily Brickler, managing director of Leach Theatre

As Leach Theatre drops the curtain on its 25th anniversary season, it is time to reflect on a season well-spent and begin preparations for the next 25 years.

The theater's silver anniversary kicked off in September 2016 with a sold-out gala performance by the St. Louis Symphony Orchestra. STOMP and a performance by the Russian National Ballet also sold out. Acclaimed cellist Yo-Yo Ma packed the house for the Remmers Special Artist/Lecturer Series.

So how can the theater top that this coming season? Easy. ... At 2 p.m. Sunday, Oct. 29, William Shatner, cultural icon and *Star Trek* titan, will perform a solo act. Tickets go on sale Sept. 1.

For more information about the Shatner performance or the 2017–18 season, visit leachtheatre.mst.edu.

MAKING STRONGER CONCRETE WITH FLY ASH

Portland cement has been around for over 250 years as the binding material for concrete, mortar and stucco, but **Mohamed ElGawady** says replacing it with fly ash can make concrete more durable, stronger and more resilient.

ElGawady is working with the Missouri Department of Transportation to improve the state's concrete bridges and extend their service life beyond the typical 75 years. Zero-cement (ZC) concrete resists shrinkage cracking and freeze/thaw damage common with conventional concrete mixtures.

It also cures faster. ZC concrete reaches its compressive strength in less than 24 hours compared to the 28 to 56 days required by conventional concrete. It also shows high resistance to freezing and thawing, corrosion, elevated temperatures, fire, salt and acid or alkaline environments, as well as very low permeability and high tensile strength.





Cody McKellips' prototype flotation device, called the Last Chance, has three primary components — a specially designed stand, a pneumatic launcher and a projectile.

ENGINEERING A RESCUE

The night Brian Hunt died, volunteer firefighter **Cody McKellips** vowed to find a better way for fire and rescue teams to speed up water rescues, particularly as flood waters rise.

Hunt became the 14th victim of a December 2016 flood when his truck was swept off of a Route H bridge into Missouri's Pomme de Terre River after storms caused massive flooding the day after Christmas. McKellips, a junior in aerospace engineering at Missouri S&T, was working with the Walnut Grove, Mo., Volunteer Fire Department when it was dispatched to the scene.

"It was flooding that night all around Springfield," McKellips recalls. "It was around 40 degrees. Hunt was in the middle of the river, which at that point was probably 200 feet across. We were so far away, and you could see the water rise — it was happening so quickly — and we weren't able to get enough equipment to first responders. We couldn't get to him."

The next day, McKellips and his father, Tom, a retired Springfield firefighter and now a

volunteer firefighter in Walnut Grove, sat down at their kitchen table and started pitching ideas to help fire departments avoid losses like this in the future.

By the end of the night, the McKellipses and partner Matt Halaschak, an electronics expert, had plans for a prototype of a water rescue device. And before long the three formed a non-profit company to manufacture the device — Global Rescue Systems.

The prototype flotation device, called the Last Chance, has three primary components — a specially designed stand, a pneumatic launcher and a projectile. The projectile, which looks a bit like a foam swimming pool toy, is the flotation device. The device weighs about 30 pounds and costs just over \$100 to build.

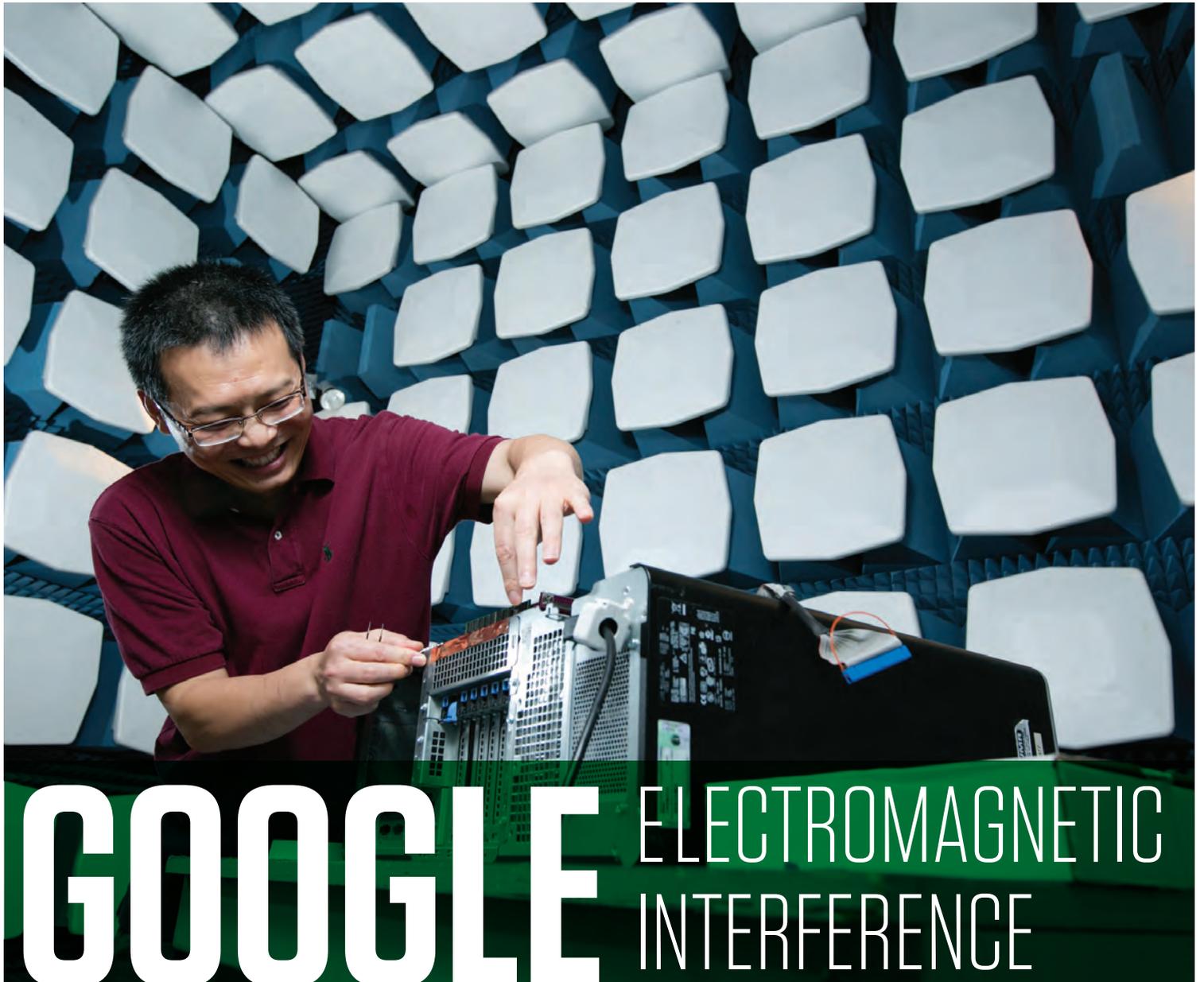
McKellips' engineering background helped him evaluate the mechanics of materials, safety, price optimization, aerodynamics and rocketry concepts.

"It's fairly simple," McKellips says. "You use compressed air to launch the projectile a decent distance."

Right now, the device is capable of launching the flotation device about 250 feet. The team is working on improvements that will extend that reach to well over 500 feet.

The Last Chance prototype is designed to not automatically retract — and for good reason. There is a lot of debris in the water during a flood, McKellips says, and that would make a self-retracting device difficult to use. It would also add to the cost of the device. McKellips says that isn't part of the plan.

A main goal of the project is to make these devices so affordable that they can be provided at little or no cost to volunteer fire and rescue teams. The inventors have provided a prototype to the Pleasant Hope Volunteer Fire Department and are raising funds to pursue a patent and begin larger-scale production. They're also working on more advanced versions of the Last Chance and other rescue devices.



A decade from now, your smartphone won't look anything like it does today — at least on the inside.

With 5G technology, the devices will also be 10 times faster than they are today. And self-driving cars won't be a novelty, they will be part of your daily commute.

Jun Fan, a professor of electrical and computer engineering and a researcher in S&T's Electromagnetic Compatibility Lab, is using a grant from Google to meet those goals — and do it safely — by deciphering and solving the problems of electromagnetic interference inherent in the systems.

Every electronic device emits electromagnetic radiation, and cellphones are no different with their multiple channels and multiple digital and analog circuits. "Noise," or electromagnetic interference, affects the performance of multiple input, multiple output (MIMO) systems by slowing the speed of apps and downloads, dropping calls and making calls you do receive sometimes hard to hear clearly.

Those issues can be frustrating, but they're not life-threatening. But keeping self-driving cars safe is.

"We need to make these devices, phones and cars, work in a real-world setting," Fan says.

His lab is a fully enclosed electromagnetic quiet room equipped with wave-absorbing material on three walls and the ceiling, with big pads and smaller egg crate shapes. Here the researchers gauge the radiation from electronic devices' transmitters and receivers.

The information gleaned there can be applicable to autonomous automobiles, Fan says. Just as reducing interference in phones can lead to better performance, reducing interference in and among self-driving cars will make them safer when multiple vehicles are on the road. Of course, infrastructure investment in and surrounding roads will be necessary to keep the communications between autos clear and direct.

LECTURE SERIES

BRINGS CHEMISTRY GRADS FULL CIRCLE

"I wanted to invite alumni back to talk about what they have done as an encouragement to students to see what's possible."



James O. Stoffer wanted to give Missouri S&T students a chance to learn from eminent scholars and innovators in polymer chemistry and related areas. So last fall the Curators' Distinguished Professor emeritus of chemistry established a lecture series to showcase his former students and inspire current ones.

"I wanted to invite alumni back to talk about what they have done as an encouragement to students to see what's possible," says Stoffer, a pioneer in polymer synthesis who holds 15 patents in various areas of polymer chemistry. "I've had very successful students who have gone out and accomplished something for the university, so I decided in this way to bring them back."

Janet Kavandi, MS Chem'80, gave the inaugural talk in the series. Kavandi, director

of NASA's John H. Glenn Research Center in Cleveland, Ohio, an astronaut and veteran of three space flights, was one of Stoffer's graduate research assistants and worked with him on her master's project. She credits Stoffer with preparing her for her career with NASA.

"He's a wonderful human being," Kavandi says of Stoffer. "It was a pleasure and an honor to work with him. When I first arrived at Missouri S&T, I pretty much knew nothing about advanced research. He was a great mentor."

Kavandi says she was surprised and honored to be chosen as the first speaker in the series. She says that what Stoffer is doing with his lecture series is important in inspiring and encouraging the next generation of scientists, engineers and, of course, astronauts.

"It's important to do things like this so that today's students see that there is a path forward," Kavandi says. "Given the right opportunities and the right mentors, you can go out and do some pretty amazing things with your life. Being able to come back (to S&T) and share with the current students helps to make it more real."

The lecture series was funded through a \$50,000 gift from Stoffer. The funds are from royalties from Stoffer's patent for an environmentally friendly chrome-free paint that is used on all military aircraft. S&T matched that gift with an additional \$50,000 in patent royalties.

The next lecture in the series will be held this fall. The featured speaker will be chosen by the selection committee, which consists of **Jay Switzer**, the Donald L. Castleman/FCR Endowed Professor of Discovery in Chemistry, **Tom Schuman**, professor of chemistry, and Stoffer.



CHRISTOPHER G. MAPLES NAMED INTERIM S&T CHANCELLOR

Christopher G. Maples, president emeritus of the Oregon Institute of Technology, began his duties as interim chancellor of Missouri S&T on May 15.

He takes over from **Cheryl B. Schrader**, who had served as S&T chancellor since 2012 before accepting the position of president of Wright State University in Dayton, Ohio.

His appointment, approved by the UM System Board of Curators in April, is for one year. He will not be a candidate for the permanent chancellor position. A national search to fill that position begins this fall.

ACADEMY INDUCTIONS

At ceremonies held in October and April, 38 alumni and friends were inducted into Missouri S&T academies. Academy membership recognizes a career of distinction and invites members to share their wisdom, influence and resources with faculty and students.

ACADEMY OF CHEMICAL ENGINEERS

Dutro "Bruce" Campbell,
ChE'92
Mike Schmidt, ChE'80,
MS ChE'85

ACADEMY OF CIVIL ENGINEERS

Becky Baltz, CE'84, EMgt'84
Claudia Hoeft, CE'90
Paul Kronlage, CE'83
Mary Lamie, MS CE'98
John Priest, CE'52
Tom Wolff, CE'70
Shamsher Prakash,
professor emeritus of
civil, architectural and
environmental engineering
(honorary member)

ACADEMY OF ELECTRICAL AND COMPUTER ENGINEERING

Dean S. Ford, EE'95
Tina E. Gaines, EE'89
Mark R. Hoffman, EE'86
Marcus A. Huggans, EE'96,
MS EMgt'97, PhD EMgt'98
Kevin J. McEnery, EE'86
Michael E. McEnery, EE'85
Gregory A. O'Neill Jr., EE'65

ACADEMY OF ENGINEERING MANAGEMENT

Gerard Hart, EMgt'71

ACADEMY OF MECHANICAL AND AEROSPACE ENGINEERS

Andrea C. Dorr, AE'92
James R. Friend, ME'92,
MS ME'94, PhD ME'98
L. Wayne Garrett, ME'72
Michael Ludwig, ME'78,
MS EMgt'88, MS SysE'05
David C. McMIndes, ME'88
Jeff Thornburg, AE'96

ACADEMY OF MINER ATHLETICS

Laurie Behm, LSci'84,
basketball and cross country
Donald Hahn, ME'72, baseball
David "Willie" Vonarx, CE'89,
cross country
David Wisch, CE'75,
MS CE'77, football

ACADEMY OF MINES AND METALLURGY

Dane L. Cantwell, PetE'85
Robert Duenckel, PetE'74
Matt Hinson, MinE'01
Braden Lusk, MinE'00,
PhD MinE'06
Gary Pennell, MetE'96
Hans Karl Schmoltdt, GGph'72,
GeoE'78
Genevieve Bodnar Sutton,
MetE'98, MinE'01
Greg Sutton, MinE'88
Ron Tyson, GeoE'91
Patrick Wagner, PetE'86,
MS PetE'88
Steve Wunning, MetE'73



HOMECOMING 2017



THURSDAY, OCT. 26

Jerry Bayless Retirement Banquet
5–7 p.m. Reception, 7–9 p.m. Dinner
Kinyon-Koeppel Grand Hall, Hasselmann
Alumni House

The civil, architectural and
environmental engineering department
will host a retirement banquet for
Jerry Bayless, CE'59, MS CE'62.

**Geology and Geophysics Annual Awards
and Alumni Banquet**
5:30–9:30 p.m.
Ozark Room, Havener Center

**Jackling Jocks Welcome
Pizza Party**
6 p.m. | Comfort Suites

FRIDAY, OCT. 27

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

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

Jackling Jocks Lunch
11 a.m. | Sybill's St. James
1100 N. Jefferson St., St. James, Mo.

Miner Legends Luncheon
noon–1:30 p.m. | Hasselmann Alumni House

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

*Tickets for event: \$20 each,
complimentary for MAA board members
and S&T academy members.*

Departmental Open Houses
3–4 p.m. | various campus locations

- Arts, Languages and Philosophy
- Biological Sciences
- Business and Information Technology
- Civil, Architectural and Environmental Engineering
- Electrical and Computer Engineering
- Experimental Mine
- Geology and Geophysics
- Mechanical and Aerospace Engineering

Silver and Gold Gathering
5–9 p.m. | Hasselmann Alumni House
Reception 5 p.m., Dinner buffet 6–8 p.m.

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

**Jackling Jocks Dinner at the
Silver and Gold Gathering**
5 p.m. | Hasselmann Alumni House



SCHEDULE



COME BACK TO YOUR ROLLA HOME OCT. 26–29 FOR A 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 Bearcats from Southwest Baptist University on Saturday. Homecoming 2017 continues through Sunday afternoon, when William Shatner takes the stage in Leach Theatre.



ACADEMY EVENTS

Academy of Computer Science

Banquet

6 p.m. Thursday, Oct. 26
Location TBD

Meeting

8:30 a.m.–3 p.m. Friday, Oct. 27
Location TBD

Academy of Mechanical and Aerospace Engineers

Board of Directors Meeting

12:30 p.m. Thursday, Oct. 26
Silver and Gold Room, Havener Center

Induction Dinner and Annual Meeting

6:30 p.m. Thursday, Oct. 26
St. Pat's Ballroom, Havener Center

Annual Business Meeting

9 a.m. Friday, Oct. 27
Missouri/Ozark Room, Havener Center

Student Design Presentations

1:45 p.m. Friday, Oct. 27
Room 140, Toomey Hall

Academy of Miner Athletics

Attend Silver and Gold Gathering

5–7 p.m. Friday, Oct. 27
Hasselmann Alumni House

New Member Induction Ceremony

7–8:30 p.m. Friday, Oct. 27
Carver/Turner Room, Havener Center

Membership Meeting

8:30–10 a.m. Saturday, Oct. 28
Gale Bullman Building

Academy of Mines and Metallurgy

Homecoming Meeting

8:30 a.m.–3 p.m. Friday, Oct. 27
Missouri/Ozark Room, Havener Center

SATURDAY, OCT. 28

Miner Alumni Association Board of Directors Meeting

8–11 a.m. | Kinyon-Koeppel Grand Hall,
Hasselmann Alumni House

Kappa Delta 45th Anniversary Brunch

8:30–11:30 a.m. | Kappa Delta House

MinerFest Family Connection

9:30 a.m. | St. Pat's Ballroom, Havener Center
Annual parent meeting

Homecoming Registration

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

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, bratwursts,
beverages and other tailgate goodies.

*Tickets for event: \$5 for those who preregister
online or call by Oct. 22, 2017. Tickets
purchased at the door: \$10 for adults,
\$5 for children ages 6–12, free for children
under age 6.*

Homecoming Parade

11 a.m. | Havener Center

Parade follows State Street to 11th Street past
Hasselmann Alumni House.

Missouri S&T Athletics Hall of Fame Room open to visitors

11:30 a.m.–12:30 p.m. | Gale Bullman Building

Football Game: Miners vs. Southwest Baptist University

1 p.m. | Allgood-Bailey Stadium

*Tickets for event: \$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., Rolla, Mo.

Wrap up your homecoming weekend with a
pint and some downtime 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. | Carver/Turner Room,
Havener Center

SUNDAY, OCT. 29

Chancellor's Advisory Committee on African American Recruitment and Retention Meeting

11 a.m.–2 p.m. | Carver-Turner Room,
Havener Center

Brunch will be served.

SHATNER'S WORLD: A performance by William Shatner

2 p.m. | Leach Theatre, Castleman Hall

SPECIAL CELEBRATIONS

Jackling Jocks 20th Annual Reunion

*For more information contact Delbert Day at
573-364-5569 or day@mst.edu or Newton Wells
at 979-690-3650 or mnwells1@verizon.net*

Kappa Delta 45th Anniversary

Brunch and house tours 8:30–11:30 a.m.
Saturday, Oct. 28, 1800 N. Pine St.

Lambda Chi Alpha Centennial Celebration

See details on page 19.

Theta Xi Groundbreaking Ceremony

Theta Xi alumni and their guests are invited to
a groundbreaking for their new chapter house,
4 p.m. Saturday, Oct. 28, 1605 N. Pine St.

MINERFEST REGISTRATION INFORMATION

Register online at
mineralumni.com/homecoming or
call 800-JOMINER (800-566-4637).

Alumni should pick up their
registration packets at the
Homecoming Welcome Table:

10 a.m.–7 p.m. Friday, Oct. 27,
Hasselmann Alumni House

10:30 a.m.–1 p.m. Saturday,
Oct. 28, Alumni Tent, Gale
Bullman Building parking lot



2017 HOMECOMING AWARD RECIPIENTS

Alumni Achievement

1. **John Bade**, EMgt'85, MS EMgt'87, PhD EMgt'98, vice president Boeing Saudi Arabia Defense, Space and Security, The Boeing Co.
2. **Robert "Bob" Lankston**, AE'85, director of aircraft engineering, FedEx Corp.

Alumni Merit

3. **Robert "Bob" Pahl**, ChE'68, MS ChE'70, PhD ChE'74, fuels and technical support manager, ConocoPhillips (retired)
4. **David "Dave" Richardson**, CE'71, MS CE'73, PhD CE'84, Chancellor's Professor, Missouri S&T (semi-retired)

Robert V. Wolf Alumni Service

5. **James "Jim" Bertelsmeyer**, ChE'66, founder and CEO, Heritage Propane Partners, now Energy Transfer Partners (retired)

Distinguished Young Alumni

6. **Christopher "Chris" Buterbaugh**, MetE'07, asset integrity and reliability supervisor, Chevron Corp., Asia Pacific Exploration and Production Co., seconded to Unocal East China Sea Limited
7. **Fiorella Giana**, MinE'05, haulage manager, Sociedad Minera Cerro Verde S.A.A.

Frank H. Mackaman Alumni Volunteer Service

8. **John Borthwick**, PetE'86, principal engineer, HydroGeologic

Class of '42 Excellence in Teaching

9. **Max Tohline**, EngI'07, assistant professor, arts, languages and philosophy

CELEBRATING 100 YEARS OF LAMBDA CHI ALPHA

Originally formed as the Muckers' eating club in 1913, Alpha Delta Zeta, the 28th chapter of Lambda Chi Alpha fraternity, was chartered in Rolla on April 21, 1917 — the fifth fraternity on campus.

Alumni and students of Lambda Chi will celebrate their centennial throughout 2017 and conclude with a dedication of their newly renovated 77-bed house during Homecoming.

Below is a listing of other planned events. More information is available at adz100years.com.

THURSDAY, OCT. 26

Early Arrival Happy Hour

5–8 p.m. | Public House Brewing Co.

FRIDAY, OCT. 27

Alpha Delta Zeta Brotherhood Golf Tournament

11 a.m.–4 p.m. | Oak Meadow Country Club

Missouri S&T Campus Tours

noon–4 p.m.

Missouri Wine Tasting

1–2 p.m. | St. James Winery

Brotherhood Barbecue and Social

6–10 p.m. | Alpha Delta Zeta chapter house
Registration required.

SATURDAY, OCT. 28

All events at the chapter house unless noted.

Housing Corporation Breakfast | 8–9 a.m.

Registration required.

Housing Corporation Meeting | 9–11 a.m.

Chapter House Re-dedication | 11 a.m.–noon

Light lunch

Registration required.

Open House and Guided Tours | noon–4 p.m.

Centennial Banquet | 6–9 p.m.

Kinyon-Koeppel Grand Hall, Hasselmann Alumni House
Registration required.

6–7 p.m., Social hour, appetizers and cash bar

7–9 p.m., Banquet

GLASS PIONEER

S&T GRAD'S WOUND CARE RESEARCH IS NOW AVAILABLE ON THE COMMERCIAL MARKET

Minutes from the Missouri S&T campus, a global center of specialty glass manufacturing sits in a nondescript industrial park just past an Interstate 44 truck stop.

Mo-Sci Corp. got its start in 1985, when then-S&T professor **Delbert Day** formed a spinoff company to manufacture TheraSphere, irradiated glass beads used to treat inoperable liver cancer.

Day, CerE'58, the co-inventor of TheraSphere, is long retired from Mo-Sci, having sold the company to his son, Ted, a decade ago. But thanks to a late-career encounter with a determined freshman in an introductory ceramic engineering class, Day's legacy persists at a company that has grown into a

worldwide manufacturer that now reaches into the health-care, automotive, energy and aerospace industries.

That freshman, **Steven Jung**, parlayed his first-year encounter with Day into a summer job at the decorated professor's lab. It would be the beginning of a 10-year academic alliance for Jung, CerE'05, MS CerE'07, PhD MSE'10.

Forget about any other destinations. Immediately after graduation, it was next stop, Mo-Sci.

"I did my dissertation defense on a Thursday," says Jung, who joined the company as a senior research and development engineer and is now chief technology officer. "And I started here on the following Monday."

A man with short brown hair, wearing a white lab coat and clear safety glasses, is leaning forward and looking intently at a piece of industrial machinery. The machinery is illuminated with a warm, yellow light, creating a strong contrast with the cooler, blue-toned background. The background shows a laboratory or industrial setting with various pipes, metal structures, and a blue object hanging on a wall. The overall atmosphere is one of focused scientific or technical work.

Steve Jung, CerE'05, MS CerE'07, PhD MSE'10, is now chief technology officer at Mo-Sci, a manufacturer of specialty glasses founded by Delbert Day, CerE'58, Jung's former professor. Jung's research at Missouri S&T with Day led to the invention of Mirragen, a bandage made of glass fibers that is absorbed by the body to heal stubborn wounds.



THE ROAD TO CERAMIC ENGINEERING

Jung came to Rolla in 2000 from Freeburg, Ill., a town 30 miles southeast of St. Louis. He spent two years as a varsity Miner swimmer before deciding to more fully focus on academics.

"At some point you're not going to make the Olympics, right?" says Jung, who competed as a sprinter in butterfly, breaststroke and individual medley events.

By Jung's first year, Day had mostly stepped aside from teaching undergraduates and mentoring graduate students, though he maintained an active glass research lab. But savvy talent scout that he is, Day insisted on continuing to teach what was then known as Ceramics 90.

"That allowed me to see the undergraduates at an early level," Day recalls. "Otherwise I wouldn't see them until their junior or senior years, when those interested in graduate school would be tied up with another faculty member."

Though he would become a Day protégé with 15 U.S. and foreign patents to his name before

even leaving campus, graduate school didn't initially interest Jung. He changed his stance after an eight-month co-op with Kohler Co., realizing that the path to management often involves an advanced degree or two.

Once in grad school, a one-year internship at the Savannah River National Laboratory in South Carolina led him to the next obvious step in pursuit of a doctorate.

Jung and Day decided to collaborate on research into the effect of borate-based glasses on soft tissue, the next frontier for a technology that began with the use of silicate-based bioactive glasses to repair bones, bolster orthopedic hardware and enhance dental care.

Turning to his mentor's one-time company to take his ideas to market was an obvious step, according to Jung.

"What we ended up doing here got Delbert's son, Ted, excited," he says. "They decided to hire me and see how far we could take this stuff."



"I didn't interview anywhere else. I knew that we were going to commercialize the majority of my research. Why would you want to go anywhere else?"

Seven years later, a dissertation that took root at Missouri S&T's Graduate Center for Materials Research and the Center for Bone and Tissue Repair and Regeneration has developed into Mirragen, a "bioresorbable" bandage made from glass that simultaneously promotes soft tissue growth. Mo-Sci licensed the technology from S&T in 2011.

It's a medical products innovation that Jung, Ted Day and the Mo-Sci spinoff Engineered Tissue Solutions are betting could transform an advanced wound care market that by some estimates could soar to a \$15 billion industry by 2020.

In August 2016, the U.S. Food and Drug Administration approved Mirragen (previously known as DermaFuse) for human use to treat several types of persistent wounds, including

bed sores, pressure ulcers and chronic, non-healing diabetic wounds.

The governmental approval follows a clinical trial at Phelps County Regional Medical Center (PCRMC) in Rolla in which dozens of patients with diabetic and venous stasis ulcers and bed sores showed more rapid healing, with the improvement at times apparent within days of treatment.

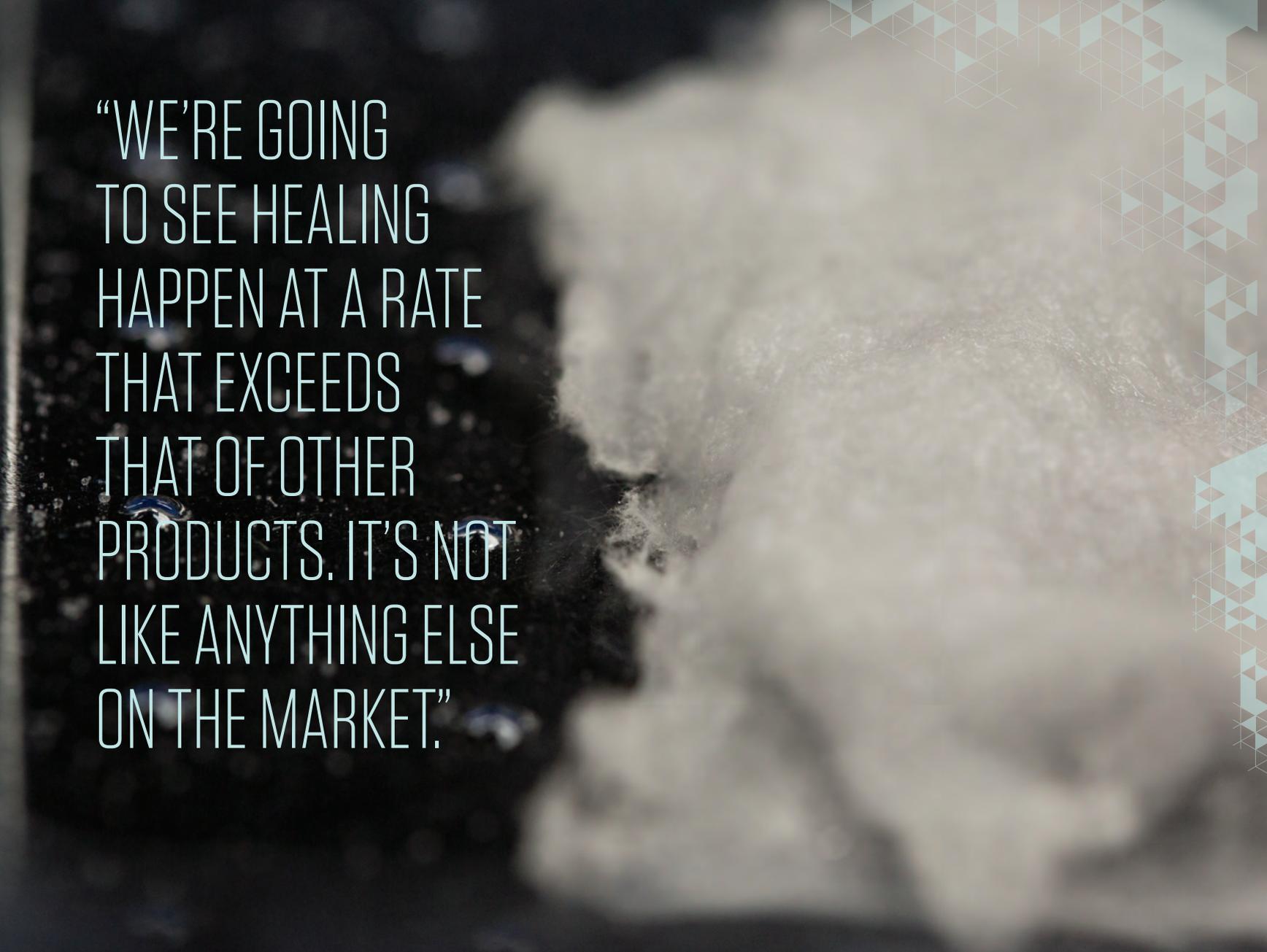
"People who were looking at having amputations didn't have to lose their limbs. Wounds that wouldn't heal or would otherwise take months to heal were doing so in relatively short periods of time," says Jung.

"Not only will (the bioactive glass fibers) heal wounds, it will stop bleeding," he adds. "It's a fantastic hemostatic material."

Peggy Earl, a PCRMC wound care nurse, described one patient with an 11-centimeter wound shaped like a "strip" on the back of her leg. By the patient's next visit several days later, the wound had shrunk to one-third the

Jung, pictured above left in a laboratory at Mo-Sci, joined the company right out of college with plans to commercialize his glass research.

Above right, a colleague of Jung's works with molten glass in a Mo-Sci laboratory.



“WE’RE GOING TO SEE HEALING HAPPEN AT A RATE THAT EXCEEDS THAT OF OTHER PRODUCTS. IT’S NOT LIKE ANYTHING ELSE ON THE MARKET.”

Above and center right: Mirragen, the wound-healing bandage, is made up of tiny glass fibers that give it the appearance of fluffy cotton candy. The material — a nanofiber borate glass — was developed in the laboratories of S&T’s Graduate Center for Materials Research and the Center for Bone and Tissue Repair and Regeneration, and marketed by Mo-Sci.

Top right: Jung with a Mo-Sci colleague.

Bottom right: Jung and his mentor, Delbert Day, Curators’ Distinguished Professor emeritus of ceramic engineering, with jars of the cotton-candy-like fibers of Mirragen in a Mo-Sci laboratory. Jung began working with Day as an undergraduate student at Missouri S&T. Photo by B.A. Rupert.

size as Mirragen’s fluffy fibers — which have the consistency of cotton-candy — worked to generate healthy tissue.

“What I was seeing is that it would build tissue very quickly in the wound bed,” she says. “We’re going to see healing happen at a rate that exceeds that of other products. It’s not like anything else on the market.”

A similar product, Rediheal, also stemming from Jung’s research at S&T, has been successfully used by veterinarians for the past three years to heal major wounds in animals.

In early April, Jung and the ETS team traveled to a wound-care industry event in San Diego to unveil their new technology. That was followed by a trip to promote the technology in South Korea before rounding out the month at the annual Ceramics Expo, a manufacturing trade show for ceramic materials and technologies in Cleveland.

While starting out with a soft product launch, the Mo-Sci team hopes that Mirragen will one day be used by battlefield medics, or even move from a specialized medical device to an over-the-counter product suitable for household medicine cabinets.

Yet despite its immediate and long-term promise, the wound care product is far from Jung’s only workplace project. As CTO and in his former role as Mo-Sci’s director of new product development, Jung has his hand in dozens of different to-do lists at any given time.

“We’re always trying to come up with new types of glass products to offer,” he says. “Part of what we do in R&D is on the research side, come up with something nobody is doing, and on the development side, make it profitable to offer that service.”

THE IMPACT OF RELATIONSHIPS

Away from work, Jung stays occupied as the father of two sons, Benjamin and Barrett, ages 3 and 1. He met his wife, **Rachel Jung, MBA'09**, a Miner Alumni Association board member, while both were in graduate school.

He's also a member of the Rolla City Council, deciding to run as a write-in candidate in April 2015 after no candidates filed to represent the city's sixth ward on the council. Jung was unopposed for a second two-year term on the council and won re-election in April.

Jung will also teach on campus this fall as an adjunct professor in the materials science and engineering department, where he will lecture on his specialty: biomaterials and tissue engineering.

"This is an exciting new endeavor to bring a commercial flavor to the biomaterials activities already occurring on campus," says Jung.

For Delbert Day, the continued success of perhaps his most accomplished graduate student is an accomplishment the 80-year-old Curators' Distinguished Professor emeritus calls a career highlight. That's no small feat for someone who is the university's only member of the National Academy of Engineering, a recent inductee into the National Academy of Inventors and a civic leader whose name graces the new Delbert Day Cancer Institute at PCRMC, where his son, Ted, chairs the charitable foundation.

"I put a great deal of importance on the quality of my graduate students and my teaching," Day says. "Early in my career I began thinking, 'What's my output?' I decided that I wanted to base my career, to be judged, on the accomplishments of my students, like Steve, as opposed to be judged primarily on the quality and volume of my technical articles and publications.

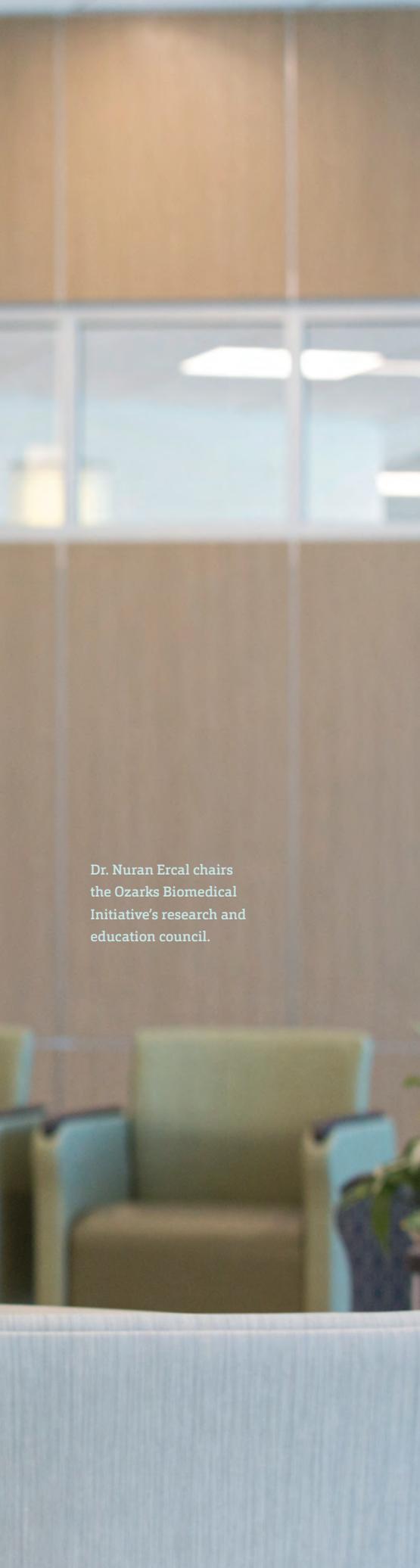
"People encounter my former students — my output — a whole lot more often than they might read a technical article on glass research," Day says. "Steve's accomplishments, and those of many other of my students, teach me that I made the right choice." □



IN ROLLA, A MEDICAL INITIATIVE TAKES ROOT

By Andrew Careaga, acareaga@mst.edu | Photo by Sam O'Keefe





Dr. Nuran Ercal chairs the Ozarks Biomedical Initiative's research and education council.

Dr. Nuran Ercal wishes something like the Ozark Biomedical Initiative (OBI) had existed when she first joined the Missouri S&T faculty in 1993.

A physician who also holds a Ph.D. in physiology, Ercal was eager to find fellow physician-scientists to work with on her research into age-related eye disorders. But with no medical school nearby or associated with S&T, opportunities to work locally with fellow M.D.s were scarce. So Ercal, who holds the Richard K. Vitek/Foundation for Chemical Research Endowed Chair in Biochemistry, ended up connecting with researchers in the ophthalmology department at Washington University in St. Louis. Through this partnership, Ercal has made progress on work that may lead to ways to prevent or even cure macular degeneration, which is the leading cause of vision loss.

“I WOULD HAVE LOVED TO HAVE HAD THIS OPPORTUNITY WHEN I FIRST ARRIVED IN ROLLA.”

Today, Ercal is working to open new doors of collaboration for Missouri S&T researchers with a biomedical interest. She's doing it through the OBI, a partnership formed in July 2015 between the university and Phelps County Regional Medical Center.

“I would have loved to have had this opportunity when I first arrived in Rolla,” says Ercal. “We are just getting started with this project, but I hope it will lead to greater collaboration and new research over time.”

The partnership's chief goal is to support biomedical research, says **Warren K. Wray**, co-chair of the OBI's executive committee. Toward that end, PCRMC and S&T each contribute \$25,000 annually to award to joint research proposals that involve individuals from both entities. That funding provides seed money for research and testing that can support future proposals to major funding agencies like the National Institutes of Health, Wray says.

The partnership gives S&T researchers access to specialized medical equipment only available at the medical center, Wray says. It also provides access to PCRMC's Delbert Day Cancer Institute, which opened last December. Named after **Day**, CerE'58 and a Curators' Distinguished Professor emeritus of ceramic engineering, the institute will provide the OBI with two floors of lab and meeting space.

In her role as chair of the OBI's research and education council, Ercal leads a group of S&T researchers and PCRMC physicians that reviews the joint proposals. Last year — the first full year of OBI funding — the panel considered five proposals and awarded grants to each.

Each project involves a distinct approach to a health or medical issue. One research team plans to characterize the sex pheromones of brown recluse spiders — a necessary step for a proposed method to lure and trap the poisonous spiders. Another project involves the fabrication of a biodegradable brachytherapy implant that could deliver concentrated radiation therapy to target cancerous tumors. Another research group proposes developing “nanorods” as vessels to treat breast cancer, while another is investigating urine-sampling techniques to detect biomarkers that could indicate traumatic brain injuries. A fifth research team will study fetal heart rate patterns to develop a computational model to predict the risk of fetal hypoxia and acidosis after a mother has entered labor.

For more information, visit obi.mst.edu. □

THE DOCTOR IS

IN

By Peter Ehrhard, ehrhardp@mst.edu | Photos by Sam O'Keefe

“The medical students from Rolla are different. Every single one seems to be scarily talented and driven.”

That is the opinion of **Dave Westenberg**, who says he has probably taught a class to every S&T student who has gone on to medical school in the past 15 years.

“It makes writing letters of recommendation for medical schools really easy, though,” he notes.

Every year, undergraduate students from colleges and universities around the nation apply to medical schools. But what makes Missouri S&T's five-to-10 annual applicants stand out is their background. Every medical student is smart and studious, but what they

may lack is S&T's hands-on training in subjects outside of medicine.

“We want our students to be well-rounded and prepared for a number of careers,” says Westenberg, an associate professor of biological sciences who just concluded a term as interim chair of the department. “You cannot get a job in pre-medicine. That is why we do not offer it as a major. Instead, we teach them skills in biology, chemistry, psychology and engineering, not a strict focus on medical application-only lessons.”

Missouri S&T has a pre-med program, but it is more there for guidance and support, says Westenberg. Missouri S&T students get into medical school through their own merit, rather than following a pre-established pipeline.

Students applying to medical schools still need to take classes in the sciences, such as genetics and cell biology, but there is less focus on quantity and more on quality.

“In the past few decades, there has been a shift in what makes a good medical student,” says Alice Arredondo, assistant dean of admissions and recruitment at the University of Missouri-Kansas City School of Medicine. “Strong applicants are well-rounded individuals who also exhibit teamwork and communication skills. Admissions committees will accept students based on their potential to contribute to the future of the medical field, not just because they had a high GPA.”

Dave Westenberg (right), associate professor of biological sciences, estimates he has taught every S&T student who has gone on to med school over the past 15 years.





Dr. Karlynn Sievers, Engl'96, LSci'96 (left), sees patients as a family medicine doctor and teaches residents as a faculty member at St. Mary's Regional Medical Center in Grand Junction, Colo. Her humanities background made her the type of well-rounded student med schools watch for. Photo by Cat Mayer Studio.



Dr. Christina Byron, Chem'03 (below, left), is an OB/GYN at Mercy Clinic in O'Fallon, Mo. She draws parallels between engineering and medicine.

participation for my successful application — those are the types of characteristics a medical professional really needs to thrive.”

After being frustrated in her first engineering course at S&T, Dr. **Christina Byron**, Chem'03, an OB/GYN at Mercy Clinic in O'Fallon, Mo., and Ballwin, Mo., decided to change majors. It was the best career decision she ever made.

“Medicine and engineering have a number of parallels; it just depends on how you want to learn,” says Byron. “Medicine is like fixing a car, only you are working with a human body. You ask questions, test parts and then repair; it is more about having problem-solving abilities rather than any one particular skill set.”

ENGINEERING A MINOR

“It doesn't solely matter what subject a student studies, their age or previous work, I have seen many different types get accepted to medical school,” says **Julie Semon**, an assistant professor of biological sciences at Missouri S&T who coordinates the university's introduction to biomedical engineering course. “That is what trips up some students. It's not just grades or studies, but experiences and hands-on learning, which we offer in abundance.

“For example, one day a student in my lab was examining a sample through a microscope and saw our mesenchymal stem cells ‘eating’ bioactive-glass pieces used in an experimental treatment,” Semon says. “After he asked me why they do that, I told him that nobody knows, as he was probably the first person in the world to ever witness that phenomena. And that type of experience is what sets S&T students apart in the application process.”

The biomedical engineering minor, in its second year at S&T, often involves interdisciplinary research for its students.

REAL-WORLD APPLICATION

Dr. **Karlynn Sievers**, Engl'96, LSci'96, is proof that the path to medical school is not always straight-forward.

“I wasn't one of those people who wanted to be a doctor since kindergarten,” says Sievers, a family practitioner and faculty member at St. Mary's Regional Medical Center in Grand Junction, Colo., where she teaches medical

residents. “I originally wanted to be a technical writer, but found research projects in chemistry and biology to be a lot of fun.”

After deciding to apply for medical school, Sievers worried about the lack of anatomy studies that many traditional medical school applicants have. But her concerns were unfounded, as she discovered that medical schools demanded a more well-rounded student than typically assumed.

“Medical school requires a strong science background, which I had from life sciences, but application boards also want intangibles,” says Sievers. “I credit my confidence, leadership and communication skills from Kappa Delta sorority

Julie Semon (right), an assistant professor of biological sciences at Missouri S&T, coordinates the introduction to biomedical engineering course. She says experiences and hands-on learning are two things med school recruiters seek.

Dr. Selin Acar, Chem'12 (below, right), is a psychiatry resident at the Cleveland Clinic Foundation. Her husband, Robert Adams, ME'10, is finishing studies in neurology at Saint Louis University. Both are Rolla natives with Missouri S&T faculty parents.

Semon teaches tissue engineering and stem cell biology, but professors from chemical engineering, ceramic engineering, chemistry, electrical engineering and mechanical engineering also teach courses.

"It gives our students more perspective," says Semon. "Biologists approach problems in a similar manner even when working on different projects, like applying the scientific process to fungal research or biomedical problems. Engineers, on the other hand, have different approaches to problems than biologists."

While only a few students in the biomedical engineering minor plan to go on to medical school, they all learn the do's and don'ts of medical research.

"For our pre-med students, we don't focus so much on getting into medical school," says Semon. "We are more worried about how they will manage once they are out in the world. Society tends to put doctors on a pedestal, but we want to make sure S&T graduates deserve to be up there."



BRAINSTORMING A SOLUTION

Robert Adams, ME'10, and **Dr. Selin Acar, Chem'12**, are a husband-and-wife duo finishing up medical training. Adams is a seventh-year combined Ph.D. and M.D. student at Saint Louis University focused on neurological studies. Acar is a first-year psychiatry resident at the Cleveland Clinic Foundation. Adams will soon join Acar in Cleveland to work at University Hospitals Cleveland Medical Center, a part of Case Western Reserve University. Both have S&T faculty connections — Acar's father is electrical

engineering professor **Levent Acar**, and Adams' father is the former John and Susan Mathes Chair in Environmental Engineering, who now works at SLU.

The two are the yin and yang of both medical school preparation and brain studies.

"Medical school is particularly rigorous, and I didn't have much anatomy background," says Acar. "Luckily, though medical school is tough, there is always a lot of support along the way. My time at S&T really shaped the way I think and approach problems."

"I believe being from outside the traditional majors for pre-meds helps me look at problems differently and contribute from a unique angle," says Adams. "This is especially true when it comes to engineering-style problems like bone stresses or blood pumping issues."

OH THE PLACES YOU'LL GO

So if S&T students transition so smoothly into the medical profession, why don't we have more alumni doctors?

"The biggest reason we don't have more students go on to medical school is that they are almost too skilled and end up graduating with a ton of career choices," says Westenberg. "More could go on to practice medicine, but they can also go on to be an engineer, technical writer, researcher or scientist instead. It all comes down to what our graduates put their mind to." □



THE BUSINESS SIDE OF HEALTHCARE

By Mary Helen Stoltz, mhstoltz@mst.edu

For some, the mention of “healthcare” brings to mind doctors and nurses — the people on the front lines of the medical industry. But, as with any other industry, there is a business side to healthcare.

The healthcare field also needs people with expertise in areas like policy analysis, finance and accounting, budgeting, human resources, marketing, and information technology. Successful healthcare operations also need leaders who can navigate a difficult, constantly changing landscape.

Tom Selden was one of those leaders. He says one of the questions he is asked most often is, How did a mechanical engineer end up running a hospital system?

“Engineers are problem solvers,” says Selden, ME’70, who recently retired as president and CEO of Southwest General Health Center in

Tom Selden, ME'70 (right), parlayed a background in engineering into a successful career as a hospital CEO. He says the problem-solving skills of engineers are essential in running a healthcare system. Photo by Jason Miller.

Beth Baumbach, CerE'90 (far right), pictured here with Dr. Donald Morris, a BJC Medical Group physician, used the problem-solving skills she honed during 15 years in the engineering industry to manage BJC Medical Group's move from paper charts to electronic medical records. Photo by Sam O'Keefe.

**"ONCE YOU LEARN
HOW TO SOLVE
A PROBLEM, IT
DOESN'T MATTER
WHAT THE
PROBLEM IS."**



Middleburg Heights, Ohio. "And healthcare is a changing environment with problems to solve. Once you learn *how* to solve a problem, it doesn't matter what the problem is. Engineers can do anything."

Selden's first experience with healthcare came in the military. After graduation, he was commissioned as a second lieutenant in the U.S. Army in 1971 and served in the infantry, returning home with an obligation to continue his service in the U.S. Army Reserves. He chose a position in an Army hospital.

"The infantry taught me that, if I needed to sleep, I could sleep on the ground," Selden says. "But I heard that Army hospitals offered cots."

The prospect of sleeping off the ground, combined with the leadership skills he

developed at Missouri S&T and honed in the military, led Selden to a 30-year career in the healthcare industry.

But that career didn't start right away. While working in hospital administration in the Army Reserve, Selden spent several years as an engineer for Firestone Tire and Rubber Co. He earned an MBA along the way and advanced into strategic planning and marketing.

He also learned one of the most important things a successful hospital administrator needs to know while working in the Army Reserve hospital.

"I learned the difference between what doctors do and what nurses do," Selden says. "Doctors are specialized. They need to come in to the hospital, do something special for the patient

and then they leave. Nurses are there all the time doing incredible things for patients. If you don't balance that, you quickly have problems with both groups."

During his career, Selden took over — and turned around — two troubled hospitals. Over the years, he overcame many challenges. One of the biggest evolutionary changes he encountered was the move away from paper medical records.

"These days records are live on the hospital floors and they remain live in storage," Selden says. "It resulted in a cost savings and is more efficient, but at the time it was a huge disruption. Everyone was used to making notes on scraps of paper and then transferring those notes to the paper chart. The system is great now, but it was a challenge to get there."

MANAGING CHANGE

That very challenge is what led **Beth Baumbach**, CerE'90, to the healthcare field. She had spent 15 years as a ceramic engineer in product development for Sunnen Products Co. before moving to BJC HealthCare in St. Louis.

"When I walked in to my interview, the person who hired me said, 'Tell me about your experience in healthcare.' I told her I had no experience in healthcare — I was working in manufacturing. She looked at me and said, 'Have you been to the doctor? If so, you have experience.'"

Because it wasn't about healthcare experience, it was about work flow. A routine checkup, for instance, has much in common with a manufacturing process, Baumbach says.

"You walk into the doctor's office, you check in, they take you back to a room, check your vitals and review your meds and histories. The doctor sees you and does an assessment. He develops a plan and may prescribe some meds or order some tests. Then you check out and you're done."

At the time she switched careers, "lean" principles were a big focus in manufacturing and had begun to catch on in healthcare. "That is part of the reason I was hired," Baumbach says. "They wanted me to bring those techniques over and help use that experience."

Baumbach was hired in August 2006 to take on the medical group's switch to electronic health records, and by November she was expected to take the first pilot live. She hired a team and got started on two pilot practices.

They observed current operations, looked at where they needed to go and then assessed the gap — what had to be done to move their records from paper to electronic. "We went workflow by workflow, role by role, visiting each practice to talk with the staff and providers and developed an implementation strategy and model to help them transition.

"We rolled out nine practices every six weeks," Baumbach says. "We did that for a year and a half, rolling out functionality in phases, to get the whole medical group live. As it grew, we continued to bring on new practices and physicians."

Baumbach and her team expanded their roles to optimize the system and manage yearly upgrades, migrate data from legacy systems brought along with their acquired practices and developed clinical reporting to allow the electronic data to drive actions and improve patient care.

"So, what I thought was going to be a two-year project turned into a nine-year career."

In 2015, Baumbach transferred to BJC's Center for Clinical Excellence.

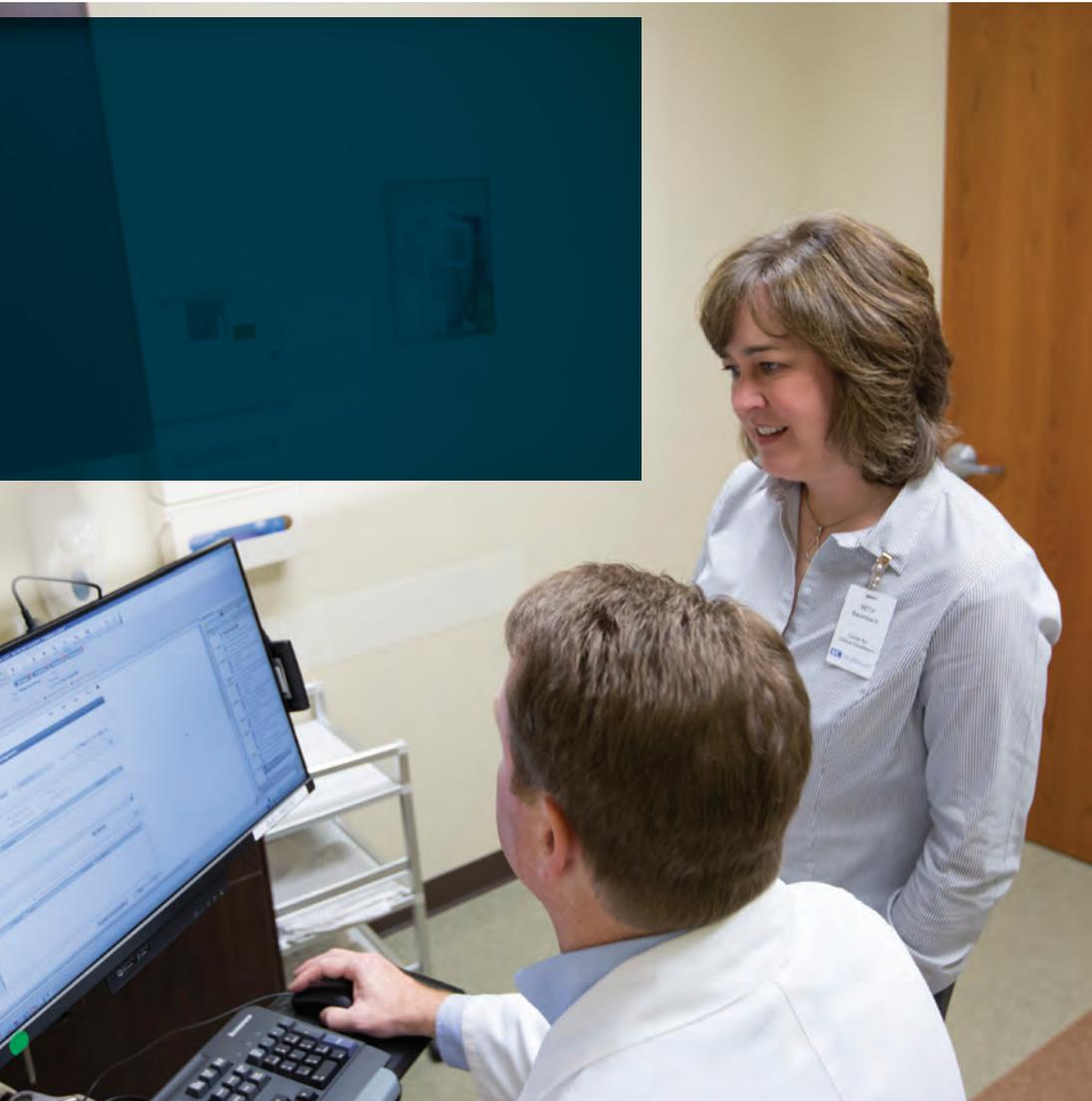
Baumbach is the operations manager for the Transformation Support group, a 30-member internal consulting group that partners with the hospitals and across the healthcare system to achieve operational excellence. They provide project management, process improvement through lean and Six Sigma, and facilitation and change management services. Many of the consultants are engineers.

The mission of caring for people drew Baumbach to healthcare and it still motivates her.

"I enjoy the challenge of healthcare through supporting the efforts at BJC to improve operations for our staff and providers, and in turn improve health for the patients and communities we serve," she says.

Even though they don't see patients in their line of work, for both Baumbach and Selden, the work all comes down to people.

"Always ask the people closest to the work about how to do things better," Selden says. It's a lesson he learned on his first engineering job and it applies to the healthcare field, too. "I didn't find all the solutions," he says. "I found good people who could help me find those solutions." □



COME TOGETHER

With over 50 sections across the country, the Miner Alumni Association offers an abundance of opportunities for you to expand your professional and social circle. From sporting events to St. Pat's festivities, Miners like you get together year-round to connect and play. Don't miss out on the fun. Check out the events calendar at mineralumni.com/events.



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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CLASS NOTES

SHARE A CLASS NOTE

Let your classmates know what you've been doing. Send us information about your professional and personal accomplishments — career changes or promotions, weddings, births and other news — and we will publish it in an upcoming issue. Email your update and a high-resolution photo (if available) to alumni@mst.edu.
Deadline:
Spring issue — Nov. 15

PUBLICATION POLICY

We publish information submitted by alumni, news submitted by employers of alumni, and selected news stories that mention alumni and their affiliation with Missouri S&T. We are happy to announce weddings, births, promotions and other special occasions after they have occurred. We will print addresses if specifically requested to do so by the alumnus/alumna submitting the note and will mention a spouse's name if it is specifically included in the submission. We reserve the right to edit alumni notes and will use submitted print-quality photos as space permits. Due to the production time required for each issue, submissions may take up to six months to appear. Your patience is appreciated.

1942

Niles Brill, MinE: "I graduated 74 years ago. I'm still above ground!"

1950

Paul A. Haas, ChE: "For 60 years I visited Rolla two or three times per year to see relatives. I no longer do this, and I miss seeing the changes and growth of the campus."

1951

John Griffith, CE: "I would have enjoyed attending the 65th Homecoming for 1951 grads, but I do not ambulate too well these days. My wife, Joan, still walks miles each week, but I manage only a few hundred feet at a time."

William Tsai, MinE: "Happy retirement!"

Lee M. Wehmeier, CE: "It was a proud moment when granddaughter **Jordan L. Wehmeier**, EMgt'15, graduated in December 2015. She is the daughter of **Lee M. Wehmeier Jr.**, ChE'77, and his wife, Susan. Three generations of graduates!"

1953

John R. Ford, CerE: "I would advise all students, current or prospective, to pay particular attention to the first two years, which in my case was on basic math and sciences. I found the things I learned then to be most useful in my later and continuing life."

1955

Campbell C. Barnds III, EE, says he is retired but still does occasional consulting and reads many publications in the electrical field.

1960

Charles Akmakjian, MetE, reports that he's enjoying 19 years of retirement. He previously worked for EC&G Inc. and Perkin Elmer.

1965

Charles H. Atkinson, CE: "I finally got old enough to shoot my age (73) at Scottsdale (Ariz.) Starfire Golf Club in March — but I haven't been under 80 since."

Nolan "Sully" Sullivan, Math: "I lost my lovely wife, Lee, on April 1, 2016. I retired from teaching math and physics at Rockford (Ill.) East High School in 1984."

Larry Vardiman, Phys, lives with his wife, Jeannette, in Rockport, Wash., after retiring from the Institute for Creation Research in 2012. He continues to write, speak and teach online and every other year one semester on campus at Shasta Bible College in Redding, Calif., on biblical origins.

1968

Stuart Storrs, CE: "After having a very pleasant river cruise along the Danube in 2013 with a number of friends, we learned that my wife, Mary Margaret's, breast cancer had returned in 2014 — 15 years after remission. She was unable to fight the metastasis and passed away in July 2015. I continue to live in Overland Park, with my son, daughter and son-in-law and two grandchildren living nearby. I am hoping

ALUMNI GIVE BACK WITH HONEYWELL HARVESTERS



Harvesters is a local food bank that serves 26 counties in northwestern Missouri and northeastern Kansas. Honeywell Federal Manufacturing & Technologies (FM&T) participates in about one service event with Harvesters every month, and Missouri S&T alumni hold an event every March to celebrate St. Pat's and give back to the community.

Although Harvesters holds many types of activities, the most common is called "Backsnack," where volunteers pack healthy donated meals into backpacks for kids who don't have regular access to food on the weekends. Honeywell FM&T has a friendly competition for the number of meals packed in the two-hour event. In March, S&T alumni packed 1,100 backpacks.

From left are **Peter Freiburger**, ME'15; **John Hollenbeck**, MetE'91; **Elise Swanson**, ME'16; **Andrew Vance**, ME'09; **Alycia Yungbluth**, EE'11 (front); **Lindsey Lancey**, CerE'10 (back); **Anita Burke**, ChE'10 (back); **Kaley McLain**, CerE'12; **Tom Bender**, ME'80 (back); **Sam Otto**, ME'82; **Alex Olsen**, ME'15 (back); **Elizabeth McMinds**, ME'81; **Travers Coen**, ME'98 (front); **James Tinsley**, AE'07, MS AE'11 (back); and **Kevin Tew**, ME'15.

GOLDEN ALUMNI RETURN TO S&T

On May 16–17, the Miner Alumni Association and Missouri S&T welcomed back 59 alumni and guests from the Class of 1967 to celebrate their Golden Alumni Reunion. Following a campus update from **Robert J. Marley**, provost and executive vice chancellor for academic affairs, guests visited the Kummer Student Design Center and the hot glass shop and toured their academic departments. The two-day event culminated with a re-enactment of the graduates' commencement ceremony when they officially earned the title of Golden Alumni.



to return to Rolla for Homecoming 2018!"

1970

Bob Webb, EE, "Susan and I are enjoying retirement. Time spent on engineering education at Missouri S&T paid off significantly throughout my life."

1972

David E. Evers, CE, was inducted in the 2016 Metal Construction Hall of Fame, which honors people's work within the metal construction industry. He was inducted for his work with Butler Manufacturing Co. and the Metal Building Manufacturers Association's Energy Committee. He retired in July 2016 after spending nearly 43 years with the Kansas City, Mo., company.

Joseph Rupp, MetE, president of the Missouri S&T Board of Trustees and a former commencement speaker, retired April 27, 2017, as chair of Clayton, Mo.-based Olin Corp. Rupp served as chair of Olin since May 2016 and had served as chair and CEO in 2015–16; chair, president and CEO in 2005–14; and president and CEO in 2002–05. He was with the company for 45 years.

1974

Marvin Borgmeyer, ChE'74, MS ChE'75, was the Baton Rouge, La., 75th annual Golden Deeds Award winner. Borgmeyer, a retired Exxon chemical engineer, said his membership and

volunteering with more than 35 local organizations have allowed him to meet people he never would have otherwise. The award celebrates a Baton Rouge-area resident who gives back to the community.

1975

Kevin Skibiski, CE, MS CE'76: "After 40 years, I retired from full-time consulting on Jan. 15, 2017. I teach a course in engineering statics at Missouri State University in the cooperative engineering program with Missouri S&T and do some selective part-time consulting."

1978

Nick Heatherly, CE, retired as the public works director in Joplin, Mo., on March 31, 2017. He had served three years as city administrator in Willard, Mo., when he took the Joplin job in 2013. Before that, he worked 23 years for the city of Springfield. He was director of building services there for 10 years after being the assistant director of the Springfield Public Works Department.

1985

Dave Heinzmann, ME, became president and chief executive officer of Littelfuse Inc. on Jan. 1, 2017, and joined the company's board of directors. Heinzmann was chief operating officer since January 2014. He began his career at the company in 1985 as a manufacturing engineer.



Mary Reidmeyer, CerE'78, MS CerE'84, PhD CerE'89, teaching professor of ceramic engineering and outreach coordinator in materials science and engineering at Missouri S&T, is the inaugural recipient of the university's Dr. Elizabeth Cummins Women's Advocate Award.

The award, which was established and funded by **Cindy Tang**, Econ'85, recognizes an S&T employee, regardless of gender or job designation, who demonstrates commitment to the women on campus through mentorship and advocacy and by setting an example through professional achievement.

Bastian Solutions is a global material handling and robotic systems integrator.

2000

Somnath Chilukuri, EnvE, a veteran in the water and wastewater treatment industry, joined Freese and Nichols as a senior project manager for the Southeast Texas Treatment, Transmission and Utilities Group.

Frank Coln, NDD, was named chair of the Dallas and Fort Worth, Texas, Community Practice of the Lean Construction Institute, which focuses on improving design and construction project delivery using lean practices.

2006



Penny M. Bloedel, MS GGph, was named the new deputy commander of the U.S. Army Corps of Engineers-Alaska District. The lieutenant colonel assumed duties Jan. 1, 2017. Bloedel manages the Alaska District's resources, staffing and programs, annually executing military construction, civil works and environmental programs throughout Alaska. She also directs emergency operations during disaster contingencies.

1987

Steven W. Pflantz, EE, was elected the 2017 president of The International Society of Automation. He served as vice president of ISA's Professional Development Department, on ISA's executive board and as an ISA district vice president. Pflantz is an associate in the St. Louis office of CRB Consulting Engineers Inc.

1991

Tom Brockman, ME, an operations manager with Byrne & Jones Construction, earned sports field certified track builder accreditation.

1994

Thomas Nield, Hist, was promoted to director of the records management division in the Missouri Secretary of State's office. Previously, he was an electronic records archivist in the office for 17 years.

1997



Jason Nowak, ME, was promoted to director of Bastian Solutions' robotics division in Maryland Heights, Mo.



"I love my job, and I am really so thankful for the education I received at Missouri S&T," says **Sarah (Klein) Martin**, Math'03, vice president of Lockton Companies in Dallas. "I assumed I would get my math degree and work as an actuary in an insurance company my whole career. But instead I'm now in a very specialized area — I analyze and negotiate pharmaceutical prices for large employers across the country. Last year my team negotiated tens of millions of dollars in savings for our clients. There are so many interesting career opportunities out there — many more than I could have begun to imagine as a college student. Missouri S&T prepares you for anything."



When **Charlie Brune**, CSci'78, an avid Ham radio operator and former member of the student radio club, died last fall, his wife, **Liz**, donated his extensive collection of gear to the radio club. Liz is pictured above on an April visit to campus, seated in the broadcast chair with much of the donated equipment. Charlie's picture is on the computer screen.

Continued on page 41

THE TRAVELER



Up until last summer, Heather Castelli, ME'17, had visited more foreign countries than U.S. states.

Heather Castelli, who worked as a photographer for the *Rollamo*, takes photos of landscapes. Here, she is pictured at Machu Picchu, the 15th century Inca citadel on top of a mountain in Peru.

On another trip, Castelli sits at the rim of Quilotoa, a volcano in the Ecuadorian Andes mountains. After its last eruption 800 years ago, the crater has accumulated an 820-foot-deep lake.



"I follow in my grandfather's footsteps," Castelli says. "He left Hungary in 1956 at the start of the revolution. My grandmother is from there as well. It all comes back to them."

Castelli first traveled with Engineers Without Borders to Honduras. The next year she returned to Honduras with EWB, visited Panama for a conference and went to Nicaragua with Miner Challenge Alternative Spring Break. She chose Hong Kong for her study abroad trip as a senior because she wanted something different.

"I was looking for a culture shock," Castelli says. "I had never really experienced a culture shock. I was raised in a multicultural household. I'm the first generation not to speak Hungarian. It's very normal for me to sit at a dinner table and have no idea what anyone is saying."

"I LIVED OUT OF A 46-LITER BACKPACK DURING MY ENTIRE SIX MONTHS IN HONG KONG, SO LIVING OUT OF A SUITCASE ISN'T AN ISSUE."

Starting this fall, she will begin a full-time job for Accenture as a business analyst. The prospect of frequent business travel isn't a problem.

"I've known a lot of people who have done a lot of different types of work for Accenture and every pro or con they mention is a pro for me," Castelli says. "I lived out of a 46-liter backpack during my entire six months in Hong Kong, so living out of a suitcase isn't an issue. I've learned how to travel light because I don't like to carry things."

This past spring break Castelli and six friends road-tripped in an old, red wood-paneled van nicknamed "Clifford" to hike through sites like the Grand Canyon, Carlsbad State Park and Joshua Tree, Yosemite, Zion and Arches national parks.

She got back just hours before jumping on a plane to accompany her mom on a business trip to Aruba, her 21st country.

"I did a lot of cool things at S&T," she says. "When I worked as an admissions ambassador, I always told prospective students that S&T is a great school to come to, and if you want to leave for a little bit, they have great opportunities to send you some place and get you back safely." □

HIATT SHOULDERS THE LOAD AS ORTHOPEDIC SURGEON



Photo by Scott Gable

Standing on the mound, freezing cold, his left shoulder ached. Still, he pitched. It was the 2004 season opener, and he was Missouri S&T's starting pitcher. Of course he pitched. And when his turn in the rotation came up, he pitched again. And again. And again.

Finally, he couldn't pitch anymore, and that eventually led Dr. **Stephen Hiatt**, CE'06, to where he is today: an orthopedic surgeon finishing up a fellowship at the University at Buffalo, State University of New York.

Wanting a chance to get back on the mound, he took a medical redshirt so he could return in 2006.

"I ended up having arthroscopic surgery on my shoulder and required extensive

rehab to get back to pitching," Hiatt says. "I worked nearly every day after practice with the trainers to increase the strength and flexibility in my shoulder.

"Battling this injury ultimately helped me decide that I wanted to pursue medicine."

He realized he only needed two semesters each of biology and organic chemistry for medical school, and after graduating from S&T, he applied and was admitted to the University of Missouri-Kansas City's medical school. Hiatt did his orthopedic residency at UMKC, and when his fellowship ended in late July, he joined the Kansas City Bone and Joint Clinic.

His focus — his specialty — is surgery from the fingers to the shoulder. Of course.

Going from an engineer to a surgeon required a recalibration in the way he thought about things.

During his residency, he worked on a paper with the UMKC engineering department that focused on the biomechanical analysis of fracture fixation in hand surgery. The study looked at the strength of different sizes of wires used to stabilize bones while they heal.

"The biggest change from engineering was, with engineering, there's always an equation and a correct answer," Hiatt says. "In surgery, we're continuing to learn more about anatomy and the human body. Each patient is different and is treated as an individual based on their goals."



SUNRAYCE '99 JACKET MAKES TRIUMPHANT RETURN

When **Mike Hunter**, Math'99, decided to donate his Solar Car Team Sunrayce '99 jacket to the Missouri S&T archives, it wasn't necessarily for altruistic reasons.

"It all started with the utilitarian decision that I needed to not have it in my closet anymore because the elastic was worn out," he says. "I took a picture of myself with it and mentioned @MissouriSandT and @SolarMiner in a tweet. I thought that'd be the end of it, and I'd actually put it in a pile for the thrift store, but then I saw the university had messaged me about it, and the rest is history. My wife will never hear the end of this: Any time we're thinking about getting rid of anything, I can trot out that it belongs in a museum!"

Hunter and his teammates won that rain-soaked race, holding off Queen's University in the event that went from Washington, D.C., to Orlando, Fla. Their winning time was 56 hours, 16 minutes, 44 seconds for an average speed of 25.3 mph.

2009



Nathan Clark, ArchE, was promoted to director of estimating for Byrne & Jones Construction's asphalt division in St. Louis. Clark will oversee all facets of estimating in the asphalt division, which serves commercial and municipal customers, by building and maintaining parking lots, roads and highways.

2010

David Sanchez-Turner, EMgt, was promoted to operations manager for Multi-Pack Solutions in the Milwaukee-based wet wipes manufacturing business. He will lead the company's production, procurement and logistics teams.



Austin Thompson, EE, an electrical engineer at Hanson Professional Services Inc.'s Peoria office, recently earned his professional engineer license in Illinois. Thompson joined Hanson in 2015.

2011

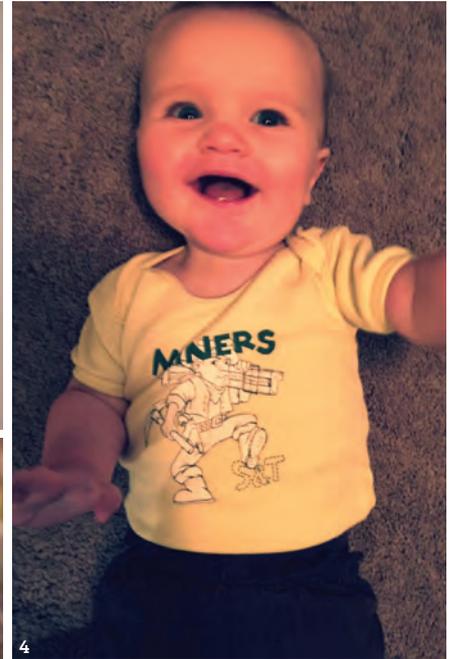
Alex Sellers, CE, MS EMgt'12, loves his hometown of Salem, Mo., so much that he helped launch an effort to make it a better place to live and raise a family. He was honored for his efforts in November with the Missouri Community Betterment Adult Leadership Award.

2015

Nathan Rohrbaugh, GeoE, MS GeoE'15, was honored with the 2016 State Ability Works award by the West Virginia Division of Rehabilitation Services for exemplary vocational rehabilitation success at its annual Ability Works Recognition Ceremony on Oct. 19 at the state Culture Center in Charleston, W.Va.



Kayla Stephens, CE, joined Byrne & Jones Construction's concrete division as a project engineer to help with estimates and engineering. The concrete division serves commercial and municipal customers, building and maintaining parking lots, roads and highways. □



FUTURE MINERS

1. **Jeffrey Burke**, ChE'10, and his wife, **Anita (Heinzke) Burke**, ChE'10, had a boy, Emmett James, on Oct. 12, 2016.

2. **Charles Carder**, ME'08, and his wife, Megan, had a boy, Mac Robert, on July 5, 2016.

3. **Jeff Lentz**, MS ME'08, and his wife, Ashleigh, had a son, Sullivan Beckett, on July 19, 2016. He joins brother Theo, 3. The family lives in Powder Springs, Ga.

4. **Shawn Meeks**, ME'13, and his wife, **Sara (Shafer) Meeks**, ArchE'11, MBA'12, had a boy, Abel Rush, on June 27, 2017.

5. **Christopher Morgan**, CE'02, and his wife, **Sarah Phillips-Morgan**, CE'02, MS CE'06, had a son, Matthew Christopher, on Feb. 8, 2016. He joins big brother Levi, 6.

MINER UNIONS

Chris Buterbaugh, MetE'07, married Abigail Dornblaser on Oct. 22, 2016. The couple resides in Houston.



WELCOME TO MYMINERBOARD

Being a Miner has never been easier. Because now your account information is available on myMinerboard, your one-click, at-a-glance personal dashboard. Use myMinerboard to update your profile information, register for events, report your volunteer service, check your engagement overview or review your giving history. To view myMinerboard, go to give.mst.edu/dashboard. You must be registered with the online community to access your account. Questions? Contact **Patti Chism**, director of advancement services, at chismp@mst.edu or 573-341-4777.



NO PAIN, NO GAIN: ACCIDENT AND REHAB SPURS S&T ALUMNI TO START COMPANY

Matt Brown, left and Doug Hoang. Photo by Steve Jennings

Inspiration can come from the unlikeliest of places, even in the middle of a Chicago street. "I got hit by a bus," says **Doug Hoang**, ME'10. His arms, shoulders and elbows sustained injuries in the 2012 accident. "I went through physical therapy, and I knew it could use a lot of innovation."

Inspiration led to innovation, and the idea for Enflux — a line of athletic wear with sensors to track and record a user's movements — was hatched.

Hoang was developing engines for Power Solutions International at the time of the accident, but he left in December 2014, cashed out his stock options and plunged full time into getting Enflux up and running. Investment also came from Y Combinator, a Silicon Valley business accelerator known for investing and jumpstarting billion-dollar startups like AirBnB and Dropbox.

In mid-March 2017 Hoang returned from a month-long, jetlag-inducing trip to China to secure development and distribution chains. Partnerships in China, Cambodia and South Korea produce the clothing, and he says Enflux has \$14 million in purchase orders.

"What sets us apart is we're much more cost-effective than all other competitors," Hoang says.

It isn't just athletes who use Enflux clothing to improve their workouts. The clothes also have applications in physical therapy, film animation, gaming and virtual reality products.

Matt Brown, ME'09, leads a team that develops the software for those applications. "Overall, I keep my thumb on the pulse of where the business is going and try to figure out what code is needed to support that," he says.

Brown was visiting former roommate **Elijah Schuldt**, AE'10, EE'10 and Enflux's chief technology officer, when Hoang recruited him to write algorithms for the company. Hoang and Brown were lab partners at S&T in Mechanics of Materials, and although Brown had a good job with an oil and gas company, he left to join Enflux. "Being in a startup seemed like a worthwhile challenge," he says.

Apple, Microsoft and Ford Motor Co. were all startups at one point. They didn't stay that way, and that's the way Hoang wants San Francisco-based Enflux to be.

"We want to keep growing and be a huge company," he says.

ALUMNA VENTURES INTO THE UNKNOWN

Hannah Mills, ME'16, couldn't imagine herself overseeing a production line or sitting in an office cubicle.

Mills turned down a job offer for a chance at the unknown, and she found it with Venture for America (VFA), a non-profit that connects recent college graduates with start-up companies. This summer she went to training camp at Brown University in Providence, R.I., before being paired with a company.

"I'm looking at this with a wide-open perspective," Mills says. "No matter where I end up, I'll learn skills that will allow me to pursue anything."

If it's like her college career, it could be anything during her two-year fellowship. Mills was a preview, registration and orientation (PRO) leader and coordinator, a teaching assistant in the machine shop, and studied abroad in Italy. She held an internship with Hussmann and a co-op with Emerson Process Management, and played on the Miner Threat ultimate Frisbee team. And she had a minor in art. No wonder she was S&T's 2016 Renaissance Student Award winner.

Her experience and education allowed her to match up favorably with graduates from Harvard, Duke, Yale and Princeton when it came to Venture for America's selection day — a full day of individual and group interviews. About 18 percent of candidates earn fellowships, says Venture for America talent associate Madeleine Stanley.

"They told us to be our authentic selves," Mills says. "I kind of forgot the judges were even in the room during the interview. Presenting myself for the way that I am was a huge factor in being selected."

CALLING 1964-68 MINER FOOTBALL PLAYERS

Gene Ricker, NDD'68, **Bill Henehan**, EE'68, and **Bob Yates** ask that all players of this era make a special effort to attend Homecoming this year.

For more information contact:
Gene Ricker at 525-979-4035 or GR925@msn.com, Bill Henehan at 217-477-1451 or Bob Yates at 214-477-1451.



Six members of Tau Kappa Epsilon fraternity got together in February in Virgin Gorda, British Virgin Islands. The group got on a sailboat **Bob Bieg**, ME'78, owns and keeps in St. Croix and sailed to several islands in the chain. On the trip were, from left, Bieg; **Greg Hicks**, CE'76, MS EMgt'80; **John Eash**, AE'79, MS EMgt'90, Missouri S&T's executive director of corporate relations; **Dan Kissel**, EE'78; **Dave Brueggeman**, ME'79, and **Mark Abernathy**, EMgt'90.

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MINERS REMEMBERED

Missouri S&T Magazine will announce deaths when information is submitted by an immediate family member or published in a newspaper obituary. Notification of deaths that have occurred more than two years before the date of publication will not be published unless a special request is made by a family member. Yearbook photos, if available, will be included for alumni when families submit obituary information. Due to the production time required for each issue, submissions may take up to six months to appear. Your patience is appreciated.

1934



Durward E. Fagan, CE, owned S.G. Hayes & Co. in Palos Heights, Ill., for over 75 years, was the former owner of Fagan Antique Auto Museum and was a founding member of Palos United Methodist Church. He lived to 105. (Oct. 4, 2016)

1940

Paul F. Ross, ME
(Nov. 22, 2016)

1943

Joseph George Sueme Jr., ChE, was a member of the Miner

football team, was a U.S. Army veteran and was an executive for Anheuser-Busch in St. Louis for 36 years. He was father to Joseph G. Sueme III, LSci'96, stepfather to David A. Ryckman, GGph'95, and step-grandfather to S&T student Cambria Ryckman. (Feb. 2, 2017)

1948



James Chaney, MinE, MS MinE'49, was a member of Sigma Nu fraternity, Blue Key and SME-AIME. He served on the Miner Alumni Association board of directors, was a section officer and

a class coordinator, and was a member of the S&T Academy of Mines and Metallurgy. (Jan. 15, 2017)

Irving C. Falk, GGph
(Nov. 2, 2016)

Ellsworth W. Hudgens, ChE
(Nov. 22, 2016)

Robert T. Kracht, ME
(Jan. 10, 2017)

Robert Rock, MetE
(Jan. 2, 2017)

1949

Robert V. Boaz, CE
(Dec. 07, 2016)



James S. Crump, ME, served three years in the U.S. Navy after graduating high school

in 1940. He retired as a sales engineer in the sheet metal and air conditioning field. (Dec. 11, 2016)

Joseph G. Sevick, MetE
(Feb. 12, 2017)

1950

Edward L. Johnson, GGph
(Nov. 17, 2016)

Irving Klaus, CerE
(Oct. 14, 2016)

Charles O. Kunz, MetE
(Dec. 10, 2016)

George W. Mable, ME
(Nov. 12, 2016)



Norman A. Niederstadt, ChE, was a member of Tau Kappa Epsilon fraternity, Blue Key, Alpha Chi Sigma and Tau Beta Pi and was a Miner basketball player. He retired from NL Industries in 1990. (Dec. 4, 2015)

1951

Frank J. Boscia, MetE
(May 25, 2015)

Leroy E. Ross, CE
(Nov. 10, 2016)

Robert E. Schuchardt, MetE
(Jan. 20, 2017)



Bruce E. Tarantola, MinE, was a member of Sigma Nu fraternity, the Order of the

Golden Shillelagh, the Academy of Mines and Metallurgy, Theta Tau professional engineering fraternity and the Engineers Club and served on the Miner Alumni Association board of directors. He also served in many other roles with the Miner Alumni Association. Mr. Tarantola retired as president of Southampton Co. in 1999 and as president of TARA L.C. in 2000. (Dec. 15, 2016)



C. Warren Keller, ChE, MS ChE'59, was a member of Alpha Chi Sigma, choir and orchestra, and Tau Beta Pi. He retired as an energy management specialist at Monsanto Corp. (Nov. 29, 2016)

1952

Donald E. Jones, MinE
(June 4, 2016)



Vernon Carl Potter, MetE, was a member of Army ROTC and was a rifle team member. He was chief metallurgist at Presmet Corp. and retired as a consultant with Potter & Potter Consultants. (Feb. 12, 2017)



Eugene F. Sanders, ChE, was a member of Sigma Phi Epsilon fraternity, Blue Key, Alpha Chi Sigma and Tau Beta Pi. He retired as a technical director from Mallinckrodt Chemical in 1995. (Dec. 30, 2016)

1953

James Edward Akers, Chem
(April 28, 2016)



Earl Robb Dill, CE, was a member of the Kappa Alpha Order and choir and orchestra. He served in the Army in Korea in 1946-47 and again in 1950-51. He worked for Southwestern Bell Telephone in St. Louis and in Texas before retiring after 30 years. (Jan. 18, 2017)



LeRoy Justice, MinE, was a member of Sigma Phi Epsilon fraternity. He served in the Navy during World War II, and he worked in the coal and natural gas industries for 35 years,

retiring from Columbia Gas Transportation Corp. (Dec. 28, 2016)

Claude J. Osbourne, EE (Dec. 7, 2016)

James E. Thompson, CE (Oct. 17, 2016)

1954

Judson A. Hughes, ME (Nov. 9, 2016)

Harold A. Koelling, MetE (Feb. 4, 2015)



Milton J. Smid, ME, was a member of Pi Kappa Alpha fraternity, Blue Key, Army ROTC and the *Rollamo* staff. He was a first lieutenant in the Army, volunteered with the Boy Scouts and retired from Monsanto Co. in 1992. (March 15, 2017)

1955

Robert F. Farris, CerE (Oct. 18, 2016)

James G. Mullen, Phys (Jan. 23, 2017)

1956

Eugene D. Fabricius, Phys (Oct. 22, 2016)

George L. Senior, CE (May 1, 2016)

K. Don Statler, CE (Dec. 7, 2016)



Kenneth Frank Steffan, EE, was a member of Blue Key, Independents (GDI), the Radio Club and Tau Beta Pi. He retired as a division general manager for The Aerospace Corp. (Aug. 30, 2016)

1957

Carl M. Antrim, ChE (Oct. 15, 2016)

Donald R. Bowers, ME (Dec. 10, 2016)

Raymond D. Zook, MetE (Nov. 25, 2016)

1958

Leslie C. Daniels, ChE (Dec. 25, 2016)

Thomas J. Farrell, CE (Dec. 26, 2016)

Joseph A. Mickes, CE (Sept. 25, 2016)

Richard K. Spencer, ChE (Jan. 25, 2017)



Robert L. Wilkins, ChE, was a member of Alpha Chi Sigma and the Miner golf team. He was self-employed as a computer consultant. (July 31, 2016)

1959

John G. Borman, ME (Dec. 22, 2016)



Walter A. Rinehart, ME, was a member of Tau Beta Pi, the Baptist Student Union and Pi Tau Sigma. He was a chief technology officer at Boeing, retiring in 2003. (April 22, 2015)

Richard N. Thompson, CE (Feb. 3, 2017)

1961

Kenneth E. Deford, EE (Dec. 14, 2016)

1962

Kanaya L. Bhatia, CE (Dec. 27, 2016)

John R. Childress, Phys (Dec. 28, 2016)

James A. Holzem, ME (Jan. 6, 2017)

Ardeshir Samrad, CE (Jan. 27, 2017)

Lee A. Waltrip, CE (Jan. 12, 2017)

James H. Yost, ME (Oct. 23, 2016)

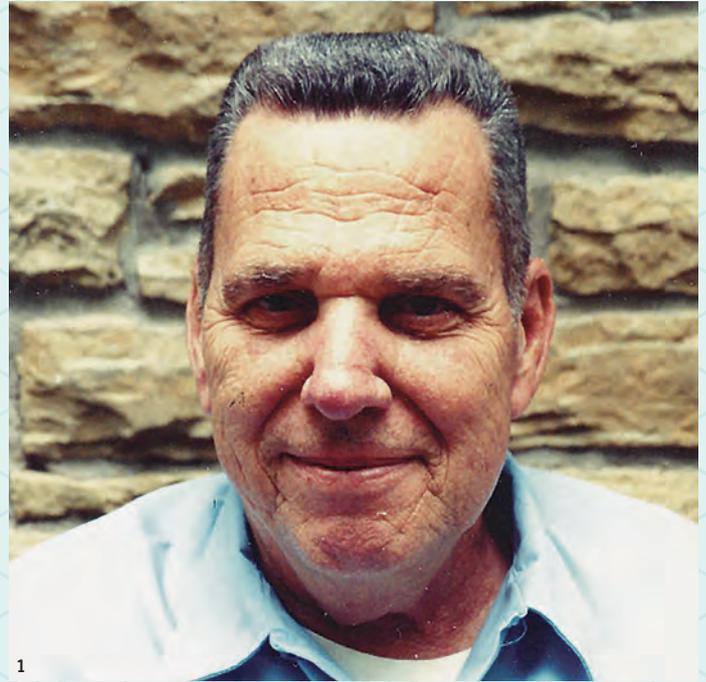
1963

Timothy O. Brown, MinE (Aug. 9, 2016)

Paul H. Miller, PetE (Nov. 30, 2016)



Lee William Ousley, EE, was a member of Independents



1



2

1. **Arthur F. Grimm**, ME'66, MS ME'70, died Jan. 1, 2017. A member of Kappa Sigma fraternity, he served in the Army military police stationed in Alabama during the Korean War, and he taught Engineering Graphics at Missouri S&T from 1966 to 1969. Mr. Grimm owned and operated Art's Coffee Service in Rolla and neighboring communities for 30 years.
2. Dr. **Otto Herman Hill**, professor emeritus of physics at Missouri S&T, died March 7, 2017, in New Braunfels, Texas. He earned a Ph.D. from the University of Texas-Austin in 1957. He worked for the Naval Defense Lab and General Dynamics, and he was a Fulbright Professor of Materials Science in 1977-78 at the Middle East Technical University, Ankara, Turkey. At Missouri S&T, his research interests included charge transport in ionic solids, radiation effects in materials and A.C. Hall effect measurements.

(GDI) and SME-AIME.
(Jan. 16, 2017)

1964

Monte C. Mitchell,
ME (Feb. 11, 2017)

Samuel H. Smith,
CE (Nov. 17, 2016)



Clarence P. "Clank" Wagner, ME, was a member of Phi Kappa Theta fraternity, Army ROTC, the Newman Center, the Society of Military Engineers, Alpha Phi Omega and the *Rollamo* staff. He was a production manager at Nestle Purina Pet Care and an engineer at PM Resources Inc. and KV Pharmaceutical. (Feb. 15, 2017)

1965

D. Eugene Smith,
ME (Dec. 7, 2016)

1966

Ronald J. Hay, CE, was general manager of Columbus Asphalt Paving until his retirement in 1999. (Dec. 20, 2016)

Donithan R. Jennings,
CE (Dec. 26, 2015)

1967

Ronald T. Pelley,
NDD (Nov. 10, 2016)

Charles R. Smith,
EE (May 26, 2016)

John D. Wolf, EE
(Dec. 21, 2016)

1968

Billy J. Smithson,
EE (June 6, 2015)

1969

Raymond Riggs,
NDD (Jan. 8, 2017)

1970

J. Fred Archer, EE
(Jan. 20, 2017)

Richard R. Blevins,
ChE (Nov. 17, 2016)

Joseph E. Grimm,
ME (Dec. 4, 2016)

Robert L. Monsees,
CSci (Sept. 5, 2016)

Thaddeus G. Podgorny,
ME (Jan. 20, 2017)

1971

Joseph D. Bucci, Chem
(Sept. 23, 2016)

James J. Delargy III, EE,
worked for Sherwood Medical, Dana Corp., GFI Control Systems, Sytron Corp. and EADS. (Sept. 15, 2016)

Thomas L. Greene,
ME (Jan. 20, 2017)

Billy W. Peace, Chem
(Nov. 17, 2016)

Don E. Rainey, ME
(Dec. 3, 2016)

David M. Simon,
EMgt (Oct. 13, 2016)

1972

Richard L. Kuebrich,
CSci (June 2, 2016)

Pramod Kumar, PetE
(Aug. 13, 2016)

Larry L. Schnieder,
ME, was a member of the National Society of Professional Engineers and the American Society of Mechanical Engineers. He was the

owner and manager of Coachlight Inn in Rolla, Mo. (May 25, 2016)

1973

Don Meredith Alday,
EMgt, was a member of Kappa Alpha fraternity. He worked for 28 years for Paul Mueller and also worked for Rose Metal Products and Fasco. (March 23, 2015)

1974

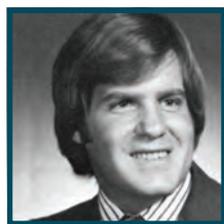
Steven W. Souders,
ChE (Dec. 6, 2016)

1975

David W. Ebersole,
CerE (Feb. 6, 2017)

Michael A. Stevens,
MinE, was a member of SME-AIME and an alumni scholarship recipient. He worked in the coal industry in Illinois and Alberta, Canada, then retrained to be in restaurant management and entered a partnership to open a chain of Doc and Eddy restaurants. Later, he began his own landscape company, Landscapes Plus, and then joined R.H. Dupper Landscaping, where he worked on large commercial projects until he retired in 2009. (Dec. 24, 2016)

1977



Reed Alan Curtis,
ME, was a member of Kappa Alpha fraternity,

Pi Tau Sigma, Student Council, the M-Club and the Miner swim team. He worked for Westinghouse in Detroit, but later settled near Atlanta, where he had a successful career in technical sales management in the telecommunications industry. (Jan. 8, 2016)

1979

Bryan E. Byrd, CerE
(Dec. 6, 2016)

Ronald J. Henson,
ME (Jan. 5, 2017)

Kevin M. Kenney,
MetE (June 6, 2016)

Raymond J. Smith,
GeoE (June 27, 2016)

1980

Thomas E. Mueller,
EMgt (Jan. 10, 2017)

1981

James M. Gambill,
ME (Oct. 30, 2016)

Gregory Alan Young,
CerE (Jan. 12, 2017)

1982

Frank Eugene Andrews,
CE, was a member of Chi Epsilon and Tau Beta Pi. He was an Eagle Scout, and he worked as an engineer at Stone & Webster Inc. and as a senior civil engineer at Bechtel. (Feb. 14, 2017)

1983

Donald E. Hoeckelman,
MetE (Dec. 10, 2016)

William J. Pennstrom,
MetE (Jan. 31, 2017)

Brian James Thomas,
CSci (Dec. 27, 2016)

1985

Jay Patrick Williams,
EE (Dec. 26, 2015)

1991

Robert Michael Jackson, MS CSci,
worked in the corporate business office for Jack Henry & Associates. (Jan. 25, 2017)

2017

Renetra Bimilade Osun,
Mult (Feb. 11, 2017)

FRIENDS

William W. Aaron
(Nov. 7, 2016)

Mollie Achterberg, wife
of the late Ernest R. Achterberg, MinE'53
(May 16, 2016)

Pat Barnes, wife
of the late Amos Eugene Barnes, ME'50
(Jan. 03, 2016)

Virginia Bowman
(Feb. 10, 2017)

Mary Louise Boyd, wife
of the late William F. Cain (Jan. 12, 2017)

Mary E. Canady,
wife of Arthur R. Canady, MetE'55
(Dec. 31, 2016)

Mary A. Crum
(Nov. 19, 2016)

Myrna Lou Eckhoff,
former secretary at Missouri S&T and wife
of James L. Eckhoff, EE'60 (Nov. 13, 2016)

Tina Mae Eudaly,
wife of Bosco Eudaly
(Dec. 12, 2016)

Jack Feeler
(Jan. 12, 2017)

Kenneth F. Fiebelman, former
state representative
(Jan. 3, 2017)

Patricia Ann Fryer,
wife of Lonnie E. Fryer (Jan. 10, 2017)

Eleanor L. Higley
(Nov. 6, 2016)

John K. Hock
(Jan. 5, 2017)

Mark Hopkins
(Jan. 18, 2017)

Lola Howe
(Jan. 21, 2017)

Carole Kracht, wife
of the late Robert T. Kracht, ME'48
(Aug. 14, 2015)

Susan J. Karcher,
wife of the late James G. Mullen, Phys'55
(Jan. 13, 2017)

Clara Mae Lasky
(Dec. 8, 2016)

Betty Lavino
(Dec. 9, 2016)

Beth Lorey, the first
woman on the St. Pat's
advisory board and
the first woman to be
named an Honorary
Knight of St. Patrick.
She and her late
husband, Dr. G. Edwin
Lorey, were members
of the Order of the
Golden Shillelagh.
(Oct. 19, 2016)

John L. Middleton
(April 7, 2016)

Dorothy M. Ousley,
wife of the late Lee
William Ousley,
EE'63 (Jan. 5, 2017)

Darryl Pearson
(Nov. 1, 2016)

Jolene Pierson, wife
of the late Ossean
E. Pierson, Math'70
(Dec. 28, 2016)

Charlotte Pursell, wife
of the late Dr. Lyle
E. Pursell, professor

emeritus of math
at Missouri S&T
(Jan. 11, 2017)

Charles Redburn
(Feb. 21, 2017)

Mary Lee Reed, wife of
the late Dr. X.B. Reed,
professor emeritus of
chemical engineering
at Missouri S&T
(Jan. 2, 2017)

Julia Ross, wife of
Paul F. Ross, ME'40
(Nov. 29, 2016)

Randy Russell,
husband of Judy
Russell, administrative
assistant in mining and
nuclear engineering
at Missouri S&T
(Jan. 29, 2017)

Dorothy Schuchardt,
wife of the late Robert
E. Schuchardt, MetE'51
(Jan. 6, 2017)

Buelah Scott
(Jan. 20, 2017)

**Lou Allen
Short III**, former
custodial supervisor
at Missouri S&T
(Feb. 4, 2017)

Jane Spencer, wife
of the late Richard
K. Spencer, ChE'58
(Feb. 29, 2016)

Vivian Elaine Stille
(Feb. 4, 2017)

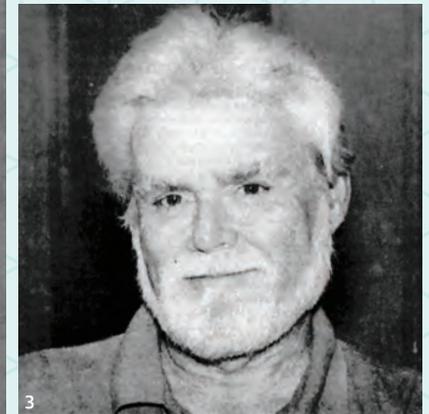
Mary M. Storrs, wife of
Stuart M. Storrs, CE'68
(July 3, 2015)

Pauline M. Taggart
(Feb. 19, 2017)

Lois Lorraine Walls
(Jan. 23, 2017)

Kevin Wiedenkofe
(Dec. 15, 2016)

Beverly Jean Wisdom,
wife of the late David
Glen Wisdom, CE'49
(Nov. 5, 2016) □



1. Dr. **Tim Philpot**, associate professor of structural engineering in the civil, architectural and environmental engineering department, died Jan. 25, 2017. Dr. Philpot developed a digital teaching tool called MecMovies, which illustrates engineering concepts that are difficult to picture using only static images. The program, designed and developed in collaboration with other Missouri S&T faculty, is used in S&T's Mechanics of Materials courses. The software, which he developed through a grant from the U.S. Department of Education, won the MERLOT Classics Award in 2006 for excellence in multimedia education. Dr. Philpot was a registered professional engineer in Missouri and Kentucky. The author of many papers in peer-reviewed publications and funded research grants, he received the Tau Beta Pi Outstanding Professor Award. He taught several courses during his tenure at S&T, including Mechanics of Materials, Structural Steel Design, Reinforced Concrete Design, Structural Analysis and Statics. Dr. Philpot earned a Ph.D. in civil engineering from Purdue University in 1992, a master of engineering degree from Cornell University in 1980 and a bachelor of science degree in civil engineering from the University of Kentucky in 1979.
2. Dr. **Oran Allan Pringle**, Curators' Distinguished Teaching Professor of physics at Missouri S&T, died March 24, 2017, after a short battle with cancer. Dr. Pringle joined the S&T faculty as an assistant professor of physics in 1985. He was named associate professor in 1991 and professor in 1998. He was named Curators' Distinguished Teaching Professor

in 2005 and retired March 1, 2017. Dr. Pringle, a former recipient of the Governor's Award for Excellence in Teaching, earned bachelor of science, master of science and Ph.D. degrees in physics from the University of Missouri-Columbia in 1970, 1971 and 1981, respectively. He was a member of the American Physical Society, the APS Division of Condensed Matter Physics and Science Teachers of Missouri. Dr. Pringle's research specialty was neutron-diffraction studies of magnetic materials. He was active in teaching the fundamentals of science to K-12 students and educators to help improve science instruction in Missouri schools.

3. Dr. **Richard D. Rechten**, associate professor emeritus of geology and geophysics at Missouri S&T, died Oct. 22, 2016. His research included developing techniques for locating "solution cavities," which are caves or other underground openings formed when rock is worn away or dissolved by fluids. He adapted the work for use by the Army Corps of Engineers. Dr. Rechten was a member of the Society of Exploration Geophysics, the American Geophysical Union and the Society of Engineering Geologists. He was a National Science Foundation Fellow, won an Outstanding Performance Award from NASA, was named an American Man of Science and won two Outstanding Teacher Awards from Missouri S&T in 1966-67. Dr. Rechten earned bachelor of science, master of science and Ph.D. degrees in geological engineering and geophysics from Washington University in St. Louis in 1958, 1959 and 1964, respectively.

A GIFT WITHOUT BORDERS

Photo by George Bridges



David Heikkinen, ME'93, and Dr. Ann Rueff Heikkinen have deep Rolla roots. They met as students at Rolla Junior High School, and their mothers both worked for Missouri S&T. Virginia Heikkinen Callahan, Hist'88, worked in admissions and Chris Rueff in career services.

When it came time for college, Ann majored in chemistry at the University of Missouri-Columbia and David enrolled at S&T as a petroleum engineering major. A summer internship prompted him to change majors. "After working in west Texas with the rattlesnakes and tarantulas, I switched to mechanical engineering," he says.

David joined Shell Oil in New Orleans after graduating and earned an MBA from Tulane University. Ann earned a master's degree in nutrition at Louisiana State University before attending LSU School of Medicine, graduating in 2002. She is now a family physician in Houston.

"Ann and I have known each other more than 30 years, and we've been married for 23 years," says David. They have 9-year-old triplets: Charlie, Grace and Joe.

David transitioned into oil and gas investment research in 2000 when he joined Southcoast Capital. Five years later, he met Rolla graduate Dan Pickering, PetE'88, also an energy investment analyst. The two found they had a lot in common, from Missouri upbringings to industry experience.

In 2005 after Hurricane Katrina, David joined Dan's company, Pickering Energy Partners, which grew to become Tudor, Pickering, Holt & Co. "Dan was the best in the business at oil field services, and I was an up-and-comer in exploration and production," says David. "We made a great team."

David left the company in 2012 and took time off. "I had a window before our triplets started kindergarten," he says. During his sabbatical, David hosted a meeting with a group

of friends in the industry. "The lightbulb went on that these people were really good at what they do, and that's when Heikkinen Energy Advisors was born."

Today the company provides research and consulting services to energy investors and companies. And the Heikkinens have stepped forward with a philanthropic investment in Missouri S&T. Their \$250,000 gift will support the S&T chapter of Engineers Without Borders (EWB).

"Rolla played a key role in what happened for Ann and me," says David. "We wanted to give back, and the compounding possibilities of the EWB challenge (see story on page 6) appealed to us. If our contribution touches 20 students in EWB, and those 20 students touched 10 or 100 people with each project, then we have touched the lives of 200 or even 2,000 people. And that can happen for years to come."

MISSION COMPLETE: MAKER FAIRE KANSAS CITY

Missouri S&T was well-represented at Maker Faire Kansas City 2017 as it showcased its world champion Mars Rover Design Team, projects from the new S&T Makerspace, Joe Miner and an interactive Ozobot mission. Nearly 18,000 people attended the two-day, family-friendly event, which Missouri S&T helped sponsor.



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S&T MARS ROVER TEAM

2017 WORLD CHAMPS

THEY CAME. THEY ROVED. THEY WON.



→ Congratulations to S&T's Mars Rover Design Team for winning the 2017 University Rover Challenge, an international design competition where teams showcase potential next-generation Mars rovers.