

FALL/WINTER 2014 VOL. 88 NO. 3

MISSOURI
S&T
MAGAZINE

BERT ELSM EYER HALL

a bright future. a bold vision.

9

SMARTPHONE
BIOLOGY

16

HOMECOMING
2014 RECAP

48

MEETING A 20/20
CHALLENGE

Remember Rolla for the Holidays

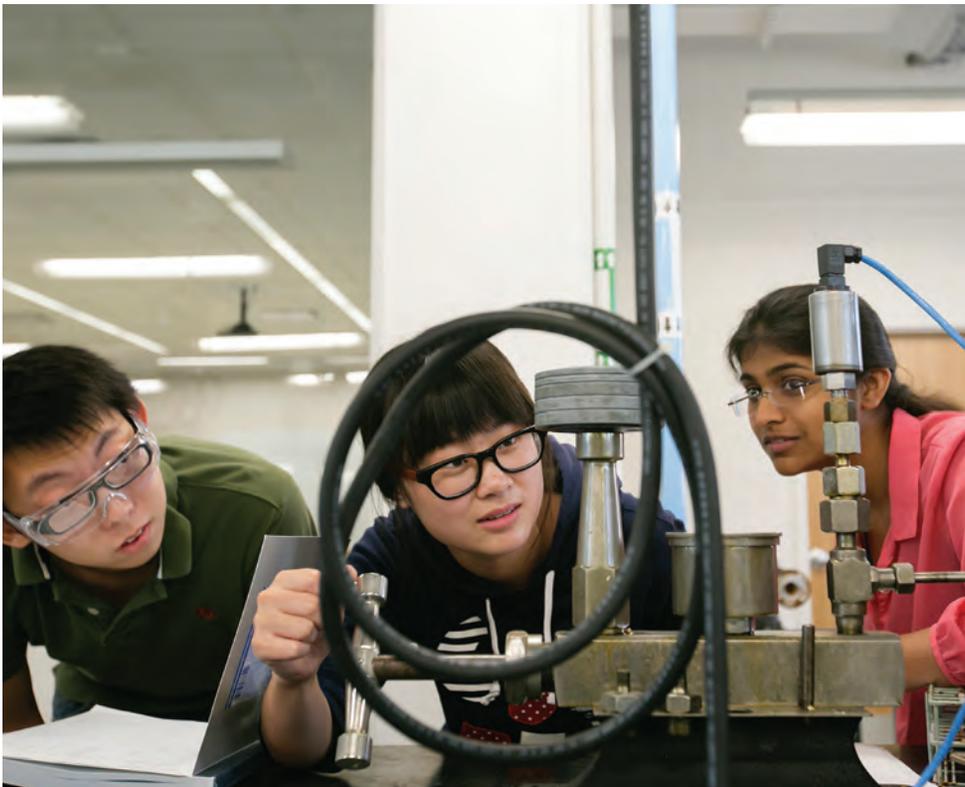
As study sessions fill the not-so-silent nights in Rolla, we ask you to consider making your giving more memorable this year by giving the gift of education. Each year the Miner Alumni Association relies on gifts to the Annual Fund from alumni and friends to sustain a variety of campus programs. Your support makes a great Missouri S&T education possible.



MISSOURI
S&T

Your tax-deductible gift will help the association continue its legacy of preparing students to meet the challenges of tomorrow.

Go online to mineralumni.com/give.



◀ ON THE COVER

James E. Bertelsmeyer Hall, the new home of Missouri S&T's chemical and biochemical engineering department, was officially dedicated during Homecoming in October 2014. The \$22.3 million facility is named in honor of its lead benefactor, **James E. Bertelsmeyer**, ChE'66.

IN YOUR WORDS

Q&A and Letters

What is your best spring break memory?

4

AROUND THE PUCK

Team Orion

Grads who overcame adversity give back.

7

Smart rocks

Detect bridge damage at the foundation — underwater.

11

Building a better battery

Tyler Fears uses nanomaterials as cathodes.

13

S&T teacher prep

Teacher certification ranks among the best in the U.S.

14

Printing the future

Jonathan Bopp used a 3-D printer to build prototypes of his Mars rover parts.

15

Improving rural drinking water

Danielle West studies safer water treatment options.

19

FEATURES

Bertelsmeyer Hall

A look at Missouri S&T's new chemical and biochemical engineering complex.

22

BEYOND THE PUCK

Section news

St. Louis Student Send-off.

35

Class notes

Find out what your former classmates are up to.

36

Memorials

We remember our classmates and friends.

43

Donor

Sandy Simmons-Gamble.

48

BRIEFLY { BY THE NUMBERS }

3

Missouri S&T's rank among the nation's engineering schools as reported in *USA Today*. The list, presented by College Factual, ranks colleges based on overall quality.

86

Missouri S&T's rank in *Money* magazine. S&T was the top-ranked public university in Missouri. *Money* based its rankings on educational quality, affordability and career outcomes.

Record number of employers recruiting at the Fall 2014 Career Fair.

304



Solar Miner VIII's place in the Formula Sun Grand Prix, held in Austin, Texas, in July. The Solar Car Team is already designing the car it will race in summer 2016.

\$13.8 million

Funds Missouri S&T raised during the 2013–14 fiscal year, an increase of 36 percent over the previous year's giving.

47

Missouri S&T's ranking in *Washington Monthly's* list of national universities that offer the "best bang for your buck."

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

Richard W. Eimer Jr., EE'71

EDITORS

Katie Jackson (Alumni)

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

ASSOCIATE NEWS EDITORS

Maridel Allinder Peter Ehrhard Mindy Limback
Andrew Careaga John Kean Luke Rinne

ASSOCIATE ALUMNI EDITORS

Nancy Hatch Travis Sewell

DESIGN AND PRODUCTION

Jake Otto Nikki Pirch Lishia Stevens

STAFF PHOTOGRAPHER

Sam O'Keefe

CONTRIBUTORS

Terry Barner Arielle Bodine

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, 1200 N. Pine St., Rolla, MO 65409-0650.

Missouri S&T Magazine is printed by R.R. Donnelley, 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
1200 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

Dear Alumni and Friends,

Twice a day I drive by the corner of 11th and State streets. For years, the scene there was the same: a full parking lot across the street from the Chancellor's Residence. Today, I pass the amazing 68,500-square-foot building that houses Missouri S&T's chemical and biochemical engineering program.

On Oct. 17, just 18 months after breaking ground for the building, Miner alumni joined Missouri S&T faculty, staff and students, along with members of the Rolla community, to celebrate the dedication of James E. Bertelsmeyer Hall. The fireworks were spectacular.

This issue of *Missouri S&T Magazine* is dedicated to Bertelsmeyer Hall — the back-story of the phenomenal alumni support for the project, a look at the building and a little bit about the magic that happens inside. You'll also learn about some of the generous alumni who made Bertelsmeyer Hall possible.

Alumni like **Jim Bertelsmeyer**, ChE'66, who channeled a love of science and math into a successful career as a chemical



engineer, businessman and entrepreneur. His love for his alma mater inspired him to give back in many ways.

Alumni like **Bipin Doshi**, ChE'62, MS ChE'63, whose respect for his mentor inspired the naming of the Unit Ops Lab — a well-known spot for all chemical engineering students.

And alumni like **Jason Brinker**, ChE'97, who helped promote a grassroots fundraising campaign among fellow alumni at ExxonMobil.

It's an amazing story befitting an amazing facility. Read on and enjoy. And next time you're in Rolla, don't just drive by the corner of 11th and State streets. Find a parking spot and take a peek inside this impressive structure.

Mary Helen Stoltz

Engl'95
news & features editor

EDITOR'S
TOP FIVE
PICKS

- 1} Students in **Terry Wilson's** biology lab learned to build a DIY microscope with a smartphone and \$10 in hardware supplies. Read more on page 9.
- 2} **Paul Runnion**, Math'05, MS Math'07, redesigned Calculus I with smaller lab sizes, more hands-on work and a way to help struggling students. See page 37.
- 3} A fiscal assistant in international affairs used a state matching gift program to endow a scholarship in memory of her father, **Milton L. Simmons**, CerE'49, who loved Missouri S&T. See page 48.
- 4} Food Network aficionado **Darian Johnson** almost didn't come to Missouri S&T. Learn what changed her mind, and how she melds chemical engineering with her love of food science, on page 21.
- 5} James E. Bertelsmeyer Hall, home to the chemical and biochemical engineering program, is Missouri S&T's newest building. The back story begins on page 22, but turn to page 28 for a look at some of the building's features.

CORRECTIONS

In the story titled "A golden year for the EEC" on page 13 of the Summer issue, **Anton Brasunas'** name was spelled incorrectly. We regret the error.

The figure 13'1 1/2" in the "sports by the numbers" section on page 22 of the Summer issue, was actually mathematics senior **Taylor Cipicchio's** school-record clearance in the pole vault. Cipicchio was the Great Lakes Valley Conference champion in the event.



What is your best spring break memory?

Some college students spend spring break lounging on a beach. Others help rebuild a small town after a natural disaster or trek the Continental Divide. We asked about your favorite spring break experiences. Here is what you told us.



When one thinks about spring or winter, it depends upon where you are. In December 1990 and January 1991 Missouri S&T had its end-of-semester break before the start of the spring 1991 semester.

That was winter in Missouri but spring in Africa, south of the equator.

I worked for a month aboard a ship named *Anastasis*, which was anchored in the town of Lomay, Togo, located in the armpit of Africa.

I got my doctor's degree in dentistry in 1960, but had never had a bachelor's degree so I was still a student in Rolla back then with the intention of earning my bachelor's degree in life sciences.

In that part of Africa there were no dentists to fill cavities, perform fluoride treatments or remove abscessed teeth, so my help as a licensed dentist was really needed.

When I returned to Missouri I continued my private dental practice in Rolla until I retired in

June 1996. I graduated from Missouri S&T on Dec. 12, 1992, with the first bachelor's degree that I had ever earned. That made me very happy and I am still proud to be a graduate of Missouri S&T.

Dr. George W. Karr, LSci'92
Rolla, Mo.

I spent every spring break working to make enough money to make it to the end of the school year. I did have my wisdom teeth pulled one year, so I worked one less day that spring break, but I would not list that as a fond memory.

Arnold P. Harness, ChE'87
Kansas City, Mo.

Driving to Corning, N.Y., to visit the Corning Museum of Glass with my friends **Seth Rummel**, AE'12, and **Becca Mullen**, CerE'13. We added the Liberty Bell in Philadelphia and Hershey's Chocolate World in Hershey, Pa., to the trip along the way. We slept in the SUV between house-hopping with friends and relatives on the way east. Good times and great memories. The trip was inspired by Missouri S&T's Hot Glass Shop!

Matthew Eye, ME'13
Duncan, Okla.

Watch for the next question in your Miner Alumni Association eNewsletter.

Email your answers to alumni@mst.edu or respond via Facebook or Twitter.



HELP US REMEMBER: 150 YEARS OF MINER LEGACY

The year 2020 will mark Missouri S&T's sesquicentennial celebration. A special commemorative book is being planned for the occasion and we need your help. Please share remembrances of your alma mater and you may see your story in the book. All stories will be shared with the University Archives. Email your stories to 150@mst.edu. We look forward to hearing from you!

Dear Editor,

I first read your article "Where's Dave" in Missouri S&T Magazine during my freshman year in 2009. At that time I was looking for motivation and a direction for my future. Of all the material I had read while searching for my dream career, I found this article to be the most inspiring; I decided I wanted to travel in Dave McCann's footsteps. My career needed not be with GE, but would simply allow me to interact directly with people of many different cultures while solving technical problems. I still reread the article now and again to remind myself of the end goal. I would like to contact Dave McCann, so if you could point me in the right direction, I would greatly appreciate it.

Evan Carroll, senior in mechanical engineering
Clarence, Mo.

Editor's note: Dave McCann, ME'79, was featured in the Summer 2009 "Miners Around the World" issue. We forwarded Evan's note to Dave. Here is his response:

Dear Editor,

Wow! What a nice and unexpected honor to know that my story has provided inspiration for a young person interested in following a similar path in life. Thanks for forwarding his message to me. I will contact Evan directly, and hope that I can provide him with some insights. And just in case you are interested, I retired last year, and have continued to travel and explore new places and cultures. I came back to Jeff City to attend my 40-year high school reunion and celebrate my dad's 87th birthday, but I just got back from my first-ever trip to Costa Rica, where I spent the month of May sightseeing. My favorite moment was spotting a wild toucan in the trees just above me one afternoon while I was watching the sun set over a little beachside village. Life is good. :)

Dave McCann, ME'79
Jefferson City, Mo.

Dear Editor,

I just received the latest issue of Missouri S&T Magazine and while reading through it I noticed that on page 22 in "by the numbers" it says the baseball team has 608 wins since its inception in 1966. I take exception to that because I was part of the first baseball team that played in the spring of 1965. So this year would be the 50th year. We were 6-6 that first year. I even have the school newspaper that mentions that record. I always felt that we didn't get any recognition for that year and it seems like we've been forgotten. I hope you can rectify this error. We would start each practice on the third base line and walk the infield to pick up any rocks on the infield.

Mike Hahn, ME'70
Florissant, Mo.

Editor's note: You are correct, Mike. The Miners played as an independent team in 1965, one year before joining the MIAA Conference in 1966. We apologize for the error. Thank you for setting us straight.

SEEKING INVENTORS

Help us find Rolla alumni who have demonstrated ingenuity and innovation through their inventions. *Missouri S&T Magazine* is compiling a list of alumni who saw a need and created something to meet it. Below is a list of alumni inventors we've heard from so far. Don't see your name listed? Help us out by completing this short online survey found at rol.la/minerinventors.

- **Paul Abney**, EE'76, one patent for the apparatus that automatically decelerates and stops a sewing machine motor.
- **Gary Amsinger**, CE'80, one patent for a crane safety device.
- **Buddy Austin**, EE'60 (deceased), held 10 patents related to cooking stoves and ranges.
- **Michael P. Dallmeyer**, ME'84, 47 patents for fuel injection systems or gasoline fuel injectors.
- **Red J. Dietrich**, EE'57, seven patents for antenna parts and related satellite batteries.
- **Simon Dirnberger**, Met'03, ME'05, one patent for Dremel quick release for cut-off wheels.

- **Charles L. Dohogne**, MetE'61, 12 patents in chemistry, metallurgy, electro-chemistry and biomechanics.
- **Lee M. Etnyre**, Phys'60, three patents related to navigation and global positioning systems.
- **Marvin Havens**, ChE'71, MS ChE'73, PhD ChE'76, 39 patents on antistatic polymers and oxygen detection.
- **Bill Jacobs**, ME'64, four patents for voice mechanism marketed by Mattel Toys.
- **Ingrid Kaufman**, ME'97, three patents for vibration-based machine health monitoring for Ford Motor Co.
- **Dale R. Lutz**, Chem'71, 11 patents related to CO₂ emissions and fiber optic sensors on high-voltage power lines.

- **William R. Morgan**, ChE'81, one patent related to aluminum production.
- **Allen J. Rushing**, EE'70, PhD EE'73, 36 patents in imaging technology.
- **Richard Schafermeyer**, ChE'73, MS ChE'75, holds 14 patents in food science.
- **Michael M. Sinar**, ME'69, five patents.
- **Willard Sudduth**, CE'66, invented an Angle Gripper, which is similar to a Vice Grip.
- **Ralph D. Taylor**, EE'68, three patents in aerospace and aircraft testing.
- **Scott C. Wehner**, GeoE'80, one patent related to oil recovery.
- **Paul Steven Weitzel**, ME'68, seven patents, with another application pending.

During move-in weekend, we asked our students to share their experiences on social media with the hashtag #MinerMoveIn. See more at rol.la/MinerMoveIn14.



@CheezinDRyan

Danny Ryan, ME'12, Memphis

New @MissouriSandT admissions polo just showed up! Gonna recruit all the new engineers in @Memphis!!! #ProudAlum

@kaleykmac

Kaley McLain, CerE'12, Bettendorf, Iowa

Hey new @MissouriSandT students you made the right choice! Just paid off all my loans in 1.5 yrs bc of the awesome job I got w my S&T degree.

@missmariavdubs

Maria Vega-Westhoff, senior in chemical engineering, Columbia, Mo.

So glad to be back from co-op and start my final year with classes in the new ChemE building at @MissouriSandT.

@vincebertram

Vince Bertram, president and CEO of Project Lead The Way Inc., Indianapolis

Congrats to @PLTWorg partners @WPI & @MissouriSandT. Named to list of Top 10 #engineering universities in the U.S.

@goofybrahh

Tom Waters, freshman in mechanical engineering, Lombard, Ill.

First test is DONE! So looking forward to the rest of my time at @MissouriSandT #GoMiners

@DougDuchardt

Doug Duchardt, ME'87, Charlotte, N.C.

Proud to be a graduate of #3 @MissouriSandT — The top 10 engineering colleges in the U.S. via @usatodaycollege.



MissouriSandT

Students walk by Bertelsmeyer Hall, set up for today's dedication ceremony and homecoming festivities.

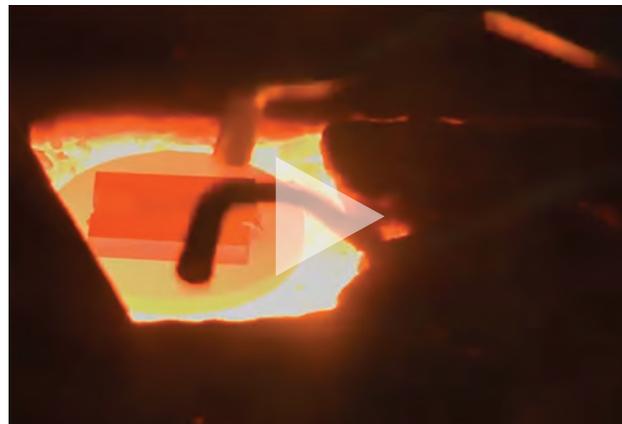


MissouriSandT

#missourisandt #rolla #SandThomecoming



MissouriSandT



Missouri S&T Signature Area: Enabling Materials for Extreme Environments

The creation of ceramics and composites to withstand hypersonic flight, concentrated solar power, nuclear fusion, ballistic impact and welding are part of Missouri University of Science and Technology's signature area of Enabling Materials for Extreme Environments.



Sara Lewis

Financial Aid Ninja turtle!

Missouri University of Science and Technology likes this.

Join your alma mater online at news.mst.edu/social.



Twitter



Facebook



YouTube



Flickr



Instagram



Storify



Delicious



Vine



Subscribe



LinkedIn



From left: Tyler Martin, Dylan Prévost, Katherine Bartels and Abdalla Bani. Not pictured: Fabrice Tine.

TEAM ORION: PURSUIT OF LIFE

Abdalla Bani, AE'13, **Tyler Martin**, AE'13, and **Fabrice Tine**, ME'13, AE'13, all overcame adversity to make it to college. Despite the challenges they faced, each of them earned a degree from Missouri S&T. Now they are helping other S&T students who face adversity to achieve the same success.

The three were part of a group that formed Team Orion during their aerospace engineering senior design class, where they raised more money than needed for their project. With the extra money, Bani, Martin and Tine established the Pursuit of Life Scholarship to give a financial boost to an S&T student who has struggled like they did.

Bani, now a graduate student in mechanical engineering at Missouri S&T, relocated nearly 6,000 miles, from Tripoli, Libya, to attend school. His homeland

soon entered civil war and revolted against Muammar Gaddafi, leaving Bani to constantly worry about his family.

Tine moved from his homeland of Périgny, France, to attend S&T. He had to adjust to a different culture and learn engineering in a whole new language.

Martin was homeless as a teenager. During high school, he got a job and started saving his money. When he decided to become an engineer, he founded his own personal training business to support his education.

"Looking back it seems reckless to go to college when there was no obvious way to afford it," says Martin, now a system integration analyst at Accenture. "But as years went by, it wasn't long before doors started opening that I never would have imagined because of my education."

Initially, the group planned to offer one \$500 scholarship. That changed, however, once they read through the applications. Students were required to include an essay describing the adversity they faced and how they planned to overcome it to achieve their goals.

"We had a very difficult time choosing just one candidate," says Martin. "So the team agreed to round up an extra \$200 to give to our runner-up."

This past fall, Team Orion awarded the first Pursuit of Life scholarships to **Katherine Bartels**, a sophomore in environmental engineering, and **Dylan Prévost**, a senior in nuclear engineering.

The team hopes to offer the scholarship again in the future and gradually grow the amount they can offer, says Bani.

CELEBRATING CULTURAL DIVERSITY

Every fall since 2010, lions, dragons and camels have paraded through downtown Rolla to show that people love a parade, regardless of their native country.

Celebration of Nations was created to give area residents and Missouri S&T students a chance to share their heritage and celebrate the region's cultural diversity. Each year the celebration has grown, and the 2014 event — the fifth annual Celebration of Nations — was the largest ever.

Events included international foods, displays, arts and crafts, music, entertainment, camel rides, a climbing wall, and activities for kids.

ENROLLMENT RECORD BREAKER

For the second year in a row, Missouri S&T enrolled a record number of students this fall.

At the official fourth-week count, 8,642 students were enrolled, breaking last fall's record of 8,130. The previous record of 7,795 was set in fall 1982.

The number of female students increased by 6.3 percent over fall 2013 to an all-time high of 1,955.





SMARTPHONE BIOLOGY

Daniel Miller's DIY smartphone microscope can magnify samples up to 175 times with a single laser pointer lens — nearly 400 times if he stacks two lenses.

Using nothing more than a smartphone and less than \$10 in hardware supplies, Missouri S&T biology students built their own microscopes in biology lab this past fall.

The do-it-yourself microscope is part of the Transforming Instructional Labs project. Funded through a grant from the University of Missouri System, the project is designed to re-imagine how lab courses can be taught in five science and engineering disciplines on campus. Project organizers hope to create a how-to manual for other colleges and universities.

Terry Wilson, associate teaching professor of biological sciences, offered

her general biology students extra credit for building their own microscopes. They built a stand with carriage bolts, nuts, wing nuts, washers, plywood and Plexiglas from a hardware store, laser pointer lenses, and LED click lights from a keychain flashlight. The smartphone became a tool for viewing, enlarging and photographing lab specimens.

The DIY microscopes can magnify samples up to 175 times with a single

laser pointer lens, or nearly 400 times when stacking two lenses, says **Daniel Miller**, BSci'12, MS BSci'14, who created a prototype to use last spring in Wilson's General Biology lab, where he served as a teaching assistant. He also offered extra credit to any of the 50 students in the lab who would build one, and 15 students took him up on the offer.

Wilson also experimented with her Cell Biology lab lecture this fall as part of the Transforming Instructional Labs project. She "flipped" the lab lecture part of the course by offering it online but continued to offer the lab in the traditional manner.

COMING SOON: 450 NEW BEDS

In June, the University of Missouri Board of Curators approved a proposal to replace the aging residence halls in the Quadrangle with a new apartment-style housing complex. The curators approved \$30 million in revenue bond financing for the project, which will add housing for 450 students and remove more than \$35 million in deferred maintenance from the books.

The new facility will be built at the northeast corner of the intersection of University Drive and U.S. Interstate 44, near the site of Missouri S&T's Residential College buildings. The Quad buildings will be razed and plans call for that area to be used for additional campus parking. Those plans could be reevaluated, however, and the site could be considered for campus housing if needed.



IN PRINT

Trent Watts, associate professor of English and technical communication, co-authored a book titled *Ed King's Mississippi: Behind the Scenes of Freedom Summer*, published in October by University Press of Mississippi. The book documents the 1964 summer Ed King, a white Methodist minister, spent with Martin Luther King Jr. and other civil rights workers attempting to get black Mississippians registered to vote.

ALMOST HOME

Construction on the Hasselmann Alumni House is almost complete and the Miner Alumni Association staff is ready to move in.

Staff members plan to move into the house, located near downtown Rolla at 1100 N. Pine St., during the winter intercession. Furnishings should be in place by early 2015. Watch construction crews put the finishing touches on the house at mineralumni.com/house.

The campus will host an official dedication ceremony and grand opening for the Hasselmann Alumni House in conjunction with Missouri S&T's St. Pat's Celebration on Saturday, March 14, 2015. Read more about the event on page 20.

Fundraising for the house is ongoing and naming opportunities are still available. For gifts of \$25,000 or more, the Koeppel Challenge will match \$1 for every \$2 contributed. You can also still make a gift to the Hasselmann House registry at mineralumni.com/hahregistry.

For more information, contact **Darlene Ramsay**, MetE'84, assistant vice chancellor for alumni relations and advancement services, at ramsayd@mst.edu or 800-JO-MINER.



‘SMART’ ROCKS DETECT BRIDGE DAMAGE

In the foreground, a passive smart rock contains a magnet suspended in liquid. In the background is a concrete-encased smart rock that is about the size of a basketball and weighs about 50 lbs.

The leading cause of bridge collapse in the U.S. is scour, an erosion process where water flow carries away river bed deposits and creates scour holes around a bridge pier or abutment. Floods intensify the problem and can quickly make the bridge unstable.

But gauging a bridge’s structural stability can be difficult when its foundation is buried in a riverbed, deep below the water’s surface.

Researchers at Missouri S&T are creating “smart” rocks with embedded sensors that are designed to roll near the foundation of an underwater bridge and provide accurate real-time data at the

surface. They’re an easy and cost-effective tool to monitor the bridge’s structural health, says **Genda Chen**, the Robert W. Abnett Distinguished Chair in Civil Engineering at Missouri S&T.

“The rock follows the trail of the scour hole’s progression — as it goes deeper and deeper, the rock will also sink deeper and deeper. One reason we call it ‘smart’ is because the rock can represent the maximum depth of the hole.”

A major concern for scour monitoring is how well the technology holds up during a flood event. But the researchers are seeing good results with smart rocks installed in 2012 at Missouri’s Gasconade River Bridge and Roubidoux Creek Bridge. The rocks

will last forever and the battery survives about five to 10 years, depending on how often data is collected, Chen says.

The researchers hope to partner with state departments of transportation for further studies.

Chen is working with **David Pommerenke**, professor of electrical and computer engineering, and **Rosa Zheng**, associate professor of electrical and computer engineering.

*This technology (patents pending) is available for licensing through the S&T Center for Technology Transfer and Economic Development. Contact **Eric Anderson** at 573-341-4690 or ericwa@mst.edu.*

A NEW ERA FOR ENERGY

Missouri S&T's World War II-era power plant, which burned coal and wood chips to provide steam to the campus since 1945, was decommissioned this past spring to make way for a new geothermal energy system.

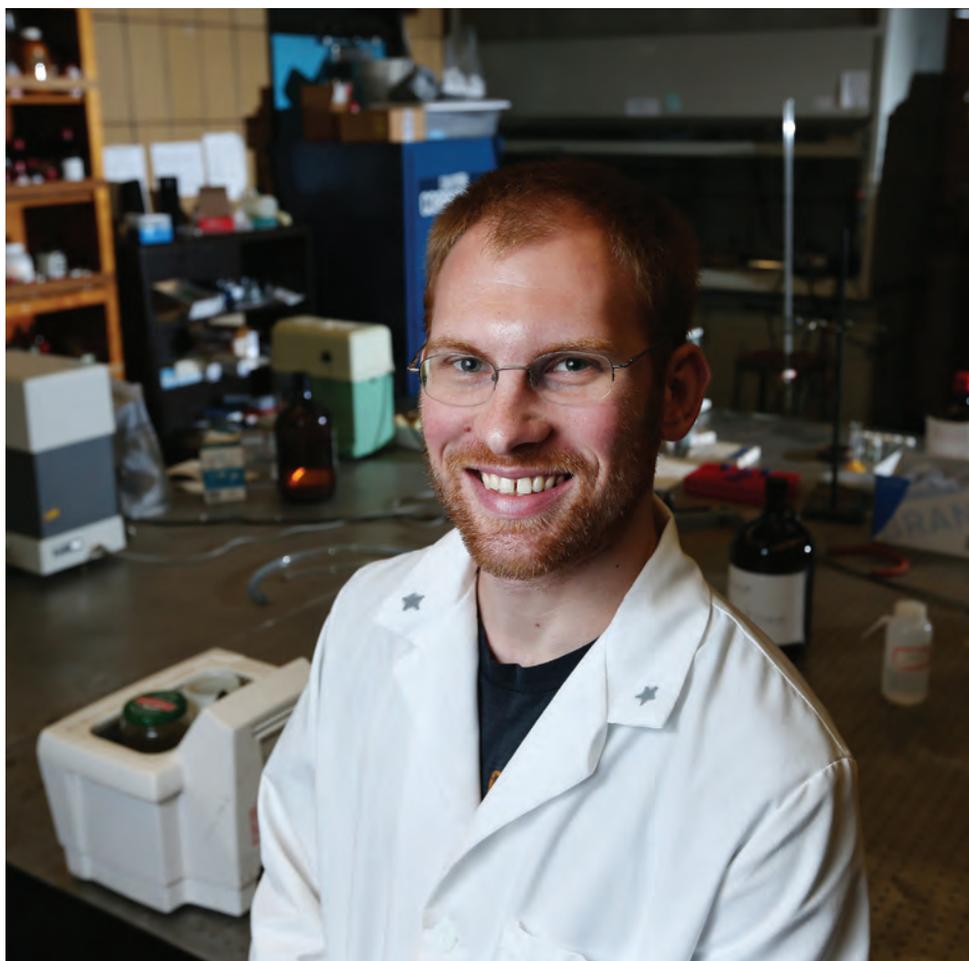
Now fully operational, the system provides heating and cooling to 17 buildings and chilled water to the majority of campus buildings. Under construction since 2012, it is one of the most comprehensive projects of its kind ever undertaken by a university.

Plans for the power plant and its iconic smoke stacks have not been determined.

FALL 2014 CAREER FAIR

Career opportunities and employer relations hosted the largest Career Fair in S&T history with 304 employers on campus. More than 130 alumni returned to recruit graduates of their alma mater. Prior to the career fair, the Miner Alumni Association and Students Today, Alumni Tomorrow (STAT) hosted a continental breakfast to thank the recruiters for their support of S&T. Following the event, the New Alumni Council hosted a happy hour for alumni recruiters.





With funding from the National Science Foundation, Tyler Fears studies nanomaterials in Schrenk Hall.

BUILDING A BETTER BATTERY

Tyler Fears, Chem'10, Phys'10, a Ph.D. student in chemistry, is using nanomaterials that act as cathodes to expand the capacity of lithium-ion batteries through an Integrative Graduate Education and Research Traineeship (IGERT) at the University of Missouri-Columbia. His project is funded by a five-year, \$3 million grant awarded to MU by the National Science Foundation.

Fears works with Helmut Kaiser, research professor at the MU Research Reactor Center, and Haskell Taub, MU professor of physics and astronomy, to observe the structure of the cathode nanomaterials using neutron diffraction, the process of scattering neutrons by matter. He prefers neutron scattering over the more common X-ray scattering technique because its interaction with light elements lets him see the materials' structures in greater detail.

"These materials can also be used in lightweight and strong composites, which absorb energy," says Fears. "Think of a bullet-proof vest. The material absorbs the energy of the bullet by compressing without shattering."

Fears recently submitted a patent application for a project that involves making vanadium oxide gels and films at one-tenth the cost of previous methods. The gels can help form the composites used in his current research. The films have uses in energy-efficient window coatings.

NSF FUNDS CLIMATE VARIABILITY PROJECT

Missouri S&T is one of nine institutions in a research consortium that received a five-year \$20 million grant from the National Science Foundation to study climate variability and its potential agricultural, ecological and social impacts in Missouri.

"The Missouri Transect: Climate, Plants and Community" received funding from the Experimental Program to Stimulate Competitive Research (EPSCoR), a National Science Foundation program to support research; education in science, technology, engineering and mathematics (STEM); and workforce development.

Joel Burken, professor of environmental engineering and director of the Environmental Research Center, will lead the project at Missouri S&T.

IN PRINT

Kathleen Drowne, associate professor of English and technical communication, is the author of *Understanding Richard Russo*. Published in July by the University of South Carolina Press, the book explores themes and writing techniques contemporary American novelist Richard Russo uses in his works.

S&T TEACHER PREP IS AMONG NATION'S BEST

Missouri S&T's teacher certification program is one of the best in the nation and in Missouri, according to a national report released in June by the National Council on Teacher Quality (NCTQ).

The NCTQ report ranked Missouri S&T's teacher prep program in chemistry at No. 87 nationally out of more than 400 secondary education programs. The report also ranked Missouri S&T second among Missouri universities for secondary education programs.

The 2014 NCTQ Teacher Prep Rankings, published by *U.S. News & World Report*, "outline which bachelor's and master's education programs are building the best teachers," *U.S. News* says.

GONE WITH THE WIND (NOISE)

Lian Duan, assistant professor of mechanical and aerospace engineering, received a Young Investigator Research Program Award from the Air Force Office of Scientific Research to study how noise affects wind tunnel testing for hypersonic vehicles.

Using the world's largest supercomputers, Duan studies the physics of noise generation in hypersonic wind tunnels and the effect of the tunnel noise on boundary layer transition. His work can help characterize the natural disturbance environment in hypersonic wind tunnels and improve the testing of high-speed space vehicles.

NUCLEAR FUSION: ACHIEVED

In May, three Missouri S&T physics seniors achieved nuclear fusion of deuterium into helium as part of the final project in their senior research laboratory class. This nuclear fusion reaction is the same process as the one that powers the sun.

Brock Ebert, **Sheldon Harper** and **Jaykob Maser** constructed an inertial electrostatic confinement where two deuterium, a type of hydrogen that has an extra neutron attached to the nucleus, were heated to the point that their nuclei overcame electrical repulsion, collided and fused. The collision bound them together to form a new nucleus of helium and a stray neutron.

Working under the supervision of **Greg Story**, associate professor of physics, the students confirmed that they had achieved fusion by detecting the production of the neutrons. Their work followed a semester-long research project in collaboration with the nuclear engineering department and the Missouri S&T Nuclear Reactor.

"I never thought it would happen because the experiment is so complicated," says Story. "It is an incredible accomplishment for undergraduate students who built their apparatus entirely on their own. Their next goal is to try to optimize the process by adjusting things like the pressure of the gas in the plasma."

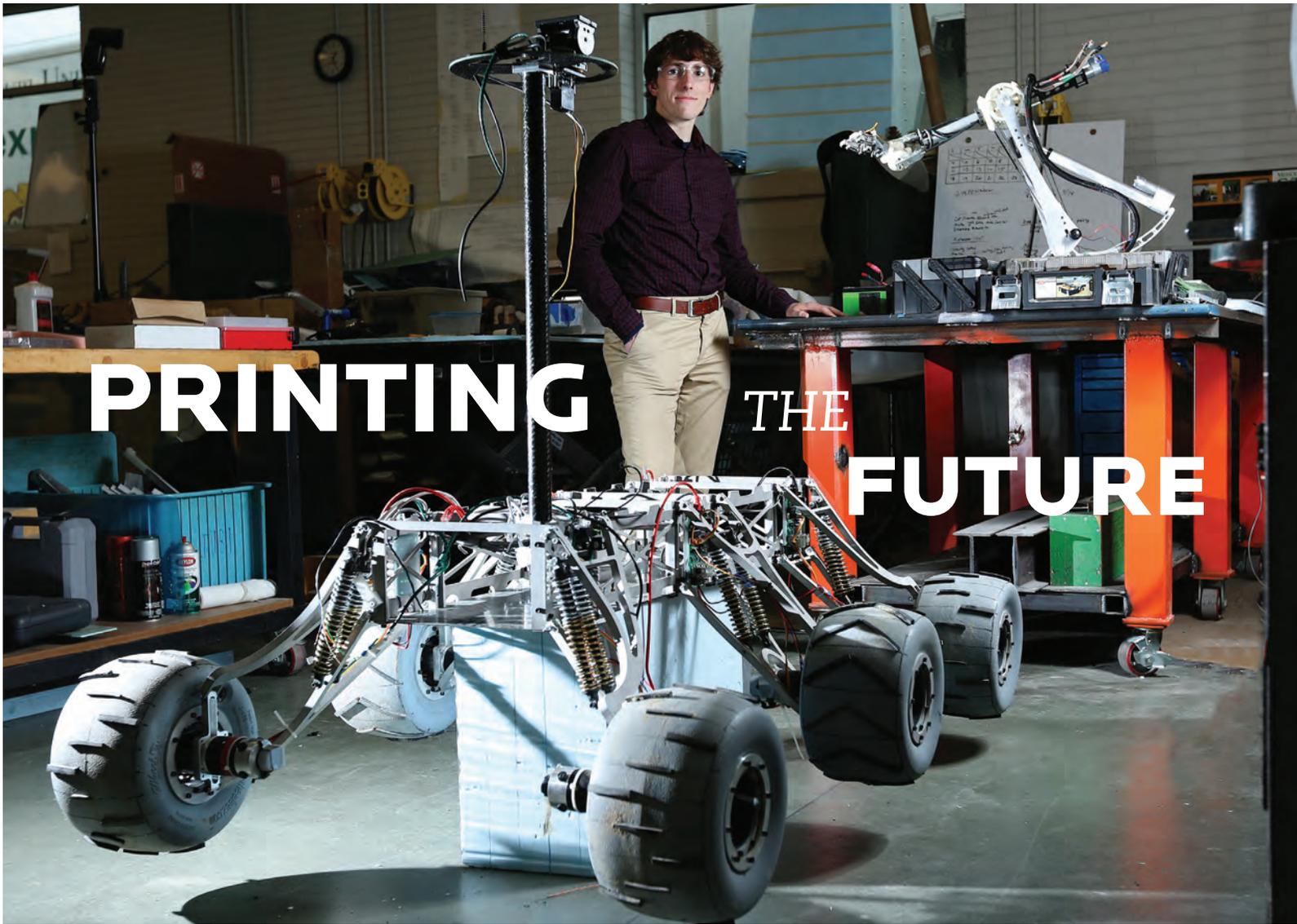


ALUMNI OF INFLUENCE

Three years ago Missouri S&T honored our first class of Alumni of Influence — alumni who, through their wisdom, discoveries, inventions and generosity, have made their mark on the world. This tradition will continue in 2016, when we gather to honor the next class of Alumni of Influence.

We're looking to you, our alumni, for recommendations.

For nearly 145 years, graduates of what is now known as Missouri S&T have accomplished remarkable feats. Tell us about them at influence.mst.edu/nominate.



PRINTING THE FUTURE

Mechanical engineering junior **Jonathan Bopp** is the epitome of a team player. As a second-year member of the Mars Rover Design Team, Bopp spent nearly every spare hour last spring in the Kummer Student Design Center working to perfect the 2014 Mars rover.

But that isn't unusual for a student design team member at Missouri S&T. What sets Bopp apart is his single-mindedness in designing a robotic arm that can perform all the functions a Mars Rover might need, including the ability to retrieve tools, collect soil samples and maintain equipment in the field.

Bopp saved the money he earned during a 2013 summer internship to buy a 3-D printer to prototype his rover designs. He used the printer to build plastic models of the gears and drills that were used on the 2014 rover, then tested them for durability. He says he and the other team members were a little concerned about the plastic's ability to withstand wear and tear, but they liked the cost and weight efficiency of 3-D-printed parts.

His work — and that of his teammates — paid off. In May, the team placed second in the University Rover Challenge, an international competition that challenges college students to design

and build the next generation of Mars rovers. Missouri S&T was the top team in the United States.

This is the second year Missouri S&T's Mars Rover Design Team competed in the University Rover Challenge. In 2013, the team placed last.

"Without 3-D printing, there would be no way we could have implemented such innovative designs and concepts and know that they would succeed," says Bopp. "I learned a lot from last year's rover. It worked okay, but this year I focused on designing the arm to have six degrees of freedom, be light-weight and still look cool."

HOMECOMING 2014

THE WIZARDLY WORLD OF MINERS



1. Donors who contributed to Bertelsmeyer Hall, pictured in front of the building, were honored during a dedication ceremony on Oct. 17.

2. **Bipin**, ChE'62, MS ChE'63, and **Linda Doshi**, pictured during the dedication ceremony, contributed \$1 million to name the Unit Operations Lab.

3. **Ernie Banks**, ChE'81, connected with fellow Miners at Friday's Silver and Gold Gathering.

4. Following the dedication, alumni and friends moved to a tent outside Bertelsmeyer Hall for hors d'oeuvres and drinks at the Silver and Gold Gathering.

5. During the Oct. 18 tailgate party, guests celebrated the installation of artificial turf on Missouri S&T's football and intramural fields.

6. The Miners took on the Cardinals from William Jewell College, but lost 27-34.

7. More than 50 runners and walkers celebrated Homecoming with a trek around campus during the Miner 5K.





HONORING MINER LEGENDS

The Miner Alumni Association honored this select group of alumni for their accomplishments and devotion to the association, the campus and its students during Homecoming. Chosen from an impressive list of nominees, the awardees received special recognition during the Miner Legends Luncheon. Pictured above (from left) are:

Jeffery Thornburg, AE'96, Distinguished Young Alumni

Tansel Yucelen, Class of 1942 Excellence in Teaching

Robert R. Holmes Jr., CE'87, MS CE'89, Alumni Achievement

Daniel A. Reed, CSci'78, Alumni Achievement

Randall Dreiling, CE'81, Frank H. Mackaman Alumni Volunteer Service

Hugh Cole, EMgt'72, Robert V. Wolf Alumni Service

S. Cary Dunston, EMgt'88, Alumni Merit

Dale Spence, ME'97, MS EMgt'05, Distinguished Young Alumni



5



6



7

NASA FUNDS TURBULENCE RESEARCH AT S&T

Missouri S&T received a \$750,000 grant from NASA to help develop new approaches and computational models for predicting turbulence in aircraft flow fields. Washington University in St. Louis and Lincoln University are partners on the project.

Missouri is one of 15 states to receive funding in 2014 through NASA's Experimental Program to Stimulate Competitive Research (EPSCoR). The program supports basic research and technology development in areas relevant to NASA's mission in designated states.

David W. Riggins, Curators' Teaching Professor of mechanical and aerospace engineering at Missouri S&T, is the project administrator.



OFF-THE-GRID ENERGY RESEARCH

A microgrid that connects the four student-built solar houses that make up Missouri S&T's Solar Village began operations this fall to manage and store renewable energy among the four homes. A ribbon-cutting ceremony (pictured above) was held in July.

The microgrid also acts as a research tool that will help Missouri S&T professors and students analyze the abilities of small-scale microgrids. Students living in the four solar houses will monitor the results and demonstrate how people interact with a new system of energy management.

IN PRINT

Matt O'Keefe, MetE'85, professor of materials science and engineering; **Bill Fahrenholtz**, Curators' Professor of materials science and engineering; and **James O. Stoffer**, professor emeritus of chemistry, co-authored a chapter in the book *Rare Earth-Based Corrosion Inhibitors* with **Eric Morris**, PhD Chem'00. The book was published in August by Woodhead Publishing Series in Metals and Surface Engineering.

TIME-LAPSE MICROSCOPE IMAGES AID STEM CELL RESEARCH

Using time-lapse microscopy images, **Zhaozheng Yin** can record the movement and division of cells and track changes in their shape and appearance. His research could lead to advances in the growth of stem cells for medical purposes.

Yin, an assistant professor of computer science, earned a Faculty Early Career Development Award from the National Science Foundation to support his research.

"There is a lot of interest in using a person's own stem cells to repair an injury — like for a soldier wounded in combat," says Yin. "Stem cells can be grown very quickly, but biologists need to be able to control the growth of cells and decide whether they should become bone, blood or skin. Our goal is to help biological researchers see the process of the stem cell growth so they can learn from it."

Using a time-lapse video sequence, Yin tracks and monitors individual cells. "Every time a cell divides it creates 'children,' each with its own family tree. It looks like a garden," he says. "These trees give us a lot of information to compute. An algorithm counts the cells, tracks how fast they divide and when they die."



IMPROVING RURAL DRINKING WATER

Disinfectants used in water treatment operations could generate harmful byproducts that are unregulated by the U.S. Environmental Protection Agency (EPA).

But **Danielle West**, a Ph.D. student in chemistry, is screening Missouri drinking water for contaminants and seeking new treatment techniques that could minimize — or even eliminate — those byproducts.

With grants from the Missouri Department of Natural Resources and the EPA, West is helping to develop a rapid, sensitive and cost-effective method

to detect perchlorate and bromate in drinking water, as well as a technique for removing perchlorate. The advanced detection method will play an important role in monitoring of drinking water quality in the future.

“There are just so many chemicals that have potential to get into water,” West says. “Many harmful chemicals aren’t currently regulated and can be potentially found in many communities’ drinking water. Our goal is to minimize the formation of these chemicals or find technologies capable of removing them to ensure safe drinking water.”

Disinfectants like monochloramine could generate harmful byproducts that are unregulated by the EPA. West and her colleagues are researching the use of an alternative disinfection agent to treat the water. The disinfectant could provide an economical approach to limiting the formation of contaminants. They believe that incorporating this disinfectant into current water purification processes will improve drinking water safety.

Yinfa Ma, Curators’ Teaching Professor of chemistry, and **Honglan Shi**, associate research professor of chemistry, are West’s advisors.

ST. PAT'S CELEBRATION PLANNED AT NEW ALUMNI HOUSE

All alumni and friends are invited to attend the 107th St. Pat's party, which will mark the official dedication of the Hasselmann Alumni House. The celebration will be held on Saturday, March 14, at the newly completed house, located at 1100 N. Pine St.

The Hasselmann Alumni House will open at 9 a.m. and a dedication ceremony will begin at 9:30 a.m. in the Grand Hall.

Commemorative T-shirts will be given to the first 500 guests.

Following the parade, free hot dogs will be available in the beer garden and a Hasselmann Alumni House Supporter Picnic will honor the alumni and friends who contributed to the project.

Make plans now to travel to Rolla for this momentous occasion or attend one of the St. Pat's parties in your section. Help make the 107th celebration the Best Ever!

VOLLEYBALL TEAM PLAYS IN NCAA TOURNEY

Seeded sixth in the Midwest Regional, the Miner volleyball team fell in the opening round of the NCAA Tournament to the Grand Valley State Lakers on Nov. 20. This was the second time in four years S&T was selected to play in the tournament.

The Miner volleyball team finished its season with a record of 18-14.

SPORTS

BY THE NUMBERS



School-record quarterback sacks recorded by Missouri S&T's defense during the Miners' 2014 season. This broke the previous record by two sacks.

1.12

Career goals-against average for Lady Miner goalkeeper **Kaitlyn Deister** heading into her senior year. Deister recorded a 0.56 mark in goal as a junior.

Top finishes for senior Lady Miner cross country runner **Alyson Smith** during the last two seasons.

9

12

Consecutive shutout wins for the Missouri S&T men's soccer team from October 2013 to October 2014.

54

Academic All-America awards earned since 2000, the fifth-most of any NCAA Division II institution over the last 14 years.

WHIPPING UP A CUSTOM CAREER



Darian Johnson with cupcakes she made for her fellow summer camp counselors at Missouri S&T.

Food Network aficionado **Darian Johnson** always wanted to be a chef. In high school she also discovered an affinity for chemistry.

“I thought, ‘I like chemistry and I like food. What can I do with this?’” she says. “So I applied to all the food science-y schools.”

Of course, Missouri S&T was not one of them.

“My plan was to go to the University of Tennessee at Knoxville to study food science. My twin brother was going to UT-Martin. I thought it was perfect; we could be together!” says Johnson, a junior in chemical engineering from Kansas City, Mo. “But then I thought about my mom — she only has two kids and he’s going away to Martin. I just couldn’t leave her.”

Then her best friend from high school came to Missouri S&T and told Johnson, “I love it here, but there’s just one problem: You’re missing.”

A Missouri S&T representative who visited Johnson’s school during a college fair also encouraged her to give Rolla a try. “He said, ‘I’ve seen your test scores. You should really think about engineering,’” says Johnson. He suggested she study chemical engineering, supplemented with some online food science courses.

Johnson visited campus for a Pre-College Initiative program. “After meeting students and seeing campus I thought, ‘I might actually like this place,’” she says.

But when Johnson arrived as a freshman, she didn’t participate in anything outside of class. She also ignored numerous emails inviting her to meet potential mentors, she says.

“I just kept hitting delete, delete, delete. So my freshman year I didn’t have a mentor,” she says.

Today, she mentors others through the student diversity program, during Opening Week, and as a student success coach at the Burns & McDonnell Student Success Center. Johnson is also the new president of the Association for Black Students and is active in Phi Sigma Phi national honor fraternity.

“I love it here now,” says Johnson. “I’m meeting all types of new people and I’m very involved.”

She’s also networked with people in the food science industry and is researching online courses. “I would like to work in product development,” she says. “I want to make new food products that are more tasty, healthy and cost effective.”

BERT ELSM EYER HALL

a bright future. a bold vision.

by Maridel Allinder | allinderm@mst.edu



When alumni, donors and dignitaries gathered in April 2013 to break ground on James E. Bertelsmeyer Hall, Chancellor **Cheryl B.**

Schrader opened her remarks with a story about a “providential collision of opportunity and generosity” that occurred two years earlier.

Jim Bertelsmeyer, ChE’66, remembers it clearly.

“I had been thinking that I wanted to make a major contribution,” says Bertelsmeyer. “I was inspired by **Gary Havener**’s words at the groundbreaking for the Havener Student Center. Gary (Math’62)

said he was motivated to do something while he was alive so he could see and enjoy it. I remember Gary also commenting that he wished **V.H. McNutt** (MinE 1910, MS MinE 1912) had been there for the dedication of McNutt Hall. That got me thinking, Why not make a contribution while you’re living? So I contacted (then-chancellor) **Jack Carney** and that was all he needed to set the wheels in motion.”

After nearly six years at the helm of Missouri S&T, John F. Carney III was preparing for retirement in a few months — and pondering his own legacy. Schrenk Hall immediately came to mind. The



40-year-old chemical and biochemical engineering building was desperately in need of renovation, but prohibitive cost estimates had deferred maintenance. Convinced that a new building for chemical and biochemical engineering would be far more cost effective than a major renovation, Carney made a trip to Tulsa to talk with Bertelsmeyer about funding possibilities for the project.

With state funding unavailable for capital projects, Carney saw another possibility: bond financing. But he knew he would have to demonstrate significant financial support from alumni before the University of Missouri System

Board of Curators would consider financing a portion of the project. He asked Bertelsmeyer to lead the charge as the major donor.

“ The whole project came together in a very short period of time — in a down economy. ”

Within a few days, Carney had his answer. In April 2011, Missouri S&T announced Bertelsmeyer's \$5 million gift in support of the new building. With the momentum provided by a lead gift, Carney went to the Academy of Chemical Engineers to ask for support.

The timeline was tight (the curators' last meeting of the fiscal year was less than 60 days away) and the fundraising goal was a leap of faith in Miner pride.

That leap proved to be a lifeline. The response was immediate and enthusiastic as alumni stepped forward, beginning with academy member **Bipin Doshi**, ChE'62, MS ChE'63, president and CEO of Schafer Gear Works Inc. of South Bend, Ind. He and his wife, **Linda**,



Students study in the Bob and Ginny Pahl Student Lounge.

pledged \$1 million to the project. Before long, a grassroots fundraising campaign took off among chemical engineering alumni spanning more than 65 years of graduating classes, from 1944 to 2010. Their groundswell of support made the difference.

Within weeks, Missouri S&T raised a total of \$8 million in private donations. In June 2011, the Board of Curators unanimously approved bond financing of \$12.3 million. The final \$2 million needed to complete the \$22.3 million project came from campus funds.

“The whole project came together in a very short period of time — in a

down economy,” says Bertelsmeyer. “The legislature was cutting funding to education and the economy was still trying to recover from the 2008 economic collapse. It was truly a team effort.”

One of the most remarkable demonstrations of teamwork came from S&T graduates who were employees or retirees of ExxonMobil. Rallied by **Jason Brinker**, ChE'97, they took advantage of the company's 3-to-1 matching gift program to contribute nearly half a million dollars. (Read more about the contributions of ExxonMobil alumni on page 32.)

The new campus landmark is a testament to many. As Bertelsmeyer said on the day he symbolically shoveled the project's first dirt: “Support came from alumni of all ages — and also from our current students. It was truly a broad-based effort. I'm proud that my family and I could play a part.”

Another speaker that day, **Brian Peterson**, ChE'11, MS ChE'13, summarized the sentiments of many: “I am extremely proud of where our department has been, and where we are going.” ■



JIM BERTELSMeyer

education champion. stem stakeholder. proud miner.

by Maridel Allinder | allinderm@mst.edu

When fireworks lit up the sky over Missouri S&T at the dedication of James E. Bertelsmeyer Hall, it was a fitting conclusion. Because fireworks and Jim Bertelsmeyer, ChE'66, go back a long way.

In fact, they landed him in the dean's office almost 50 years ago, when a homemade firecracker exploded under a professor's shoe in Schrenk Hall.

"A couple of friends and I decided to make firecrackers in chemistry lab," says Bertelsmeyer, a university trustee and lead donor to the new 68,500-square-foot home for chemical and biochemical engineering. "As I recall, we used iodine crystals and ammonium hydroxide. In the process of making them, we spilled some on the floor. About that time, Doc Fisher (**E.D. Fisher**, former professor of chemical engineering) wandered by and stepped on a piece. The explosion didn't do any damage, but it certainly gave him a jolt."

Bertelsmeyer and his cohorts in crime ended up paying a visit to Dean of Student Affairs **Paul Ponder's** office.

“S&T produces well-rounded engineers who know how to work and can hit the ground running.”

"We were warned we would be expelled if we ever did it again," says Bertelsmeyer. "But on the way out, Dean Ponder asked, 'Did you make those out of iodine crystals and ammonium hydroxide?' When we answered in the affirmative, he smiled and said, 'I think I did the same thing in a chemistry lab.'"

Growing up in Florissant, Mo., Bertelsmeyer credits an older friend with introducing him to Missouri S&T. "I remember liking the size of the university," he says. "I felt like I could get a better education at a smaller school."

He also found a balance of student life (Lambda Chi Alpha fraternity, Student Council) and industry experience

(a co-op position at Monsanto and a summer internship at General Motors).

"The engineering education I got was one of the best in the country," says Bertelsmeyer. "The technical knowledge I acquired helped me significantly. The social and leadership skills I learned helped with the development of my business career later in life."

Bertelsmeyer began his career with Mobay Chemical Corp. After serving in the U.S. Marine Corps and earning an MBA from Memphis State University, he joined Conoco Pipeline's management training program. In 1989, he founded Tulsa-based Heritage Propane Partners, a startup that grew into the nation's third-largest retail propane marketer. He took the company public in 1996 and is now retired.

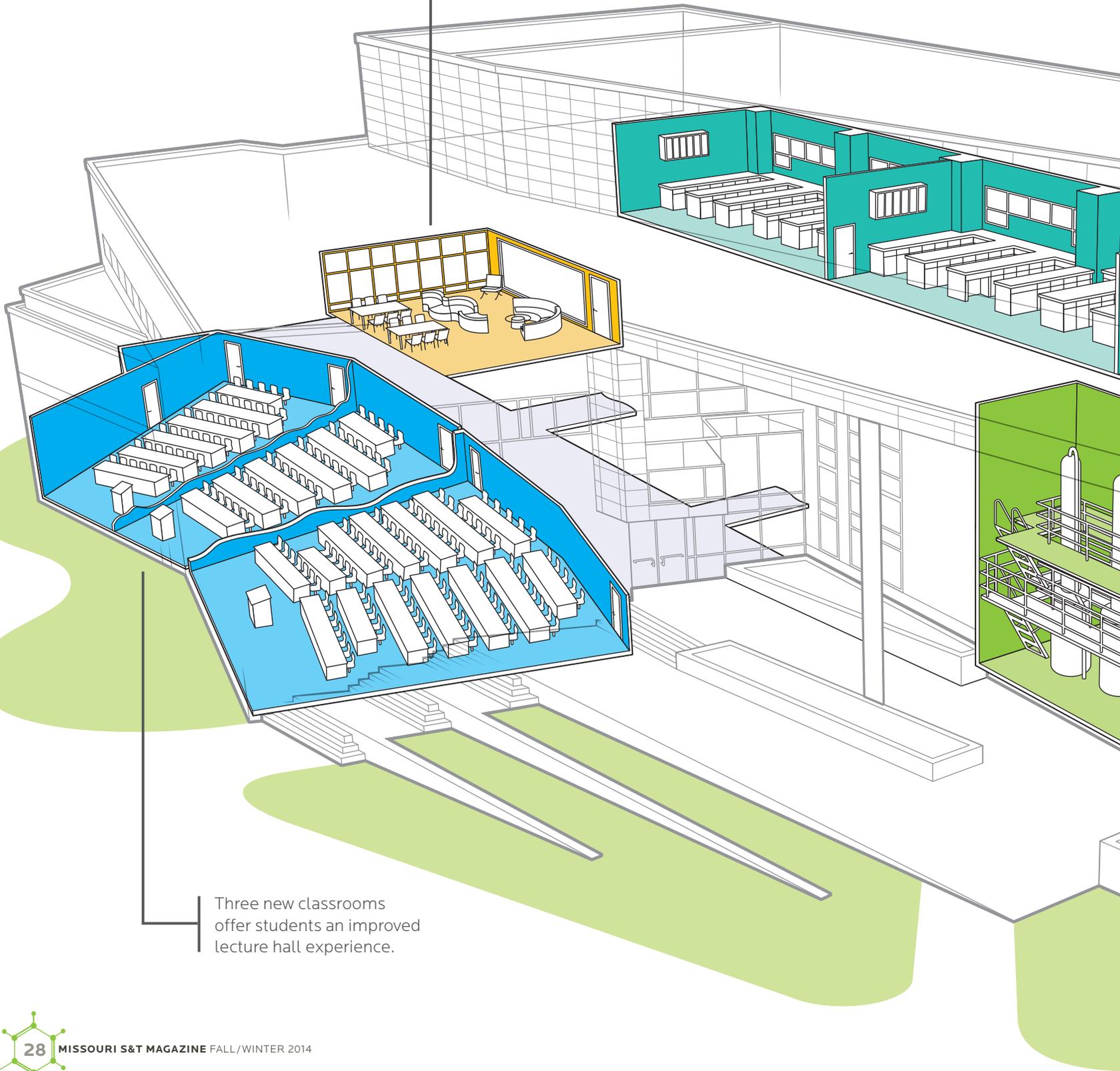
A former president of the Miner Alumni Association, Bertelsmeyer

was honored as one of Missouri S&T's Alumni of Influence in 2011. The endowment he established in 1998 — the largest in alumni association history — awards four-year scholarships to two new students every year for a total of eight scholars at any given time. For Bertelsmeyer, there is no better investment in the future.

"S&T is one of the best values in education today," he says. "The hundreds of companies that recruit on campus every year are there for one reason: S&T produces well-rounded engineers who know how to work and can hit the ground running." ■

AN INSIDE LOOK

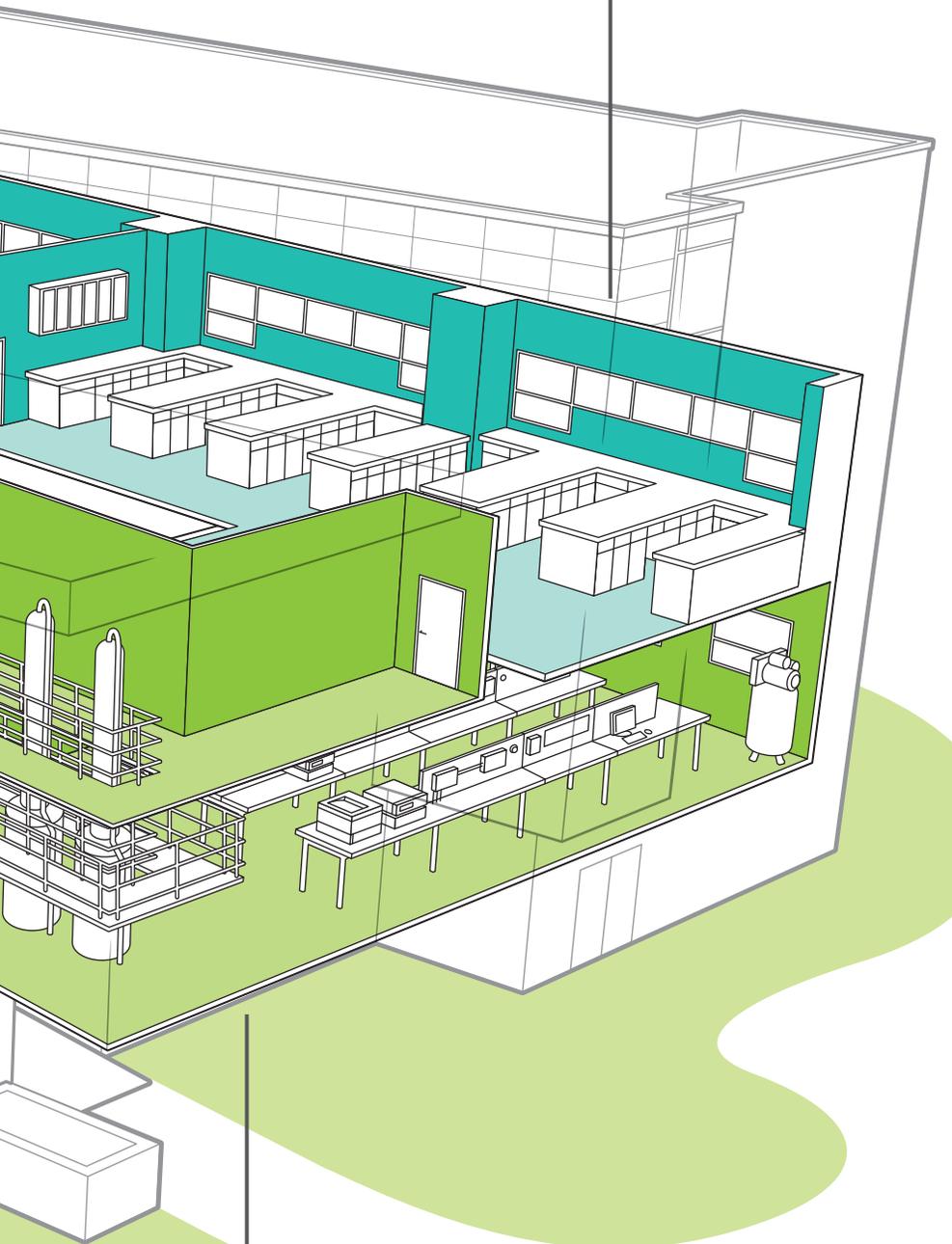
This comfortable student lounge is designed to give students an area to gather, study and relax between classes.



Three new classrooms offer students an improved lecture hall experience.

SPECIAL UNIT OPS

A hub of research, Bertelsmeyer Hall features multiple flexible labs that support studies that range from advancing solar energy fuel cells to developing nanoparticles for drug delivery in cancer treatment.



Frank H. Conrad Unit
Operations Laboratory

The Unit Operations Laboratory is an essential part of every chemical and biochemical engineering student's education. "Unit Ops" is where students learn to apply the theory of process engineering in a practical, hands-on way. It's also the place where students, working together on projects, forge long-standing friendships, says **Bipin Doshi**, ChE'62, MS ChE'63.

"I made some great friends in the lab because most of the time we were working in teams," says Doshi, now president and CEO of Schafer Gear Works Inc. in South Bend, Ind. "Looking back, that was an important part of my education. It prepared me for a lifetime of working with people."

The new Unit Ops Lab in Bertelsmeyer Hall is even more special for Doshi. He and his wife, **Linda**, donated \$1 million to name the lab in honor of the late **Frank H. Conrad**, a chemical engineering professor who died in 1983. Conrad was Doshi's academic advisor and mentor.

"He was very skilled at advising in a mentoring way," Doshi says. "He treated everybody with equal respect."

Conrad also opened the door for Doshi's first job by arranging an interview for Doshi with a division of U.S. Rubber. "That morning, he asked me if I knew that the company was holding interviews today," Doshi recalls. "When I said I didn't, he told me, 'I've signed you up for an interview this afternoon.'"

The company offered Doshi his first job, and he spent the next 25 years with U.S. Rubber (later Uniroyal) before buying Schafer Gear Works in 1988.

"I've never forgotten the kindness and caring that Dr. Conrad showed me," Doshi says. "He deserves to be recognized, and I hope that by naming the Unit Ops Lab in his honor, his legacy will live on."



BERTELSMEYER HALL

at a glance

68,500

SQUARE FEET IN
BERTELSMEYER HALL

“ No matter who you are or who you become, it is always good to be a little bit humble and a whole lot giving. Give back to those individuals and institutions, like Missouri S&T, who have helped you along the way. Because, when it's all said and done, we will never be remembered for what we have, only for what we give. ”
– **Kent Thoeni**, ChE'63

63 

NUMBER OF YEARS
ABET HAS ACCREDITED
MISSOURI S&T'S CHEMICAL
ENGINEERING PROGRAM

82



INDIVIDUAL AND
CORPORATE
DONORS

AWARDED TO DATE:

3,892



BACHELOR'S DEGREES
IN CHEMICAL ENGINEERING

“ This type of investment at Missouri S&T aligns with one of our core values of improving lives. ”
– **Phillips66**

380

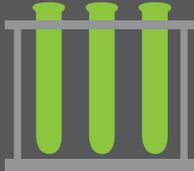
SEATS IN
THREE
LECTURE
HALLS

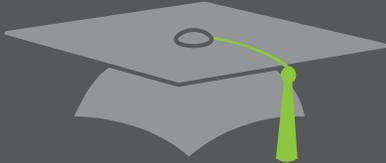
16

FACULTY
OFFICES

“ I gave because Rolla gave so much to me. All the professors in Schrenk Hall gave me a world-class education, and with that experience I was blessed with a rewarding job. I'm proud to put my donation and ExxonMobil's match to work for future generations of chemical engineers. ”
– **Marcus H. Hayer**, ChE'10

“ Schrenk Hall was all but brand new – clean, bright and spacious – as I got my degree. In the last few years, visits to campus and the department were a surprise, in terms of how old and worn the building appeared to be compared with my memories. To me, the need for an upgrade or a new building was obvious. ”
– **John Campbell**, ChE'74

161 
Ph.D.s IN CHEMICAL
ENGINEERING AWARDED TO DATE


1919

YEAR MISSOURI S&T
AWARDED ITS FIRST
THREE BACHELOR OF
SCIENCE DEGREES IN
CHEMICAL ENGINEERING

“ Long after retiring from my engineering career, I realized that Rolla had always been the key to opportunities that brought success. I hope that future generations of chemical engineering graduates will find rich rewards in their education at Missouri S&T, and that their lives will be enriched because of Bertelsmeyer Hall and all the resources of a great university. ”
– **John W. Broadhacker**, ChE'44

“ The Unit Operations Lab was the first course that offered me some hands-on learning. I hope that students take full advantage of the modern facility and want to spend more time in the building socializing with other students – whether it's collaborating, doing homework, sharing intern or co-op job experiences, or just strengthening the bonds of friendship. ”
– **Sarah Bock**, ChE'87

688
MASTER'S DEGREES
AWARDED IN
CHEMICAL
ENGINEERING
TO DATE 

1ST 
CAMPUS BUILDING TO FEATURE
CONTACTLESS SMART CARD
TECHNOLOGY, MAKING BUILDING
ACCESS FASTER AND EASIER

“ This building is a platform upon which the future reputation of our degrees and the university itself will stand. ”
– **Kimberly Kay Denney**, ChE'82

31.5% 
INCREASE IN CHEMICAL
ENGINEERING MAJORS SINCE 2011

5 
BUILDINGS
CONNECT TO
BERTELSMEYER
HALL'S GEOTHERMAL
ENERGY PLANT

INFLUENTIAL ADVISORS

Members of the Academy of Chemical Engineers and the Chemical and Biochemical Engineering Industry Advisory Council were instrumental supporters of Bertelsmeyer Hall, and helped see the project through to completion.

The academy was established in 1996 to honor Missouri S&T's chemical engineering alumni for contributions to their profession, leadership and involvement with their alma mater. It serves as an advisory group to the department chair, faculty and students.

"The academy members have been a strong source of help to the department in recent years," says **Muthanna Al-Dahhan**, chair and professor of chemical and biochemical engineering at Missouri S&T. "They played an important role in raising the funds needed for the new building."

A complete list of Academy of Chemical Engineers members is available online at rol.la/YMyFF0.

Established in 1991, the Chemical and Biochemical Engineering Industry Advisory Council also serves as an advisory group for the department. The group is made up of representatives from industries that hire chemical engineers, including chemical, oil, consumer products, biotechnology, renewable energy products, aerospace, engineering, construction management and consulting, and higher education.

"The Industry Advisory Council helps the department with ABET accreditation, including any needed assessments and evaluation plans," says Al-Dahhan. "Its members review curriculum development and continuous improvement and they give their feedback. They also help the department reach out to industry to raise the needed funds for collaboration."

More information about the Industry Advisory Council, including a list of current members, is available online at rol.la/1nKYxNq.

A PERFECT MATCH

by Mary Helen Stoltz | mhstoltz@mst.edu



Danielle Bowles-Martin, a senior in chemical engineering, studies in an ExxonMobil lecture hall.

When former Chancellor **John F. Carney III** issued a challenge to chemical engineering alumni to help fund a new chemical and biochemical engineering building, a group of alumni at ExxonMobil took action.

Jason Brinker, ChE'97, venture manager for ExxonMobil and the company's recruiting lead for Missouri S&T, heard about the plan to upgrade the facility when Carney presented to a group of alumni in Houston. Later, he received an email about the fundraising effort.

"I knew this was a rare moment where I could make a lasting contribution to my alma mater and my department," Brinker says.

Not only did Brinker make a gift to support the cause, he helped spread the word to fellow alumni who are employed at ExxonMobil.

"When they found out about the campaign, they were happy to contribute," Brinker says. "As chemical engineers, we all feel a personal connection with the department and we appreciate the quality of the education we received. The Bertelsmeyer Hall campaign was our chance to help the department grow and succeed by supporting the next generation of chemical engineers."

The ExxonMobil employees took advantage of their company's

corporate match to leverage their personal gifts to the project.

"ExxonMobil has a terrific program to support STEM education at universities, matching alumni gifts at a 3-to-1 ratio," Brinker says. "This is a great way for alumni to multiply the impact of their gifts."

Thanks to the combined effort of the ExxonMobil alumni and the company's generous matching program, ExxonMobil raised nearly \$500,000 toward Bertelsmeyer Hall. That contribution made the company the project's third-largest donor.

The ExxonMobil alumni chose to use their funds to name one of the building's main lecture halls. The room can be divided into two smaller lecture halls — each named after one of the company's historic logos. Pegasus is Mobil's mascot and Tiger is Exxon's mascot.

"We wanted a space that would have a big impact on the most students, but would also showcase ExxonMobil's support for the university," Brinker says. "It was a good opportunity for both sides." ■

THANK YOU!

Richard J., ChE'61, and **Shirley Agricola**
Alycia Ahrens, ChE'01

Kelley Arrington, ChE'07
Denis Andrew, ChE'87, and

Catherine C., ChE'87, **Backer**
Ernest Kelvin, ChE'81, and

Angela Renae, EE'87, **Banks**
Robert Sean, ChE'96, and **Lenca Bartel**

Shirley Bauer, *in memory of*
Dick Bauer, ChE'52

Joshua Kolett and **Katelyn**, ChE'08,
Baygents-Kolett

James E. Bertelsmeyer, ChE'66
Sarah, ChE'87, and **Daniel**, ME'87, **Bock**

Boeing Foundation
Jason Brinker, ChE'97, and **Josh Frey**

John W. Brodhacker, ChE'44
Daniel Burtman, ChE'09

John, ChE'74, and **Sharon Campbell**
Howard M. Casselman, ChE'48

Chevron Corp.
ConocoPhillips

Mark A. Cox, ChE'06
Covidien

Michael "Terry" Doyle and
Kimberly Kay, ChE'82, **Denney**

Justin Louis DePauw, ChE'99
Brian, ChE'87, and **Beth Donley**

Roger, ME'65, and **Sandy Dorf**
Linda and **Bipin**, ChE'62, MS ChE'63, **Doshi**

in memory of **Frank H. Conrad**
Emerson Process Management

ExxonMobil
Gary J., ChE'73, MS ChE'74,

and **Connie Fennewald**
Fluor Foundation

James Allen, ChE'83, and
Peggy Ann, MS Math'83, **Folta**

Eric W. Fryatt, ChE'01
Paul A., ChE'50, and **Betty Haas**

Gail (Dolan), ME'72, and
Donald E. Hahn, ChE'82

Allan H. Harvey, ChE'83, and **Paula Harvey**
Gary W. Havener, Math'62, *in memory*

of **Dean Culnan**, ChE'62, and
Roger A. Schild, ChE'62

Marcus H. Hayer, ChE'10
Harry C. Hershey, ChE'60,

MS ChE'63, PhD ChE'66
Daniel Edmond Jackson, ChE'90

George W., ChE'50, and **Barbara Jamieson**
Fred Kielhorn, ChE'87

Kraft Foods Inc.
Dale Anthony, ChE'82, and

Joan (Fleming) Kyser
James R. Lattner, ChE'78

G. Glenn Lipscomb II, ChE'81, and
Janet L., ChE'81, **Hartley**

Guy Mace, ChE'65
Mallinckrodt Inc.

Robert L. Martin, ChE'49, *in*
memory of **Virginia B. Martin**

James M., ChE'45, and **Judith McKelvey**
Charles Lee, ChE'82, and **Alana Meyer**

Stephen G., EMgt'82, and **Maureen E.**
(Murphy), ChE'82, **Midgley**

Ron, ChE'64, and **Janice Miller**
Mondelez International Foundation

Peggy Cahill Montana, ChE'76
MYNAH Technologies LLC

Bob, ChE'68, MS ChE'70, PhD ChE'74,
and **Ginny Pahl**

Sue and **Dennis**, ChE'68, **Parker**
Gary K., ChE'60, PhD ChE'66,

and **Barbara R.**, Chem'61,
MS Chem'65, PhD Chem'85, **Patterson**

Kent, ChE'82, and **Ellen Peccola**
Pfizer Inc.

Phillips66
Pioneer Natural Resources Co.

Procter and Gamble Co.
Chad David, ChE'97, and **Elizabeth Reimann**

Rosemount Inc.
Stephen S. Schade, ChE'74, MS ChE'75

David, ChE'78, and **Karen Scharf**
Cornelia (Hecker), ChE'83, and **Pete Schirber**

Jeff, ChE'80, and **Pat**, ChE'80, **Sheets**
Shell Oil Co. Foundation

Robert E. Stevens, ChE'81
Barbara Stirrat *in memory*

of **Jay Stirrat**, ChE'64, MS EMgt'74
Amanda L. Sutterer, ChE'09

Larry D., ChE'77, and **Jane Swinney**
Kent, ChE'63, and **Sue Thoeni**

Roger, ChE'71, and **Jean Truitt**
Kevin D., ChE'80, and **Susan Watson**

A.B. Westbrook
Kevin and **Theresa**, ChE'98,

MS EMgt'02, **Williams**
Elizabeth Ann Willis, ChE'00

Kenneth W., ChE'60, and **Ramona Wood**
Daniel, ME'89, and **Linda**, ChE'88, **Wright**

Kenneth J., ChE'64, and **Caroline Wulfert**
John and **Kathryn Ann (Wittler)**,

ChE'86, **Zeigler**
3M Foundation

We thank all of the generous donors who helped make Bertelsmeyer Hall a reality.





MINER ALUMNI ASSOCIATION

Representing more than 56,000 alumni worldwide

For more information about your representatives, go to mineralumni.com.

PRESIDENT

RICHARD W. EIMER JR. '71
retiredexec4@gmail.com

PRESIDENT-ELECT

HELENE HARDY-PIERCE '83
hpierce@gaf.com

VICE PRESIDENTS

ERNEST K. BANKS '81
ernie.banks@prodigy.net

DELORES HINKLE '75
deloreshinkle@gmail.com

RONALD W. JAGELS '86
ronjagels@gmail.com

MIKE MCEVILLY '80
michaeljmcevilly@comcast.net

CHRIS RAMSAY '83
cramsay@mst.edu

STEPHEN W. RECTOR '72
swr@rimop.com

TREASURER

W. KEITH WEDGE '70
bk670wdg@fidmail.com

ASSISTANT TREASURER

RICHARD L. ELGIN '74
elgin@rollanet.org

SECRETARY

BILL BRUNE '75
tallbill@bruneweb.com

DIRECTORS-AT-LARGE

ROBERT "R.J." AGEY '03
rageeumr@gmail.com

TESSA C. BAUGHMAN '04
tessa.russell@gmail.com

PRESTON CARNEY '02
pcarney@cox.net

MICHAEL EMANUEL '87
mjmanuel@swbell.net

KURT HASLAG '07
khaslag@askbrinkmann.com

DARRIN TALLEY '88
darrin.l.talley@exxonmobil.com

STUDENT REPRESENTATIVES

Student Council President
REBECCA JACOBSEN
rsj7w2@mst.edu

Graduate Student President
ERICA RONCHETTO
earp7c@mst.edu

Student Union Board President
NICHOLAS MCGRAW
nrm7cd@mst.edu

Students Today, Alumni Tomorrow
TIMOTHY VICTOR
trv7w6@mst.edu

COMMITTEE CHAIRS

Student Engagement
ERNEST K. BANKS '81
ernie.banks@bjc.org

Alumni Engagement
KURT HASLAG '07
khaslag@askbrinkmann.com

Strengthening Campus Relations
MICHAEL MCEVILLY '80
michaeljmcevilly@comcast.net

Financial Resources
STEPHEN W. RECTOR '72
swr@rimop.com

Marketing and Communications
DARRIN TALLEY '88
darrin.l.talley@exxonmobil.com

PAST PRESIDENTS

ARTHUR G. BAEBLER '55
ivybaeb@att.net

ROBERT D. BAY '49
rdbay673@yahoo.com

ROBERT T. BERRY '72
rberrytwin@aol.com

JAMES E. BERTELSMEYER '66
pinnacleinvestmentsllc@gmail.com

ROBERT M. BRACKBILL '42
rbrackbill@hotmail.com

MATTEO A. COCO '66
cocohm@sbcglobal.net

JOHN EASH '79
johnneash@miner.mst.edu

LARRY L. HENDREN '73
lhendren@ess-inc.com

ZEBULUN NASH '72
zebnash@sbcglobal.net

JAMES R. PATTERSON '54
jrpat@charter.net

DARLENE (MELOY) RAMSAY '84
ramsayd@mst.edu

PERRIN R. ROLLER '80
roller@miner.mst.edu

SUSAN HADLEY ROTHSCHILD '74
srothsch@swbell.net

GERALD L. STEVENSON '59
stevenson63@verizon.net

JOHN B. TOOMEY '49
starrgmt@aol.com

STAFF

NANCY HATCH
Alumni Relations Manager
hatchn@mst.edu

KATHY INMAN
Administrative Assistant
inmank@mst.edu

KATIE JACKSON
Assistant Director
jacksonkj@mst.edu

DARLENE (MELOY) RAMSAY '84
Assistant Vice Chancellor for Alumni
Relations and Advancement Services
ramsayd@mst.edu

TRAVIS SEWELL
Alumni Relations Manager
sewelltd@mst.edu

SARAH GROSE
Secretary
grose@mst.edu

RENEE D. STONE
Accountant
renees@mst.edu

AREA DIRECTORS

Area 1: DOUGLAS MARQUART '82
dwmarquart@yahoo.com

Area 2: STEPHEN SCHROCK '11
schrock.stephen@gmail.com

Area 3: DANIEL RYAN '12
daniel.lewis.ryan@gmail.com

Area 4: JOHN KEATING '73
jmkeating@aol.com

Area 5: DAWN STUFFT '99
dmstufft@marathonpetroleum.com

Area 6: GARY HINES '95
ghines3@tx.rr.com

Area 7: BERNARD HELD '75
bhheld@cmtengr.com

Area 8: RICHARD BERNING '69
richtbern@aol.com

Area 9: MICHAEL GROSS '88
smoky1001@yahoo.com

Areas 10-18:
ELIZABETH BAUMBACH '90
elizabeth.baumbach@gmail.com

MICHAEL BUSBY '78
mike@airsolutionsinc.com

ALAN ERICKSON '75
alericson@gmail.com

RUSSELL GOLDAMMER '78
russell_goldammer@ctsinc.biz

RACHEL JUNG '09
rlk_755@hotmail.com

JEREMIAH KING '06
jeremiah.king@askbrinkmann.com

WILLIAM MCALLISTER III '76
bmcallister@burnsmcd.com

JOHN RENZ '81
johnwrenz@gmail.com

STEPHEN SQUIBB '98
steveandamie@gmail.com

Area 19: DANIEL BAILEY '03
daniel.jaye.bailey@gmail.com

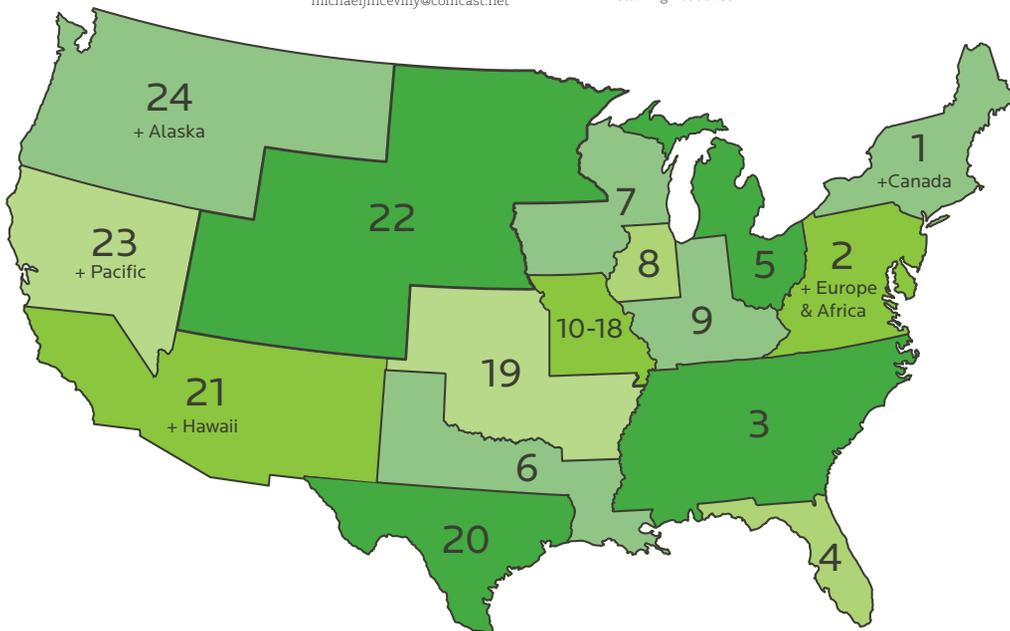
Area 20: JOHN CAMPBELL '74
campbjr@msn.com

Area 21: DANIEL JACKSON '90
djack1003@cox.net

Area 22: KIMBERLY MORRISON '96
kimberly@morrisongeo.com

Area 23: DENNIS LEITTERMAN '76
dennis_leitterman@yahoo.com

Area 24: DAVID HEINECK '79
heineck@frontier.com



ALUMNI AREAS

The Miner Alumni Association board of directors functions as the eyes, ears and voice of more than 56,000 living alumni. Please check the map at left and the "area directors" list above to identify your current area director. We encourage you to contact your area director.

KEEPING COMMUNICATIONS FLOWING

In 2012, the Miner Alumni Association board consolidated its committees into five groups with broad goals. This issue, we introduce you to the Marketing and Communications Committee.

Keeping the lines of communication open is the chief purpose of the Marketing and Communications Committee. “The prime directive — for you *Star Trek* fans — is always to open and maintain the lines of communication between alumni, the Miner Alumni Association and the campus,” says **Bernard Held**, CE’75, a member of the committee.

Committee chair **Darrin Talley**, ME’88, adds that the committee works with alumni relations and marketing and communications staff at Missouri S&T to “develop content that communicates the overall benefits and objectives of the alumni association to current and future alumni.”

The group takes a data-driven approach. “We’ve spent quite a bit of time gathering input from alumni across the world, reaching out to both new graduates and alumni who have been out of Missouri S&T for a long time,” Talley says. “We have learned a lot about what alumni want to hear and how they want to receive communications. We plan on using these insights to more effectively communicate what the Miner Alumni Association is up to and what are some of the main objectives of the association’s other committees.”

During the past year, the 18-member committee assisted in a review of the recently redesigned association website (mineralumni.com) and provided input on the creation of an alumni membership card, which is distributed to soon-to-be graduates at events during their final semester.

“The Miner Alumni Association has a lot to offer, and each of the committees works hard to create value for our alumni,” Talley says. “Our role is to develop the communications plans and material to get the message out to existing and future alumni. I feel like we have made great progress over the past year.”

ST. LOUIS STUDENT SEND-OFF



Photo by Bob Phelan

The Miner Alumni Association and the New Alumni Council hosted a fun-packed Student Send-off picnic in St. Louis’ historic Tower Grove Park on Sunday, Aug. 3. The event drew more than 200 alumni, current and incoming students, and their families for a taste of St. Louis that included Kenrick’s barbecue and frozen custard from Ted Drewes. The Student Design and Experiential Learning Center exhibited several recent student design team projects. A prize raffle awarded S&T Store gift cards to students and T-shirts to alumni. Stories about the road to and through Rolla helped Miners, new and old, catch the Miner spirit.

WITHOUT **S&T**,
IT’S JUST PAT’S.

Just because you can’t make it back to Rolla for the revelry doesn’t mean you can’t celebrate like a proud member of Miner Nation.

Join your fellow Miners at St. Pat’s celebrations in dozens of cities across the nation. Come relax, meet your fellow Miners and celebrate Rolla style. To locate the nearest St. Pat’s party, please visit mineralumni.com, click on events to select the party you plan to attend and click registration.



SANDY SIMMONS-GAMBLE:

Meeting a

20/20 CHALLENGE

When **Milton L. Simmons**, CerE'49, died in 2005, his daughter knew she wanted to do something special to honor his memory.

"My father loved this university," says **Sandy Simmons-Gamble**, fiscal assistant in the international affairs office at Missouri S&T. "He always had so many stories about his time at Rolla and about the education he got — what it meant to him. He loved his time here and truly appreciated his education."

Gamble was an administrative assistant in the development office in early 2013 when the University of Missouri System announced the 20/20 Challenge.

Through the 20/20 Challenge, the UM System would give Missouri S&T \$400,000 to create 20 need-based

scholarships, but S&T had to raise matching funds in private donations.

Gamble accepted that challenge and donated \$30,000 to establish the Milton L. Simmons Endowed Scholarship in Ceramic Engineering. The state matched \$20,000, bringing the total endowment to \$50,000. Like all of the scholarships established through the 20/20 Challenge, Gamble's scholarship will be awarded to a student who qualifies for the federal Pell Grant program, which provides tuition assistance to undergraduates from economically disadvantaged families.

The Milton L. Simmons scholarship will go to a Missouri S&T student in ceramic engineering.

"My father worked at Ferro Corp. in Cleveland, Ohio, his entire career," Gamble says. "He started as a ceramic engineer, traveling to places like Japan and South

America with my mother. After a few years, Ferro sent him to law school and he became the company's patent attorney.

"I always thought that when I was able to, this would be something to honor him," Gamble says. "He was a brilliant man. Growing up here, I've always had high opinions of this school. Missouri S&T has produced some really impressive people who have gone on to do some amazing things. I thought this would be a good way to honor my father and at the same time, help a future leader."

Gamble raises Borzoi, dogs that used to be known as Russian Wolfhounds, on a farm outside Rolla. She shows her own dogs and is approved by the American Kennel Club to judge four breeds in Conformation Dog Shows, as well as all breeds in Lure Coursing.

▶ **ROCKETS' RED GLARE**

Missouri S&T explosives engineering students lit up the night sky over Bertelsmeyer Hall with a custom-designed fireworks display set to music. The show served as a finale to the building's dedication on Oct. 17.





Miner Alumni Association
1200 N. Pine St.
Rolla, MO 65409-0650

ADDRESS 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: 573-341-4145 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

**BERTELSMEYER HALL:
A BRIGHT FUTURE. A BOLD VISION.**
FALL/WINTER 2014 VOL. 88 NO. 3
MAGAZINE.MST.EDU

RAISE THE ROOF



The walls are up and the floors are down ... now we're ready to raise the roof at the Hasselmann Alumni House. Join us Saturday, March 14, 2015, as we celebrate St. Pat's in the new building, located at 1100 N. Pine St.

- 9 a.m.** Hasselmann Alumni House opens
Commemorative T-shirts will be given to the first 500 guests
- 9:30 a.m.** Dedication ceremony
- Noon** Following the parade, free hot dogs will be available in the beer garden
- Noon** Hasselmann Alumni House Supporters Picnic (By invitation)