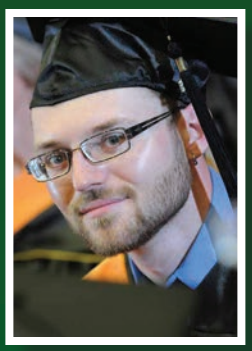
The BRIDGE

Civil, Architectural and Environmental Engineering

Winter 2012 | Vol. 29

MISSOURI S&T



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MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY

facebook.com/MissouriSandTCArE

Thumbs up for this year's top 10 Facebook posts

10. Fall Department Picnic held at Lions Club Park. The corporate sponsor this year was HRGreen.

9. Seminar by Andrzej Nowak, the Robert W. Brightfelt Professor of Engineering at the University of Nebraska-Lincoln and world-renowned expert in the field of bridge engineering, on the development of advanced design codes for bridges.

8. **Kathrine (Glee) Braddy**, CE'05, stopped by Dr. Bate's class and shared stories and information about working for Caterpillar.

7. **Jeffery Volz** and his group were featured in the October issue of *Structural Engineer Magazine* under Life Span for their work on modern materials used in bridge design (website: www.gostructural.com).

6. Students and faculty attended the Mid-American Environmental Engineering Conference in October. The keynote address was presented by alum **Jeff Theerman**, CE'80, on Green Infrastructure. Technical talks were presented by S&T students **Jordan Wilson**, **Eric Farrow** and **Yuan Yuan**.

5. **Glenn Morrison**, **David Richardson** and **Jeffery Volz** receive 2011-2012 Outstanding Teaching Awards.

4. **Jeffery Volz** was selected to receive a 2012 Faculty Excellence Award.

3. **Jerry Bayless** turned 75 this year.

2. Homecoming 2012: **Meg Riley**, a senior in civil engineering, was named Homecoming Queen. First runner-up was **Ashley Sacco**, a senior in civil and architectural engineering.

1. iPad Giveaway: 450 undergraduate students were eligible to win an iPad and other prizes. **Katie Beardslee**, a freshman in civil engineering, was the lucky winner!

Scan this QR code with your smart phone and "like" our Facebook page. if you haven't already.

1.

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The BRIDGE

in this issue

DEPARTMENT ADMINISTRATION

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William P. Schonberg, Ph.D., P.E.

Associate Chair
Joel Burken, Ph.D., P.E., BCEE

Assistant Chairs
Civil: Ronaldo Luna, Ph.D., P.E.
Architectural: Stuart Baur, Ph.D., A.I.A.
Environmental: Mark Fitch, Ph.D.
Graduate Program: Cesar Mendoza, Ph.D.

Undergraduate Advising Center Director
Eric Showalter, Ph.D., P.E.

Chancellor Cheryl B. Schrader
Photo by B.A. Rupert

Chancellor discusses six themes
during inaugural state of the university address

In her first state of the university address since joining Missouri S&T last April, Chancellor **Cheryl B. Schrader** emphasized the need for the campus to "develop and inspire creative thinkers and leaders" to address the nation's most pressing societal and economic challenges.

"The leaders of our state, nation and world are looking to universities like Missouri S&T to come up with creative solutions to the grand challenges of our time," Schrader told the audience of S&T students, faculty and staff gathered to hear her inaugural state of the university address.

"They are looking to us to prepare tomorrow's innovators who can address complex problems in areas like energy security, environmental sustainability, health care and infrastructure," she said. "Our talented, innovative community of students, faculty, staff, alumni, and partners in the private sector and government can and will work together to address these challenges, even during this time of reduced funding and disruption in higher education."

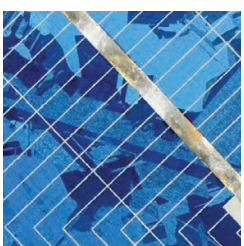
Schrader emphasized six themes during her state of the university address, which was held Wed., Oct. 3, 2012, on the S&T campus. The themes arose from various discussions Schrader has held with student, alumni, faculty and staff groups since becoming chancellor on April 2, 2012.

"These themes, combined with a new strategic planning process now under way on campus and at the University of Missouri System, will help ensure that Missouri S&T strengthens its role as a leading technological research university well into the future," Schrader said.

The themes are as follows:

• **Develop and inspire creative thinkers and leaders**. "As a university community, we must promote creativity and innovation across the institution — from our classrooms and labs where our students learn and conduct groundbreaking research with faculty mentors, to the way we implement our business processes," Schrader said. "I want Missouri S&T to become known for embracing innovation and creativity throughout the organization."

(continued on page 6)



Missouri S&T among nation's **best values**, *U.S. News* says

Yet another national publication has identified Missouri S&T as one of the best deals in the nation for a college education.

This latest recognition comes from *U.S. News & World Report*, which ranks Missouri S&T seventh in the nation among public universities in its "Great Schools, Great Prices" listing (called "Best Value Colleges" in the online edition). The listing was published in the magazine's 2012 *"America's Best Colleges"* guidebook. The guidebook rankings were released in September.

Missouri S&T is ranked 46th overall in the "Great Schools, Great Prices" listing.

U.S. News determined the rankings based on a university's academic quality and "the 2011-12 net cost of attendance for a student who receives the average level of need-based financial aid."

According to the guidebook, "The higher the quality of the program and the lower the cost, the better the deal. Only schools ranked in or near the top half of their categories are included, because *U.S. News* works on the premise that the most significant values are among colleges that are above average academically."

In the category of nationally ranked universities, *U.S. News* lists Missouri S&T at No. 60 among public universities (125th overall). S&T is also ranked 45th nationally among doctoral-granting public universities for undergraduate engineering education (75th overall).

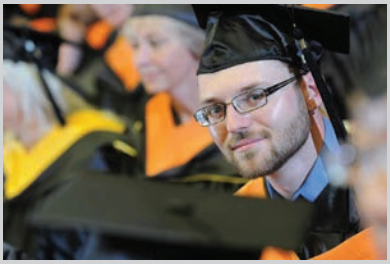
This ranking follows similar recognition of S&T's affordability from *Newsweek* magazine, which rated Missouri S&T as the most affordable public university in the nation.

Missouri S&T is included twice in *Newsweek's* ranking of the nation's 25 "Most Affordable Schools." S&T ranks 24th in the nation in terms of affordability for out-of-state students and eighth in affordability for in-state students. When considering public universities only, Missouri S&T tops the list for out-of-state students. S&T is ranked third among public universities in terms of affordability for in-state students.

The affordability ranking is part of *Newsweek's* "College Rankings 2012" listings. The collection of rankings was released online in August.

S&T and the other schools on the list are those considered by *Newsweek* to provide the most return on investment "when measured through a lens of the potential earnings with a degree from each institution as well as the average debt level of graduates." They are places "where students are most able to shoulder the cost of their degree — and where the education has a proven record of being a valuable investment relative to other schools."

Missouri S&T has received previous national recognition for providing a high return on investment, or ROI. In 2010, *Bloomberg BusinessWeek* ranked Missouri S&T 13th in the nation for a 30-year return on investment equal to $1,181,000, or an annualized net ROI of 12.4 percent.



Photos by B.A. Rupert


Photo by B.A. Rupert


Photo by B.A. Rupert


Photo by Rod Lentz

Chancellor discusses six themes *(continued)*

• **Integrate teaching, learning, research and application.** "At Missouri S&T, learning doesn't begin and end in the classroom," Schrader said. "Some of our greatest learning experiences occur through interactions that take place among students and faculty in our student organizations, sports teams or research activities. Our goal is to further integrate formal and informal education to improve the way we learn, conduct research and apply our knowledge to make the world a better place."

• **Enhance reputation and raise visibility**. "Missouri S&T is well-known as a leading technological research university and an excellent value for students," Schrader said. "We plan to build on that reputation for excellence and enhance our national and international profile, so that when people are looking for an exceptional education and research partner, Missouri S&T is top of mind."

• **Foster global competency and inclusion**. "The world needs talented, intelligent and creative problem-solvers. We will continue to strive to make Missouri S&T an institution where everyone is welcome, and one that promotes an appreciation for diverse viewpoints and perspectives."

• **Advance an environment of success, support and community engagement**. "We know that the students who succeed at Missouri S&T go on to attain remarkable achievements in their personal and professional lives," Schrader said. "Our mutually beneficial goal in the larger S&T community is to advance an environment that brings together every available resource and opportunity to ensure their success."

• **Achieve sustainable growth and ensure the university's future**. "We've enjoyed tremendous growth in recent years," Schrader said. "We want to make sure we continue to provide the rigorous, high-quality education Missouri S&T is known for by leveraging innovative collaborations and partnerships."

Also during her address, Schrader discussed several notable accomplishments occurring on campus in recent months. *They include:*

• The April 2012 **groundbreaking for S&T's geothermal energy project**. When completed in the summer of 2014, the project will reduce S&T's carbon footprint by 25,000 tons annually and cut campus energy usage by 50 percent, or $2.8 million a year.

• A **record number of women and minority students** enrolled at the university this fall. A total of 1,732 female students are enrolled at S&T, an increase of 2.8 percent over the previous year. In addition, the number of minority students increased by 1.8 percent over 2011 — from 790 to 804. *(see story on page 18)*

• A **new strategic planning process** on campus and at the UM System level that emphasizes a customer-focused approach to planning.

• A **winning sports season** under way for the S&T Miners football and volleyball teams.

• Recent recognition from the Association for the Advancement of Sustainability in Higher Education for achieving a **silver STARS designation** for the campus's environmental improvements. STARS stands for Sustainability Tracking, Assessment & Rating System. *(see story on page 16)*

• A **77 percent increase in enrollment for distance education** programs over the past five years.

Schrader also discussed the planned spring 2013 groundbreaking for construction of James E. Bertelsmeyer Hall, the new 63,500-square-foot chemical and biochemical engineering building, and encouraged the campus community to attend S&T Homecoming.

"I'm proud to be leading a campus that's on the move," Schrader said. "I'm proud to be a Missouri S&T Miner."

Digging in to Geothermal

Kedra Dierking's parents recently converted their home in Union, Mo., to a geothermal energy system. Like many home improvement projects, it involved some retrofitting and rearranging. But that conversion pales in comparison to Dierking's summer project on the S&T campus.

Dierking, a senior majoring in architectural and civil engineering, is digging deep into Missouri S&T's geothermal energy project. On an internship this past summer with Kansas City-based JE Dunn Construction Co., the company overseeing the effort, Dierking was responsible for keeping track of well-drilling operations. As JE Dunn's project engineer intern, she tracked the depth of each well drilled, as well as the date of each drilling, the PSI levels, grout test results and other data, and made note of it in bore logs for the company. She recorded information about dozens of the more than 600 wells that will eventually be drilled as part of the project.

She may have kept bore logs, but the work was anything but boring.

"I love it," she says. "I was completely shocked and ecstatic when I learned that I got this internship. I love that I'm able to get out in the field." Dierking was also responsible for tracing the inventory of pipes and other materials stored at a warehouse south of Rolla. She conducted safety training for new subcontractors and took notes at meetings with staff from the university, JE Dunn and subcontractors.

Her typical day began at 7 a.m. in a makeshift office in the basement of the U.S. Bureau of Mines Building on Bishop Ave. After a check of email, she visited the work sites.

"It was a little overwhelming at first," she says of the internship. "There was a lot to take in, because it's just such a big project." When it is completed in 2014, the geothermal system will provide heat to 15 buildings as well as chilled water to the majority of campus buildings.

"There's a lot of mechanical engineering to learn," Dierking says. "But JE Dunn has been great to work with, and they've helped me learn a lot about how everything works."

Dwight Davis, JE Dunn's project manager for the effort, says Dierking "has helped us out in many ways. It's nice having an extra set of hands." He believes the internship benefits Dierking as well.

Photo by B.A. Rupert

Kedra Dierking (above), a senior architectural and civil engineering major, is digging deep into S&T's geothermal energy project.

"The timing of the project worked out well because Kedra is able to see a project starting up and to work with us on a lot of the initial tasks," Davis says. "She's able to see that there is a lot more to starting a large project than digging a hole in the ground."

"We like for our interns to do the same type of work they will encounter as a full-time new hire," Davis adds. "This allows Kedra to get a good feel for what is expected and to ultimately decide if construction is the right career for her."

originally published on discover.mst.edu

Ancient Structural Element

Leads to New Ideas in Bridge Building

Douglas County Bridge in Missouri
Photo submitted

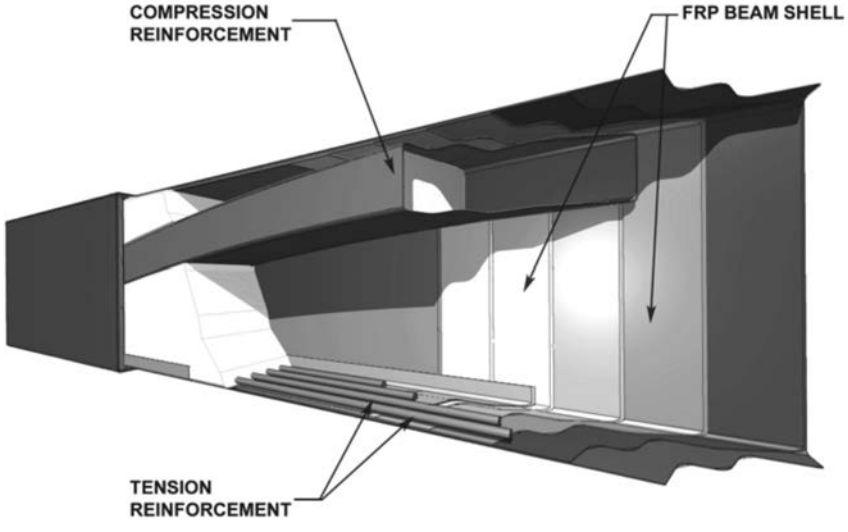
BY MINDY LIMBACK

Researchers are ***bridging a gap*** between an ancient structural element and modern technology.

Structures professor John Myers pictured with graduate students Renee Earley and Mohamed Aboel Seoud.

Led by **John Myers**, S&T researchers are working with designers at HC Bridge Co. to combine an ancient concrete arch form — dating back to the Roman empire — with a composite shell to create bridge beams that are designed to last 100 years. Tucked inside durable, fiberglass composite shells, the lightweight beams are supported by a concrete arch and anchored by seven wire tendons, which serve as the system's tension tie.

Illustration submitted



Tucked inside durable, fiberglass composite shells, the lightweight beams are supported by a concrete arch and anchored by seven wire tendons, which serve as the system's tension tie.

"The composite shell protects the system from the elements, extending its service life and reducing the maintenance expenses that might normally be needed in a traditional bridge girder," says Myers, associate professor of civil, architectural and environmental engineering at Missouri S&T. "It also serves as a formwork for the construction of the concrete arch system."

The system uses a high-performance concrete, known as self-consolidating concrete, which can flow easily into tight and constricted spaces without needing vibration to remove trapped air or allowing the coarse aggregate to separate from the cement paste.

Using advanced concrete materials and composites for bridges and other infrastructure applications has been a key focus for Myers, who was recently appointed to serve a three-year term on the Federal Highway Administration's Long-Term Bridge Performance Program Expert Task Group Advisory Committee.

At the end of the project, the three new bridges will be located in Douglas, Dade and Reynolds counties. The bridges will be funded in part by the Missouri Department

(continued on the next page)


Photo submitted

The Douglas County bridge, which opened to traffic in December 2011, carries Highway 76 over Beaver Creek just outside Jackson Mill.

of Transportation's Safe and Sound bridge program, which is currently replacing or rehabilitating more than 800 of the state's poorest bridges.

Habor Technologies in Maine was commissioned to manufacture the composite shell and housing for the beams. Myers says the technology is flexible enough to allow for the arch's self-consolidating concrete to be poured either at a precast facility or at the job site directly.

"Quality control is often better at a precast facility since the concrete is batched in a very close proximity to the beam," Myers says. "It's also often more cost-effective to pour at that type of facility because these bridges are in a rural part of the state."

The first two bridge beams were cast at a ready-mix plant in Mountain Grove, Mo., and a precast plant in Virginia, respectively. The final bridge involved placing concrete at the job site after the beams are erected into place. "In all cases, lower capacity cranes can set them in place because it's a lighter weight, more efficient structural system," Myers adds.

Myers and S&T graduate students **Renee Earley** and **Mohamed Aboel Seoud** are working on the project with Glenn Washer, associate professor of civil and environmental engineering at the University of Missouri-Columbia.

The ***closed loop structural tied arch system*** housed in a composite shell will extend the expected service life to 100 years.

Project Summary:

FIRST BRIDGE
Bridge B0439 in Douglas County is located on Missouri Highway 76 over Beaver Creek.
(completed Dec. 2011)

SECOND BRIDGE
Bridge B0410 in Dade County is located on Missouri Highway 97 over Sons Creek. This bridge is instrumented with structural health monitoring sensors.
(completed Sept. 2012)

THIRD BRIDGE
Bridge B0478 in Reynolds County is located on Missouri Highway 49 over Ottery Creek Overflow.
(completed Aug. 2012)


Photo submitted

Initial load testing of MoDot HCB Bridge B0439 in Douglas County, Missouri.

Laufer Chair leads Missouri S&T energy center

Joseph Smith

Wayne Laufer

Joseph Smith, the Laufer Chair of Energy at Missouri S&T, became director of S&T's Energy Research and Development Center (ERDC) on Sept. 1.

Smith is the first person to hold The Wayne and Gayle Laufer Endowed Chair in Energy. The position was established through a 2009 gift of $3.4 million from **Wayne Laufer**, CE'67, and his wife, Gayle.

Laufer, who spent his career in the energy industry, is the retired co-founder and CEO of Bois d'Arc Energy Inc., an NYSE Houston-based company that specialized in offshore oil and natural gas exploration and production. Laufer retired from Bois d'Arc executive management in November 2007 but remained active on the board of directors until the company was sold to Stone Energy Corp. for $1.6 billion in August 2008.

As director of the ERDC, Smith will be responsible for coordinating and leading various energy-related research activities.

Approximately 35 S&T faculty members are involved in energy-related research. Their expertise includes coal, nuclear energy, and petroleum and natural gas; energy transportation, transmission and distribution; electric power generation and delivery efficiency; alternative and renewable energy sources; energy conservation and efficiency; and the environmental aspects of generation, transport and consumption of energy resources.

"Energy security is our generation's grand challenge," Smith says. "Wars have been fought over energy and our nation's future will be defined by how we address our growing energy needs. Finding and using economically and environmentally sustainable energy is essential to supporting the economy and minimizing our impact on the environment. I am excited for the focus this position provides to address our grand challenge."

ElGawady joins the department

We are happy to announce that **Mohamed ElGawady** has joined the department of civil, architectural and environmental engineering at Missouri S&T as an associate professor this fall.

ElGawady earned his Ph.D. in structural engineering from the Swiss Federal Institute of Technology at Lausanne (EPFL) in 2004. Previously, he earned a bachelor of science with honors in civil engineering, as well as a master of science in structural engineering, from Cairo University in Egypt. He has held positions at University of South Australia, Tokyo Institute of Technology, Washington State University and University of Auckland. He also worked in industry as a structural engineer for three years.

ElGawady's research encompasses seismic behavior of masonry and concrete structures. He is involved in developing modern building codes for earthquake-resistant masonry structures. He has authored and co-authored 60 refereed journal and conference papers, as well as technical reports.

His current research interests include: seismic behavior of unreinforced masonry (URM) structures, the application of Fiber Reinforced Polymers (FRP) in strengthening and repair of masonry/reinforced concrete structures, seismic behavior of reinforced concrete bridges, damage-free bridge columns, segmental construction, rocking mechanics and the use of sustainable materials in seismic prone regions.

Mohamed ElGawady

Oerther with his wife, Sarah, and children , Barney and Emma.

Research meeting at UFOPA.

Oerther on the bank of the Tapajos and Amazon Rivers.

Oerther serves as cultural ambassador to the Amazon

Photos by Gil Serique

Home for the holidays has a whole new meaning for **Daniel Oerther** this year. He's conducting research in Brazil, where he's celebrating the festive season with his family. In a recent blog post he said, "One unique challenge is the balance between the desire to get work done and the reality of coordinating the holiday calendars of two countries." Oerther, the John A. and Susan Mathes Chair of Environmental Engineering at S&T, is serving as the Inaugural Fulbright ALCOA Distinguished Chair in Environmental Science and Engineering at the Federal University of Western Para (UFOPA), Santarem, Brazil.

The Fulbright ALCOA Distinguished Chair was established in 2011 to "promote the highest levels of scholarly ties and dialogue among Brazilian and American universities studying environmental sciences and engineering through broadened mutual understanding of culture and society." Oerther's research in the region known as the "Middle Amazon" includes tracking sources of feces in the confluence of the Tapajos and Amazon rivers, characterizing microbes to remediate mine wastes, and documenting changes in soil microbial ecology during reforestation of pastures and soybean fields.

Oerther's visit isn't the first connection between Missouri and Brazil. The Brazilian state of Para, where Oerther is studying, is a "sister state" of Missouri sharing similar industries of mining and soybean cultivation. Delegations for economic development and educational exchange regularly visit Para on behalf of Missouri. In fact, Oerther isn't the first Missouri S&T faculty member to visit the area. For more than two decades, Jim Bogan, Curators' Teaching Professor emeritus of art history and film has visited Para on numerous occasions, first as a Fulbrighter at the Federal University of Para (UFPA), Belem, Brazil, in 1986.

Established in 1946, the J. William Fulbright Program of the U.S. Department of State serves as the flagship international exchange program of the U.S. government. Each year, nearly 1,200 faculty and professionals from the U.S.A. travel abroad as cultural ambassadors. Of these, only 40 are selected as Fulbright Distinguished Chairs, and these awards are viewed as among the most prestigious appointments of the Fulbright Program. Distinguished Chairs, including Oerther, are eminent scholars with significant records in publication and classroom performance.

Oerther isn't travelling alone to Brazil. His wife, Sarah, and their two children, Barney, 2, and Emma, 6 months, are visiting as well. Sarah and Dan are experienced travelers, and their children previously have visited India, East Africa, Central America and the Middle East.

"Our time in the Amazon will be an opportunity to learn, to teach, to share, and to work for improved relations among the peoples of Brazil and the U.S.A."

— Daniel Oerther
Mathes Chair of Environmental Engineering

While he's away from Rolla, Oerther continues to teach his course, Fundamentals of Environmental Engineering. "Dan's commitment to global scholarship and bringing his experiences back to the classroom via reverse distance learning is a great benefit to our department," explains **Bill Schonberg**, chair of civil, architectural, and environmental engineering.

Dr. Patricia Chaves de Oliveira, International Relations Officer, UFOPA, agrees that sharing a faculty member as a cultural ambassador is rewarding, "We, at UFOPA, are looking forward to the establishment of a Technological Innovation Nucleus in Environmental Biotechnology using the expert advice of Dr. Oerther."

"Our time in the Amazon will be an opportunity to learn, to teach, to share, and to work for improved relations among the peoples of Brazil and the U.S.A.," explains Oerther, "The Fulbright program has a clear mission, and I'm fortunate to be empowered by S&T to serve as a cultural ambassador."

To follow Oerther's adventures as the inaugural ALCOA Fulbright Chair, check out danieloerther.wordpress.com.

Fall Conference Series

Transportation Infrastructure Conference

S&T held its first Transportation Infrastructure Conference in September. The conference was hosted by the Center for Transportation Infrastructure and Safety (CTIS) and the Center for Infrastructure Engineering Studies (CIES).

Four prominent civil engineers from the U.S., Canada and Europe served as keynote speakers. They discussed cutting-edge technologies related to the research themes of the centers, as well as the value of research to the transportation industry. This year's inaugural conference showcased recent findings of projects supported by the CTIS in the areas of advanced construction materials, non-destructive testing and structural health monitoring of transportation infrastructure. The event hosted 90 participants and included a tour of S&T's outstanding research facilities.

"We hope that this technology transfer event will grow in the future to foster further exchange between S&T researchers, industry and government agencies with the ultimate goal of building S&T's recognition at the national level in the area of transportation infrastructure engineering," says conference chairman **Kamal H. Khayat**, the Vernon and Maralee Jones Endowed Professor of Civil Engineering and the Director of the Center for Infrastructure Engineering Studies at Missouri S&T. "This conference series will be held every Fall and will rotate locations on each of our sister campuses."

If you'd like to be a part of the next conference, please contact Khayat at 573-341-6223 or email khayatk@mst.edu.

Keynote speaker Kamal Khayat

Khayat delivers IBRACON keynote

In October, Kamal Khayat presented the keynote address at the 54th IBRACON Brazilian Concrete Conference held in Maceió, Alagoas-Brazil. This is one of Brazil's largest technical forums to discuss emerging concrete technologies and construction techniques. During the conference, participants celebrated 40 years of IBRACON's service to the concrete industry.

Khayat addressed an audience of over 800 during the plenary session with his talk titled, "Evaluation of Thixotropy of Self-Consolidating Concrete and the Influence of Thixotropy on Material Performance." He also gave presentations at the first Latin American Symposium on Self-Compacting Concrete and the 2nd Symposium on Subway, Railway and Highway Infrastructure.

"It was a great honor to take part in this major event. It was an excellent opportunity for me to foster international collaborations for Missouri S&T with various research institutes from Brazil," says Khayat.

To learn more about IBRACON, Brazilian Concrete Institute, visit their website at http://www.ibracon.org.br/.

Burken **brings together** academic leaders

Joel Burken, professor and associate chair of civil, architectural and environmental engineering at Missouri S&T, is leading a new effort to bring academic leaders in environmental engineering together on an annual basis to improve education in universities nationwide.

He served as chair for the Environmental Engineering Department and Program Chairs Conference that was held in July at The Ohio State University. The conference is sponsored by the Association of Environmental Engineering and Science Professors (AAESP) and the American Academy of Environmental Engineers (AAEE).

Burken is president of AAESP, an association of roughly 900 professors in the U.S. and abroad. The conference theme — "Preparing the Future Stewards of Our Planet" — underscored the mission of both organizations to recruit and educate more prospective college students into the environmental engineering field. The meeting was supported with a grant from the National Science Foundation (NSF) to Missouri S&T.

"Environmental engineering is rapidly expanding in scale and in professional scope as we face many new challenges in protecting human health and the environment around us," says Burken. "This conference and continuing efforts will focus on establishing a continuing communications platform among the leaders in academia to address the needs of educating and training those entering the environmental engineering profession."

"The number of undergraduate programs has expanded greatly, going from fewer than 10 in 1995 to over 50 in 2007," Burken says. "We have roughly 50 leaders registered for the conference, representing most of the programs in the country."

Burken and his co-organizers plan to hold the conference annually, with next year's meeting scheduled to be held in Golden, Colo.

Missouri S&T achieves silver **STARS designation** for sustainability

In recognition of efforts to make the campus a more environmentally friendly place to learn and work, Missouri S&T recently achieved a "Silver" rating in the Sustainability Tracking, Assessment & Rating System (STARS).

STARS is a national program designed to help colleges and universities measure their environmental and other sustainability efforts. The program was developed by the Association for the Advancement of Sustainability in Higher Education, or AASHE.

"The STARS designation highlights Missouri S&T's commitment to environmental sustainability while educating students who are aware of the importance of good environmental stewardship," says S&T Chancellor Cheryl B. Schrader. "We're very proud to participate in this program and to be associated with many other institutions that also place a strong emphasis on sustainability."

AASHE's STARS program allows colleges and universities to publicly report information related to their sustainability performance. Participants report achievements in three areas: education and research, operations, and planning, administration and engagement.

Missouri S&T is one of 103 universities across the nation to achieve the silver STARS designation. STARS also offers Bronze, Gold and Platinum designations to institutions that achieve certain levels, and only 37 have attained a Gold rating. To date, no institution has attained a platinum rating.

Missouri S&T's notable achievements in the area of environmental sustainability include:

- **Development of the S&T "Solar Village,"** a neighborhood of four solar-powered homes designed and built by students. The homes are inhabited by students and faculty, while also being used for public tours and research.
- **Construction of a campuswide geothermal energy system** that, when completed in 2014, will reduce Missouri S&T's energy usage by 50 percent and cut greenhouse gas emissions by 25,000 tons a year. The project began last spring.
- **Hands-on student design teams focused on sustainable energy usage**, including the Solar House Team, which builds homes for the international Solar Decathlon competition; the H2 Design Solutions Team, which creates hydrogen power designs for an annual design event; and the Solar Car Team, which designs and builds a solar-powered vehicle.
- **Undergraduate and graduate research in a variety of energy and environmental areas**, including solar and wind power, biofuels, phytoremediation (the use of plants to detect and remove pollutants), and the future "smart" power grid.
- **The Energy Research and Development Center**, which coordinates energy-related research among faculty and students from various academic areas.
- **Missouri's first environmental engineering degree program**, established in 2003, and a sustainability minor, established on the S&T campus in 2012.
- **Becoming the first U.S. campus to develop a comprehensive environmental management system and become I.S.O. 14001 certified**. Certification has been maintained since 2001 and was recently renewed after review by an external audit team.

"STARS was developed by the campus sustainability community to provide high standards for recognizing campus sustainability efforts," says AASHE Executive Director Paul Rowland. "Missouri S&T has demonstrated a substantial commitment to sustainability by achieving a STARS Silver Rating and is to be congratulated for their efforts."

Photo by B.A. Rupert

Professor Joel Burken and doctoral student Matt Limmer

Student honored for **research paper**

Matt Limmer, a doctoral student in environmental engineering at Missouri S&T, has received a national award for his research paper describing a process for detecting contaminants through trees.

Limmer, who is from Oregon, Ohio, received the C. Ellen Gonter Environmental Chemistry Award from the American Chemical Society's (ACS) Environmental Chemistry Division during the society's national meeting in August. Chartered by the U.S. Congress, ACS is the world's largest scientific society with more than 160,000 members.

The Gonter award is given to a graduate student for an outstanding research paper. Gonter was a research chemist and consultant who worked for the U.S. Army, U.S. Steel Corp., Pittsburgh Coke and Chemical Co., the Nuclear Utilities Service Corp. of Pittsburgh and the National Sanitation Foundation of Ann Arbor, Mich.

Limmer's award-winning paper, "Phytoscreening: Sectoriality in Uptake of Chlorinated Solvents by Trees," describes a phenomenon to aid in understanding of groundwater contaminants by examining the contaminant profiles in trees. By using a thin filament called a solid-phase microextraction fiber, or SPME, Limmer and other S&T environmental researchers can detect traces of chemicals at minute levels.

"The trees can provide compass-like information, pointing us toward more contaminated regions of the subsurface," Limmer says. "The more well-characterized subsurface contamination is, the easier and cheaper it is to remediate."

Limmer's advisor is Joel Burken, professor of civil and environmental engineering at Missouri S&T.

Collaboration garners **international acclaim**

The international project Pollution Investigation by Trees (PIT) was awarded the top 2012 Technology Award from Network for Contaminated Land in Europe (NICOLE). The three winning entries received their awards at NICOLE's 2012 workshop in Baden-Baden, Germany.

The winning entry is a collaborative project funded by the French Agency of Environment and Energy Management (ADEME). Overall there are 26 international members participating in the Pollution Investigation by Trees project, and Missouri S&T professor Joel Burken is one of the four Co-PIs on the project. The steering committee includes Jean Christophe Balouet of Environment International in Paris, Don Vroblesky of U.S. Geological Survey in Columbia, S.C., and Kevin Smith of the U.S. Forest Service in Durham, N.H.

The project is developing novel methods in using plants to assess contaminants in the surrounding environment and also can look back in time to determine contaminant levels in tree rings dating back many decades. The method of assessing organic compounds is termed 'phytoscreening' and has been pioneered over the last decade at S&T and with U.S.G.S. researchers Vroblesky and John Schumacher at the U.S.G.S. Water Science Center in Rolla.

The NICOLE network is recognized today as a leader in the European Union and reaches everywhere in the world.

Photo submitted

Pictured left to right are: Jean Christophe Balouet, CEO of Environment International Ourrey, France, project leader for Pollution Investigation in Trees (PIT), Michel Chalot, Professor Université de Franche-Comté, Steering Committee of PIT, and Joel Burken.

Photo by B.A. Rupert

LaWanda Jones, pictured second from left, helps S&T recruit students.

Meeting the **challenge**

LaWanda Jones is not one to shy away from a challenge. As a student, she handled a rigorous engineering curriculum. As an engineer who progressed into the marketing field, she prevailed over a different set of challenges. And today, as the first female to chair the Chancellor's Advisory Committee on African American Recruitment and Retention (CACAARR) at S&T, she readily accepts a new challenge: to help S&T recruit a more diverse student body.

"There's no doubt an urgency for more technical minds needed to resolve our nation's most pressing issues," says Jones, the corporate marketing manager for ABNA Engineering and a 1991 civil engineering graduate. "As our population continues to experience a diverse shift, we must do all we can to prepare the next generations with educational opportunities to equip our society with leaders in technical careers."

Last year, Jones began her term as chair of CACAARR. The committee, made up of alumni volunteers, advises the chancellor's office on matters related to African American recruitment. Established in the mid-1980s in response to concerns related to campus diversity, early members created a lasting platform and generated a series of scholarships for African-American students. And it's making a difference. Minority enrollment has nearly doubled since 2000.

To build on this foundation, Jones encourages her fellow alumni to support a new challenge, presented by **Lt. Gen. Joe N. Ballard**, (retired), MS EMgt'72. Recently, Ballard and his wife, Tessie, donated $250,000 to create the Ballard Challenge to support more minority students at S&T. A portion of these funds is dedicated to providing $5,000 matches to encourage other alumni to endow scholarships of their own.

Laying the **foundation**

Two of the Hasselmann Alumni House's greatest champions, Jerry Bayless and the late Pete Kinyon, are the personification of the "town-gown" partnership in action.

Longtime S&T faculty member and alumnus **Jerry Bayless**, CE'59, MS CE'62, chose to make a major contribution to the project because he knows from firsthand experience that an alumni house will bring the extended university family together. "My involvement in community activities over the years gives me a perspective on how this will enhance the town-gown relationship between Rolla and S&T," says Bayless, a member of the faculty for more than 50 years — and a beloved university icon known as "Mr. S&T."

Rolla resident and honorary alumnus **Pete Kinyon**, who passed away Nov. 13, (a graduate of the University of Michigan), made a generous naming gift in support of the Grand Hall because he believes Rolla is strengthened by a great university and its graduates. "I was pleased to support this project because it will be a terrific asset to the campus and the community," said Kinyon, who made his first financial contribution to S&T shortly after retiring to Rolla in 1988 — a gift in support of Castleman Hall.

The Hasselmann Alumni House will support something near and dear to the hearts of both Bayless and Kinyon: the extended family of friends that make life on campus — and in a university town — rich in close associations, collaboration and tradition.

"It is a joy to watch the students of today continue to uphold our great university traditions as they become alumni," said Bayless. "Hasselmann Alumni House will provide that seamless connection between their campus lives as students and their professional lives as alumni."

Jerry Bayless, (right), CE'59, MSCE'62 and the late Pete Kinyon.

Photo by B.A. Rupert

Inspiring FUTURE generations *of* ENGINEERS

Wendy Bailey, ArchE'07, MS CE'08, is a structural engineer for Burns & McDonnell.

Photo by Ian Nance

Growing up on a farm in Kansas, **Wendy Bailey**, ArchE'07, MS CE'08, was sure she was headed to Kansas State University to study engineering — until she visited Missouri S&T and had a change of heart.

"Most students in Kansas interested in engineering go to K-State, and I was adamant that is where I was going," says Bailey. "But my dad encouraged me to visit Missouri S&T. I immediately liked the small class sizes, the focus on education — and the opportunity to run cross country and track."

Today, as a structural engineer for Kansas City-based Burns & McDonnell, Bailey encourages high school students to pursue careers in engineering. She and her husband, **Dan Bailey**, GeoE'03, MS EMgt'05, are also committed to providing academic opportunity as OGS members through their scholarship benefitting S&T students in the cross country or track programs. (Wendy was a member of S&T's cross country and track teams for four years; Dan also competed at S&T for one year — and ran his first Boston Marathon this past April. He works as an engineering project manager for industrial pump and process equipment distributor Lee Mathews, a Cogent company.)

"Statistically, the United States doesn't have the number of engineers that other countries do," says Bailey. "It is important to encourage young people to become engineers. It is especially important to encourage young women."

Growing up, Bailey had little doubt about her career path, but she is well aware that many teenage girls simply don't consider careers in math, science and engineering.

"I was a goal-oriented kid who was always outside building things with my dad," she says. "I wanted to be an architect, but I knew I was better at math than design. I researched careers and learned that architectural and structural engineers are basically math-based designers. It was a good fit for me."

Today Bailey volunteers as a mentor for Kansas City's annual Introduce a Girl to Engineering Day, sponsored by the local chapter of the Society of Women Engineers. Every year more than 100 high school girls come together with women in all fields of engineering to learn more about the profession.

"The older girls want to know what schools are the best, which classes are the hardest, what major to choose," Bailey says. "The younger girls want to know what you do and how much you make. In either case, it is important to share this information and show them that there are career options outside of the traditional female occupations."

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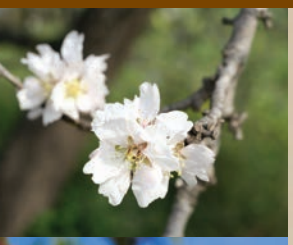
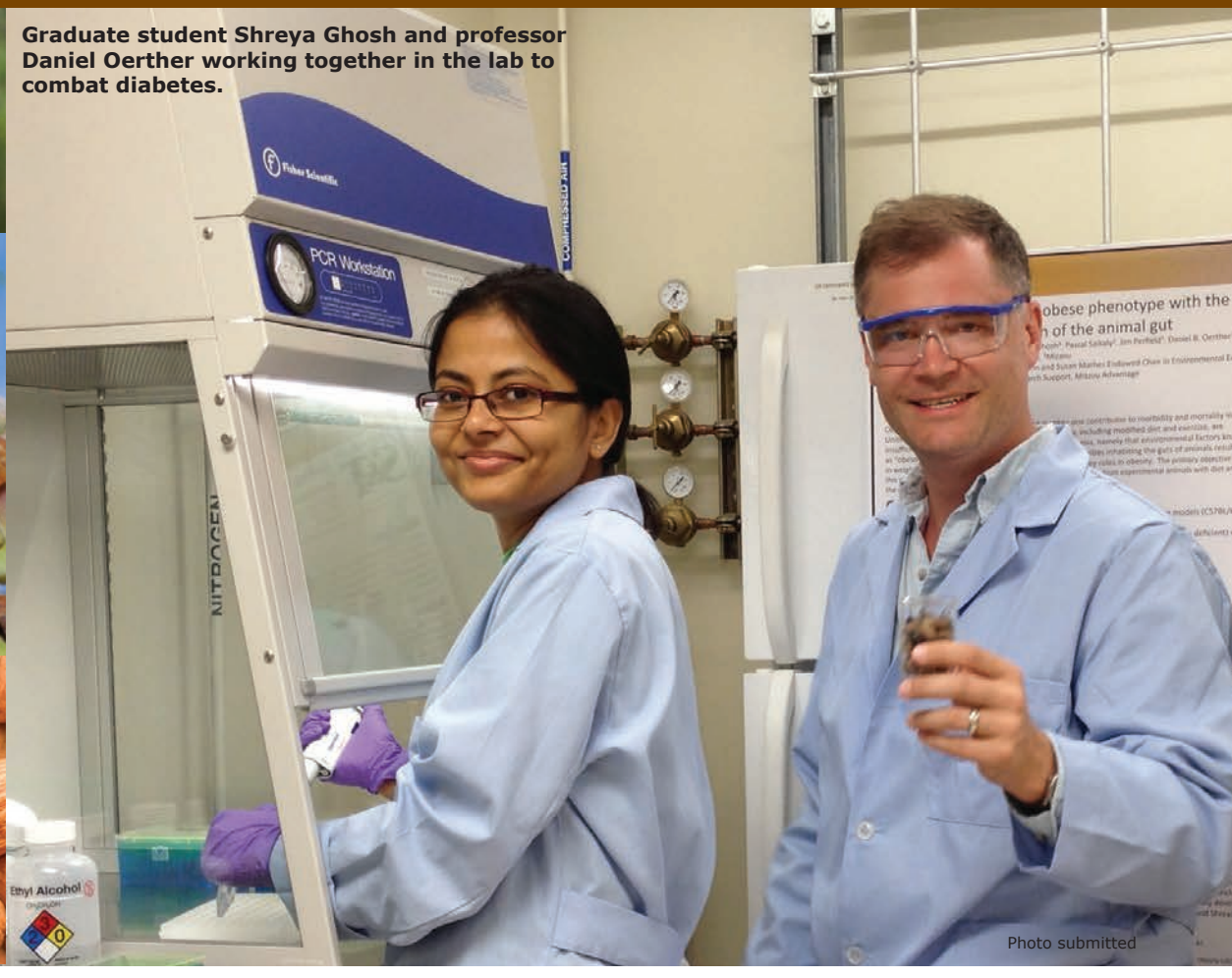




Graduate student Shreya Ghosh and professor Daniel Oerther working together in the lab to combat diabetes.

Photo submitted

Tree oil may combat obesity, diabetes, S&T research suggests

by Andrew Careaga

A future weapon in the battle against obesity and diabetes could come in the form of an oil derived from the seeds of wild almond trees, according to researchers at Missouri University of Science and Technology.

The key to the oil's potential lies in its ability to affect certain microorganisms living in our bellies.

In a study presented in June at the American Society for Microbiology's general meeting in San Francisco, Missouri S&T researchers reported that adding sterculic oil to the diets of obese laboratory mice increased their sensitivity to insulin. This was due to the oil's effect on three types of microorganisms that live in the guts of the mice.

As a result, the researchers saw a "statistically significant improvement in glucose tolerance and insulin sensitivity in the obese mice," says **Shreya Ghosh**, a Ph.D. student in environmental engineering at Missouri S&T. The sterculic oil had no adverse affects on lean mice fed the same diet. Sterculic oil is extracted from the seeds of the wild almond tree known as Sterculia foetida.

The research by Ghosh and her advisor, Daniel Oerther, builds upon previous studies conducted at the University of Missouri-Columbia. In those studies, sterculic oil was found to suppress the bodily enzyme stearoyl-CoA desaturase 1 (SCD1). SCD1 is associated with insulin resistance, a condition that can lead to diabetes and obesity.

Other studies have shown that obese mice deficient in the hormone leptin have a different composition of "gut microbiota" than do lean mice. (Those studies are referenced in a 2011 article in Nature Reviews Microbiology.) Leptin helps regulate metabolism, and a deficiency of the hormone can contribute to obesity, says Oerther, the John and Susan Mathes Chair of Environmental Engineering at Missouri S&T.

In the S&T study, a diet supplemented by sterculic oil also correlated with lower levels of three types of gut microbiota — Actinobacteria, Bacilli and Erysipelotrichia — in the obese mice. It isn't clear, however, whether the lower levels of those microbiota led to the improvement of glucose tolerance and insulin sensitivity among the obese mice, Oerther says.

To perform her experiments, Ghosh studied 28 male mice — 14 of them obese and 14 normal. The mice were five weeks old at the beginning of the study. She separated the mice into four groups and, for nine weeks, fed a standard diet to one group of obese mice and one group of non-obese mice. Over the same period, she fed the same diet, supplemented with 0.5 percent of sterculic oil, to one group of obese mice and one group of non-obese mice. Ghosh recorded the weights, food consumption and glucose levels of the mice during the nine-week period.

After the nine weeks, researchers conducted a DNA analysis of the gut microbiota at King Abdullah Institute of Science and Technology in Saudi Arabia. The results confirmed correlations between the diet, improved glucose tolerance and groups of microbes. Even though the mice fed a diet with sterculic oil did not experience weight loss, both Ghosh and Oerther believe their findings could lead to new insights into controlling diabetes and weight gain.

Ghosh's research poster presentation at the ASM meeting is titled "Responses of Gut Microbiota to Sterculic Oil Supplemented Diet in Lean and Obese Mice." Her co-authors were Oerther; James W. Perfield II, assistant professor of food science at the University of Missouri-Columbia; and Pascal Saikaly, assistant professor of environmental science and engineering at King Abdullah University of Science and Technology in Saudi Arabia.

RICK STEPHENSON

Helping make the world a better place

"I think we can help them; I'm sure we can help them. That's what we're here for," said David Schepers, vice president for energy delivery technical services for Ameren, on an Engineers Without Borders (EWB) trip near the Beni River in Bolivia.

His confidence came from the knowledge that S&T provides an education that allows alumni to succeed everywhere — from a developing nation to a high-tech research lab.

That foundation is built by people like **Rick Stephenson**, who take application — sometimes — to the extreme.

Back in 2004, students came to Stephenson, who was known as a strong proponent of practical hands-on engineering and a firm believer that engineers must make the world a better place. The students had an idea that would require his backing and put them through a real-world test — starting a chapter of Engineers Without Borders.

Rick Stephenson, pictured far left, with a group of EWB-S&T students in Bolivia.

Photos courtesy of EWB

At the time no chapter existed in Missouri, but that didn't stop Stephenson and the students. Their first trip was to Jerez, Guatemala, in the summer of 2005. Since then, more than 300 S&T students have traveled to Bolivia, Guatemala, and Honduras, conducting over 30 various infrastructure projects to improve the lives of villagers.

Stephenson has learned a lot since that first trip, but one thing remains constant — the only way for a project to succeed is to involve the villagers and use materials they have available. This keeps the project sustainable long after he and the students leave.

As determined as Stephenson is to provide potable water and other basic needs to a struggling community, he also spent most of his 41-year career determined to find ways to save Egypt's most treasured antiquities. By studying soil, rock and water samples, Stephenson offered engineering solutions to stop ancient sandstone structures, such as the Temple of Luxor, the Court of Ramses II and the Avenue of the Sphinxes, from collapsing.

Although Stephenson officially retired from the department in August, he hasn't been able to give up his love and devotion to EWB. He will be staying on a quarter-time appointment as a Chancellor's Professor to help develop a university-wide partnership program for EWB-S&T.

This partnership will capitalize on the strength of each University of Missouri campus to provide international education opportunities and experiences. His main focus will initially be with the master's program in public health at the University of Missouri-Columbia. He envisions a team of engineering students, public health students, agriculture students and others working as teams to address the rural development needs in other countries.

Longtime professor retires

Charles Morris, professor of civil engineering, retired this past summer after 34 years of teaching and research. Morris holds a B.S. and M.S. in civil engineering from the University of Missouri-Columbia, and a Ph.D. in civil engineering from the University of Illinois, Champaign-Urbana.

Before S&T, Morris held the titles of principal engineer at Camp Dresser & McKee; division director for the Water Resources Division, and vice-president at Clark, Dietz and Associates. He also served as a Lieutenant in the United States Public Health Service in Cincinnati. He worked briefly for NASA as an aerospace engineer before receiving his direct commission into the United States Public Health Service as an environmental engineer. During his service, Morris received the U.S. Government, Department of Health, Education and Welfare, Award for Service in Developing an Environmental Survey. Recognition for Morris includes operating the LEAD Learning Center with the highest percentage of student participation during 2003-04. He also received a Certificate of Recognition as a Learning Enhancement Across Disciplines Faculty Associate 2003-04 for personal commitment and dedication to student success through participation in a LEAD Learning Center.

Other awards include the Exxon Chemical Company Responsible Care Award for Polymer Weir Design. Morris designed a device, which uses only the hydraulic power of the water flowing through it, to collect polymer pellets so they can be recycled. The pellets were being ingested by wildlife, causing starvation.

Published work by Morris includes chapter author of "Valves," and contributing author of the following chapters: "Flow in Conduits," "Pipes and Fittings," "Data for Flow in Pipes, Fittings, and Valves," and "Avoiding Blunders" in "Pumping Station Design," Butterworth Publishers, MA., 1989. This book won the 1989 Excellence Award from the Professional and Scholarly Publishing Division of American Publishers.

During his work as an associate professor of water resources engineering, Morris was the best "two-legged friend" a fish could have. In the early '90s, his research led to the first use of a rock dike as a fish screen for pump-back units at the Harry S. Truman Dam. This allowed the pump back facility to be used without harming the fish.

Morris' most recent investigations included: erosion potential of the Osage River downstream from Bagnell Dam for Ameren U.E.; and an urban stream stability expert system for the Metropolitan St. Louis Sewer District. His research interests are in the areas of hydraulics, hydrology, fluid mechanics, sediment transport, stream mechanics and mathematical modeling.

In retirement, Morris plans to continue his professional engineering practice with Benton & Associates, Inc. and provide expert testimony in court cases as a forensic engineer. Currently, he is on the Board of Directors for the Missouri Society of Professional Engineers.

Director of design center retires

Roger A. LaBoube, Curators' Teaching Professor emeritus of civil engineering, has retired as director of the Student Design and Experiential Learning Center, effective Sept. 1.

The faculty advisor for the S&T Steel Bridge Team from 1991 until 2010, LaBoube has served as director of the design center for the past two years. Under his leadership, the center has added three new design teams, moved operations to the new Kummer Student Design Center and increased the number of student participants to more than 400.

Phelan to focus on Solar House

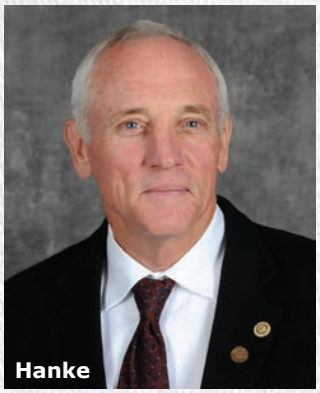
Bob Phelan, outreach manager of the Student Design and Experiential Learning Center (SDELC), will spend the next year helping the Solar House Team prepare its entry in the 2013 U.S. Solar Decathlon, to be held in October in Irvine, Calif.

As part of the management team of the design center, Phelan is no stranger to the Solar Decathlon. In 2001, he mentored the team in the management of its first house, which was entered in the 2002 Solar Decathlon. Since then, Phelan has provided various levels of support for the team's entries in 2005, 2007 and 2009.

"Bob brings a wealth of knowledge and experience to the project from his involvement with all four previous solar houses designed and built at Missouri S&T," says **Heath Pickerill**, main project team advisor and director of the Missouri Local Technical Assistance Program at S&T.

Eight inducted

Photos by B.A. Rupert


Hanke


Kamp


McCown


McDonough


McVeigh


Perry


Strauss


Wojciechowski

Academy of Civil Engineers 2012

Eight civil engineers with ties to Missouri University of Science and Technology were inducted into the Missouri S&T Academy of Civil Engineers during the academy's induction ceremony held in April.

Brett Hanke

of Wentzville, Mo., president of Hanke Constructors, earned a bachelor of science degree in civil engineering in 1972 and a master of science degree in engineering management in 1984, both from Missouri S&T. Commissioned through S&T's Army ROTC Program, he began his career as an engineer officer with the 82nd Airborne Division. After eight years, he left active duty at the rank of captain, but remained in the Missouri National Guard. From 1980 until 2004, he worked for Booker Associates in Sauget, Ill., and served as director of public works for Granite City and Collinsville, Ill., and for Wentzville, Mo. In 2002, Hanke retired from the Army as a colonel. He returned to active duty two years later and served a tour in Iraq, where he was responsible for the $4 billion reconstruction program for water and wastewater facilities. He was a security engineer for SAIC until his retirement in 2007. He established Hanke Constructors in 2009.

Alan Kamp

of Kansas City and Branson, Mo., vice president and senior project manager for Black & Veatch Co.'s oil and gas business line, earned bachelor of science and master of science degrees in civil engineering from Missouri S&T in 1964 and 1966, respectively. He began his career as a structural engineer for gas and oil process plants for Phillips Petroleum Co. At Black & Veatch he designed and managed projects in China, Australia, Abu Dhabi, Scotland and the U.S. These projects included gas treating, sulfur recovery, LNG peak shaving and base load facilities, oil refinery units, an African sugar refinery and a coke gasification facility that produces ammonia fertilizer. Kamp is a longtime member of the Academy of Civil Engineers, has served as a Boy Scout leader, chaired Black & Veatch's United Way efforts and received the company's Robinson Outstanding Management Award in 1995. He and his wife are part owners of and operate the Branson Scenic Railway.

Pat McCown

of Kansas City, Mo., CEO of McCown-Gordon Construction LLC, earned a bachelor of science degree in civil engineering from Missouri S&T in 1974 and an MBA from the University of Missouri-Kansas City in 1983. After working for Fluor Corp. in California, he moved to Kansas City in 1977, to hold positions with Pritchard, JE Dunn, and Walton Construction companies. He earned his professional engineer license in 1980. In 1999, he founded McCownGordon Construction. McCown has served on a variety of technical and professional committees and serves on the boards of UMB Bank N.A., Greater Kansas City Chamber of Commerce, Kansas City Area Development Council, Ronald McDonald House Charities, Kansas City Art Institute, Starlight Theatre, UMKC Conservatory's Advisory Committee and the Leadership Committee for United Way. He co-chairs the Business Council for the Nelson Atkins Museum of Art, is a member of the Metropolitan Arts Council and a corporate partner of the Kemper Museum of Contemporary Art.

Ranney McDonough

of Houston, Texas, president of McDonough Engineering Corp., earned a bachelor of science degree in civil engineering from Missouri S&T in 1966. He was commissioned as a second lieutenant through the Army ROTC, volunteered for Army Rotary Wing Flight School and flew for the 187th Assault Helicopter Company in Vietnam. He left the Army as captain in 1969 to begin his civil engineering career. In 1977, he founded McDonough Engineering in Houston, which has designed numerous commercial, industrial, public works, governmental and transportation projects in the Texas Gulf Coast Region. Ranney is a member of several technical and professional societies, has served on the executive board of the Bay Area Houston Transportation Partnership, and is a past president of the Harris County (Texas) Flood Control Task Force. He is a member of S&T's Order of the Golden Shillelagh and

(continued on the next page)

is active in the Houston Section of the Miner Alumni Association. He has supported the Boy Scouts, the American Festival for the Arts and Houston Livestock Show.

Stephen McVeigh

of Houston, an independent oil and gas consultant, earned a bachelor of science degree in civil engineering from Missouri S&T in 1972. He has spent his career in the engineering and management aspects of oil and gas exploration and production. He retired after 32 years in the domestic and international upstream sector of Royal Dutch Shell companies. From 2000-2004, he served as CEO for Sakhalin Energy Investment Co., in the Russian Federation, which managed the first offshore oil and gas development and LNG project in Russia. Under McVeigh's leadership, the joint venture and its shareholders (Shell, Mitsui and Mitsubishi) reached a positive final investment decision for a $10 billion grass roots integrated oil, gas and LNG development, one of the largest such projects ever attempted.

Michael Perry

of St. Louis, president of HBD Construction Inc., earned a bachelor of science degree in civil engineering from Missouri S&T in 1980. He joined HBD, one of the largest general contracting and construction management organizations in St. Louis, right after graduation. The company recently won a "Project of the Year Keystone Award" from the Associated General Contractors (AGC) of St. Louis and was nominated as General Contractor of the Year by the American Subcontractors Association. Perry currently serves as immediate past chair of AGC St. Louis and chairs its membership committee. He is involved with the AGC Construction Careers Center and serves on the advisory board for Youth Lifeline America. He is on the board of the American Heart Association of St. Louis and coordinates its annual Heart Walks. He is a member of the Rotary Club and the Regional Chamber and Growth Association (RCGA) Leadership Circle, and serves on the legislative committee for the Missouri Growth Association.

Amy Strauss

of Springfield, Mo., senior engineer in power generation for City Utilities of Springfield (Mo.), earned bachelor of science and master of science degrees in civil engineering from Missouri S&T in 1990 and 1991, respectively. Her engineering career began as a co-op student with the City Utilities. She is now responsible for the management of various power plant projects, as well as process monitoring and projects to increase efficiency. Strauss has been active with the Ozark Chapter of the Missouri Society of Professional Engineers and served as chair of S&T's civil engineering department's advisory council. She also served as co-chair of the Greater Ozarks Chapter of the American Red Cross's "Every Day Heroes Event," and as the chapter's board chair, assisting the organization's efforts to acquire and renovate a building for office expansion. Following the Joplin tornado last year, she was deployed as part of the Missouri State Emergency Management Agency's structural assessment visual evaluation team. She was named the National Society of Professional Engineers National Young Engineer of the Year in 2000.

Paul Wojciechowski

of Wildwood, Mo., senior associate and St. Louis office manager of Alta Planning + Design, earned a bachelor of science degree in civil engineering from Missouri S&T in 1983. He began his career with the Missouri Department of Transportation in Willow Springs. He served in planning and design positions at MoDOT for 17 years, primarily in the St. Louis Metro District. He served as director of public works for the City of Clayton, Mo., where he was responsible for public works projects, capital improvement budgeting, parking, traffic, vehicle fleet management and building maintenance. Wojciechowski received an Outstanding Local Government Leadership Award from the East West Gateway Council of Governments in 2007. An avid bicyclist, his work in "bike ped" issues and facilities has earned him Trailnet's Healthy Active Living Award and Missouri Bicycle Federation's Distinguished Service Award. He has served on the city of Wildwood's City Council and Planning and Zoning and Town Center Advisory committees, and currently serves on its Board of Adjustment.

GREENBERG FAMILY LIVES ON

Through their generous estate gifts totaling $1.6M, alumnus **Aaron J. Greenberg** and his sister **Zelda A. Greenberg** have established the David X., Sarah M., Aaron J. and Zelda A. Greenberg Scholarship Endowment at Missouri S&T. This scholarship honors the memory of their parents, David X. and Sarah M. Greenberg, as well as the Greenberg family's longstanding relationship with Missouri S&T, where both father and son earned their engineering degrees.

David Greenberg, a native of Kirkwood, Mo., graduated from the Missouri School of Mines and Metallurgy in 1917 with a degree in mining engineering. A member of the Engineers Club, an active participant in the school's early St. Pat's celebrations, and an enthusiastic spelunker, David went on to become a successful engineer, community leader and philanthropist in St. Louis, where he and his wife, Sarah, raised two children, Aaron and Zelda.

A second-generation S&T alumnus, Aaron grew up hearing stories about his father's alma mater and visited Rolla many times as a boy. After graduating from Missouri S&T in 1950 with a degree in civil engineering, Aaron returned to St. Louis and worked as an engineer for St. Louis County for many years. His sister, Zelda, who graduated from the University of Missouri-Columbia with a degree in journalism, also returned to St. Louis where both siblings became community leaders and philanthropists who generously gave back in many ways.

A passionate ambassador for the engineering vocation, Aaron was active in the American Society of Civil Engineers (ASCE) and chaired the St. Louis Section's career guidance committee for many years. In this role, he attended career fairs, visited schools and encouraged the next generation of civil engineers. He also established an Engineers Club of St. Louis Scholarship, which is awarded to engineering students from St. Louis attending Missouri S&T.

Aaron's commitment to Missouri S&T was legendary. He was one of the Miner Alumni Association's most dedicated members, serving as an admissions ambassador, public resource ambassador and class coordinator. Aaron rarely missed a Homecoming or annual spring scholarship banquet. His leadership was instrumental to the success of the Class of 1950 Golden Alumni Reunion and Class of 1950 Scholarship Fund. Aaron was also a generous and loyal financial contributor who supported the civil engineering department and alumni association with annual gifts for more than 30 years.

The Miner Alumni Association honored Aaron for his extraordinary service to Missouri S&T with the Alumni Merit Award in October 2009, just days before his death. In 2010, the American Society of Civil Engineers established a summer camp scholarship in memory of Aaron through the Miner Alumni Association.

Zelda also enjoyed a lifelong connection to Missouri S&T, sharing the close ties her father and brother maintained with the university. She died in January 2012. Through the generosity of Aaron and Zelda, The David X., Sarah M., Aaron J. and Zelda A. Greenberg Scholarship Endowment Fund will provide aspiring engineers for many generations to come with the opportunity to study at Missouri S&T.

Myers appointed to Technical Activities Committee

John Myers, associate professor of civil, architectural and environmental engineering, was recently appointed to a three-year term on The Masonry Society's (TMS) Technical Activities Committee (TAC). According to TMS' Executive Director Phil Samblanet, Myers was selected by TMS's Executive Committee for his technical knowledge and past committee expertise. Myers has served two nationally elected terms on TMS's Board of Directors and has been highly engaged for many years on the development of environmentally sensitive masonry products and techniques to harden and strengthen existing masonry and concrete systems for multi-hazards. TMS's TAC directs, coordinates and reviews all technical activities of the Society with the goal of assuring that the TMS technical committees operate in an effective and coordinated manner and ensures the quality of the materials TMS produces.

Golden Alumni Reunion

In May, classmates from 1962 celebrated 50 years of graduation from Missouri S&T. Alumni visited with former classmates and toured campus.

Civil alumni **Norman Brown**, **Floyd Hahn** and **Mike Reuck** (pictured below from left to right) were in attendance and received a pin during recognition ceremonies.

Fellowships

We are grateful to the following individuals and corporations for providing these fellowships for our graduate students. These fellowships are key to the department's continued success in attracting quality students to work with our world-class faculty. Thank you!

GeoEngineers Graduate Fellowship
For full-time graduate students specializing in geotechnical or geoenvironmental engineering with a GPA of 3.5 or greater.

Michael D. Hurst Endowed Fellowship
For civil engineering graduate students with a construction preference or focus.

Missouri Asphalt Pavement Fellowship
For S&T graduate students majoring in civil engineering with an emphasis in asphalt materials engineering.

Norbert Schmidt Fellowship
For graduate students majoring in geotechnical engineering on a GTA appointment.

Ron Eckelkamp Memorial Fellowship
For graduate students studying geotechnical engineering with a preference for those who have received an undergraduate degree from a college in Missouri, Illinois or Kansas.

SCI Engineering, Inc. Fellowship
For S&T graduate students majoring in geotechnical or geoenvironmental engineering with an interest in an internship with SCI Engineering and/or a career in consulting engineering.

Shannon & Wilson, Inc.
For graduate students in geotechnical engineering with a high need for financial aid, as required to be reported on the Free Application for Federal Student Aid (FAFSA).

URS Corp Fellowship
For graduate students studying civil engineering at S&T who are U.S. citizens or permanent residents of the U.S., and interested in an internship with URS and/or a career in consulting engineering.

Wei-Wen Yu Fellowship
For graduate students majoring in civil engineering and pursuing a degree with an emphasis in cold-formed steel structures.

Kvetensky inducted

Joee Kvetensky, ChE'95, MS EnvE'97, was inducted into S&T's Athletic Hall of Fame in September. The 2012 inductees were honored during an induction ceremony at Matt's Steakhouse and also during halftime at the Miners' football game against the University of Indianapolis.

A standout in the women's basketball program from 1990-94, Kvetensky completed her playing career as the Lady Miners' all-time leading scorer with 1,484 points and among the career leaders in several other categories. She accumulated a school-record 403 free throws, 551 rebounds and 520 made field goals, while recording the single-season record of 520 points as a senior when she led the MIAA with an average of 19.3 points per game. During that season, she posted one of the school's top scoring games with a 35-point performance in an overtime victory over Southern Indiana.

She led the Lady Miners in scoring and rebounding as a junior and senior, averaging 18.8 points over those two seasons, both of which saw her earn first-team All-MIAA honors. The Lady Miner program was ranked among the top 25 nationally in NCAA Division II in two of her four seasons as a player.

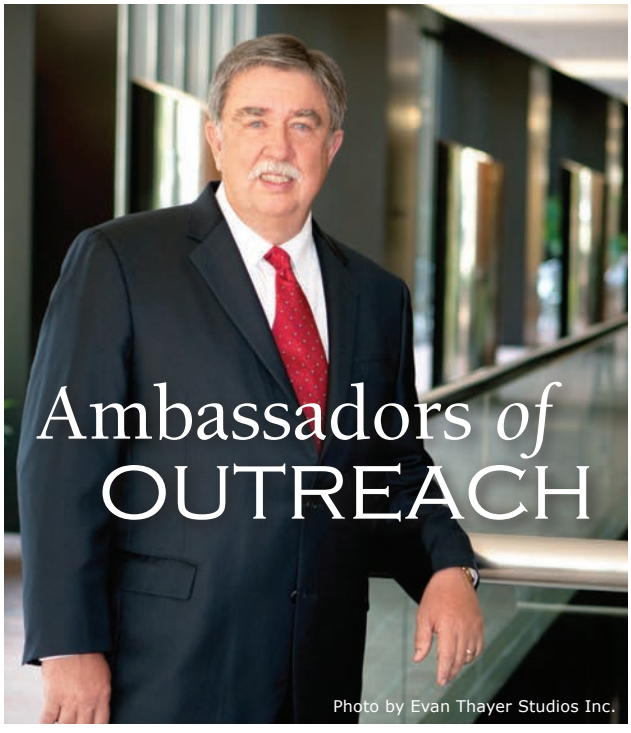
Congratulations to new LDP participants

The President's Academic Leadership Institute announced the Leadership Development Program (LDP) participants for 2012-13.

Congratulations to the following individuals from our department who were selected:

- **Mark Fitch**, associate professor of civil, architectural and environmental engineering
- **Kamal Khayat**, Vernon and Maralee Jones Professor of Civil Engineering and director of the Center for Infrastructure Engineering Studies

This select group was identified from each of the four campuses and is based on the individual's personal and professional accomplishments and potential. Past participants include Joel Burken, Daniel Oerther and Bill Schonberg.



Ranney McDonough, CE'66, is founder and principal of Houston-based McDonough Engineering Corp.

When **Ranney McDonough**, CE'66, heard about Mentor a Miner, he was one of the first to register for the online service connecting Missouri S&T alumni with students interested in finding mentors." There are a lot of alumni who are eager to help," says McDonough, founder and principal of Houston-based McDonough Engineering Corp.

The mentoring program sponsored by S&T's Career Opportunities and Employer Relations (COER) is still under the radar for many students, but COER has launched a promotional campaign to raise awareness of this powerful networking tool. "We're out here, in Houston and hundreds of other cities, and we're eager to help S&T students," said McDonough. "We have connections. We've been there. We know people."

McDonough's words capture a powerful fact about alumni involvement at S&T. Through the gift of service, Miners are making a difference in countless ways: recruiting students, hiring graduates, promoting the engineering profession in high schools, judging science fairs, organizing alumni activities, serving on boards and much more.

For more information or to get involved, visit the Career Opportunities and Employer Relations website at career.mst.edu.

Homecoming award winners

Two of our own were honored during the Miner Alumni Association's Miner Legends Banquet in October. The awards banquet was held in conjunction with Missouri S&T's Homecoming celebration.

The award recipients were:

- **Joel Burken** of Rolla, Mo., who received the Alumni Merit Award. Burken is associate chair and professor of civil, architectural and environmental engineering at Missouri S&T.

- **Preston Carney** of Broken Arrow, Okla., who received the Distinguished Young Alumni Award. Carney, who is an estimator and project manager for Sheehan Pipeline Construction Co., earned bachelor of science and master of science degrees in civil engineering from Missouri S&T in 2002 and 2003, respectively.

Joel Burken, center, with Chancellor Shrader and President-elect John Eash.

Preston Carney, center, with Chancellor Shrader and President-elect John Eash.

Inspiring future generations of engineers

(continued from page 19)

Bailey is one of 189 S&T graduates who work at Burns & McDonnell. Recruited as an S&T student, she was attracted to the company's employee-owner structure. "We all share in the success of the company," she says. "We think like owners and are willing to put in the extra effort to make our projects successful. This mentality creates a positive place to work."

Bailey has recruited for Burns & McDonnell on campus, and she is proud that an S&T degree is so highly respected throughout the United States.

"S&T students are great at problem solving," Bailey says. "In the real world of engineering, there is never an application that matches the textbook exactly, so engineers must take what they know and apply it differently each time. This is something S&T students always excel in."

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Letters should include the writer's full name, address, email and daytime phone number.

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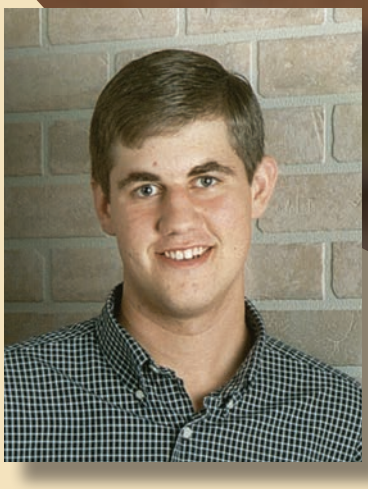

Pooker Family Endowed Scholarship

In recognition of the life, leadership and legacy of **Matthew John Pooker**, beloved son of Norman H. and Louise E. Pooker and brother of Rebecca Pooker, the Pooker family, along with their extended family of friends, have chosen to establish the Pooker Family Endowed Scholarship in Memory of Matthew John Pooker at Missouri University of Science and Technology.

This scholarship honors the memory of Missouri S&T alumnus Matthew Pooker, who earned his bachelor's degree in 2005 and master's degree in 2006, both in civil engineering. Matthew was a member of the American Society of Civil Engineers and a partner in Pooker Excavating and Grading LLC, Festus, Mo. He was a project manager for Penzel Construction Company, Jackson, Mo., and died in a job-related accident on May 7, 2012.

A native of Festus and 2001 graduate of Hillsboro High School, Matthew was born Dec. 7, 1982. He was a confirmed member of the Zion Lutheran Church in Hillsboro and was an avid outdoorsman and hunter.

The Pooker Family Scholarship also honors Matthew's father, **Norman H. Pooker**, CE'74, owner of Pooker Excavating and Grading LLC, and his sister, **Rebecca Pooker**, CE'11, a project engineer for Atkinson Construction.

In keeping with the wishes of Matthew's family and friends, annual earnings of the scholarship shall be awarded to undergraduate students with financial need majoring in civil engineering, with first preference given to graduates of high schools in Jefferson County, Mo. Through their generosity in establishing this permanent source of financial support for aspiring engineers, the legacy of Norman, Matthew and Rebecca will strength the profession they love for generations to come.

For more information regarding this scholarship, please contact Paula McBurnett by phone at 573-341-6082 or email paulam@mst.edu.

Life, leadership and legacy

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