

MISSOURI  
**S&T**  
MAGAZINE

FALL/WINTER 2016 VOL. 90 NO. 3

# ALUMNI OF INFLUENCE

# Miner pride makes our house a home.

From our house to yours, this holiday wish comes postmarked with gratitude and stamped with the spirit of Miner pride. Because giving thanks begins with thanking the generous alumni who give back. Your annual gifts support scholarships, alumni sections, student organizations and so much more. But most of all, your pride and participation make our house a home for every Miner.



## Help us deck the halls of Hasselmann Alumni House!

In celebration of the season and the blessings we share, we're creating a special display of holiday cards from Miners across the miles.

Please add us to your holiday mailing list:

**Miner Alumni Association  
Hasselmann Alumni House  
1100 N. Pine St.  
Rolla, MO 65409**

If an electronic card is more your style:  
**[alumni@mst.edu](mailto:alumni@mst.edu)**

Make your gift at **[mineralumni.com/give](http://mineralumni.com/give)**.





## CORRECTIONS

**Craig Barnes**, ME'78, was incorrectly identified as a civil engineering graduate in the Summer 2016 issue. He is a mechanical engineering graduate.

The "MS" was omitted from the degree information for **John Lovitt**, MS CSci'70, in the Summer 2016 issue.

The following alumni were incorrectly listed as deceased in the Friends section of the Memorials in the Summer 2016 issue. These alumni are still living; however, each has a spouse who recently died. The spouses are correctly listed in the Friends section of the Memorials in this issue, when applicable. We regret the errors.

**Jonas Bereisa**, EE'67, MS EE'70

**Carey B. Bottom**, Chem'72,  
MS Chem'75, PhD Chem'79

**Robert J. Halford**, EE'68

**Donald R. Pogue**, ChE'62

**Merle Steckel**, PetE'69

**Kevin C. Volner**, ME'72

**Robert M. White**, NDD'60



## AROUND THE PUCK

### 5 Greening mines

S&T researchers are growing plants in tailings from old lead mines.

### 6 Rocking the *Rollamo*

Tegan Brand is editor-in-chief of Missouri S&T's yearbook.

### 10 Homecoming 2016

MinerFest in review.

### 14 Explaining atomic motion

This S&T physics researcher super-cools atoms then studies their movements.

### 18 Horatio Alger scholar finds a home at S&T

Homeless at age 15, Mikayla Bridgewater is set on finding success in Rolla.

### 20 In the swim of things

Civil engineering senior Shawn Wallace swam in the 2016 Summer Olympics for his home country, Palau.

## FEATURES

### 22 Alumni of Influence

Meet the 2016 honorees — a group of Miner alumni who have achieved remarkable success.

## BEYOND THE PUCK

### 54 Come together

Catch a glimpse of alumni events at sections all across the country.

### 55 Class notes

Find out what your former classmates are up to.

### 57 S&T All-American competes in Olympic long jump

Tyrone Smith, Hist'07, was chosen to carry the flag for his home country, Bermuda.

### 58 Rolla Miner, redux

Braden Lusk, MinE'00, PhD MinE'06, returns to S&T to lead his home department.

### 61 Memorials

We remember our classmates and friends.

### 64 Giving thanks for a full life as first-time donors

David, CE'69, and Lynda Malone.

# 8,640

Record number of students enrolled at Missouri S&T on the first day of the fall 2016 semester. Classes started Monday, Aug. 22.

# 29

New faculty who joined Missouri S&T this fall. S&T has now filled 42 faculty lines toward its goal of hiring 100 new faculty by 2020.

# 19,655

Sheets of drywall used in the construction of S&T's new University Commons residential housing complex. The facility opened in August.

## MISSOURI S&T BY THE NUMBERS

# 2008

The last year Missouri S&T hosted the Great Lakes Valley Conference Cross Country Championships before hosting the 2016 meet in October.

# 3

Missouri S&T's rank on a list of the best universities for engineering as ranked by *College Factual* in September.

# 1,734

Miles traveled by the Miner football team on its first three road trips of 2016. The team played games at the University of West Florida, Saint Joseph's University in Indiana and Kennesaw State University in Georgia.

# 610

Project Lead The Way programs Missouri S&T coordinates in elementary and secondary schools across Missouri.

## 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.

### CHANCELLOR

Cheryl B. Schrader

### VICE CHANCELLOR FOR UNIVERSITY ADVANCEMENT

Joan Nesbitt

### MINER ALUMNI ASSOCIATION PRESIDENT

Helene Hardy-Pierce, EMgt'83

### EDITORS

Nancy Hatch (Alumni)

Mary Helen Stoltz, Engl'95 (News & Features)

### ASSOCIATE NEWS EDITORS

Maridel Allinder Peter Ehrhard

Andrew Careaga Joe McCune

### ASSOCIATE ALUMNI EDITORS

Logan Campbell Joe McCune Travis Sewell

### DESIGN AND PRODUCTION

Jake Otto Lishia Stevens

### STAFF PHOTOGRAPHER

Sam O'Keefe

### CONTRIBUTORS

Jesse Cureton John Kean

Greg Katski Mindy Limback

Alan Scher Zagier

*Missouri S&T Magazine* (ISSN 1084-6948) is issued three times per year (April, August, December) in the interest of the graduates and former students of the Missouri School of Mines and Metallurgy, the University of Missouri-Rolla and Missouri University of Science and Technology. *Missouri S&T Magazine* is published by the Miner Alumni Association, Missouri S&T, 1100 N. Pine St., Rolla, MO 65409-0650.

*Missouri S&T Magazine* is printed by LSC Communications, Liberty, Mo. Covers are printed on 114 lb. — 7 pt. Sterling White; interior pages are printed on 60 lb. Sterling White.

*Missouri S&T Magazine* is printed using soy-based ink.

### Send letters to:

Darlene Ramsay  
Miner Alumni Association  
1100 N. Pine St.  
Rolla, MO 65409-0650  
Phone: 800-JO-MINER  
Fax: 573-341-4706  
Email: alumni@mst.edu

### News & features:

Phone: 573-341-4328  
Fax: 573-341-6157  
Email: news@mst.edu

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



# Q&A

## *I owe my success to ...*

*“Which individual — faculty, staff or administrator — from your time in Rolla had the greatest impact on your success?”* Historian **Larry Gragg**, Curators’ Distinguished Teaching Professor of history and political science, posed this question during the summer. Here are a few of your answers.

---

The easy answer is Dr. **James Bogan**, Curators’ Distinguished Teaching Professor emeritus of art history and film (my favorite English professor). The way he challenged us and taught us to write has transcended one semester and stayed with me my whole career. Over the past 35 years, I have had the opportunity to head up plants of 2,000 people and successfully led multi-billion-dollar businesses. Today I am the operations lead for our company and oversee 1,500 locations and 90,000 people around the globe. I firmly believe that the communications skills I earned from Dr. Bogan are a key in the success I have had in my career.

**Tom Hayes**, ME’81  
Minneapolis

My favorite professor was **James Grimm** in electrical engineering. I went with him to a papers contest in New Mexico in 1956 and wondered why we went over a bridge in the middle of a desert. Growing up in Missouri, I didn’t know what a dry wash was! He urged me to go on for a master’s degree, which I got from Purdue two years later. I got my Ph.D. from The Ohio State University in 1968 with a wife and four kids.

**Fred Dietrich**, EE’57  
Palo Alto, Calif.

Professor (**David**) **Westenberg**, interim chair of biological sciences, gave me my first chance at research, which is now a big part of what I do as a professor myself. Professor (**Oliver**) **Sitton**, associate professor of chemical and biochemical engineering, excelled at getting students to learn by doing in his classes and gave us a great chance to solve a big problem from the ground up in our senior biochemical engineering lab. Also, **Tina Sheppard**, former director of residential life, who was my first hall director as a freshman, and ultimately my mentor and boss when I was a head RA and she was the director of residential life. She taught us a lot about leadership and gave students more power and choice than any other university I’ve seen. That ultimately gave us the opportunity to try new things and learn from both failure and success.

**Kyle Lampe**, ChE’04  
Charlottesville, Va.

I owe my success to Dr. (**Oliver**) **Sitton**, associate professor of chemical and biochemical engineering, who was my advisor when I started the chemical engineering program. Over my four years at Missouri S&T, Dr. Sitton spent many hours talking about my academic options and my career possibilities and supporting me personally. I can still remember the meeting

where he pushed me to look to the oil and gas industry to experience process engineering. When I came back from that internship, I knew without a doubt that I wanted to start my career as a process engineer. I have been fortunate to spend the first four years of my career in process engineering at the Phillips 66 Wood River Refinery, the same refinery where my father, grandfathers and great-grandfather worked at various points in their lives. Even now that I’m currently in the environmental department, I consider myself a process engineer first. As I write this, I see clearly Dr. Sitton’s impact on my career and personal development. He will smile to read that I revised several sentences — including this one — to use action verbs rather than ‘be’ verbs. In the first months of my career, my supervisors and others praised the technical writing skills I developed from the numerous lab classes he taught me. Without Dr. Sitton’s guidance, I may have ended up where I am today, but it would not have been as smooth of a journey.

**Emily Amizich**, ChE’09  
Glen Carbon, Ill.

## TO THE EDITOR

Accounts of my death have been greatly exaggerated. In the April 1987 *MSM Alumnus* on page 33 it was reported that I had passed away. Other than me being dead, all of the other details were correct. I have enclosed a copy of the front page of the *Alumnus* and page 33 for your review. I have just retired from the city of University Park after 27 years and hope to enjoy many more years in retirement. I thought it was time to correct the record.

**Robert E. “Bob” Whaling**, CE’73  
Plano, Texas

I have just completed reading from cover to cover the latest *Missouri S&T Magazine*, and I especially enjoy the stories of the current S&T collaborative projects and how these help give students some practical experience. During my visit to Rolla for my 50th class reunion last year, I enjoyed touring the Kummer Student Design Center and seeing the chemical car in the ChE department. From the alumni magazine, I see that all students must now take part in at least one experiential learning project before they graduate.

**Wick Doll**, ChE’65  
Spartanburg, S.C.

**Editor’s note:** Wick Doll included a note about his own experiential learning — a chemical engineering research project. That story can be found in its entirety at [magazine.mst.edu](http://magazine.mst.edu).

I would like to commend you on *Missouri S&T Magazine*. It is very interesting and full of news — without typos, which is unusual these days. The latest issue, Spring 2016, was especially good. I especially enjoyed the young man who was into volunteering. As an avid volunteer myself, I was very impressed by him.

**Pat Swanson**, wife of the late  
**Ken Swanson**, GGph’59, CerE’62  
West Liberty, Ohio



## MUN Y. CHOI NAMED NEXT UM SYSTEM PRESIDENT

**Mun Y. Choi**, provost and executive vice president at the University of Connecticut, will become the 24th president of the University of Missouri System on March 1.

"As a product of and passionate champion for public higher education, I will advocate tirelessly on behalf of our exceptional institutions with state and national business, political and civic leaders to achieve excellence in all that we do, and make sure our great campuses realize their full potential," says Choi.

Born in South Korea, Choi came to the U.S. as a child. As a young man, he worked in his family's business in Chicago, and graduated from the University of Illinois at Urbana-Champaign with a bachelor's degree in general engineering in 1987. He later earned master of science and Ph.D. degrees in mechanical and aerospace engineering from Princeton University.

## SAVE THE DATE: BEST EVER 109

Make plans now to travel to Rolla for the 109th St. Pat's pre-parade party at 9 a.m. Saturday, March 18, 2017, at Hasselmann Alumni House, located at 1100 N. Pine St. Complimentary breakfast and a cash bar will be available before the parade. The parade begins at 11 a.m.

If you can't make it to Rolla, attend a section event in your area. See [mineralumni.com/events](http://mineralumni.com/events) for a list of St. Pat's events in your area. Help make the 109th celebration the Best Ever!



## A FIRST FOR NEW I/O PSYCH PROGRAM

This past May, **Cheyenne Kovach**, MS IOPsyc'16, became the first to complete Missouri S&T's master's degree program in industrial-organizational psychology.

The program was established in spring 2015 to help meet a growing need for human resources and talent management professionals. Industrial-organizational psychologists develop assessments of people for selection and placement into jobs, effective training programs, strategies for organizational development, performance measurement and ways to promote quality of work-life balance.

## BUILDING A BETTER BATTERY

The battery in your cell phone and laptop may one day hold a longer charge thanks to the work of **Xinhua Liang**, an assistant professor of chemical and biochemical engineering at Missouri S&T.


Liang and **Rajankumar Patel**, PhD ChE'16, are leading a study that uses thin-film coating and atomic layer deposition to boost lithium-ion battery performance. Their work was published in the May 4 issue of *Scientific Reports*.

Using atomic layer deposition, Liang coats and dopes lithium magnesium nickel oxygen (LMNO) with iron oxide at the same time. Doping means filling in the gaps in the lattice-like crystalline structure of the LMNO by adding an element or compound. Coating is simply putting ultra-thin layers of iron oxide around the whole compound.

Current research practice calls for either doping or coating, but the researchers say their work is the first to do both, and their process allows ionic iron to enter the lattice structure during the coating process. They also say the process improves the performance of lithium-ion batteries and makes them last longer.

The Missouri S&T process makes lithium-ion batteries that have 93 percent capacity retention after 1,000 cycles of charge and discharge at room temperature and 91 percent at elevated temperatures. That is equivalent to about three years of battery life with performance nearly identical to a new battery, Liang says.





Working in Missouri S&T's Baker Greenhouse, Ph.D. student Mariam Al-Lami and Joel Burken study ways biosolids can promote plant growth.

# GREENING MINES

Working in the Baker Greenhouse on the roof of Missouri S&T's Butler-Carlton Civil Engineering Hall, researchers are growing plants in mine tailings and studying whether the addition of nutrient-rich biosolids helps promotes growth.

The project, led by Ph.D. student **Mariam Al-Lami** and Joel Burken, Curators' Distinguished Professor of civil, architectural and environmental engineering and chair of the department, is the outgrowth of a 2012 research agreement between Missouri S&T and Doe Run.

Mine tailings are the ground-up rock byproducts created when separating mineral from waste rock during the mining process. Impoundments where they're stored typically have little ground cover, but through remediation of those sites, vegetation is planted. Miscanthus is one of the few plants that can thrive in such

challenging conditions, but Burken and Al-Lami are assessing the addition of poplar and willow trees to that environment.

They found that the tailings that were treated with biosolids dramatically improved plant growth compared to untreated tailings.

The encouraging lab results earned Al-Lami the top student paper at the American Society of Mining and Reclamation's annual meeting in June, as well as the chance to present her findings at the Ecological Society of America conference in August.

The researchers hope soon to translate their greenhouse findings into field trials on parts of a 300-acre tailings impoundment at Doe Run's old Mine 28 in Viburnum, Mo.



# ROCKING THE *ROLLAMO*



As a child, geology and geophysics senior **Tegan Brand** would often make the trek through the rolling Ozark hills to visit the banks of the Meramec River as it flowed through her grandparents' farm in Steelville, Mo.

"This stark contrast of wilderness to my otherwise suburban life was what encouraged my love for the natural sciences," says Brand, who grew up in Watauga, Texas, a suburb of Fort Worth.

As a third-generation Miner, Brand was very familiar with the Missouri S&T campus and its graduates. When she discovered it was also one of the few schools that offered degrees in geology and geophysics, the choice was "a no-brainer."

"I love being surrounded by peers who share my same interest in science," she says. "The atmosphere of Missouri S&T stands out above all others. I can't walk through campus without seeing my friends, and most likely they're in one of my classes. It makes studying and doing homework really easy to stay on top of."

Combining academics with extracurricular activities comes naturally to Brand, who expresses her more artistic side through her role as editor-in-chief of the *Rollamo* yearbook and a disc jockey at KMNR free format college radio. She also is a financial aid peer counselor, plays intramurals and is part of the C.L. Dake Geological Honor Society and the General Delegation of Independents.

"Missouri S&T isn't just about the classes you take and the education, but it's about the people you meet while doing so," she says. "Instead of being the one smart kid in class, you're surrounded by peers who are just as smart as you are. The students here have the potential to do great things in the real world, and the life-long connections made while in school are priceless."



# A DAY IN THE SUN



*Solar Miner*, Missouri S&T's entry in the 2016 American Solar Challenge, ended the second stage of racing with a stop at Republic High School. *Solar Miner* placed fourth in the 1,975-mile race from Ohio to South Dakota this past summer. The race route included stops at national parks and historic sites throughout the Midwest. S&T received two of the three design awards presented during the competition: Best Solar Array and Best Electrical Design. Pictured above is **Jesse Cureton**, a senior in computer engineering from Bonne Terre, Mo., and leader of the Solar Car Design Team.



## EXPLORING OTHER CULTURES

Camel rides, colorful floats, a parade of flags from over 80 countries and foods from around the world are just part of the explosion of international culture that comes to the streets of downtown Rolla every September for Celebration of Nations. This was the seventh year for the annual event.





## S&T ENTERS THE WORLD OF MOOCS

Educators and instructional designers had the chance to learn about incorporating group work into their classes this past summer when S&T launched its first massive open online course (MOOC) in July.

The fast-paced course is an on-demand, non-credit professional development resource. It was initially offered at no cost to allow campus officials to study the process, mechanisms and benefits of MOOCs at Missouri S&T.

"There is great potential to use this venue as a pipeline to feed the distance certificate and degree programs as well as the continuing education trainings offered through S&T Global," says **Angie Hammons**, manager of educational technology at Missouri S&T.

## ASM TOOLKIT SUPPORTS MATERIALS SCIENCE AND ENGINEERING

Missouri S&T was one of three colleges to receive a materials design software and database package called the American Society for Metals Materials Genome Toolkit.

The kit includes a three-year, multi-user license to a package of Thermo-Calc Software. It will help give materials science and engineering students design skills they can use in research in industry or on federally funded projects.

It will also help them understand subjects like thermodynamics, kinetics and phase transformations, all of which are crucial in materials engineering.

## IN PRINT

**Susan Murray**, professor of engineering management and interim chair of psychological science, and **Matthew Thimgan**, assistant professor of biological sciences, published *Human Fatigue Risk Factors*.

## STUDENT ESSAY SHOWS HOW WOMEN SUCCEED AT S&T



If you know a woman who is on the fence about whether Missouri S&T is the right school for her, **Elizabeth Mulina** will tell her that S&T is a place where women can succeed.

The business and information systems and technology major from O'Fallon, Mo., wrote an essay titled "What You Should Know If You're Female and About to Attend Missouri S&T" for the online publication *Odyssey* this past spring. In it she outlined her reasons for choosing Missouri S&T, including the "endless opportunities for women to get involved."

She says Missouri S&T is "unlike most universities," but from her perspective the campus allows students to find the academic and social paths that are right for them.

"When we say you can truly be yourself on this campus, we mean it," she writes.

---

## GROWING ENTREPRENEURSHIP

Budding entrepreneurs in Missouri can earn funding while working with business experts to transform big ideas into new technologies that benefit society through the National Science Foundation's Innovation Corps program at Missouri S&T.

S&T houses the only I-Corps site in the state. It offers entrepreneurial education with both collaborative experiential learning and business best practices that can help move startups into the marketplace.

The curriculum includes innovation- and entrepreneurship-based courses offered in computer science, engineering management and economics.

The program is accepting applications, which on acceptance provides a \$3,000 stipend for materials or product-promotion travel. All interested Missouri-based students, businesses, academics and groups are invited to apply at [i-corps.mst.edu/application](http://i-corps.mst.edu/application).

HOMEcoming 2016:

# MINERFEST IN REVIEW

Photos by Sam O'Keefe and Jesse Cureton



During Homecoming, the Miner Alumni Association honored eight alumni and a faculty member for their accomplishments and their devotion to the association, the campus and its students.

Selected from an impressive list of nominees, the awardees received special recognition during the Miner Legends Luncheon.

Pictured above from left are:

**Pam Leitnerman**, Math'75, retired marketing program manager, Hewlett-Packard Co., Robert V. Wolf Alumni Service Award

**Xiaoliang Cheng**, PhD Chem'10, president, Wuhan Quality Life Technology Co., Distinguished Young Alumni Award

**Craig Barnes**, ME'78, retired executive director of technology strategy, Cummins, Alumni Achievement Award

**Jillian Beth Schmidt**, assistant teaching professor, mechanical and aerospace engineering, Class of '42 Excellence in Teaching Award

**Bill Kennedy**, president and CEO, Jack Kennedy Metal Products and Building Inc., Honorary Life Member Award

**Katherine Wasem**, MetE'99, vice president, G&S Foundry, Distinguished Young Alumni Award

**Jorge Ochoa**, ME'85, principal engineer, Exponent Inc., Alumni Achievement Award

**Thomas Feger**, CE'69, special consultant, Hanson Professional Services Inc., Frank H. Mackaman Volunteer Service Award

**John Lovitt**, MS CSci'70, chief executive officer, Pattern Insight (retired); adjunct professor, Missouri S&T, Alumni Merit Award.

1. **David Cress** (left), assistant teaching professor of arts, languages, and philosophy, leads a small jazz combo before Friday's Miner Legends Luncheon.
2. **Greg Skannal**, GeoE'85 (left), connects with **Hugh Cole**, EMgt'72, and others at the luncheon.
3. S&T student design teams display their work to alumni and friends during the Silver and Gold Gathering at Hasselmann Alumni House.





## ALUMNI TAKE LEADERSHIP ROLES IN ASSOCIATION

During its annual Homecoming meeting on Oct. 15, the Miner Alumni Association approved the following new and returning board members. We welcome them and thank the departing members for their dedication and loyalty to Missouri S&T and the Miner Alumni Association.

### Executive board

**Helene Hardy-Pierce**, EMgt'83, president  
**Stephen Rector**, PetE'72, MS PetE'73, president-elect  
**Ernest Banks**, ChE'81, vice president  
**Kurt Haslag**, CE'07, vice president  
**Delores Hinkle**, PetE'75, vice president  
**Ronald Jagels**, CE'86, MS EMgt'91, vice president  
**Michael McEvilly**, CE'80, MS EMgt'81, vice president  
**Christopher Ramsay**, MetE'83, MS MetE'85, vice president  
**Keith Wedge**, GGph'70, MS GGph'71, PhD GGph'73, treasurer  
**William Brune**, CSci'73, secretary

### Incoming board members

**George Schindler**, EE'73, director-at-large  
**Rhonda Pautler**, MetE'87, Area 1 director  
**Joshua Hoffman**, MinE'07, Area 2 director  
**Danny Ryan**, ME'12, Area 3 director (second term)  
**Michael Gross**, MetE'88, MS MetE'94, Area 9 director (second term)  
**Elizabeth Baumbach**, CerE'90, Area 10-18 director (second term)  
**Steven Puzach**, CE'09, Area 10-18 director  
**Carl Schmitz**, IST'10, Area 10-18 director  
**Chadwell Vail**, ChE'05, Area 10-18 director  
**John R. Campbell**, ChE'74, Area 20 director (second term)  
**Kimberly Morrison**, GeoE'96, Area 22 director (second term)  
**Pete Heerboth**, CSci'03, Area 23 director  
**David W. Heineck**, ChE'79, Area 24 director (second term)

### Departing board members

**Michael Busby**, CE'78, Area 10-18 director  
**Rich Eimer**, EE'71, president  
**Russell Goldammer**, CE'78, MS EMgt'79, Area 10-18 director  
**Dennis Leitertman**, EE'76, MS EE'77, Area 23 director  
**Doug Marquart**, MetE'82, Area 1 director  
**Stephen Schrock**, ArchE'11, Area 2 director







1



3



2



4





1. Some of the S&T swag available at the Oct. 15 Homecoming tailgate.
2. The Gold Miner Dance Team shares a bit of school spirit at the tailgate.
3. Alumni, students and friends enjoy a festive game-day atmosphere during the tailgate party.
4. The Miners rumble to a victory over the Lincoln Blue Tigers.
5. The Student Union Board sponsored the second annual MinerFest Homecoming parade.
6. The Miner Marching Band performs in the parade.
7. S&T mascot Joe Miner pumps up spectators.

## NEW CLASSROOM, LAB SPACE AT THE EXPERIMENTAL MINE



**Bill Kennedy** (above), president and CEO of Jack Kennedy Metal Products and Building Inc., gave the lead gift to support construction of the new Kennedy Experimental Mine Building at Missouri S&T. The 15,000-square-foot, two-story learning center will house classrooms, laboratories, mine rescue and mucking stations, offices, and equipment space.

The project was partially funded by state legislature-approved capital appropriations supporting a new learning center at Missouri S&T. As part of the Higher Education Capital Fund's requirements, S&T had to raise half of the costs from private donations or grants.

Kennedy and his company made an in-kind gift of a metal building valued at \$850,000. Additional gifts from The Doe Run Co.; Mississippi Lime Co.; Newmont Mining Corp.; Peabody Energy Corp.; and **Dianna Tickner**, MinE'79, contributed to the total. These private gifts, combined with the state resources, funded the \$2.4 million project. Guided tours of the facility (pictured below) gave the more than 100 attendees a chance to see the progress through construction.







# EXPLAINING ATOMIC MOTION

By laser-cooling atoms and studying their movements, a Missouri S&T physicist hopes to better understand how environmental factors affect atoms and their components.





## S&T INCREASES FUNDING FOR GRADUATE STUDENTS

Missouri S&T is investing \$3 million in new funds to help attract more qualified Ph.D. and graduate students and strengthen the university's research programs.

The initiative began this past fall and will cover the tuition and supplemental fees for qualified students in all Missouri S&T Ph.D. programs. The same coverage extends to similarly qualified students pursuing master's degrees in departments where a Ph.D. is not offered.

More information about Missouri S&T's graduate programs is available at [grad.mst.edu](http://grad.mst.edu).

**D**aniel Fischer, assistant professor of physics, uses laser beams to trap lithium atoms in a magnetic field inside a custom-built vacuum chamber. He then ionizes them using different lasers and, with the aid of a high-resolution momentum microscope, measures the distance and velocity they travel.

"It can be extremely challenging to predict the motion of three or more particles due to their mutual forces," Fischer says. "This complex interplay of several particles requires a combination of theoretical and experimental research because such systems cannot be fully described by mathematical expressions alone."

**"These few-body problems have both fundamental and technological relevance for the future."**

This is what physicists refer to as the "few-body problem," which continues to confound the physics world.

"These few-body problems have both fundamental and technological relevance for the future," he says. "For example, if you destroy a cancerous cell in a body, the destruction of the genetic material is not only driven by their direct absorption of radiation but also by the interaction with nearby molecules and surrounding liquids. By understanding how the atoms of these cells share the absorbed energy, we could better control localized treatments."

Few-body prediction could also be used in materials science, quantum chemistry, biological science and information processing, says Fischer.

Fischer's research was funded through a \$400,000 grant from the National Science Foundation's Early Career Development (CAREER) Program. ■



## \$100K GIFT FROM SUNDERLAND FOUNDATION HELPS FUND ACML

The Sunderland Foundation, the charitable arm of Overland Park, Kan., based Ash Grove Cement Co., donated \$100,000 to Missouri S&T to support construction of the planned Advanced Construction and Materials Laboratory (ACML).

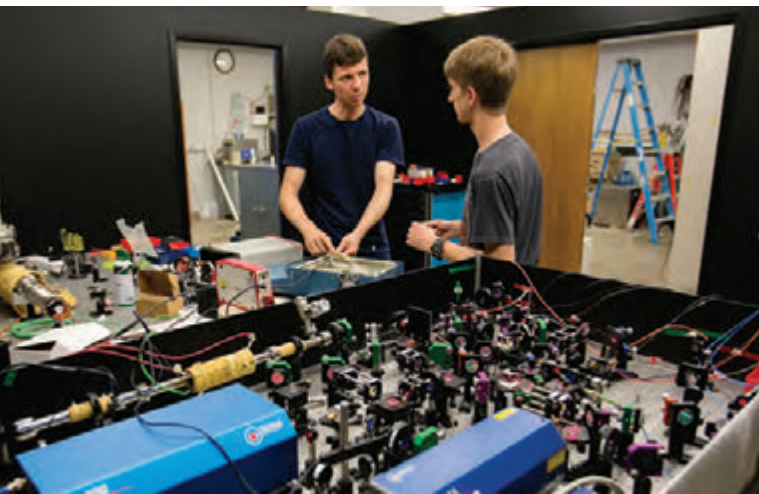
The laboratory will provide 12,600 square feet of research space for developing and testing new construction materials and methods.

"Infrastructure is the foundation that connects the nation's businesses, communities and people, driving our economy and improving our quality of life," says **Kamal H. Khayat**, lab director and the Vernon and Maralee Jones Professor of Civil Engineering at Missouri S&T. "The Advanced Construction and Materials Lab will help us realize our long-term vision of developing safer, more durable and longer-lasting civil infrastructure."

The ACML will also support Missouri S&T's Advanced Materials for Sustainable Infrastructure signature area. More than 35 pieces of testing equipment currently scattered across campus and at the Hy Point Industrial Park will be consolidated into the new research space.

Funding is still needed to complete the lab construction, and donors can double their support through dollar-for-dollar matching funds provided by a \$3 million gift from the estate of the late **James A. Heidman**, CE'65.

For more information on the ACML, contact **Sue Wallace**, associate director of advancement, at 573-466-3302, or [wallacesue@mst.edu](mailto:wallacesue@mst.edu).





# FORMULA FOR SUCCESS

Photo by Bob Phelan

Missouri S&T's Formula Car Design Team won first place out of 30 teams at the Formula North competition in June in Barrie, Ontario. The team also won endurance and autocross events during the competition. In May, the team took seventh place out of 117 teams at the Formula-SAE Michigan.







# BUILT FOR SPEED

Most high school guidance counselors encourage prospective college students to apply to as many as eight schools — from dream destinations to likely matches to safe selections where the odds of acceptance are sky-high.

At Timberland High School in the St. Louis suburb of Wentzville, **Jarrett Harkless** had little interest in that well-worn formula. A classroom poster of an open-wheel, student-designed and -built race car instead guided the sophomore mechanical and aerospace engineering major toward a different formula — the Formula SAE racing team at Missouri S&T, the lone university Harkless considered attending.

“That’s the biggest reason I’m here,” says Harkless, who in his third year on campus leads one of S&T’s oldest student design teams. “That poster is why I’m at the university. There was no other option. I was going to S&T, and that was it.”

Harkless caught the racing bug after taking a series of high school engineering classes through

Project Lead The Way, a nonprofit organization that works to boost K-12 education in computer science, engineering and biomedical science. Missouri S&T is the state affiliate for the national program, with hundreds of educators from across Missouri and the country coming to Rolla each summer for teacher training.

The Formula SAE team’s recent performance has been impressive.

In May, the squad finished seventh at a Michigan International Speedway event. Then came a first-place win in June at the Formula North competition in Toronto — a victory Harkless calls the first by a U.S. school at that event. That was soon followed by a fourth-place finish at a Lincoln, Neb., race that Harkless compares to the sport’s national championship. In the coming season, the team is ranked ninth in the world — out of 531 teams.

“We’re very proud of where we are as a team, going toe to toe with these giants and still doing really well,” he says.

“We’re very proud of where we are as a team, going toe to toe with these giants and still doing really well.”

The Formula SAE team is one of 18 student design teams at Missouri S&T. The student-led teams not only design and build race cars, rockets, robots, concrete canoes, solar homes and more, but also develop business and marketing plans while working with advisors both in industry and on campus.



# HORATIO ALGER SCHOLAR FINDS A HOME AT S&T

**A**fter spending most of her youth living off and on with relatives, **Mikayla Bridgewater** was homeless at age 15 — just days before her sophomore year of high school was to begin.

Her alcoholic mother was incapable of caring for her, so she spent her childhood being shuttled between relatives.

The living arrangements were often contentious, and by the time Bridgewater was about to become a high school sophomore, she found herself with no place to go.

A former babysitter opened her home to Bridgewater as the school year began, but Bridgewater faced the challenge of affording tuition at her private college-prep school, Cristo Rey Kansas City High School. With a mission of serving students with economic need, Cristo Rey is one of the most affordable private schools in Kansas City. But as Bridgewater entered 10th grade, she had a roof over her head but no financial support.

Bridgewater told high school counselors about her situation. They put her in touch with donors who agreed to cover her tuition and transportation costs until she could find work and cover those expenses herself.

That November, Bridgewater turned 16, found part-time work in a fast-food restaurant, began paying her own way and even reconciled with her aunt and moved back in with her.

The interventions — by a former babysitter, school counselors and donors — combined with Bridgewater's determination, paid off. She kept working and studied hard, knowing that good grades would be key to her future success.

**"I want to create a scholarship for kids in need. I want to be able to help them have the same opportunity that I've been given."**

"That was my first year of straight A's," she says. "I was really focused and determined."

Last spring, Bridgewater graduated as valedictorian of her high school class. Now, thanks to support from the Dell Scholars Program and the Horatio Alger Association, she

is studying environmental engineering and chemical engineering at Missouri S&T.

In the mid-1800s, American author Horatio Alger wrote popular rags-to-riches novels about children born in hardship who went on to become successful in life through their hard work. Today, the Horatio Alger Association awards scholarships each year to a select group of high school seniors who succeed despite their misfortunes. Bridgewater is one of this year's Horatio Alger Scholars.

She also received funding through a scholarship program established by the Michael and Susan Dell Foundation, which supports "low-income, highly motivated students" who "demonstrate the drive to succeed despite personal obstacles."

Bridgewater certainly fits that description.

When she finishes college and begins her career, Bridgewater plans to establish a scholarship for students from disadvantaged backgrounds, like hers. "I want to create a scholarship for kids in need," she says. She already has two potential scholars in mind: two children of her cousins, now ages 3 and 1.

"I want to be able to help them have the same opportunity that I've been given," she says.





Wearable trackers, like the one designed by Alec Bayliff (left), Debraj De (center) and Sajal Das (right), could help train soldiers or rehabilitate hospital patients. The device, pictured below, is the size of a large wristwatch.

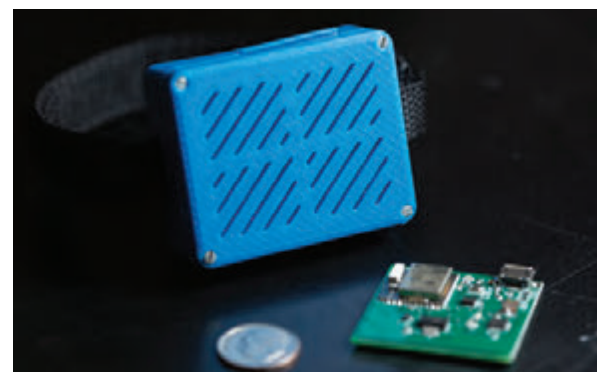
Imagine a device you can wear around your wrist, much like a Fitbit activity tracker. Unlike a Fitbit, however, this device not only tracks the steps you take in a day, but it also records movement and other bio-signals as well as information about the ambient environment.

**Debraj De**, a postdoctoral fellow in computer science, is working with **Sajal K. Das**, the Daniel C. St. Clair Endowed Chair and department chair in computer science at S&T, to develop just such a sensor. They say it can be used to track activities and behavior of people with dementia and could one day help with Army combat training. The pair are working with physicians at Phelps County Regional Medical Center in Rolla on testing as part of the Ozark Biomedical Initiative, a partnership between Missouri S&T and the hospital.

It looks like an oversized watch and has four basic functions. Like a fitness tracker, it records

fine-grained movement. It also measures the wearer's direct physical environment for temperature, humidity and barometric air pressure. It can track health status through heart rate, respiration rate and galvanic skin response, which can indicate the wearer's emotional state (indicating when a wearer is startled or agitated, for instance). The sensing device also functions like a GPS and communicates with Bluetooth beacons in proximity for various location contexts.

The device can be used a little differently for the Army. Benefits for the military include tracking respiration during rifle training to see



if recruits are gun shy — hesitant to squeeze the trigger because of noise or recoil. It could also study soldiers' physiological response to traumatic brain injury or exposure to pathogens.

The device is currently designed to be worn on the wrist, but smaller versions could be implanted in dog tags or incorporated into a military uniform, the researchers say.





# IN THE SWIM OF THINGS

By Mary Helen Stoltz, [mhstoltz@mst.edu](mailto:mhstoltz@mst.edu)  
Photos by Sam O'Keefe

## ENGINEERING STUDENT COMPETES IN OLYMPICS





“My mom always told me that if I wanted to compete, I should just go for it. Obviously I kept it up.”

For as long as he can remember, **Shawn Wallace** has loved the water, and swimming is his favorite pastime. This past summer, that pastime took him to the 2016 Summer Olympics in Rio de Janeiro.

Wallace began swimming competitively at age 8 as part of a neighborhood summer league in his Houston hometown. He joined Houston-based Alief Aquatic Club when he was 10.

“I always liked swimming,” says Wallace, a senior in civil engineering at Missouri S&T. “My mom always told me that if I wanted to compete, I should just go for it. Obviously I kept it up.”

Wallace has lived in Houston since he was 6, but he was born in the island nation of Palau, a series of over 500 islands in the Micronesian region of the western Pacific Ocean.

Wallace joined the national swimming team in Palau in 2011. He holds three Palauan long-course records: the 50-meter and 100-meter freestyle and the 50-meter butterfly. He also holds a short-course record in the 200-meter freestyle.

“Around 2010, I was a spectator at the Micronesian Games, and a very good coach I know introduced me to the team,” Wallace says. “He told the coaches he thought I could do great things for Palau.” Wallace showed Palau’s coaches what he was capable of, and the team invited him to compete in the World

Championships the following year. His first international competition was in Shanghai.

“Since then I’ve been to five world championship meets,” Wallace says. Between competitions and training trips, swimming has taken him to Guam, Japan, Spain, Turkey, Qatar, New Zealand, the Federated States of Micronesia, Papua New Guinea, Russia, Fiji and, of course, Brazil.

Wallace swam the 50-meter freestyle in the 2016 Summer Olympics in Rio and set a personal best time — and a national record for Palau. His time of 26.78 seconds, even though it is a record in his home country, was not fast enough to qualify for the Olympics. Instead, he entered under a Universality place.

Typically, a country can enter two qualified athletes for each event. However, countries that have no swimmers who reach the qualifying standards can still enter one swimmer of each gender under the Universality clause. Wallace was chosen based on his results at national and international meets.

Palau’s national team — which sent only two swimmers to the Rio games — is relatively small, especially compared to the U.S. team.

“We’re a very small country,” Wallace says of Palau. “The population of the entire country is only around 21,000 people. Swimming isn’t as predominant a sport as in some other countries.”

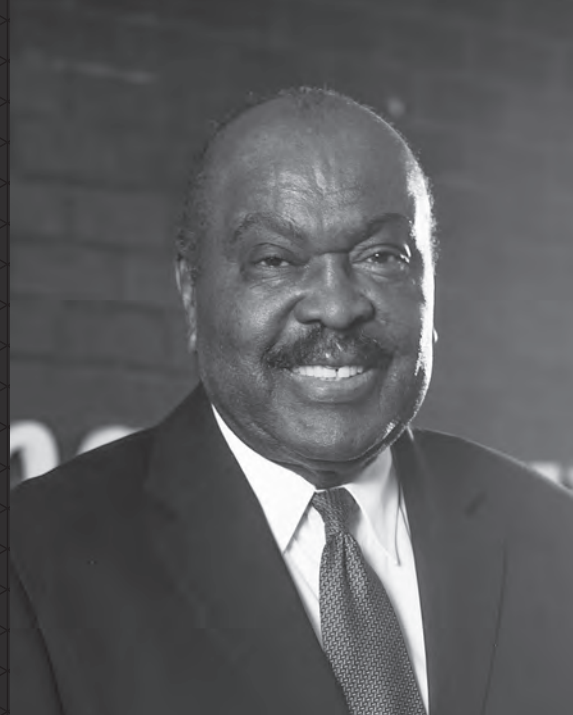
When classes are in session at Missouri S&T, Wallace, who is a member of Triangle fraternity, swims and competes with the Rolla Fins Swim Club. He is training with hopes of returning to Olympic waters in 2020.

Wallace hopes his fellow Fins swimmers — and any other athletes — follow their dreams.

“If you believe you can do it, you have to be disciplined,” Wallace says. “You’re going to have to make some tough decisions in your life that you may not like at the time — like training instead of hanging out with your friends. But it is all worth it. When you look back, you’ll thank yourself for doing it.” ■



# ALUMNI OF INFLUENCE







# ABOVE AND BEYOND

By Maridel Allinder, [allinderm@mst.edu](mailto:allinderm@mst.edu)

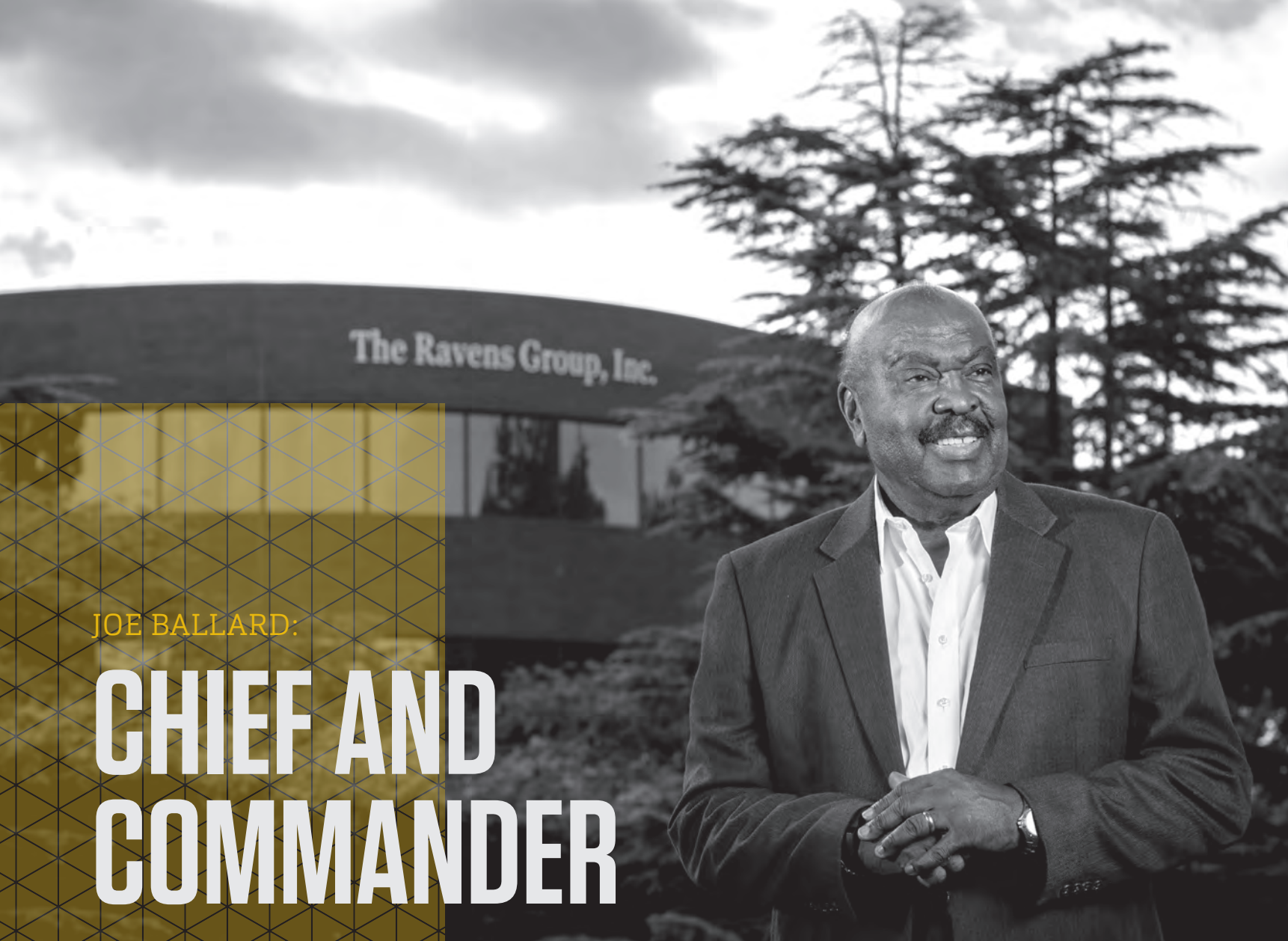
If influence is about shaping outcomes, the 10 alumni spotlighted on these pages have achieved remarkable results. Across diverse fields and demanding challenges, they have made a difference through the power of technology, the sure footing of national security, the engine of job creation, the exploration of outer space and earth's resources — and as builders raising the roof on a better quality of life.

Their achievements differ a great deal, but their paths share a similar arc. As students, they forged their future in Rolla's classrooms and labs. As leaders, they found their calling at the forefront of their professional fields. As Miners, they raised Missouri S&T's reputation for excellence. And now, as Alumni of Influence, they have earned the university's highest honor.

Five years ago, Missouri S&T's first Alumni of Influence celebration launched a new tradition. That historic gathering in November 2011 marked a milestone as the campus community and alumni nationwide gathered to honor a distinguished group of graduates for their legacy of influence.

The tradition continued this past November, with a gala honoring our 2016 Alumni of Influence. While the group portrait published on page 52 captures the collective spirit of our honorees, it is in their individual stories that we find influence to the power of 10. They are stories about bold moves, better ideas and bootstrapping. They are also stories about big hearts and giving back. We salute these Miners for the lasting impact of their leadership and service — and we thank them for making the world a better place.



A black and white photograph of Joe Ballard, a man with a mustache, wearing a dark suit jacket over a light-colored button-down shirt. He is standing outdoors with his hands clasped in front of him. In the background, there is a building with a curved roof and the text "The Ravens Group, Inc." visible. To the right of the building are several tall evergreen trees under a cloudy sky.

The Ravens Group, Inc.

JOE BALLARD:

# CHIEF AND COMMANDER

**Joe Ballard, MS EMgt'72, says it was Chicago winters, the Army — and Bernard Sarchet — that brought him to Rolla.**

After earning a bachelor's degree in electrical engineering from Southern University in Baton Rouge, La., and completing two tours of duty in Vietnam, Ballard joined Illinois Bell in Chicago. "But it was just too cold for me," he says. "I was looking for another job when I received a letter from the Army asking me to return to active duty and offering to pay for a graduate degree."

There was only one hitch: Ballard and the Army couldn't agree on the degree program. "I wanted an MBA, and the Army wanted me to get a master's in electrical engineering," he says. "Then someone mentioned a new program in engineering management started by a man named **Bernard Sarchet**. I called him, we talked, and I ended up leaving Chicago

for Rolla. It was probably the best thing that ever happened to me."

Ballard, now a retired lieutenant general, served in the Army for more than three decades in leadership positions from Korea to Germany to the Pentagon. In 1996, President Bill Clinton appointed him chief and commander of the U.S. Army Corps of Engineers, a federal agency responsible for a huge infrastructure encompassing hundreds of harbors and dams, thousands of miles of waterways and power plants producing nearly a quarter of the nation's hydroelectric power.

"I'd never worked on the civil works side of the Army," says Ballard, the first African-American to serve as chief and commander. "It





“I ENDED UP LEAVING  
CHICAGO FOR ROLLA.  
IT WAS PROBABLY THE  
BEST THING THAT EVER  
HAPPENED TO ME.”

was a culture shock. I spent the first two years reorganizing the corps into more of a business organization focused on project management.”

After his retirement in 2000, Ballard made good on a promise to his family to “plant a tree and build a house around it.” After so many years of Army moves, they wanted to settle down. Ballard also planted new roots in 2001 when he founded the Ravens Group, a company that provides professional services and technical support to U.S. government agencies. (The company name comes from the poem by Edgar Allan Poe, who captured Ballard’s imagination as a 7th-grader assigned to research him.)

Ballard also credits another childhood influence with shaping his future — a neighbor

and U.S. Navy veteran who had a home business repairing appliances. “He got me interested in electronics, and he encouraged me to study engineering,” Ballard says. “He was my first real mentor.”

Ballard is grateful for the opportunities that took him from a segregated sawmill town in Louisiana to Capitol Hill. And he is determined to open doors for future generations. In 2014, he and his wife, **Tessie**, launched the Ravens Group Challenge at Missouri S&T with matching funding for new scholarship endowments benefiting African-American students.

“One of the lessons I learned early in life was that no matter how hard you work, someone has to be willing to open the door and let you in,” Ballard says. “Scholarships open the door.” ▣

## Academy of Professional Development



Photos by Jeffrey David Lautenberger





BOB BRACKBILL:

# PETROLEUM PIONEER

Photos by Gerald J. McCarthy



**Bob Brackbill, MinE'42, remembers the day he put his career plans on hold to serve his country. It was a December afternoon in 1941, and he was hanging out with the guys at the Sigma Nu house in Rolla.**

"It was Sunday, and some of the fellows had gone home for the weekend," says Brackbill. "We were gathered in the chapter room listening to music on the radio. All of a sudden, President Roosevelt came on and announced that we had declared war on Japan. We were stunned."

Brackbill already had a job lined up with Shell Oil Co., but he enlisted in the Army Air Corps cadet training program at Yale University. He earned the rank of major, flew five missions with a B-17 bomb group, including two over Berlin, and was awarded the Bronze Star Medal.

After the war, he took up where he left off — in the oil fields. In 1946, Shell sent him to western Oklahoma to oversee the drilling of one of the deeper wells in the world at the time.

## "WE USED TECHNIQUES THAT HAD NEVER BEEN USED BEFORE."

"We used techniques that had never been used before," says Brackbill, a pioneer in the development of wellsite analysis and testing to determine reservoir production capabilities.

One of his next assignments took him to the Northwest Territories of Canada to drill wildcat oil wells. "It was 67 degrees the day I left Tulsa and minus 40 degrees by the time I got to Calgary," says Brackbill. "We waited for the muskeg swamps to freeze so we could skid drilling rigs and housing in on skis."

Brackbill's career with Shell took him to the top as the New York City-based chief executive for petroleum engineering before he was recruited to lead Texas Pacific Oil Co., where his engineers oversaw a landmark project: the conversion of an ore freighter into a drillship that drilled many wells in the Gulf of Thailand and offshore of the Philippines.

When he retired as chair of Texas Pacific, Brackbill bought a few drilling rigs with some business partners and co-founded Robertson Onshore Drilling as chair. The company's strategy — providing small operators with tightly engineered and managed drilling at a fixed rate — proved lucrative. "When we sold the company and our 15 drilling rigs, it returned nearly eight times our initial investment," he says.

Today, this oilman's legacy reaches from the industry he loved to the university he has strengthened with his service as president of the alumni association board and a member of the Academy of Mines and Metallurgy. A trustee emeritus and recipient of an honorary doctor of engineering degree and the Chancellor Medal, he has supported scholarships (including the Class of '42 Scholarship he helped to found with his classmates) and other major projects, including the state-of-the-art classroom in McNutt Hall he funded with his late wife, **Cay**, their daughter, **Mary Hargis**, GeoE'84, and son-in-law, **Mark Hargis**, GeoE'84.

"I didn't have anything when I got to Rolla," says Brackbill, who worked 10 hours a day as an office mail boy in St. Louis to save the money for his first semester. "I want to help students become engineers because our future depends on them." ■





BOB BRINKMANN:

# BUILDER AND BIG THINKER



“WE’RE BIG ON  
MENTORING —  
AND WE’RE ALSO BIG  
ON GIVING BACK.”



Photos by Sam O’Keefe\Missouri S&T

## Bob Brinkmann, CE’71, credits a mindset he calls looking for “the second right answer” with growing the company he founded more than 30 years ago.

“Engineers are problem solvers, so they look for the first right answer and move on,” says Brinkmann, founder and CEO of Brinkmann Constructors. “The biggest task is getting them to look for the second right answer, which may be a better solution.”

Brinkmann credits this emphasis on creative problem solving with building the company into an industry leader with a 30-state, \$3 billion project portfolio. “We are a service organization as much as a construction company,” he says.

After graduating from Rolla with a degree in civil engineering, Brinkmann joined the Illinois Department of Transportation and worked on the construction of Interstate 64 from St. Louis to Virginia. “I was usually in the middle of nowhere on a stretch of highway with a

survey crew,” he says. “I spent a lot of time blue-topping a sledgehammer.”

During the next decade, jobs with construction companies taught him how the business works — and how it could be done better. In 1984 he founded the R.G. Brinkmann Co. The first two years were a struggle, but by the end of the third year business had tripled.

“I went through every nickel I had that first couple of years,” Brinkmann says. “Being an entrepreneur is about hard work and risk.”

While the company is known today for the client service that brings 80 percent of customers back, its founder says the best part of the business will always be building stuff.

“The fun is being in your boots putting the footings in,” says Brinkmann, who has two

other passions that have shaped the company — mentoring and giving back.

Every employee has a mentor, and every employee participates in Monday training sessions that take place 52 weeks a year.

“Mentoring in the formal sense didn’t exist when I was coming up through the ranks,” Brinkmann says. “My mentors were superintendents and carpenters. We’re big on mentoring — and we’re also big on giving back. Everyone should be involved in a charity.”

For many years, Brinkmann and his wife, **Kim**, hosted a gala in their home to raise money for S&T student design teams. Brinkmann was also among the first donors to the Kummer Student Design Center, and he recently completed a two-year term as president of the S&T Board of Trustees.

Brinkmann Constructors celebrated two milestones in 2014: its 30th anniversary and the sale of the company to employees through an Employee Stock Ownership Plan. “Who better to own the company than the people who built it?” says Brinkmann. ■





MATT COCO:

# TRUE AND TIRELESS BELIEVER

**Matt Coco**, CE'66, was a student the first time he served on the Phi Kappa Theta building committee after a fire destroyed his fraternity house in 1964. "I wanted the new house to have a red brick exterior and a fireplace," he says. "I didn't get either."

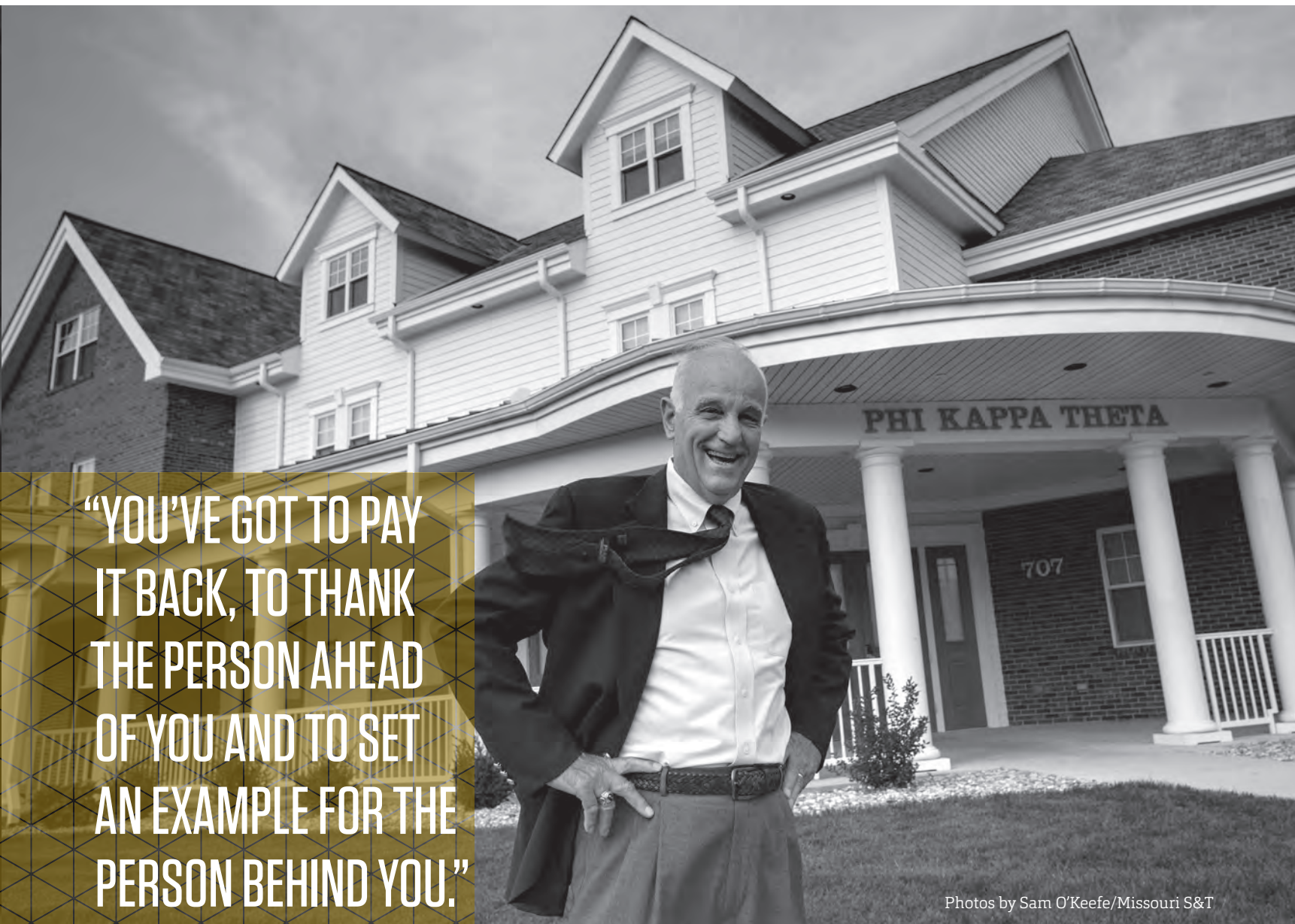
Fifty years later, as the volunteer project manager overseeing the construction of Phi Kappa Theta's current campus home, he got both.

Things have a way of coming full circle for Coco. He has a cookie story to prove it.

"It was a party weekend on campus, and I asked a girl from St. Louis but she couldn't make it," says Coco. "Friday night I was out with friends, and when we returned to the house, there was a girl sitting on the steps. She said she had a box of cookies to deliver to Matt Coco."

The cookies were from the girl he'd invited to be his date. But it was the courier who turned out to be his destiny: they were married a few years later.

Today, the Kathleen and Matteo Coco Great Room in Hasselmann Alumni House bears the names of the couple those cookies brought together. The Miner Alumni Association named the room in recognition of Coco's extraordinary service on the largest project in association history, Hasselmann Alumni House.



“YOU’VE GOT TO PAY IT BACK, TO THANK THE PERSON AHEAD OF YOU AND TO SET AN EXAMPLE FOR THE PERSON BEHIND YOU.”

Photos by Sam O’Keefe/Missouri S&T

Coco spent more than two years involved in every detail of the undertaking, from fundraising and land acquisition to design and construction. In March 2015, at a standing-room-only dedication ceremony, the alumni association announced its naming gift honoring Coco and his late wife.

“Many individuals put their heart and soul into this project, but Matt made it his full-time job — without any compensation except our gratitude,” said Miner Alumni Association Executive Vice President **Darlene Ramsay**, MetE’84, speaking to the packed house. “He oversaw every detail of this monumental project as if it were his own home.”

To anyone who knows him, it was classic Coco.

After graduating from Missouri S&T with a civil engineering degree, Coco joined St. Louis-based Alberici Constructors and went

on to a 40-year career with the company, working on hundreds of projects across the United States.

“I’ve built everything from rocket plants to a hockey rink,” says Coco, a former alumni association president and S&T trustee who retired from Alberici in 2006 as vice president of the building division. “I enjoy the construction process, especially industrial construction because you have to make sure something works.”

Coco’s enthusiasm for making things work is matched by his commitment to making a difference, whether as a member of the Academy of Civil Engineers, a scholarship donor or a fan cheering at a Miner football game.

“You’ve got to pay it back, to thank the person ahead of you and to set an example for the person behind you,” says the guy who hasn’t missed a Homecoming weekend in 50 years. ▣



Photos by Gerald J. McCarthy

ROGER DORF:

# COMMUNICATIONS PIONEER





As a commuter student, **Roger Dorf**, ME'65, carpooled to Rolla to earn his degree. On days when he finished classes before the others riding with him, he'd head to the student union to study. But what Dorf remembers most about those afternoons is the magical hour when studying succumbed to slapstick.

"Every day around 4 p.m., when it was time for *The Three Stooges*, the TV room was packed," he says. "You couldn't find a seat. I laugh when I think about all those serious engineering students getting their daily dose of comic relief."

With "a love of cars, farm equipment and pretty much all machinery," Dorf chose to major in mechanical engineering. Then, as a co-op student with IBM, he gained a fortuitous foothold in the explosive-growth computer industry that led to a 21-year career with the company.

"I started in the industry when an IBM mainframe took up an entire room and touch-tone dialing was the cutting edge," says Dorf, who worked on the manufacturing side of the company as "a guy making parts." After completing a master's degree in engineering and manufacturing at Boston University, he transitioned into management.

During the next 40 years, he worked at the front line of a communications revolution, bringing cellular service and wireless networking to countries from Honduras to Mauritius to Bulgaria. "It's been absolutely fascinating," he says, "and it has made a difference in so many lives, especially in rural areas."

In a career filled with executive leadership roles, Dorf served as chief operating officer of AT&T Paradyne, vice president of AT&T Network Systems in the Caribbean and Latin America, vice president and general manager of Nortel Networks Broadband Access, president and CEO of Navini Networks, and general manager and vice president of Cisco Systems Broadband Wireless Group. He retired from Cisco in 2009.

As a former president of the Board of Trustees, former president of the Academy of Mechanical and Aerospace Engineers, and a generous donor to countless Missouri S&T initiatives including scholarships, lab funds, new buildings, student design teams and athletics, Dorf continues to invest in the future — and the lives of those who will lead it.

"Education is the No. 1 leveler in the world," he says. "Engineering education is the No. 1 escalator." ▣

"I STARTED IN THE INDUSTRY WHEN AN IBM MAINFRAME TOOK UP AN ENTIRE ROOM AND TOUCH-TONE DIALING WAS THE CUTTING EDGE."







BIPIN DOSHI:

# INDUSTRY CHAMPION

Photos by Matthew Cashore



## “MAKING THE TRANSITION FROM THE CORPORATE WORLD TO PRIVATE BUSINESS WAS A GOOD CHALLENGE.”

Nearly 30 years ago, **Bipin Doshi**, ChE'62, MS ChE'63, left corporate America to buy a struggling gear manufacturing company. As a chemical engineer, his expertise did not encompass gears, axles or transmissions, but he believed he could turn the company around.

He was right. Since Doshi bought Schafer Gear Works in 1988, the company's annual revenue has increased 30-fold, and the number of employees has grown from 50 to over 300.

“Making the transition from the corporate world to private business was a good challenge,” says Doshi, who was no stranger to transition or challenge. At age 20, he traveled 8,000 miles from India to Rolla to study chemical engineering (after earning a bachelor's degree in chemistry at the University of Bombay).

“I came to America with nothing but the suit on my back,” says Doshi, who now serves on Missouri S&T's Board of Trustees. “I was actually wearing it when I landed. Good thing, too, because it was January and there was 8 inches of snow on the ground.”

After earning bachelor's and master's degrees in chemical engineering, Doshi joined the U.S. Rubber Co. (later Uniroyal) as a research engineer in the chemical division. Over the next 20 years, he advanced from process engineer to project manager to vice president of a company subsidiary.

Then, as Doshi puts it, “the corporate raiders of the 1980s came on the scene.” Massive changes were occurring in the corporate world, and Uniroyal was no exception.

“Uniroyal was selling off subsidiaries, and I attempted to buy the one I was running,” he says. “I didn't succeed, but my quest eventually led me to Schafer Gear Works.” He credits his wife, **Linda**, with being his sounding board.

“When you go out on your own, you need a strong business partner,” he says.

In July 2016, he completed the acquisition of another company, his sixth since purchasing Schaefer 28 years ago. “The new acquisition was a good strategic fit for us,” says Doshi, who has guided the company into a strong position serving industries as diverse as agriculture and the off-highway leisure market. “We design and manufacture machined parts for everything from golf carts and ATVs to conveyor belts and Segway.”

Today, as leaders in their industry and the community of South Bend, Ind., the Doshis are also generous contributors to higher education institutions, including Missouri S&T, where they were the first donors to step forward in support of the new chemical and biochemical engineering building after **Jim Bertelsmeyer**, ChE'66, announced his naming gift. The Doshis' major gift named the **Frank Conrad** Unit Operations Laboratory in memory of Doshi's mentor, advisor and friend.

“As a teacher, Dr. Conrad educated me in engineering principles, business ethics and behavior,” says Doshi. “As an advisor, he helped me chart my life path.” ■





DON GUNTHER:

# GLOBAL GROUND-BREAKER

“LIFE IS A  
LOT MORE  
MEANINGFUL  
WHEN YOU  
HAVE PROBLEMS  
TO SOLVE.”



Photos by Angela Seaman

In a construction career that took him from Iowa to Abu Dhabi, **Don Gunther**, CE'60, says that the toughest challenge he ever faced was in Canada, building the colossal Syncrude refinery in northern Alberta.

“The project was immense,” says Gunther, who retired as vice chair of the Bechtel Group in 1999. “We had 10-story cranes and more than 14,000 people working up there, 150 miles north of Edmonton. It was darn cold.”

Gunther's 40-year career with Bechtel, the nation's largest construction and engineering company, began with some advice from his father and fellow Miner, **Roy Gunther**, CE'27.

“When I graduated in 1960, my father said the whole world was moving to California, so I should go to work for the best construction company there,” says Gunther, who did his research, wrote to Bechtel and landed a job as a field engineer. His first project was building a fertilizer plant in Iowa. Before long, he had a résumé full of fertilizer plants.

After completing the Syncrude project, which still stands as a construction benchmark in the oil industry, Gunther took his talents into upper management, first as the head of Bechtel's refinery and chemical

division and soon as the head of an expanded division that included mining and government projects.

When Bechtel formed its first executive committee, Gunther was a founding member. Before long, he was in charge of the company's international division, where he led a reorganization. “We had a map of the world in our conference room,” Gunther says. “We asked ourselves ‘Where's the money to build things?’ Then we set up engineering offices in the 20 top markets.”

From India to Oman, the company was ahead of its time in promoting local procurement practices, cultural sensitivity and government relations. “When the big jobs came in, we were ready,” says Gunther. “We increased our international work considerably.”

After retiring from Bechtel, Gunther continued to consult for the company. He also went to work making things better for others.

As an original member and later chair of the Naples Winter Wine Festival, he has helped to raise more than \$150 million for the Naples Children & Education Foundation, which supports nonprofit agencies serving at-risk children in south Florida. As chair of the board of The Immokalee Foundation, he led efforts to provide scholarships for children of agricultural workers from the Caribbean and Latin America. He and his wife, **Rosemary**, also have supported Missouri S&T in many ways, including a scholarship endowment and major addition to Butler-Carlton Civil Engineering Hall.

“When I retired, I thought I'd buy a boat and play golf,” says Gunther, an S&T trustee emeritus and member of the Academy of Civil Engineers. “But I wasn't having any fun because I wanted to be needed. Life is a lot more meaningful when you have problems to solve. My Rolla education was basic training for that.” ■



Shaping the Future of Aerospace

International Space Station: A Journey of Discovery  
Presentations for guests, November 14-15, 2016



SANDRA MAGNUS:

# SPACE SOJOURNER AND SUPER ROLE MODEL

Photo by James Kirby Photography

For a woman who flew three space missions, including a four-month stint aboard the International Space Station conducting experiments, installing structural upgrades and blogging about it with children, **Sandra Magnus**, Phys'86, MS EE'90, is low-key about her legacy.

"I don't think we know what our greatest contributions are," says the former NASA mission specialist who now serves as executive director of the American Institute of Aeronautics and Astronautics. "I'm just hoping at least one young person I interacted with along the way was inspired to achieve a dream."

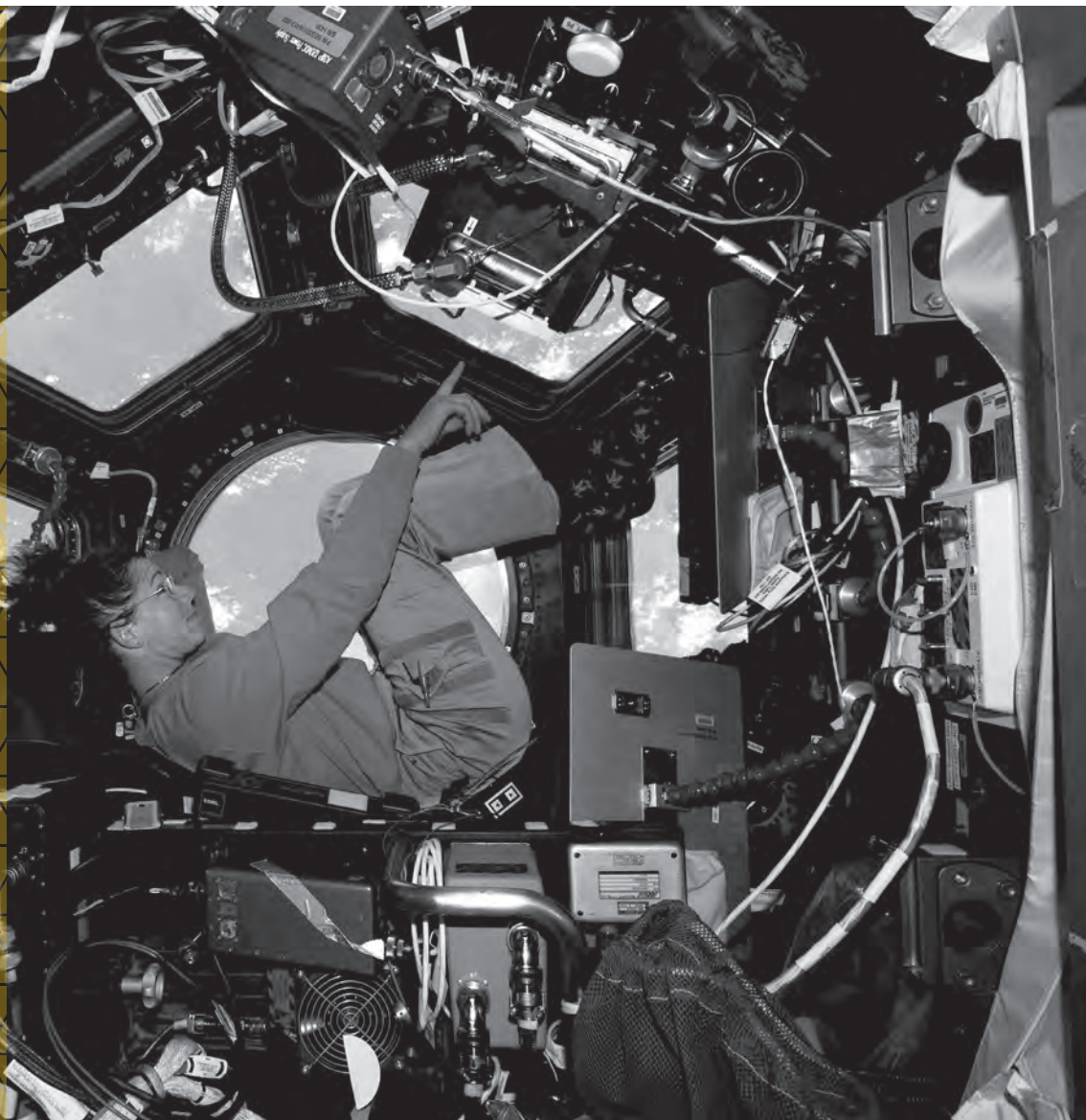
Last year, Magnus got her answer, when a young fan circled back as a college senior to say thanks.

"I was the guest speaker at a senior banquet at the University of Maryland," Magnus says. "After dinner, a young woman came up to me with a letter I wrote to her when she was 7. That was a special moment, especially since she was graduating with a degree in aerospace engineering."

Magnus flew her first mission to the International Space Station in 2002 aboard the space shuttle *Atlantis*. She returned to the space

“I WAS LUCKY  
BECAUSE  
THE WHOLE  
ARC OF MY  
CAREER WAS  
SPENT IN AN  
INTERNATIONAL  
ENVIRONMENT.”

Photo courtesy of NASA



station in 2008 for a four-month assignment as a science officer — and an inspiration to hundreds of children through her “spacebook” blog hosted by Missouri S&T. She made her last flight in 2011 as one of four crew members on the final journey of *Atlantis*, the mission that closed the book on NASA’s shuttle program.

“I was lucky because the whole arc of my career was spent in an international environment,” says Magnus, who holds a doctorate from Georgia Institute of Technology. “The NASA class of 1996 was the start of a transition. We were the International Space Station group.”

Magnus has witnessed the transformation of the space program from the Cold War tension of her childhood to the international cooperation of her years as an astronaut. Now she is

intrigued by the future of space exploration in the private sector: “It will be fascinating to see how the commercialization of space evolves and changes the industry.”

She continues to mentor future generations of scientists and engineers — and to make a difference at Missouri S&T. She visits campus to talk with students, and she supports the Kummer Student Design Center, the departments of physics and electrical and computer engineering, and athletics (Magnus was an intercollegiate soccer player).

Although she doesn’t spend much time beyond the reaches of gravity anymore, Magnus still enjoys a good space film. *The Martian* is her favorite for sentimental reasons. “It’s the only film that made me homesick for space,” she says. □





Photos by Steven B. Williams

DICK VITEK:  
**CHEMIST, ENTREPRENEUR  
AND CRUSADER**

“WHAT IS MORE  
IMPORTANT THAN  
IMPARTING KNOWLEDGE  
TO OTHERS SEEKING IT?”



**Dick Vitek, MS Chem’58, started his career as a research chemist — an archetypal scientist in a white lab coat mixing substances and studying the results. He worked for the Atomic Energy Commission producing uranium from ore. Then, as a scientist with Allied Chemical Co., he developed solid oxidizers for rockets and missiles for the U.S. space program’s Advanced Research Projects Agency — a project that led to his first patent.**

But it wasn’t until he went to work for Aldrich Chemical Co. that he found he had a talent for something else: business development. As the national sales and marketing director for Aldrich, he grew the company’s chemical sales exponentially — and learned a great deal about running a business.

In the late 1970s, Vitek founded three startups, including FOTODYNE, the first company to manufacture lab instruments for DNA research. “I was reading a chemistry journal and came across an article on how DNA

is visualized under UV radiation,” says Vitek, who earned his bachelor’s degree in chemistry at Albion College. “I knew I could build an instrument that would illuminate and photograph DNA.”

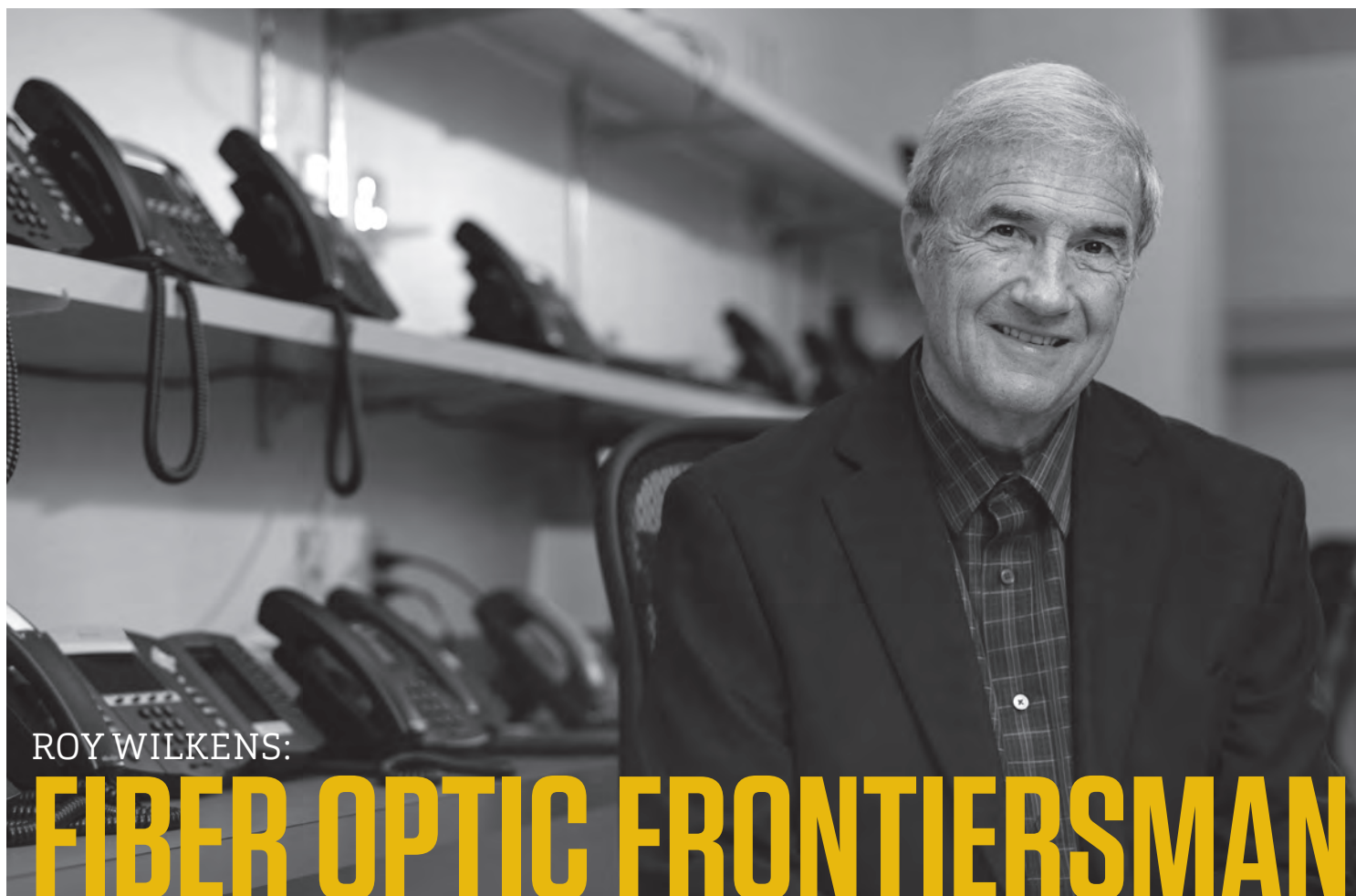
From that kernel of an idea grew a company that became a pioneer in molecular imaging. But the entrepreneur and crusader in Vitek didn’t stop there. Working with the U.S. Coast Guard, Vitek developed UV imaging instruments capable of analyzing oil spills to identify the tankers responsible. He then developed a method of testing arsenic levels in wine that made headlines and eventually led the Environmental Protection Agency to impose stricter limits on pesticide use in U.S. vineyards.

Vitek retired as chair and chief executive officer of FOTODYNE in 2002. He continues to make a difference through many philanthropic endeavors, including his support of the Vitek Institute for Robotic Surgery at Mission Hospital in Mission Viejo, Calif. At Missouri S&T, his legacy includes an endowed chair in biochemistry and a graduate fellowship in analytical chemistry. He is also a past president of the Board of Trustees and trustee emeritus, and co-founder of the S&T Foundation for Chemical Research.

Although Vitek says his greatest satisfaction comes from his contributions to environmental issues, he also cites FOTODYNE’s educational division, which offers teacher workshops, equipment loan programs and other resources dedicated to encouraging the next generation of molecular biologists.

“What is more important than imparting knowledge to others seeking it?” he asks. ■





ROY WILKENS:

# FIBER OPTIC FRONTIERSMAN

As the CEO of a major pipeline company, **Roy Wilkens**, EE'66, never expected to take an entrepreneurial risk midway through his career. But he had an idea that catapulted him from a corporate office suite to a basement startup operation with six employees.

He never regretted the move, and he went on to make headlines as the innovator who built a telecommunications network by stringing fiber optic cable through abandoned natural gas pipelines.

"I guess I had more of an entrepreneurial streak than I thought," says Wilkens, who was CEO of Williams Pipeline Co. in 1982 when the breakup of the Bell System monopoly opened the long distance communications market to competition.

"I saw the telecommunications industry exploding, and Williams Pipeline had a vast network of decommissioned oil and gas pipelines doing nothing," says Wilkens, who did what any self-respecting problem-solver does: He put two variables into an equation and found their commonality. In this case, the variables were pipelines and fiber optic cable.

In 1985 Wilkens launched WilTel as a business unit of The Williams Companies (then led by late Rolla alumnus **Vernon Jones**, CE'53). With an 11,000-mile fiber optic network, the company began providing long-distance service to customers as well as selling bandwidth to other carriers as a wholesaler.

"It was a time of enormous opportunity," says Wilkens. "Technology was moving extremely fast, and lots of people jumped into the industry. It was the wild, wild West for five to 10 years."

Although the telecommunications industry has circled back to dominance by a few carriers, another idea Wilkens championed revolutionized television broadcasting: video transmission via fiber optics rather than satellite. In 1990, a WilTel business unit, Vyvx, broke ground by using fiber optics to

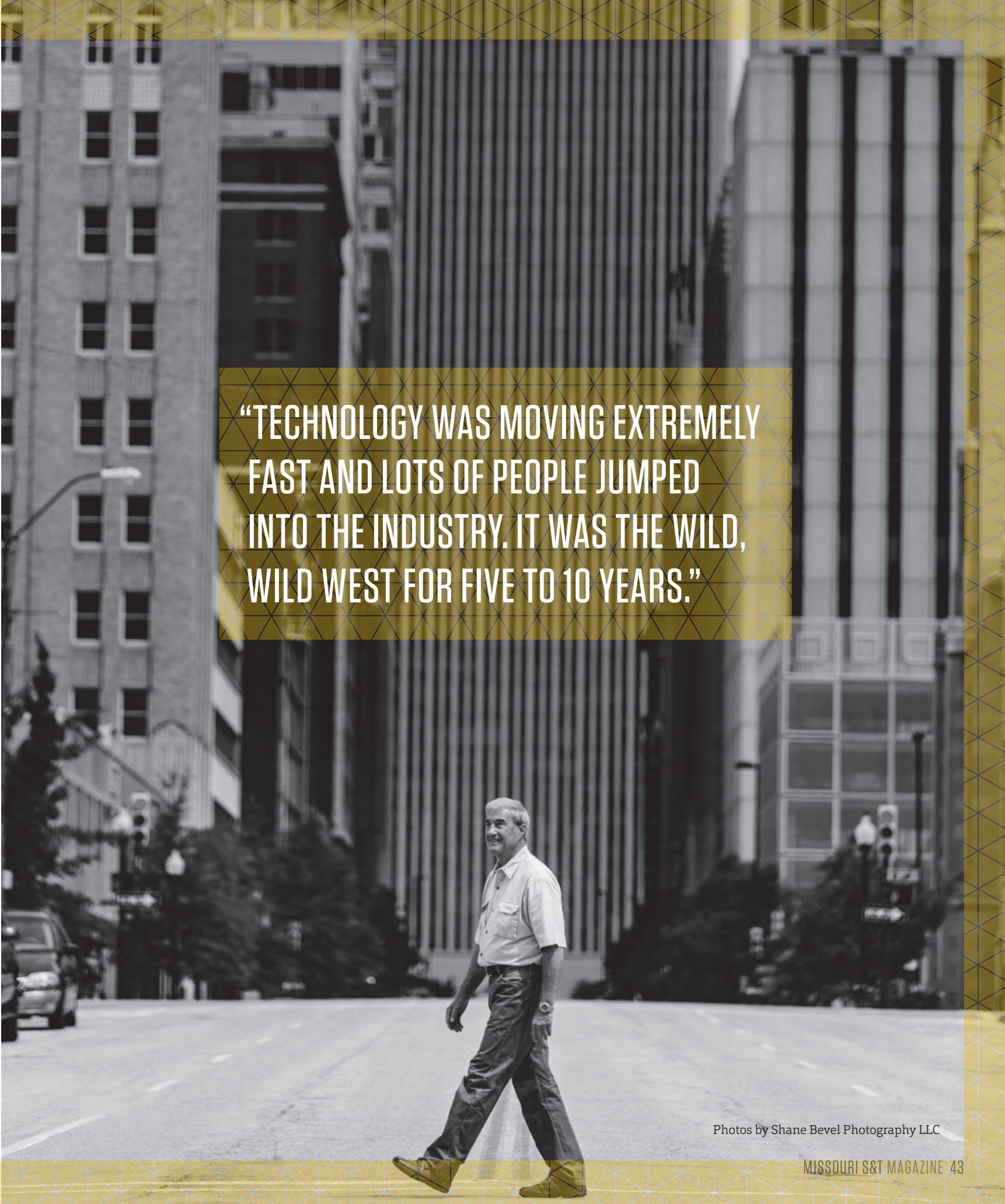
transmit video of Super Bowl XXIV from New Orleans to CBS. Today, Level 3 Vyvx continues to bring viewers some of the world's most watched television events.

In 1997, two years after LDDS Communications (later MCI WorldCom) acquired WilTel for \$2 billion, Wilkens retired from the company. He went on to become CEO of network services for McLeodUSA, co-founded Adaption Technologies and served as a director on numerous boards in the telecommunications private and public sectors.

An S&T trustee emeritus and member of the Academy of Electrical and Computer Engineering, Wilkens endowed a professorship in telecommunications at S&T in 2004. He also has supported many other university endeavors, including the Kummer Student Design Center.

For the risk-taker who looked at miles of buried steel pipe and saw a digital empire, there is no training ground for leading the charge into the entrepreneurial unknown.

"No matter what you study in school, you are never prepared," Wilkens says. "The only thing that prepares you is the ability to solve problems. I think that's the definition of an engineer — and the definition of a Rolla graduate." ■



“TECHNOLOGY WAS MOVING EXTREMELY  
FAST AND LOTS OF PEOPLE JUMPED  
INTO THE INDUSTRY. IT WAS THE WILD,  
WILD WEST FOR FIVE TO 10 YEARS.”

Photos by Shane Bevel Photography LLC







## THE INFINITY OF INFLUENCE UNVEILED

Dozens of Miner alumni, friends and guests from the Rolla community gathered outside Hasselmann Alumni House on Saturday, Nov. 5, for the unveiling and dedication of *The Infinity of Influence*.

This three-piece kinetic sculpture, which stands on the Vaninger Family Plaza outside Hasselmann Alumni House, was created to honor Missouri S&T's Alumni of Influence.

Following remarks by Chancellor **Cheryl B. Schrader** and **Darlene Ramsay**, assistant vice chancellor for university advancement, a curtain was dropped to unveil the sculpture. After the unveiling, guests were treated to high tea.

See the story at right for more information about the sculpture and its creator.



Photo by Iris McLister

## INFLUENCE IN MOTION: A NEW SCULPTURE HONORS S&T ALUMNI

**M**ark White's kinetic art starts with something familiar to every Rolla grad: problem-solving. The movement of his large-scale metal sculptures is often described as mesmerizing and meditative.

But make no mistake. Achieving this hypnotic quality is a complex balance of math, metal fabrication and Mother Nature.

"Making kinetic sculpture is first and foremost problem-solving," says White, the New Mexico-based artist who created the new art installation in the Vaninger Family Plaza at Hasselmann Alumni House. The site-specific piece, *The Infinity of Influence*, was dedicated during the university's Alumni of Influence celebration on Nov. 5.

By calculating movement and counter-movement, White creates 3-D works in copper and stainless steel that weave revolving optical illusions in the wind. His sculpture is designed to respond to wind velocity ranging from the slightest breeze to a 100-mph gale. "These pieces have to hold up in tough weather conditions," he says.

A native of Centralia, Ill., White earned a bachelor's degree in sociology from Southern

Illinois University and pursued graduate coursework in art as well as studying independently with American sculptor Lincoln Fox and Russian master Valentin Okorokov.

After a stint as a social worker and economic development planner, White returned to the job he did to put himself through college: creating architectural metal work for buildings. And this is where his second career was born.

"I started cutting out dance figures in copper because my daughter was a modern dancer at the time," says White. "I suspended them in the air like mobiles and watched them spin. Then I started abstracting everything to get to the essence of movement."

White's pieces are included in private and public collections nationwide. He has also completed many civic and corporate commissions for large-scale outdoor works. His sculpture owned by the late Joffrey Ballet co-founder Gerald Arpino was seen in the 2003 film, "The Company."

From his studio on Canyon Road in Santa Fe, White continues to make art melding metal and air. Meanwhile, the winds of south-central Missouri are moving his newest work in a tribute to influence on the Missouri S&T campus.







1



2



4



3



# 2016 ALUMNI OF INFLUENCE GALA

Missouri S&T rolled out the red carpet at Hasselmann Alumni House on Nov. 5 to commemorate the university's second Alumni of Influence Gala. Ten remarkable Miners were honored for their leadership and accomplishments. The following pages feature scenes from the evening.

1. Guests left their cars with the valet and entered the gala on a red carpet.
2. **Darlene Ramsay**, MetE'84, greets 2011 honoree **John Mathes**, CE'67, MS CE'68.
3. **Nuran Ercal**, the Richard K. Vitek/ Foundation for Chemical Research Endowed Chair in Biochemistry, visits with **Cynthia Tang**, Econ'85, and **Francisca Oboh-Ikuenobe**, interim chair of geosciences and geological and petroleum engineering.
4. Honorees and guests mingled during a reception before dinner in the Kathleen and Matteo Coco Great Room.
5. Alumni of Influence honoree **Bipin Doshi**, ChE'62, MS ChE'63, visits with 2011 Alumni of Influence honoree **John Fairbanks**, EE'71.
6. Honoree **Roy Wilkens**, EE'66 (second from right) poses with Dale Hubbard (left), Eric Wilkens (second from left) and Todd Wilkens (right).
7. **Ralph Flori**, PetE'79, MS PetE'81, PhD PetE'87, associate professor of petroleum engineering, poses with his wife, **Beverly**, Chem'79, MS Chem'85.
8. Current and former faculty were among the guests who turned out to help honor the 10 Alumni of Influence at the reception that kicked off the gala.



5



6



7



8



# 2016 ALUMNI OF INFLUENCE GALA

1. The Alumni of Influence Gala featured a dinner with elegantly adorned tables in the Kinyon-Koeppel Grand Hall.
2. A program of the evening's events was placed at every seat.
3. Chancellor **Cheryl B. Schrader** leads the evening's festivities.
4. The Kinyon-Koeppel Grand Hall is full of celebration during the program.
5. Col. **Tom Akers**, Math'73, MS Math'75, serves as master of ceremonies.
6. **Alyssa Snider**, a senior in petroleum engineering, escorts honoree **Bob Brackbill**, Mine'42.
7. **Elizabeth Bowles**, a Ph.D. candidate in chemistry, escorts honoree **Dick Vitek**, MS Chem'58.
8. **Racheal Lawal**, center, a senior in chemical engineering, recognizes honoree **Bipin Doshi**, ChE'62, MS ChE'63.
9. **Cody Seckfort**, a senior in geological engineering and an Army ROTC cadet, recognizes honoree **Joe Ballard**, MS EMgt'72.
10. The evening closed with a program honoring the Alumni of Influence. Current S&T students introduced themselves, recognized the honorees and spoke about the impact that each of them had on their lives.



1



2



3



4





5



8



6



7



9

10







## 2016 ALUMNI OF INFLUENCE GALA

1. Honoree **Roger Dorf**, ME'65, poses with his wife, **Sandra**.
2. A pianist entertains guests in the Kathleen and Matteo Coco Great Room.
3. Honoree **Bob Brinkmann**, CE'71, visits with **Jeff Schrader** and **Dan and Sarah Oerther**.
4. There were 180 alumni, faculty, staff, students and friends in attendance at the gala.
5. 2011 honoree **Jim Bertelsmeyer**, ChE'66, poses with his wife, **Glenda**.
6. Honoree **Joe Ballard**, MS EMgt'72, visits with guests during the reception.
7. **Matt O'Keefe**, MetE'85, chair of materials science and engineering, poses with honoree **Matt Coco**, CE'66, and **Ben Hackett**, a senior in mechanical engineering and Phi Kappa Theta member.
8. 2011 honoree **Gary Havener**, Math'62.
9. Hasselmann Alumni House lit up the night sky over Rolla for the Alumni of Influence gala. Banners on the porch honored each of the 10 honorees.





5



6



7



8

9





# ALUMNI **OF** INFLUENCE







Before the Alumni of Influence gala, the honorees gather for a group photo and a cocktail reception in the Black Box Theatre in Castleman Hall. Chancellor **Cheryl B. Schrader**, with **Joan Nesbitt**, vice chancellor for University Advancement, gave a toast to honor the 2016 Alumni of Influence.

Photo far left, front row from left: **Dick Vitek**, MS Chem'58; **Bob Brackbill**, MinE'42; and **Bipin Doshi**, ChE'62, MS ChE'63. Back row from left: **Roger Dorf**, ME'65; **Joe Ballard**, MS EMgt'72; **Roy Wilkens**, EE'66; **Matt Coco**, CE'66; and **Bob Brinkmann**, CE'71. Not pictured: **Sandra Magnus**, Phys'86, MS EE'90; and **Don Gunther**, CE'60, who were unable to attend the gala.



Missouri S&T launched a new tradition in 2011 when we honored our first Alumni of Influence. That initiative was a combined effort by the alumni, faculty, staff and students who selected our inaugural honorees. For this year's celebration, we asked a committee made up of our 2011 honorees to review nominations and make recommendations. We thank those who served on the selection committee, and we salute our full delegation — 2011 and 2016 honorees — for your high achievement, inspired leadership and dedicated service.

**Thomas Akers**, Math'73, MS Math'75  
**Dick Arnoldy**, CE'69, MS EMgt'73  
**Keith Bailey**, ME'64  
**Joe Ballard**, MS EMgt'72  
**Robert Bay**, CE'49  
**Jerry Bayless**, CE'59, MS CE'62  
**Jon Bereisa**, EE'67, MS EE'70  
**Jim Bertelsmeyer**, ChE'66  
**Bob Brackbill**, MinE'42  
**Bob Brinkmann**, CE'71  
**Philip Chen**, MS ME'65  
**Matt Coco**, CE'66  
**Delbert Day**, CerE'58  
**Roger Dorf**, ME'65  
**Bipin Doshi**, ChE'62, MS ChE'63  
**Farouk El-Baz**, MS GGph'61, PhD GGph'64  
**John Fairbanks**, EE'71  
**Gary Forsee**, CE'72  
**Don Gunther**, CE'60

**Gary Havener**, Math'62  
**Thomas Holmes**, MinE'50  
**Vernon Jones**, CE'53  
**Fred Kummer**, CE'55  
**Sandra Magnus**, Phys'86, MS EE'90  
**John Mathes**, CE'67, MS CE'68  
**George Mueller**, EE'39  
**Zebulun Nash**, ChE'72  
**Mariana Rodriguez**, CE'80  
**Richard Stegemeier**, PetE'50  
**Steve Sullivan**, EE'89  
**Cindy Tang**, Econ'85  
**John Toomey**, ME'49, MS ME'51  
**Ed Tuck**, EE'53  
**Dick Vitek**, MS Chem'58  
**Ted Weise**, EE'67  
**Gary White**, CE'85, MS CE'87  
**Roy Wilkens**, EE'66  
**Joan Woodard**, Math'73



# 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](http://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.

## PRESIDENT

Helene Hardy-Pierce '83

## PRESIDENT-ELECT

Stephen W. Rector '72

## VICE PRESIDENTS

Ernest K. Banks '81

Kurt Haslag '07

Delores Hinkle '75

Ronald W. Jagels '86

Mike McEvilly '80

Chris Ramsay '83

## TREASURER

W. Keith Wedge '70

## SECRETARY

Bill Brune '73

## DIRECTORS-AT-LARGE

Robert "R.J." Agee '03

Tessa C. Baughman '04

Preston Carney '02

Michael Emanuel '87

George Schindler '73

Darrin Talley '88

## AREA DIRECTORS

Area 1: Rhonda Pautler '87

Area 2: Joshua Hoffman '07

Area 3: Daniel Ryan '12

Area 4: Steven R. Frey Jr. '86

Area 5: Dawn Stufft '99

Area 6: Gary Hines '95

Area 7: Bernard Held '75

Area 8: Richard Berning '69

Area 9: Michael Gross '88

Areas 10-18:

Elizabeth Baumbach '90

Alan Erickson '75

Rachel Jung '09

Jeremiah King '06

William McAllister III '76

Steven Puzach '09

Carl Schmitz '10

Stephen Squibb '98

Chadwell Vail '05

Area 19: Daniel Bailey '03

Area 20: John Campbell '74

Area 21: Hugh Cole '72

Area 22: Kimberly Morrison '96

Area 23: Pete Heerboth '03

Area 24: David Heineck '79

## PAST PRESIDENTS

Robert D. Bay '49

Robert T. Berry '72

James E. Bertelsmeyer '66

Robert M. Brackbill '42

Matteo A. Coco '66

John Eash '79

Richard W. Eimer Jr. '71

Larry L. Hendren '73

Zebulun Nash '72

James R. Patterson '54

Darlene (Meloy) Ramsay '84

Perrin R. Roller '80

Susan Hadley Rothschild '74

Gerald L. Stevenson '59

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



# 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](mailto:alumni@mst.edu).  
Deadline:  
Summer issue — March 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.

## 1957

**Charles A. Wentz Jr.**, ChE, MS ChE'59, awarded 16 scholarships to engineering students at Southern Illinois University-Edwardsville who were elected officers of engineering societies' student chapters. Wentz serves on the Dean of Engineering Advisory Board at SIUE. Wentz's scholarship program also awarded scholarships to 31 Edwardsville High School seniors. The program, which began in 1997, has awarded over \$1 million to students with exceptional academics, activities, career plans and personal interviews.

## 1959

**Hugh Wilson**, PetE, and his wife, Judy, report that the 18th reunion of the Jackling Jocks during Homecoming 2015 was a great success. Those attending included **Perry Allison**, ME'59, and wife, Ann; **Art Bell**, ChE'75, and wife, Linda; **Chick Boren**, ME'62; **Dick Boyett**, CE'58;

**Leon Calvin**, NDD, and wife, Carole; **Delbert Day**, CerE'58, Curators' Distinguished Professor emeritus of ceramic engineering; **Jerry Dorlac**, NDD, and wife, Pat; **Bill Engelhardt**, ME'60, and wife, Celia; Marilyn Feaster; **Tyler Fenwick**, head football coach; Gini Helm; **Jim Houseman**, ChE'60, and wife, Nancy; **Charles McCaw**, ME'62, and wife, Peggy; **Don McGovern**, ME'58, and wife, Mary; **Mark Mullin**, director of athletics; **Joel Scharf**, PetE'59; **Paul Singer**, CE'58, and wife, Jan; **Mike Vancil**, CerE'60, and Ruthann Henry; and **Newt Wells**, ME'59, and wife, Marilyn.

## 1961

**Dave Maune**, ME, was promoted to associate vice president of Dewberry. Maune is a photogrammetrist with Dewberry's geospatial group and a recognized authority in the fields of geodesy, photogrammetry, LIDAR, and IFSAR. He is mapping the state of Alaska, which has never previously been mapped to National Map Accuracy Standards at any scale.

In 2015, GPS surveys Maune managed revealed that Denali, formerly Mount McKinley, has a summit elevation of 20,310 feet rather than the 20,320 feet cited in 1952.

## 1967

**Dave Flanagan**, CE, retired as circuit court judge in Madison, Wis., after 17 years on the bench presiding over criminal, civil and juvenile trials. He was a guest lecturer at the Shanghai High Peoples Court and founded the Veterans Treatment Court. After earning a law degree from the University of Wisconsin, Flanagan served as an assistant attorney general for 24 years, specializing in jury trials. He was a Navy Seabee diving officer in 1968–71, including duty in Vietnam.

**Gail Davidge Kettenbrink**, GGph, and **Ed Kettenbrink**, GGph, retired and moved back to the Midwest after spending more than 42 years in Texas, doing exploration in the oil business and environmental consulting. They

are now living in Tipton, Iowa.

## 1968

**Michael C. Korb**, MinE, environmental program manager for the Department of Environmental Protection's Bureau of Abandoned Mine Reclamation in Wilkes-Barre, Pa., received the Interstate Mining Compact Commission 2016 Public Outreach Award.

## 1970

**Tom Nebel**, EE: "After five years as a U.S. Air Force pilot, I retired from Hewlett-Packard in 2003 and since then have embarked on a 10-plus-year real estate career in Clarksville, Tenn. I met my wife of 45 years, Susan Spindler from Lindenwood, at the all-school mixer in the fall of 1968. We spend most of our time traveling to see our three kids and grandchildren who are spread from Boston to Houston."

**Bob Webb**, EE: "I am happily retired with my wife, Susan, in Houston after 40 years of electrical engineering

## ALUMNUS' AUTOBIOGRAPHY TOUCHES ON TIME AT S&T



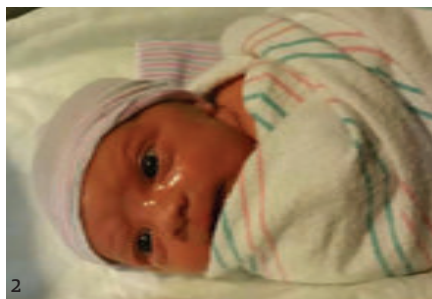
**William Patterson's** book *Walking through time: A Memoir* includes stories about his experiences at Missouri S&T.

"When my son, who works in production platform construction offshore Louisiana, asked me about his grandfather and the early oilfields, I knew the story had to be written or lost forever," says Patterson, PetE'53, pictured above with his wife, **June**.

The autobiography relates events from his earliest childhood to the present day, he says, and includes both happy and sad times at Missouri S&T. Anecdotes include reminiscing about living at the Gevecker house, ROTC, the Glee Club, St. Pat's, the Tech Club and intramural sports.

He also looks back at being recruited by **Bob Brackbill**, MinE'42, for Shell Oil Co., which began a nearly four-decade career in exploration and production.

The book is available from Amazon in paperback or Kindle.



# FUTURE MINERS

1. **Andrew Baughman**, EE'04, MS EE'06, and his wife, **Tessa C. (Russell) Baughman**, ME'04, MS ME'06, had a boy, Alexander Christian, on Jan. 16, 2016.
2. **Ryan Eisenbath**, PetE'10, and his wife, **Jen (Qualls) Eisenbath**, BSci'10, had a daughter, Margaret

Kay, on April 8, 2016. She weighed 7 pounds, 14 ounces and was 19 ½ inches long. The family lives in Houston.

3. **Buddy Pearson**, ArchE'12, CE'12, and his wife, **Alli (Pettry) Pearson**, ArchE'12, CE'12, had a boy, Edward Alan Pearson III. The Pearson family lives in Germantown Hills, Ill.
4. **Kiley Summers**, EE'07, and his wife, **Ty'Lisha Moore**, ChE'08, had a daughter, Elle Gray, on Dec. 14, 2015. She weighed 7 pounds, 7 ounces and was 20 inches long.
5. **Justin Wylam**, EE'03, and his wife, **Kira (Bluebaum) Wylam**, CE'06, had a boy, Joseph James, on June 19, 2014. He joined big sister Anna.
6. **Alex Zach**, Hist'12, and his wife, **Latesha (Humphrey) Zach**, Bus'11, Econ'11, had a son, Connor, on Dec. 4, 2015.

for oil refineries, petrochemical plants and other industrials. I have always valued my UMR education."

## 1971

**Richard F. Hill III**, CSci, wrote a book about the adventures he and **Kenneth D. Jobe**, GGph'60, CE'66, had in Vietnam in 1967–68 titled *Iron Soldiers in Vietnam*. Jobe says: "I have helped him with details, photos and reviewed the draft. Rick has written it with a light touch, is irreverent and probably not politically correct. It is our years with the 577th Engineer Battalion. It is available on Amazon and from Rick at richardhill.com."

## 1972

**Juan G. Ochoa**, MS ME, was elected to the board of directors at Universidad Pontificia Bolivariana in Medellín, Colombia, and was recognized for promoting the Nanotechnology Center Initiative for Medellín universities. He is an academic coordinator for Sociedad Antioqueña de Ingenieros-SAI, a local society grouping of most engineering disciplines in Medellín.

## 1975

**Donald L. Marlen**, EE, retired Sept. 30, 2015, from Air Mobility Command at Scott Air Force Base, Ill., as the command electrical engineer overseeing electrical systems for more than 10 Air Force bases. In December 2015, he retired as president and owner

of HR Timber Corp., a position he held for 24 years. His wife, Nancy, retired from teaching in May 2016. They plan to camp and travel.

## 1985

**Matthew J. O'Keefe**, MetE, chair of materials science and engineering at Missouri S&T and a professor of metallurgical engineering, was named a Fellow of ASM International for his contribution to the understanding of corrosion mechanisms leading to the development and use of sustainable rare-earth-based coatings for lightweight metal alloys.

## 1986



**Curt Elmore**, GeoE, professor of geological engineering at Missouri S&T, was named a Fellow of the American Society of Civil Engineers in recognition of his work in water resources and environmental engineering.

## 1995

**Marsha Rana Wayman**, EMgt, celebrated 10 years in development in the nonprofit sector and recently earned the Certified Fund Raising Executive (CFRE) designation.



## S&T ALL-AMERICAN COMPETES IN OLYMPIC LONG JUMP

**Tyrone Smith**, Hist'07, a former All-America long jumper at Missouri S&T, finished in 16th place Aug. 12 in the qualifying round of the long jump at the 2016 Summer Olympic Games in Rio de Janeiro.

Smith, who was chosen to carry the flag during the opening ceremonies for his home country, Bermuda, was among the top 12 through the first two rounds but was passed in the standings during the course of the third round.

At Missouri S&T, Smith won the Great Lakes Valley Conference championships in the indoor and outdoor long jump in 2006 and again at the 2007 indoor meet. In 2006, he was named regional field event Athlete of the Year by the NCAA for the Great Lakes Region's indoor season and was named GLVC Male Athlete of the Year. He was inducted into the GLVC Hall of Fame in 2014.

Photo by Cameron Spencer/Getty Images

### 1997

**Darren Mulford**, CE, a civil engineering and administrating contracting officer for the Army Corps of Engineers in Huntsville, Ala., is also a competitive pistol shooter. Mulford is ranked in the top 15 percent of classified shooters in the U.S. Practical Shooting Association.

### 2000

**Chris Freeman**, ChE, was promoted to lead the Food and Consumer Products team for Burns & McDonnell in the Chicago region. In his new role, he will lead project development in the upper Midwest focusing on services ranging from pre-capital

*Continued on page 59*



## O'KEEFE CHAIRS MATERIALS SCIENCE AND ENGINEERING

**Matthew J. O'Keefe**, MetE'85, professor of metallurgical engineering at Missouri S&T and former director of the Materials Research Center, became chair of materials science and engineering in March.

A member of the S&T faculty since 1999, O'Keefe teaches courses in metallurgical engineering and ceramic engineering, and he has active research projects in thin films, coatings, environmentally friendly processing and characterization of materials.



# ROLLA MINER, REDUX

## BRADEN LUSK RETURNS TO S&T TO LEAD HIS HOME DEPARTMENT



**Braden Lusk** first came to Rolla in 1996 as a walk-on wide receiver from central Kansas who excelled at math and science in high school but admittedly “had no idea what an engineer was.”

Two decades later he's back at his alma mater as the new chair of mining and nuclear engineering. A sought-after academic leader, Lusk, MinE'00, PhD MinE'06, was lured from the University of Kentucky, where he served as director of graduate studies and helped build the school's explosives research program.

“We had several big opportunities to do some really cool research,” Lusk says of his 10 years at Kentucky. But “the one thing I've always said since I left here was that if this job ever came open I would be interested.”

Once he settled on a major, Lusk quickly gravitated toward explosives thanks to a first-year class taught by **Paul Worsey**, a native of England known for starting S&T's popular summer explosives camp as well as co-hosting *The Detonators*. The 2009 Discovery Channel reality TV show paired the straight-talking Brit with Lusk, his former student.

“This crazy guy came in and put on a video of stuff blowing up to classical music,” Lusk recalls of Worsey, who would later serve as his advisor

in graduate school. “He was in the back of the classroom just laughing and having a wonderful time. And I thought, ‘Wow, I guess you can actually get paid to do this.’”

With the help of **John Wilson**, former S&T mining engineering chair, Lusk got a summer job after his first year of college at a salt mine in his hometown of Hutchinson, Kan. He parlayed that experience into a job at a Cargill underground salt mine beneath Lake Erie in Cleveland, then transfer to another Cargill position back in Hutchinson.

The work was rewarding, Lusk says. But something was missing.

“Cargill was a wonderful company. But I wasn't handling any explosives. So that's when I decided I wanted to go back to (graduate) school.”

Since Lusk earned his doctorate in 2006, enrollment in mining engineering at Missouri S&T has more than doubled.

“It's that shiny thing,” he says of his discipline, noting the almost-primal fascination we have

with fireworks and other combustibles. “We can blow stuff up. It's a really good lure for getting those kids excited about other aspects of mining.”

“We've sent quite a few people (in our program) into the explosives industry,” he adds. “But I think we've sent a lot more into the mining industry.”

Though he comes from a mining background, Lusk is quick to highlight his interest in simultaneously growing S&T's nuclear engineering program. The disciplines are distinct but also closely linked, he says.

“Each has its own identity,” Lusk says. “We don't want to shy away from those individual identities because that's what drives people wanting to be a part (of those programs).”

Lusk acknowledges that the global and industry push for renewable energy and concurrent increase in federal regulations requires a decidedly 21st century approach to his chosen discipline, even as he exudes confidence that well-trained miners will always remain in demand.

“We're going to have to continue to evolve with the industry,” he says. “But I don't think there's ever going to be a time when we don't need mining engineers. ... What we need to focus on moving forward is to prepare our engineers to be ready for those challenges.”



## HONORING OUR DONORS AND VOLUNTEERS

Missouri S&T's Honor Roll of Donors and Volunteers for fiscal year 2016 is now available online at [honorroll.mst.edu](http://honorroll.mst.edu). The listing recognizes contributions and service from July 1, 2015, to June 30, 2016.

Through the Honor Roll, Missouri S&T acknowledges the philanthropic and volunteer support that continues to move our university forward. Thank you to the alumni, friends, corporate and foundation partners, faculty, staff, students, parents and others who fill our Honor Roll with Miner Pride.

consulting and master planning for processing facilities to full process engineering, plant design and construction services.

**Joel Maevers**, ME, joined Murphy Co. as project manager. Maevers previously worked in Chicago as a project manager for Mechanical Inc. and Noresco, and he served as an associate project manager for Environmental Systems Design.

### 2002

**David B. Hammon**, CSci, was honored in March with the Alumni Service Award for outstanding service to Delta Tau Delta International Fraternity, in which he was initiated in 1999. Hammon has given back to the fraternity by serving as chapter advisor, house corporation member and colony advisor. He has also served as treasurer for the Western Plains Division since 2010.

### 2003

**Andrew S. Jackson**, CpE, a Navy lieutenant, was selected March 3 for the John McReynolds Wozencraft academic honor award on completion of his master's degree in electrical and computer engineering at the U.S. Naval Postgraduate School in Monterey, Calif. He graduated March 25.

**Srivatsan Raman**, CE, an assistant professor of biochemistry at the University of Wisconsin-Milwaukee, shared a \$200,000 Shaw Scientist Program grant through the Greater Milwaukee Foundation for distinct and innovative molecular research.

### 2006

**Andrew Rucker**, CE, celebrated 10 years of service at Hanson Professional Services Inc.'s Kansas City, Mo., metropolitan office. He provides civil design services for railway projects, including design of horizontal and vertical railroad tracks, rail yard

layouts, hydraulics and erosion control.

### 2011

**Grant Johnson**, CE, joined Engineering Enterprises Inc. of Sugar Grove, Ill., as a project engineer. His primary focus will be

on transportation-related projects.

### 2012

**Fawn Burrelsman**, ArchE, was promoted to project engineer at JE Dunn Construction. Before joining JE Dunn in Savannah, Ga.,

Burrelsman worked at JE Dunn's corporate headquarters in Kansas City, Mo., as a scheduling engineer.

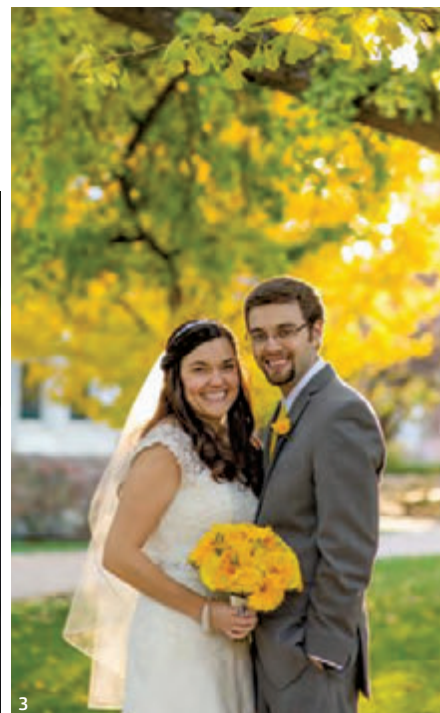
### 2015

**Aaron VonderHaar**, ME, joined ACME Constructors as a

project manager. He will oversee projects for ACME's industrial clients that involve equipment and manufacturing process installations. □

# MINER UNIONS

1. **Todd Miller**, PetE'10, MS PetE'12, married **Stephanie Rostad**, CE'12, on May 23, 2015, in Weston, Mo. The couple lives in the Houston area.
2. **Kiley Summers**, EE'07, and **Ty'Lisha Moore**, ChE'08, were married Aug. 3, 2013, in Kansas City, Mo. The couple lives in Houston.
3. **Alex Woodard**, EE'14, and **Tiffany Werckmann**, CSci'12, CpE'12, were married on Nov. 7, 2015, in St. Louis. The couple works at Boeing and lives in St. Louis.



## S&T ALUMNUS LEADS NY HARBOR PROJECT

**David Winter**, CE'78, president and CEO of Seattle-based Hart Crowser, was the geotechnical engineer on the Governors Island project in New York Harbor to build hybrid natural and human-made hills on the island. The tallest hill, called Outlook, gives visitors a 360-degree view of the harbor.

"If the hill is built traditionally, with soil fill placed and compacted in layers, the weight of the new soil would cause several feet of settlement and likely result in a slope stability failure into the harbor," Winter says.

But Hart Crowser made Outlook weigh about 50 percent less by using debris from demolished island buildings, mechanically stabilized earth and an expanded aggregate, or pumice. Other hills on the island were built with general granular fill barged to the site from a Hudson River quarry.

The construction technique used on Governors Island "reduces the settlement dramatically and forces the critical slope stability failure surface farther back away from the shoreline, thus increasing the stability factor of safety," Winter says.



Photo by Timothy Schenck



## GRADUATES SET PLAN IN MOTION WITH CLOTHING LINE

A business venture by three Missouri S&T alumni is making personal training more affordable with the Enflux smart fitness clothing line.

**Doug Hoang**, ME'10, **Elijah Schuldt**, AE'10, EE'10, and **Matthew J. Brown**, ME'09, co-founded Enflux, which makes athletic clothing with embedded motion sensors that capture the 3-D movement of your body during exercise.

"Other companies make clothing with sensors that will measure heart rate or how tense a muscle is, but not what counts most in fitness and athletic performance — the movement of your body," says Hoang in a *Wilmington (Mass.) Patch* article.

Hoang explains that the smart clothing measures the quality of your form, intensity of your workout and other advanced exercise metrics, and reports back on a smartphone app in real time. The app provides actionable feedback, just like a personal trainer, to help you maximize your performance at the gym and in sports.

It all started at S&T.

"If my guidance counselor hadn't educated me about Missouri S&T, I wouldn't have met my co-founders and best friends," he says. "After I graduated from Missouri S&T, I became a chief engineer designing and mass manufacturing engines. Then, I started Enflux with my college friends, and the rest is history."



A photograph of an elderly couple, David and Lynda Malone, standing in front of a large, two-story house with a prominent front porch. The porch has white columns and a pediment with the letters "KA" in dark wood. The house has a grey roof and white siding. The couple is standing on a paved walkway leading to the porch. David, on the right, is wearing a blue polo shirt and dark trousers. Lynda, on the left, is wearing a patterned dress. The background shows a green lawn and some trees.

KA

DAVID AND LYNDA MALONE:

## GIVING THANKS FOR A FULL LIFE AS FIRST-TIME DONORS

Nearly 50 years after graduating from Rolla, **David Malone**, CE'69, still recalls how hard he had to work — even on Saturdays. “I remember staying up all night Friday studying for the dreaded Saturday morning physics exam,” he says.

Last year, Malone, who retired from Black & Veatch in 2007, made his first gift to the university. It was inspired by those memories — and the career that followed.

“I doubt I could have made it through school without the tutoring, encouragement and fellowship of my Kappa Alpha brothers,” says Malone, who initially majored in ceramic engineering. “That lasted three semesters — until I realized that chemistry was not my strong suit.”

The David and Lynda Malone Endowed Scholarship, established in 2015, provides members of Kappa Alpha with financial support. Malone credits his wife with making it happen.

“I had wanted to endow a scholarship for several years, but I didn’t know how to bring it up to **Lynda**,” says Malone. “One day I asked her if she would fund the scholarship after I died, and she said, ‘Why don’t we do it now?’”

For the high school sweethearts from Mountain View, Mo., the scholarship was a way of passing on their blessings.

“We have had a full life and been able to send two kids through college. That is due in no small part to my Rolla education,” says Malone.

After serving in the U.S. Army in Germany and working as a plant engineer in Iowa for the Natural Gas Pipeline Co. of America, Malone joined Black & Veatch. Over the next 34 years, he worked as a field engineer, project engineer and construction manager. A licensed professional engineer in Colorado, Kansas, Oklahoma, South Carolina, Tennessee and Texas, he also earned a master’s degree in geotechnical engineering from Kansas State University. The Malones

“We have had a full life and been able to send two kids through college. That is due in no small part to my Rolla education.”

have two children, David and Melissa, and one grandchild, Scarlett.

Malone taught algebra at Missouri State University-West Plains after retiring. As a proud KA, he serves on the board of the fraternity’s education foundation and returns to campus every July on the “alumni cleanup crew” responsible for getting the house in shipshape order before the fall semester.





HONORING  
OUR PAST



Mechanical and Aerospace Engineering

MISSOURI S&T

IMAGIN  
OUR FUTURE

## PHOTO FINISH: A BANNER YEAR

The mechanical and aerospace engineering department turned a century old this year. To celebrate, the department unveiled new banners in Toomey Hall. The three banners feature the anniversary mark and depict scenes from the department's past and its influence on the future.





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

**CHANGE SERVICE REQUESTED**

*Parents: If this issue of Missouri S&T Magazine is addressed to your son or daughter who has established a separate permanent address, please notify us of the new address: 800-JO-MINER or alumni@mst.edu.*

Nonprofit Org.  
U.S. Postage Paid  
Liberty, MO  
Permit #143

A PUBLICATION OF THE  
MINER ALUMNI ASSOCIATION  
REPRESENTING AND SERVING  
ALUMNI OF MSM, UMR AND  
MISSOURI S&T

**ALUMNI OF INFLUENCE**

FALL/WINTER 2016

VOL. 90 NO. 3

MAGAZINE.MST.EDU

A large, dark bronze statue of St. Patrick, wearing a mitre and holding a crozier, stands on a stone pedestal. The scene is at night, with the statue illuminated by warm lights. In the background, a modern building with large windows is visible, and a person is walking on a path. A grid pattern is overlaid on the right side of the image.

# 109th BEST EVER

Lucky you! You're invited to join your peers and raise a glass to our patron saint of engineers. Find everything you need to know about where and how to celebrate the 109th Best Ever St. Pat's at [mineralumni.com](http://mineralumni.com).