

Fall 2019

Shillelagh

For members of the Missouri S&T Order of the Golden Shillelagh

newsletter

SHILLELAGH
IN CHICAGO!

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Dear Friends,

This issue of the *Shillelagh* spotlights our OGS Weekend in Chicago. For those who attended, thank you for your decision to spend a weekend celebrating the shillelagh spirit. For those who weren't able to attend, I hope you'll be inspired to participate in a future OGS event.

While the members of OGS are Missouri S&T's greatest champions, they don't come together often in celebration of that mission. OGS Weekend provided a rare opportunity to connect in person and participate in a tradition launched 42 years ago when our founders "picked up their shillelaghs." We were delighted to have **Mun Choi**, president of the University of Missouri System, and **Mo Dehghani**, then S&T chancellor-designate, join us in Chicago.

The founders of OGS believed that private support was essential to the university's future. More than four decades later, their vision is thriving — the stories on these pages are evidence of that. From **Michael**, Chem'78, and **Debbie Haynes**, who chose to support the Miner Match scholarship program, to **Franklin Cheng**, whose endowment encourages Ph.D. students in civil, architectural and environmental engineering, Missouri S&T is blessed with champions committed to making a difference.

In this issue, we welcome our new chancellor and share a little about Missouri S&T's 22nd leader. We also recognize OGS members **Bipin Doshi**, ChE'62, MS ChE'63, and **Al Kaplan**, CE'72, who joined us on campus in May — Bipin as our commencement speaker and honorary

doctor of engineering awardee, and Al as an Award of Professional Distinction honoree.

Our student design teams continue to be a source of tremendous pride. We congratulate the Mars Rover Design Team for finishing in the top five for the third consecutive year in the international University Rover Challenge, and we salute every team that proved Miners fly high, race hard, and build strong in competitions this past spring and summer.

This issue also highlights S&T research making headlines, from a smart helmet that can detect traumatic brain injuries to tornado resistant building design. You'll also find updates on three major construction projects underway on campus.

All of this good news is made possible by the loyal support of many, and the members of OGS are at the top of the list. You continue to have an extraordinary impact, both individually and collectively. This issue celebrates that philanthropic spirit and the connections that bring OGS members together from Michigan Avenue to Pine Street.

With gratitude,

Joan Nesbitt
Vice Chancellor for University Advancement

On the cover: OGS members experience outer space from their seats in the giant domed theater at the Museum of Science and Industry's Henry Crown Space Center.

Shillelagh in

CHICAGO

In June, OGS members gathered to celebrate the shillelagh spirit in Chicago. While some members took a skyscraping river cruise through the architectural history of Chicago, others headed for Wrigley Field. But all roads converged at the Museum of Science and Industry's Henry Crown Space Center, where S&T alumna and former NASA astronaut **Sandy Magnus**, Phys'86, MS EE'90, and members of the Mars Rover Design Team proved that S&T continues to earn a place on the front line of the final frontier.

The next day brought some free time on the Magnificent Mile, deep-dish deliciousness at Gino's East, a tour of treasures in the Art Institute of Chicago — and the weekend's culmination: our recognition ceremony welcoming new members and honoring members whose sustained support has deepened their legacy. We were delighted to have two special guests join us: **Mun Choi**, president of the University of Missouri System, and **Mo Dehghani**, Missouri S&T's new chancellor. We also thank **Jim Faletti**, EMgt'71, MS EMgt'79, **John Remmers**, MetE'84, and **Rich Wlezien**, vice provost and dean of the College of Engineering and Computing, for teaching us to appreciate Chicago dogs, South Side accents and the remarkable history of the city's infrastructure. View photos from OGS Weekend at rol.la/OGS2019.

1. OGS members admire one of the famous paintings in the Art Institute of Chicago's collection, Georges Seurat's "A Sunday on La Grande Jatte."
2. **Shahd Alassadi** and **Danny Ryan** enjoy an afternoon of baseball at Wrigley Field.
3. OGS members take a spin through outer space aboard a flight simulator at the Henry Crown Space Center.
4. Souvenir mugs autographed by NASA astronaut and S&T alumna **Sandy Magnus**.
5. Two generations of S&T space pioneers: **Sandy Magnus** with members of the Mars Rover Design Team.
6. S&T Chancellor **Mo Dehghani** and his wife, **Mina** (right), talk with **Ilene Garrett**.
7. Chicago native **Jim Faletti** welcomes OGS members to his hometown with a South Side accent and White Sox spirit wear.





8. Left to right: **Mike Evans, Bob Pahl and Rich Wlezien** at the Sofitel Chicago on the final night of OGS Weekend.
9. Left to right: **Sandy and Roger Dorf** visit with **Linda and Hugh Cole**.
10. Two special guests joined OGS members in Chicago: Missouri S&T Chancellor **Mo Deghani** (left) and University of Missouri System President **Mun Choi**.
11. Two generations of Sieckhaus family members were welcomed into OGS (left to right): **Steve, Terri, Judy and Bob Sieckhaus**.

WITH GRATITUDE

The Order of the Golden Shillelagh recognizes the following new and advancing members with gratitude for your generous support.

NEW MEMBERS

- Harvey Anderson
- Wayne and Ilene Garrett
- Bob and Judy Sieckhaus
- Craig and Beth Barnes
- Lewis and Caroline Israel
- Steve and Terri Sieckhaus
- Richard and Alison Bradley
- Al Kaplan
- Tom and Michelle Sieckhaus
- Robert Brickner
- William Kennedy and Carol Donovan
- David Todd and Sarah Jane (Hahn) Todd
- Edward and Mary Frances Clark
- Harry and Lily Lum
- Lawson Tyler Jr.
- Gerald and Kim Elphingstone
- Thomas McElyea
- Patrick and Janie Wagner
- Thomas Feger
- Karen and Geoffrey Reedy

ADVANCING MEMBERS

- Thomas S. Abernathy
- Aaron and Brenda Cook
- Debra Robinson and Daniel Hier
- Timothy and Julie Alfermann
- Bruce R. Doe
- Hans and Kathy Schmoldt
- Bradley and Sue Ann Aman
- Mike and Linda Evans
- Gordon L. Scofield
- Craig and Cynthia Bailey
- James and Ann Rene Foil
- Ellis J. Smith
- Daniel and Wendy Bailey
- Steve Frey Jr. and Michelle Frey
- James Sowers and Francine Merenghi
- John and Susan Berger
- John and Kristie Gibson
- Dale and Patricia Spence
- Andrew and Lisa Bonnot
- Ronald and Shirley Gillham
- Karen Squires Foelsch
- Frederick and Susan Booth
- Michael and Deborah Haynes
- Geoffrey Steinhart Sr. and Mary Steinhart
- Michael and Barbara Bray
- Roger and Karen LaBoube
- Richard W. Stephenson
- Robert and Kim Brinkmann
- William McAllister III and Connie McAllister
- David and Mary Suiter
- Bill and Carolyn Brune
- Stephen and Janet McVeigh
- James and Theresa Unnerstall
- John and Denise Burgess
- Duane and Peggy Montana
- Thomas and Carol Voss
- Christopher and Abby Buterbaugh
- Milton J. Murry
- Breck and Ruth Ann Washam
- John and Sharon Campbell
- Yildirim and Ferda Omurtag
- Keith and Bobbie Wedge
- George and Elaine Carlstrom
- Chris and Darlene Ramsay
- Robert Williams Jr. and Kathy Williams
- Steven and Lynn Clayberg
- Jim and Shanley Rau
- Michael and Linda Woessner
- James and Joan Woodard



Michael and
Debbie Haynes:

INVESTING IN SCHOLARSHIPS THROUGH THE MINER MATCH

Photo by David Torrence

Although romantic chemistry brought **Michael**, Chem'78, and **Debbie Haynes** together as students, it was analytical and synthetic chemistry that defined their careers.

Michael was a junior chemistry major when he met Debbie on a weekend trip to Columbia, Mo., where she was majoring in recreational therapy. Debbie began coming to Rolla for party weekends.

"I was what they called an 'import' in those days," she says.

His senior year, Michael had five interviews and three job offers.

"It was a good time to be a Rolla graduate," he says. Michael joined the Dow Chemical Co. and moved to Freeport, Texas. Debbie headed south when she graduated in 1979.

"I followed the love of my life to Texas," she says. When job prospects proved slim, Debbie went back to school, earning an associate's degree in chemical technology from Brazosport College and a master's degree in chemistry from the University of Houston.

They both worked for Dow as chemists, Debbie in polymer research and Michael as an analytical chemist and lab supervisor. After 11 years in Freeport, they transferred to Indianapolis to work for a new joint venture between Dow and Eli Lilly. They both moved into leadership roles in quality assurance compliance.

"One of the achievements I'm proudest of was working to blend the two company cultures into one," says Michael. "I also led the process to obtain our ISO 9000 certification, which was a big deal in the chemical industry."

For Debbie, it was field trial compliance audits on agricultural chemicals.

"I worked with contractors in some very rural places," she says. "I grew up on my grandfather's 80-acre farm, so I could talk to and work with ag-contractors as a team member not a company 'overlord.'"

Michael retired from Dow in 2002 after 24 years. Debbie had already left corporate life to help on her family farm

north of St. Louis and start a small produce business. After retiring, Michael pursued a non-chemical interest: assembling, testing and repairing equipment for the local John Deere dealership. He worked full time at the dealership until 2017.

Over the years, the Hayneses have remained passionate S&T supporters. Michael serves on the Dean's Advisory Council for the College of Arts, Sciences, and Business, and the couple has attended almost every OGS Weekend since they joined in 2001. They are also generous contributors to many university initiatives, including the renovation of Schrenk Hall and the Miner Match scholarship program.

"I made more my first year of working than I paid for my entire education," says Michael. "We have both been very fortunate and blessed. With Dow's matching gift program, we were able to double our impact. And with the Miner Match, we can double it again."

Franklin Cheng: INSPIRING A NEW GENERATION OF CIVIL ENGINEERING SCHOLARS

For one of the world's foremost experts on earthquake engineering and structural design, inspiring future generations is vital. That's why **Franklin Cheng** established an endowment to support outstanding Ph.D. students in civil, architectural and environmental engineering.

"To produce quality academicians, we must have strategies to nourish them by providing teaching experiences and mentoring," says Cheng, Curators' Distinguished Professor emeritus of civil engineering. "The endowment is a win-win. The university gains teaching scholars and research productivity, and graduate students benefit from funding, mentors and facilities."

Cheng was an S&T faculty member for more than three decades. His late wife, **Pi-Yu Cheng**, who completed a Ph.D. and post-doctoral work in biochemistry, taught at Rolla High School and served as a lab manager at S&T and Fort Leonard Wood. Now the Drs. Franklin and Pi-Yu Cheng Missouri S&T Teaching Scholar Award Endowment is helping Ph.D. students launch their desired careers.

"The Cheng Scholar award has been a real prize among our graduate students," says **Joel Burken**, Curators' Distinguished Professor and chair of civil, architectural and environmental engineering. "They all know the prestige and opportunity that comes with holding the Cheng Scholar title. The honor has raised the level of expectation for research productivity."

To date, three graduate students have been Cheng Scholars. Two finished their doctorates and accepted faculty positions at other universities, and one will finish this year.




Franklin Cheng with his late wife, Pi-Yu Cheng. The Drs. Franklin and Pi-Yu Cheng Missouri S&T Teaching Scholar Award continues to deepen their legacy as teachers and scholars. Photo courtesy of Franklin Cheng.

"Missouri S&T has a long record of producing outstanding alumni in industry," says Cheng. "I want to help the university produce more Ph.D. graduates who will move into distinguished careers at universities and research centers. This is how S&T will grow its reputation in academic leadership."

Cheng has served as chair or a member of 12 National Science Foundation delegations for international research cooperation, and as an advisor to NSF earthquake research centers and programs. He has also consulted for Los Alamos National Laboratory and a number of companies. He has published more than 280 articles, two graduate textbooks, four reference books, and design guides for the American Society of Civil Engineers (ASCE) and other professional organizations. Cheng is editor-in-chief of the *Advances in Earthquake Engineering* series published by CRC Press. He was named an Honorary Member of ASCE in 2007, a distinction awarded to only 565 of the organization's more than 150,000 members since its founding.

"Dr. Cheng is one of the most accomplished professors in nearly 150 years of civil engineering at Rolla," says Burken. "He continues to contribute to our legacy, both as an active scholar and as a donor committed to inspiring the next generation of scholars."



Missouri S&T Chancellor Mo Dehghani speaks to OGS members in Chicago on the final night of OGS Weekend.

S&T WELCOMES A NEW CHANCELLOR

Missouri S&T's 22nd leader, **Mohammad Dehghani**, officially joined the university as chancellor on Aug. 1. He comes to S&T from the Stevens Institute of Technology in Hoboken, New Jersey, where he served as vice provost for research innovation and entrepreneurship.

"Mohammad is a nationally prominent research and academic leader who has experience leading complex organizations with vision," says **Mun Choi**, president of the University of Missouri System. "He has the skills and expertise to help Missouri S&T reach its ambitious goals."

A 23-member committee guided the search process. The committee was co-chaired by **Francisca Oboh-Ikuenobe**, S&T professor of geology and geophysics, and university trustee and OGS member **Tom Voss**, EE'69.

Dehghani has served in leadership roles at universities and national labs for more than two decades. Prior to joining Stevens, he

was a professor of mechanical engineering and founding director of the Johns Hopkins University Systems Institute, where he established collaborative research programs with the Department of Defense, the National Institutes of Health, the National Science Foundation and other partners.

Dehghani served as head of the new technologies division at the Lawrence Livermore National Laboratory, where he expanded research into biomedical and nuclear engineering, electronics, fluidics, and multi-scale modeling and simulations. He also served for 12 years as a faculty member in mechanical engineering at Ohio University in Athens.

Dehghani holds bachelor's, master's and doctoral degrees in mechanical engineering from Louisiana State University. He and his wife, **Mina**, a pharmacologist, have one son, **Devon**.



THREE ALUMNI HONORED WITH AWARDS OF PROFESSIONAL DISTINCTION

Three alumni received Awards of Professional Distinction in May during commencement ceremonies. The award recognizes S&T graduates for outstanding career achievements. Honorees were **Kenneth Gielow**, MetE'70, MS MetE'71, president of Imrie-Gielow Inc.; OGS member **Al Kaplan**, CE'72, owner of Energy Projects Consulting; and **Charles Lyon**, ChE'84, MS EMgt'91, Americas and Asia Pacific business director for INEOS, a global chemical company.



OGS MEMBER DELIVERS COMMENCEMENT ADDRESS

Bipin Doshi, ChE'62, MS ChE'63, retired chairman, president and CEO of Schafer Industries, delivered the commencement address to S&T graduates in May. He also received an honorary doctor of engineering degree.

"I am always amazed to hear the stories of S&T alumni and their accomplishments," said Doshi, who also holds a bachelor of science degree in chemistry and physics from the University of Bombay. "Their achievements have contributed greatly to society and reflect the values of Missouri S&T. You are the next generation of alumni, and we expect nothing less of you."

Doshi began his career with U.S. Rubber Co., later Uniroyal, and held leadership positions with the company for 20 years before purchasing a struggling gear manufacturing company in South Bend, Indiana. He launched a successful turnaround that increased annual revenue 30-fold and created six times the number of jobs before selling the business and retiring in 2017.

Doshi was named one of S&T's Alumni of Influence in 2016 and received an Award of Professional Distinction in 2001. He is a member of the S&T Board of Trustees and Academy of Chemical Engineers. He and his wife, **Linda**, contributed the major gift naming the Frank Conrad Unit Operations Laboratory in Bertelsmeyer Hall in memory of Doshi's mentor, advisor and friend.

S&T DONORS PROVIDE MOMENTUM FOR A MILESTONE YEAR OF GIVING

Missouri S&T has surpassed last year's milestone as the second-largest fundraising year in university history with another successful year for giving. During the fiscal year that ended June 30, S&T donors contributed \$24.3 million in charitable gifts and pledges — a \$1.7 million increase over last year's benchmark of \$22.6 million. The university also received nearly \$20.2 million in private grants, which brings total external funding for the 2019 fiscal year to \$44.5 million.

"This growth is a testament to many, but especially to the alumni who continue to prove that Miner pride is a powerhouse," says Vice Chancellor for University Advancement **Joan Nesbitt**. "Giving of this magnitude is a resounding vote of confidence in the university, but most of all in our students. Miners are giving back to Miners, just as they have for nearly 150 years. This commitment is building a better future, not only for those who hold S&T degrees but also for people worldwide who are impacted by the expertise and service of our graduates, our faculty and our industry partners."

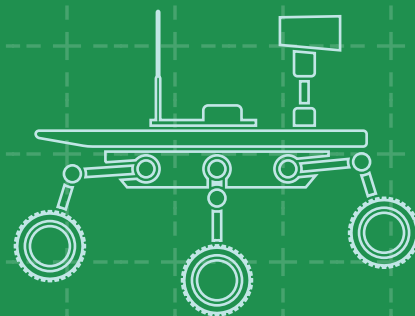
Missouri S&T has been strengthened by significant acceleration in charitable giving, with an increase of 7% over last year's total, 24% over two years ago and 129% over three years ago. The university's largest fundraising year to date was 2007, when charitable gifts totaled more than \$25.4 million.

Fundraising highlights for the 2019 fiscal year include a \$5 million planned gift from **John**, EMgt'74, and **Kristie (Capps) Gibson**, EMgt'74, in support of athletics; a \$3.8 million bequest from the late **Morton Deutch**, MetE'50, in support of scholarships; a \$1 million gift from trustee **Joan Woodard**, Math'73, and her husband, **James Woodard Jr.**, to establish the Woodard Associate Professorship for Excellence in Electrical and Computer Engineering; and a \$550,000 gift from **Robert M. Williams Jr.**, ME'74, president and CEO of St. Louis-based Williams Patent Crusher and Pulverizer Co., to fund a 300-seat lecture hall in the university's new Classroom Learning Center.

Scholarship support for S&T students also increased thanks to 36 donors who contributed more than \$6.5 million to the Miner Match, a scholarship matching program launched in response to the University of Missouri System's Missouri Promise and Opportunity initiative. The focus of the S&T and UM System scholarship matching program is twofold: to recruit top students, and to help current students with financial need complete their degrees and graduate.

Over the past four years, the significant investment made by donors has laid a strong foundation for the university's next comprehensive fundraising campaign, which will be announced during Missouri S&T's 150th anniversary celebration in 2020–21.

"The donors who give back to Missouri S&T ignite extraordinary possibilities in the lives of our students, in the potential for solution-inspired research and in the leadership essential for solving critical global challenges," says S&T Chancellor **Mohammad Dehghani**. "This commitment is the cornerstone that drives excellence and defines Miner pride."



MARS ROVER BRINGS HOME A TOP-FIVE FINISH

For the third consecutive year, S&T's Mars Rover Design Team finished among the top five teams in the annual University Rover Challenge, an international competition held at the Mars Desert Research Station in Hanksville, Utah. S&T's team finished in fifth place out of 34 competitors — and second among U.S. teams (behind Stanford and ahead of Cornell). S&T won the University Rover Challenge in 2017 and finished second in 2018 (first among North American teams).

In Utah, S&T's rover, *Valkyrie*, competed in four categories. During the extreme retrieval and delivery challenge, a key suspension link broke, which crippled the rover.

"The team flew into action, rebuilding the entire right rear suspension assembly in less than 15 minutes and resuming the task with time to spare," posted team members on Facebook. "Just as everyone was catching their breath, the replacement part broke and the task had to be called. We scored 48 hard-won points."

S&T competed against teams from Australia, Bangladesh, India, Mexico, Poland, Turkey and the United Kingdom. Kielce University of Technology in Poland won the competition.

STUDENT DESIGN TEAMS TEST THEIR TALENTS

Spring and summer is competition season for many of S&T's student design teams. From Michigan to California, Miners put their talent to the test. Here are a few highlights:

The Rocket Design Team launched a strong performance in the 2019 Spaceport America Cup in June in Las Cruces, N.M., placing 20th overall out of 124 teams. The team also placed sixth in the 10k SRAD (Student Researched and Developed) competition.

The Human Powered Vehicle Team placed fifth out of 20 teams in the American Society of Mechanical Engineers' 2019 E-Fest West in March in Pomona, Calif., and 10th out of 50 teams in E-Fest North in April in East Lansing, Mich.

The Steel Bridge Team placed first in economy and construction speed at the Mid-Continent Student Conference in April in Norman, Okla. The regional competition is sponsored by the American Society of Civil Engineers and American Institute of Steel Construction.

Miner Aviation's radio-controlled aircraft, *Dragonfly*, placed 15th out of 104 teams in the American Institute of Aeronautics and Astronautics' 2019 Design, Build, Fly in April in Tucson.

The Formula SAE Team placed second in presentation and fourth in acceleration out of 80 teams competing in the Society of Automotive Engineers' 2019 Formula SAE Lincoln in Nebraska in June.

See page 9 for the latest on S&T's Mars Rover Team. For more information on all student design teams, visit design.mst.edu.

LEADERSHIP UPDATES



Stephen Roberts has been named S&T interim provost and executive vice chancellor of academic affairs. He succeeds **Robert Marley**, who has joined the department of engineering management and systems engineering. Roberts joined S&T in 2014 as vice provost and dean of the College of Arts, Sciences, and Business. As interim provost, he will oversee the academic programs in CASB and the College of Engineering and Computing as well as academic support, enrollment management and global learning.



Richard Brow, Curators' Distinguished Professor of materials science and engineering, has been named interim deputy provost for academic excellence. Brow joined the S&T faculty in 1998 and was named Curators' Distinguished Professor in 2004. He has held a number of leadership positions at S&T including chair of ceramic engineering, chair of materials science and engineering, and interim vice provost and dean of the College of Engineering and Computing.



Kate Drowne, has been named interim vice provost and dean of the College of Arts, Sciences, and Business. A professor of English and technical communication, Drowne joined the S&T faculty in 2001 and has served as the college's associate dean for academic affairs since 2015. She is also director of the Center for Science, Technology, and Society, which provides seed funding for collaborations among humanists, social scientists, natural scientists and engineers.



Neil Outar has been named S&T's chief diversity officer. He served as interim CDO since August 2017. In this role, he is responsible for guiding the chancellor and the leadership team on diversity and equity issues, serving as Title IX coordinator, and ensuring compliance with laws and regulations related to civil rights and disabilities. Outar joined S&T in 2015 to establish the office of institutional equity, diversity and inclusion.

S&T JOINS WORLDWIDE LIGO COLLABORATION

This past spring, S&T became Missouri's only institution to join the worldwide LIGO Scientific Collaboration of researchers who are using gravitational wave science as a tool for astronomical discovery.

S&T joined the consortium of approximately 1,300 scientists and 100 institutions from 18 countries dedicated to detecting the gravitational waves predicted in Albert Einstein's general theory of relativity more than 100 years ago.

"Space is the frontier of our exploration," says **Marco Cavaglia**, S&T professor of physics. "The LIGO Scientific Collaboration is at the forefront of astrophysics research and one of the largest, most ambitious projects ever funded by the National Science Foundation."

Cavaglia, who joined the S&T faculty in January, has been a researcher in the LIGO Scientific Collaboration for more than 10 years. He co-chairs a LIGO team of more than 200 researchers looking for gravitational wave signals that originated in stellar explosions. A new astrophysics research group at S&T is part of that global team.

MAJOR CAMPUS PROJECTS MOVE FORWARD

Three major construction projects are underway on campus: the Clayco Advanced Construction and Materials Lab, the expansion of the Kummer Student Design Center and the addition of a Classroom Learning Center to the Computer Science Building.

■ Clayco Advanced Construction and Materials Lab

Construction is underway on a 16,000-square-foot addition to the high-bay structures lab in Butler-Carlton Civil Engineering Hall. The Clayco Advanced Construction and Materials Lab will support research and testing in infrastructure engineering. The \$6.5 million project was funded by private charitable contributions, the University of Missouri System, and the College of Engineering and Computing. The expected completion date is fall 2020. View time lapse images of the construction progress at rol.la/ACML-live.

■ Kummer Student Design Center expansion

The earth is moving on the west side of the Kummer Student Design Center, where excavation on the 8,000-square-foot expansion began in June. The expected completion date is spring 2020. The expansion will add manufacturing and fabrication bays, a larger machine shop, upgrades to the welding, waterjet and composites labs, new labs for electronics and synthetic biology (iGEM), and a remodeled innovation suite. The \$2.8 million project was funded entirely by private charitable contributions.

■ Classroom Learning Center

Construction began in July on a 15,900-square-foot Classroom Learning Center addition to the Computer Science Building. The addition will include a 300-seat lecture hall, four 100-seat classrooms, a new entry lobby and three learning commons areas. The lecture hall and classrooms will include distance learning technology. The expected completion date is fall 2020. The \$7.6 million project was funded by private charitable contributions and university reserves.



RESEARCH HIGHLIGHTS

Missouri S&T scholars are on the front line of research breakthroughs in detecting traumatic brain injuries, reducing the size of power plants and much more.



S&T wind engineer assesses tornado damage

Less than 24 hours after tornadoes swept across Missouri in May, **Guirong (Grace) Yan**, S&T assistant professor of structural engineering, was inspecting the damage in Jefferson City, which was hard hit by the tornado outbreak. Yan and three Ph.D. students visited the Missouri state capital to assess the damage as part of her research on tornadic wind pressure. Yan's work focuses on new models for tornado-resistant building design. Ultimately, she hopes her research will be used to strengthen building codes for municipalities. "Most of the building codes we see now design a structure to withstand straight line winds," says Yan, director of S&T's Wind Hazards Mitigation Laboratory. "We need to design structures to resist tornadoes."

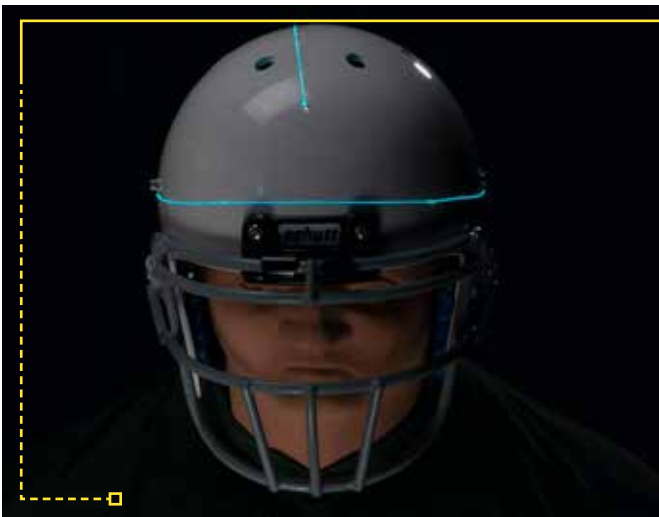


S&T awarded \$1.45 million for energy research

Missouri S&T received a \$1.45 million grant from the U.S. Department of Energy's Advanced Research Projects Agency-Energy to develop compact heat exchangers using next-generation ceramic materials. Thanks to this research, the power plants of the future could be smaller, more efficient and even portable.

"Operation of a heat exchanger under these extreme conditions has never before been attempted," says **David Lipke**, assistant professor of ceramic engineering and principal investigator on the project. "Missouri S&T is uniquely poised to overcome longstanding materials challenges because of our expertise in ceramic additive manufacturing."

Researchers will use the grant funding to build heat exchangers that operate at higher temperatures by replacing metallic superalloys with ultra-high-temperature ceramics.



Smart helmets to detect traumatic brain injuries in soldiers

An S&T scholar received a \$2.3 million grant from the U.S. Army Research Laboratory through the Leonard Wood Institute to develop a smart helmet embedded with sensors and other data-transmission technology capable of diagnosing victims of traumatic brain injuries (TBIs).

Jie Huang, assistant professor of electrical and computer engineering, is working with an S&T research team to develop a smart helmet prototype.

"Our research project will use advanced optical fiber sensors, embedded in smart helmets, to instantly warn soldiers of the severity of a concussive event in the field so that treatment can be sought immediately," says Huang. "Military-related TBIs come primarily from repeated exposures to explosive blasts during planned training activities."

IN MEMORIAM

A Missouri S&T legend, **Jerry Bayless**, CE'59, MS CE'62, died on July 2 at age 81. A memorial service on July 13 in Rolla brought together friends, colleagues and former students to honor the beloved S&T faculty member known as "Mr. MSM," "Mr. UMR," "Mr. S&T" and "Mr. Miner." Professor Bayless came to Rolla in 1955 as a student and retired in 2017 as an associate professor of civil engineering. He touched the lives of thousands of students over 58 years of teaching, in addition to serving as assistant dean and associate dean of engineering. Professor Bayless was a member of the inaugural 2011 Alumni of Influence class. He received the Missouri S&T Chancellor Medal, the Miner Alumni Association Alumni Merit Award, and held the title of Honorary St. Pat and parade marshal. "Jerry Bayless represented the heart and soul of Missouri S&T," said **Rich Wlezien**, vice provost and dean of the College of Engineering and Computing. "His values and his actions were the essence of what make us a great university."





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ALUMNI **OF** INFLUENCE

NOMINATE A MINER

Missouri S&T is seeking nominations for our 2021 Alumni of Influence, the highest alumni honor bestowed by the university.

Since the tradition began in 2011, S&T has honored 38 alumni. Now we're preparing to recognize a new group of honorees during the university's 150th anniversary.

- Use the online nomination form at **influence.mst.edu/nominate**.
- Forward nominations to **Darlene Ramsay**, executive vice president of the Miner Alumni Association, at **ramsayd@mst.edu**.
- Visit **influence.mst.edu** to read about past honorees.