



Engineering Our Future

Winter 2014

Texas Tech University - Edward E. Whitacre Jr. College of Engineering



Female Focus

For Texas Tech to have a significant impact on the future development of the nation's workforce and economy, Science, Technology, Engineering and Math (STEM) fields require contributions from a diverse pool of engineers, including men and women from various cultures. Female enrollment has risen from 12.9 percent in 2010 to 14.9 percent in 2013. The college is far from satisfied and remains committed to developing strategies to recruit under-represented groups, enhancing their retention and seeing it through to graduation. The college aims to increase the female student population to 32 percent.

Inside

- 3 Pantoya Writes Third Children's Book
- 5 College Among Top 20 Online Programs
- 10 Alumnae Leading Top Organizations



Community
of
Scholars



Dean's Report

Engineering Our Future

Winter 2014 Issue

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I hope you had a great holiday season and I wish you a happy new year from the Whitacre College of Engineering. We are excited about the opportunities we will see in 2014 and beyond.

We have already received good news this year, as our online graduate programs have been ranked among the top 20 by U.S. News in the **2014 Best Online Engineering Programs Rankings** (page 5). This is a credit to our faculty and their dedication to student learning, quality instruction, and professionalism.

The new **Petroleum Engineering Research Building** is nearing completion and we will have a grand opening celebration on February 27, 2014. You can follow the progress with our live construction camera at www.pe.ttu.edu/building

I have set a goal for the college's percentage of females in the student population to reach 32 percent in the coming years. To reach this goal, strategies and programs are being implemented at the college level and within each of the departments. To have a true **Community of Scholars** at Texas Tech, it is imperative that we recruit and educate a diverse pool of future engineers, including men and women from various cultures. Read more about our efforts on page 9.

Students in the college continue to shine in the classroom, the laboratory, and in extracurricular activities. **Haley Schneider**, a recent civil engineering graduate with a 4.0 GPA, recently began working on a master's degree and is a starting center on the Lady Raiders basketball team (page 4). **Brittany Talley**, a senior chemical engineering major, is a pitcher and key player on the Texas Tech softball team (page 4). **Jing Zhao** a doctoral student in chemical engineering, played a key role in an important discovery on the glass transition of fossil amber (page 8). Finally, **Tara Parker**, an undergraduate computer science student, received a prestigious internship at Oak Ridge National Laboratory (page 5).

The student organizations in the college are active in outreach efforts in the community. The Texas Tech chapter of the **Society of Women Engineers** recently hosted an event for girls from middle schools in the Lubbock area called "Catch the Engineering Bug" (page 4), and the Texas Tech student chapter of the **Society of Petroleum Engineers** earned the Gold Standard Award for community and social outreach (page 7).

In addition to her innovative work in nanoenergetics, **Dr. Michelle Pantoya**, a professor of mechanical engineering and the J. W. Wright Regents Chair in Mechanical Engineering, has written a third children's book. This great book teaches basic problem-solving skills by using engineering concepts and vocabulary (page 3).

Our faculty members are receiving recognition for their scholarship and contributions to society. **Dr. Sindee Simon** has been selected to receive the Society of Plastics Engineers 2014 Research/Engineering Technology award (page 6). **Dr. Tanja Karp** has been named an Integrated Scholar by the Texas Tech Office of the provost (page 6). **Drs. Greg McKenna** and **Sindee Simon** were selected to receive the ARCS Lubbock Chapter Scientists of the Year Award for 2013 (page 6). **Dr. Luciano Castillo** and **Dr. Jharna Chaudhuri** have been elected as fellows of ASME (page 7). **Dr. Hongxing Jiang** has been elected as a fellow of The Optical Society (page 7). Additionally, **David Branson** has been named an ASHRAE fellow (page 7).

The college's staff members are among the best in the university; this was evidenced in the university's Distinguished Staff Awards program, where **Debbie Starcher**, a unit coordinator in the Department of Civil and Environmental Engineering took home one of the top awards (page 6).

Our departments have been busy with special summer programs. The **Departments of Computer Science and Industrial Engineering** hosted an NSF Research Experiences for Undergraduates Site, bringing in nine undergraduate students from across the nation to tackle research topics ranging from robotics and big data to software engineering and cybersecurity (page 8).

In this issue, we feature two alumnae who are playing key roles in their organizations. **Gayle Burleson** is the vice president of the New Mexico business unit for Concho Resources (pages 10-11) and **Dr. Mica Endsley** is the chief scientist of the United States Air Force (pages 12-13). These women are proud Red Raiders and we are proud of their careers and hard work.

Our new **Alumni Job Grid**, the career placement and job posting site for all Whitacre College of Engineering alumni, continues to provide opportunities for engineers of all experience levels. Find out more at www.TTUeoc.com. I hope you enjoy hearing about the work, promotions, and advancements of your fellow alumni on pages 14-15, and read about **Erna Gras**, who received the Jefferson Award in the San Francisco Bay Area for her work with the Asante Africa Foundation (page 7).

We invite you to share your career news with us at www.TTUEngineering.com We look forward to hearing from you!



Dean Al Sacco Jr., Ph.D.

In This Issue

STEM Outreach 3

News 4-8

Female Recruitment 9

Alumnae Profiles:

Gayle Burleson 10-11

Mica Endsley 12-13

Alumni Updates 14-15

Dandelions



Community
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Pantoya Writes Third Children's Book: Designing Dandelions

Dr. Michelle Pantoya, a professor and the J. W. Wright Regents Chair in Mechanical Engineering at Texas Tech, and her co-author Dr. Emily Hunt, now an engineering professor at West Texas A&M University and Texas Tech alumna, have written another children's book teaching basic problem-solving skills by using engineering concepts and vocabulary.



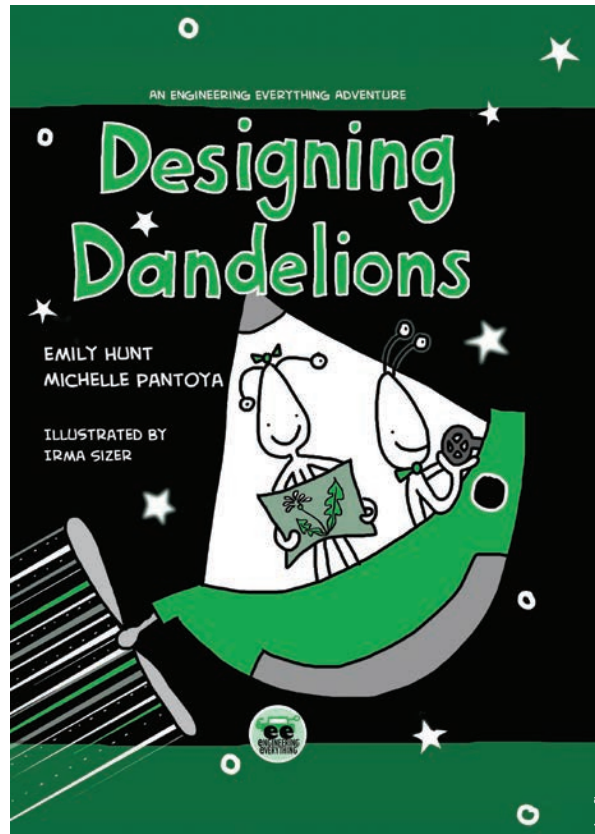
Pantoya

The pair worked with early childhood literacy experts and science museums to develop their most recent title, "Designing Dandelions: An Engineering Everything Adventure."

The book aims to teach children the relationship between science and engineering, explains the design process, and introduces science, technology, engineering, and math (STEM) concepts and vocabulary.

When Bells and Mitch, two young space aliens from the planet Exergy, crash-land on Earth, they must apply the engineering design process to get themselves back home. Captivated by the beautiful yellow dandelions near their crash site, Bells and Mitch investigate the dandelions' life cycle. Observing how the flowers disperse their seeds, they construct a mechanical replica to launch their ship back into space.

Showing how nature itself can instruct us in engineering, Hunt and Pantoya take young readers



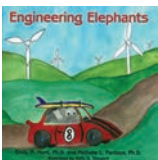
Designing Dandelions is Pantoya's third book; it aims to introduce children to STEM concepts.

on a journey of discovery and problem solving.

"I'm very excited to bring engineering to young children and start to inspire the future generations that will impact our world," Pantoya said.

"Designing Dandelions" is the third book published by the author pair and their first to be published by Texas Tech University Press. Their previous titles, "Engineering Elephants" and "Pride by Design," also have engineering themes. For more information about the Texas Tech University Press and "Designing Dandelions" visit the website at www.ttupress.org. **E**

Pantoya's previous books



Engineering Elephants



Pride by Design

Pantoya often devotes her time, in addition to her innovative work on energetics, to reading with groups of children and encouraging science and engineering exploration.





News

SWE Hosts “Catch the Engineering Bug” for Middle School Girls

The Texas Tech chapter of the Society of Women Engineers (SWE), in partnership with Texas Instruments, recently hosted an event for girls attending Lubbock area middle schools called “Catch the Engineering Bug.” The event was designed to encourage and educate girls about career possibilities in the engineering field.

The day included a series of demonstrations from various engineering disciplines with help from Texas Tech graduate students and professors. Other student groups, including the Llano Estacado RoboRaiders Team 1817, participated in the demonstrations.

The middle school students were encouraged to participate in hands-on group activities, including designing a newspaper bridge, participating in an egg drop activity, and competing in a tallest tower event.

Haley Schneider: Lady Raider Basketball Center with a 4.0 GPA

Haley Schneider, a center for the Lady Raider basketball team, is at the end of her time as a student-athlete. Schneider graduated with a Bachelor of Science in civil engineering in December 2013. She is continuing her time at Texas Tech this spring pursuing a master's degree.



Schneider

Schneider got her start in basketball at a young age by tagging along with her mom, who was a co-captain of the 1980 Olympic Team. “My mom would take us kids to her basketball camps in the summer,” Schneider said. Schneider looks up to her mom for athletics, but she has also been a huge influence on her academics, even having an impact on her major.

“My mom taught math at my high school, so she was always able to help me” Schneider said. “I ended up having a strong interest in math and that gave me a strong interest in civil engineering and that brought me to where I am today academically.”



Middle school girls watch the Llano Estacado RoboRaiders Team 1817 robot in action.

Texas Instruments provided electrical engineering demonstrations and hands-on activities for students to learn how engineering interacts in everyday life. More than 80 middle school students attended the event and prizes and giveaways were available for participants. **E**



Schneider, a center, has played in more than 40 games in her time at Texas Tech.

Not only is Schneider a civil engineering student, but she is also a part of other organizations on the campus like the Texas Tech chapter of National Society of Collegiate Scholars.

Candi Whitaker, women's head basketball coach said Schneider is a great role model for other players on the team. “The thing I like the most about Haley is her coach-ability,” Whitaker said. “She's someone who listens to everything you ask her to do on the floor. You know she's doing all the things off the floor the right way which is such a great example of what the Lady Raiders are about.” **E**



Parker Selected for Internship at Oak Ridge National Laboratory

Tara Parker, a computer science major, recently interned at Oak Ridge National Laboratory (ORNL), where she joined Dr. Arvind Ramanathan's research team in big data analytics for bio-surveillance. She implemented noise reduction and visualization techniques for twitter messages. As a result, Parker has co-authored two peer-reviewed papers.



Parker

By examining co-references that are related to diseases, health issues, and symptoms, one can reveal emerging threats to public health. Mentored by Dr. Rattikorn Hewett, Parker continues working with Drs. Ramanathan and Hewett applying novel analytic approaches for bio-surveillance. "It is exciting to bring back my experiences to Texas Tech and continue my research in big data analytics," says Parker. **E**

Brittany Talley: Lady Raider Softball Pitcher

Brittany Talley, a senior chemical engineering major with a minor in biotechnology, is a pitcher on the Texas Tech softball team. She attended high school in Little Elm, Texas, a suburb in the Dallas/Fort Worth metroplex.



Talley

Last season, she played in 39 games and was the starting pitcher in 18 games. Talley was one of three Red Raiders named to the Academic All-Big 12 first team. She finished the 2013 season with a 9-5 record and team-leading 2.77 earned-run average. Among the top-five in school history for career wins and saves, she is also among the top 10 for career appearances, games started, complete games, innings pitched and strikeouts.

In the 2012 season, she was named to the Capital One Academic All-District team. **E**

Texas Tech T-STEM Center: Boosting College Readiness and STEM Education

Led by senior director Cathy H. Allen, the Texas Tech T-STEM Center is working to improve students' college readiness, focusing on reaching and serving schools in five Education Service Centers in the Panhandle, South Plains, and Trans-Pecos regions of Texas. 78% of students served by programs like this are from historically underrepresented ethnicities and T-STEM students matriculate to colleges or universities at higher average rates.



Allen

The center is preparing strong marketing initiatives, including effective use of media and technology through a revamped website and social media use. Responding to the needs of customers, new summer 2014 professional development workshop offerings include gaming design, food science, forensics, and rigorous math and science content sessions in addition to traditional robotics and rocketry workshops. **E**

Texas Tech Among Top 20 Online Engineering Programs

The online graduate degree programs offered by Texas Tech University's Whitacre College of Engineering are ranked among the best in the nation, according to the 2014 edition of U.S. News & World Report's Best Online Graduate Programs.



Texas Tech's graduate engineering programs are ranked 20th among institutions offering a master's degree in engineering and housing at least one program that was ABET accredited at the bachelor's level or higher.

Respondents were ranked based on student engagement, faculty credentials and training, student services and technology, and admissions selectivity. **E**



News



Simon Selected to Receive SPE Research/Engineering Technology Award

Dr. Sindee Simon, Whitacre Department Chair and Horn Professor of chemical engineering, has been selected to receive the Society of Plastics Engineers (SPE) 2014 Research/Engineering Technology award for research and technology developments in polymers and polymer composites and for her pioneering contributions in thermal analysis of polymers.



Simon

This award recognizes an individual who has made significant contributions in the fields of polymeric material development, processing, design, the innovative application of polymer engineering principles, and/or the fundamental understanding of the science of polymeric materials and their behavior (creation of new polymer structures, characterization and understanding of polymer structures, properties, performance, and processing). **E**

McKenna and Simon Named Scientists of the Year

Dr. Greg McKenna, John R. Bradford Chair in Engineering and Horn Professor, and Dr. Sindee Simon, Whitacre Department Chair and Horn Professor, were selected to receive the Achievement Rewards for College Scientists (ARCS) Lubbock Chapter Scientists of the Year Award for 2013.



McKenna

The ARCS Foundation, Inc. is a national volunteer women's organization dedicated to providing financial support to academically outstanding students majoring in the fields of natural science, medicine, and engineering.

This academic year the local chapter has awarded thirteen scholarships to students enrolled at Texas Tech University, the Texas Tech University Health Sciences Center, and Lubbock Christian University. **E**

Karp Named Integrated Scholar by Office of the Provost

The Texas Tech Office of the Provost has named Dr. Tanja Karp, an associate professor of electrical and computer engineering and the Texas Tech Society of Women Engineers Faculty advisor, as an Integrated Scholar for 2013-2014.



Karp

Each year the provost works with the academic deans to develop lists of faculty members and students who exemplify the Integrated Scholar concept.

An Integrated Scholar is a faculty member who not only demonstrates outstanding teaching, research and service, but also is able to generate synergy among the three functions. These faculty members consistently promote active learning and infuse the results of their research and scholarship in courses and other learning experiences. **E**

Starcher Receives Chancellor's Colonel Rowan Award

Debbie Starcher, unit coordinator in the Department of Civil and Environmental Engineering, has been named a recipient of the Chancellor's Colonel Rowan Award for Execution as a part of Texas Tech University's Distinguished Staff Awards program.



Starcher

The Rowan award is given to staff members who go above and beyond when accomplishing tasks and projects. This is the third consecutive year that a Whitacre College of Engineering staff member has received a Rowan award.

The Distinguished Staff Awards program is a broad-based recognition effort that rewards staff for hard work, enthusiasm and dedication to Texas Tech. The nominations were completed by other Texas Tech staff members and selected by a committee comprising past award recipients and the Offices of the Chancellor and President. **E**



TEXAS TECH
UNIVERSITY



Grasz Wins Jefferson Award for Work With Asante Africa Foundation

Erna Grasz, a 1985 graduate with a Bachelor of Science in electrical engineering, has been named a Jefferson Award winner in the San Francisco Bay Area for her service in funding education and developing leaders.



Grasz

Grasz is the founder, CEO, and chairman of the board for Asante Africa Foundation, an organization providing sustainable solutions that help disadvantaged children gain a solid education in schools in 31 villages in Kenya and Tanzania. More than 660 teachers and 30,000 students have directly benefited from the work of the foundation through primary and secondary school scholarships, training for youth and teachers, and the 69 infrastructure projects completed to date, including classrooms, student dormitories, latrines and water tanks.

"I am deeply humbled by this honor," said Grasz. "The real heroes are the people delivering our programs, and the kids who are seizing the opportunities we give them and leveraging them to transform their world."

The prestigious Jefferson Award recognizes "Unsung Heroes" – ordinary individuals performing extraordinary deeds – and was established as a national award in 1972 to encourage and honor individuals for their achievements and contributions through public service.

Grasz was nominated by Asante Africa Foundation volunteer Sonja Stewart for her outstanding work in East Africa as well as her impact on local and global volunteers. Both Asante Africa Foundation's educational programs and leadership culture revolve around empowering people to use existing talents and leadership skills to accomplish results.

Asante Africa Foundation was established in 2006 by three women: Grasz; Emmy Moshi, a Tanzanian entrepreneur residing in the Kilimanjaro region; and Hellen Nkuraiya, a school principal and esteemed member of the Kenyan Maasai tribe.

For more information on the Asante Africa Foundation, visit www.asanteafrica.org **E**

Four Faculty Members Named Fellows of National Organizations

Dr. Luciano Castillo, Don Kay and Clay Cash Foundation Engineering Chair in Wind Energy and professor of mechanical engineering, and Dr. Jharna Chaudhuri, mechanical engineering department chair and professor, have been elected as fellows of the American Society of Mechanical Engineers.



Castillo



Chaudhuri

Dr. Hongxing Jiang, Horn Professor and Edward E. Whitacre Jr. Chair in Electrical and Computer Engineering, has been elected as a fellow of The Optical Society (OSA). He was elected "for outstanding research contributions to the synthesis, characterization, and applications of optoelectronic devices based on III-nitride semiconductor materials."



Jiang

David Branson, an instructor of mechanical engineering, has been named an American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) fellow. He was recognized for contributions that have had substantial impact on the advancement of the industry. **E**



Branson

Society of Petroleum Engineers Chapter Receives Gold Standard Award

The Texas Tech University student chapter of the Society of Petroleum Engineers (SPE) has earned the Gold Standard Award for 2013 in recognition of its exceptional programs in technology dissemination, membership development, community and social outreach, and more. This is the second consecutive year that the chapter has been recognized with the Gold Standard Award by SPE. **E**





News

Fossil Amber Shatters Theories of Glass as a Liquid

Fact or fiction? Stained glass found in medieval cathedrals becomes thicker at the bottom because glass moves over time. For years researchers have had their doubts, now a team at Texas Tech has further evidence that the glass is not going anywhere.

“Glass transition is related to the performance of materials, whether it is inorganic glass or organic polymers,” said Dr. Greg McKenna, professor of chemical engineering at Texas Tech. “For example, this would be important to people who own a boat made of fiberglass, or fly in an airplane made with epoxy-based composites. Information like that can help predict if that jet will still be flying in 30 years.”

The idea for this research came from a doctoral student’s qualifying exam, McKenna said. He gave Jing Zhao a problem relating to diverging time-scales using polyvinyl acetate, a substance often found in adhesives. Her results were consistent with a lack of divergence – contrary to standard thought – so they decided to up the ante by performing similar experiments on a much older, ultra-stable glass.

They chose 20-million-year-old Dominican amber, and together with Whitacre Department Chair and Horn Professor Dr. Sindee Simon, Zhao performed



Jing Zhao (left) analyzed 20 million year old amber under the guidance of Dr. Sindee Simon and Dr. Greg McKenna (right).

calorimetric and stress relaxation experiments on the samples. “What we found is that the amber relaxation times did not diverge,” McKenna said. “This result challenges all the classic theories of glass transition behavior.”

This research is supported by the National Science Foundation under a grant from the Division of Materials Research, Polymers Program. The process and results were published in Nature Communications.

Meanwhile, McKenna has recently acquired additional samples from around the world, including 220-million-year-old Triassic amber from Eugenio Ragazzi, a pharmacology professor at the University of Padova in Italy. The team now has plans to perform similar experiments on the new samples. **E**

Departments Host NSF Research Experiences for Undergraduates Site

The Departments of Computer Science and Industrial Engineering hosted four female and five male undergraduate students on campus in June, July, and August 2013 as a part of a National Science Foundation (NSF) Research Experiences for Undergraduates (REU) Site grant.

The students tackled research topics ranging from robotics and big data to software engineering and cybersecurity. Drs. Susan and Joseph Urban, professors of industrial



Susan Urban



Joseph Urban

engineering, and Mohan Sridharan and Yong Chen, assistant professors of computer science, advised the students.

The site was co-funded by the Department of Defense in partnership with the NSF REU program. The research project consisted of a 10-week program where students collaborated on cybersecurity, robotics, and software engineering research issues.

The participants worked closely with faculty members on their current research projects and came from universities in Texas, Colorado, Georgia, and Maryland. **E**



Sridharan



Chen

Female Recruitment



Engineering Opportunities Center: Showcasing Engineering to Females

The college's main office for student recruiting, job placement, and academic services — the Engineering Opportunities Center (EOC) — along with the Associate Dean for Undergraduate Studies Dr. Audra Morse, have been working to increase the visibility and numbers of female students in engineering.



Morse

Using resources like the contents of this magazine, the EOC is working to showcase female engineering students and the diverse role models that exist to help those young women achieve their professional dreams. Other programmatic activities have been funded by companies, including Halliburton, to encourage young women to attend graduate school and to recruit high school female students to engineering. This work has also been supplemented by providing scholarships to outstanding female high school students. **E**

Shifting Female Perceptions About Engineering

Addressing the college's goal of increasing the percentage of female students to 32%, Zaida Gracia, director of special projects, is developing strategies to affect a shift in the ways that females perceive engineering. Targeting K-12 students and teachers, prospective undergraduate and graduate students, and potential female faculty members, she will use strategic messaging and outreach combined with leadership skills training to attract and retain more females.



Gracia

As part of the project, Texas Tech recently joined the Women in Engineering ProActive Network. Gracia will also be expanding current collaborations with Puerto Rico's engineering programs, where women representation is about 39%, building opportunities for female recruitment in graduate programs. **E**

Departmental Recruiting Initiatives for Female Students and Faculty

Dr. Jharna Chaudhuri
Department of Mechanical Engineering



Chaudhuri

"The department has recently hired two excellent female faculty members and offered many scholarships to females, including two full rides to applicants. We are identifying a core group of female students to act as ambassadors, joining college recruiters on visits to high schools and junior colleges. In addition, the department is home to a female-focused student organization, Women in Mechanical Engineering, which offers support to female students."

Dr. Rattikorn Hewett
Department of Computer Science



Hewett

"The key strategy to recruit outstanding female faculty and students is to treat recruitment as a timely ongoing process to 'search' for potential candidates, be the first to reach out, solicit applications by personal invitations, engage/cultivate personal relationships (especially for student recruitment), and make offers early. Some innovative initiatives under consideration include a professional video tour/profile for the department website and an intelligent web crawler to 'search' customized venues to automatically collect candidate pools."

Dr. Sindee Simon
Department of Chemical Engineering



Simon

"Graduate students from the groups of Drs. Simon, Hedden, Khare, and McKenna serve as instructors for portions of two programs organized Texas Tech's IDEAL. 'Science – It's a Girl Thing' is aimed at sparking girls' interest in science, introducing them to strong role models, dispelling myths surrounding science careers, and introducing minority girls to a collegiate experience. 'Super Saturdays' is a science enrichment program for grade school children. Activities include making slime and nylon, examining the viscoelastic properties of polymers, including shear thickening and Kaye effects, and investigating hydrophobicity and hydrophilicity effects." **E**



Alumna Profile

Areas of Historical Oil and Gas Exploration and Production in the United States

Gayle Burleson: A Leader in Concho Resources' Operations

Born and raised in Odessa, Texas, Gayle Burleson came to Texas Tech and served as one of the first Engineering Ambassadors in the college with Dean Mason Somerville.

While at Texas Tech, she studied chemical engineering and enjoyed speaking to prospective students and prospective companies about the college and engineering.

"I chose chemical engineering because of my love of chemistry and having excelled in it in high school. I chose Texas Tech because it was close to home, but not too close and because of the size of the department - I could have close relationships with my professors and be a part of the engineering school and department, not just a number," said Gayle.

Gayle received a Bachelor of Science in chemical engineering from Texas Tech University in 1988 and after graduation, she worked for eight years in various reservoir and production engineering capacities for the Exxon Corporation.

At Exxon, she was responsible for primary recovery in oil and natural gas fields, and for water floods

and tertiary recovery floods in the Permian Basin and North Dakota. After her time at Exxon, Gayle spent time as a reservoir and production operations engineer at several other firms, adding to her work experience and ultimately preparing her for her current role as the vice president of New Mexico operations for Concho Resources, a \$10 billion market cap company with more than 850 employees.



Burleson

In her current position as the vice president of the New Mexico business unit, she manages 240 employees in a variety of roles, from field personnel, engineers, geologists, and landmen. In 2013 Concho focused more than \$1 billion of its \$1.8 billion capital budget on Gayle's business unit, making Concho the largest oil and gas producer in New Mexico.

For Gayle, the last 25 years of her career have been very rewarding. When she visits with prospective engineers or students, she always tells them that "every day is a new day," and "each project or problem is unique." Thinking about this advice, she indicates that she has "been involved in the drilling, development and production of thousands of wells

**The Burleson family at their home in 2012:
(L-R) Bryant, Gayle, Jerry, Cory, and their two dogs.**





in the Permian Basin from different types of fields and leases — and there are no two wells alike. They drill differently, they complete differently, and they produce differently.” For her, each new day is a challenge.

“One of the most rewarding pieces of my career has just been to be a part of the revitalization of the Permian Basin. When I started with Exxon in 1988 in Midland, everyone told me the Permian Basin was on its last leg...it didn’t have 20 more years of life, etc.,” said Gayle. “Today, we are running more rigs than the peak rig rate in 1981, with most of these rigs today being horizontal. We have arrested the oil decline that was apparent from the peak oil rate in 1973, and production has been on an incline over the last few years.”

Gayle is a member of the Texas Tech Whitacre College of Engineering Dean’s Council, the Chase Foundation Scholarship Board, and is currently the vice president of the Artesia Chamber of Commerce Board. She has also won several awards, including the 2012 Southwestern U.S. Regional Award for Management and Information from the Society of Petroleum Engineers.

In her opinion, it takes current female engineers

Gayle and her husband Jerry enjoy a round of golf in Hawaii to celebrate 25 years of marriage.



(L-R) Gayle, Bryant, and Jerry Bureson at a Texas Tech football game.

to encourage young girls to take math and science classes while in school.

“We can do it when girls are in high school or even in college, but I really feel like it needs to start before they enter junior high or while in junior high. They have to know that engineering is not just a man’s profession – women can be successful and contribute as well. They also have to know that having a career and a family is “do-able”, but it is tough. It takes a great support network of a family and a spouse. I was lucky and I had both,” admits Gayle.

Gayle indicates that women in engineering, particularly petroleum engineering, are a minority now, but the tide is shifting from what it was when she began twenty-five years ago. “I never let that be an issue for me. I just did my job. It is fun, challenging, and rewarding,” she said.

Along with juggling her career and community activities, Gayle and her husband Jerry – who is also a Red Raider – have two sons. Their youngest son Bryant is a junior at Texas Tech and is currently on the baseball team. Their oldest son Cory is a recent graduate of the University of Nebraska and is currently an assistant baseball coach at the University of California – San Diego and pursuing a master’s degree in sports management. In her free time, Gayle enjoys watching her sons play baseball but also enjoys travelling, running and playing golf. **E**

CONCHO



Alumna Profile

Endsley Serving as the U.S. Air Force's First Female Chief Scientist

In her senior year of high school, Dr. Mica Endsley was asked by a good friend to go to a weekend retreat on engineering hosted by the Society of Women Engineers.

Because of this retreat, she decided to pursue a career in industrial engineering. "That is really when I found out what engineering was about and what they did," said Mica. "I decided that sounded interesting to me. It has turned out to be a really good career choice."

She saw many opportunities in the field of industrial engineering to shape systems and products to benefit people's lives. At Texas Tech, Mica learned about optimization and human-systems integration, which she considers very valuable in all aspects of the engineering field.

Mica graduated from Texas Tech Magna Cum Laude with a Bachelor of Science in industrial engineering in 1982, paying her way through college by working at Johnson Manufacturing (now Eagle Pitcher), CBC, Inc. as a tooling designer, and later at Southwestern Bell as an office manager. These experiences led to her strong interest in the area of human factors as a way to improve the way that humans interact with systems, tools, machines.

"I got a very solid, well-grounded education at Texas Tech. I have been to a lot of other universities since leaving, and I wouldn't trade my experience at Texas Tech. I got a terrific education and I learned not just theory, but how to go out and do things effectively in the real world environment and I think that is very valuable," said Mica.

Through her hard work and dedication to her education, Mica went on to earn a Master of Science in industrial engineering from Purdue University in 1985. Moving to Los Angeles, she



Endsley graduated from Texas Tech Magna Cum Laude with a Bachelor of Science in industrial engineering in 1982.

worked as a research scientist for Northrop Grumman and stayed within the Northrop Corporation until she completed a Doctor of Philosophy in industrial and systems engineering from the University of Southern California in 1990.

After earning her Ph.D., she returned to Texas Tech as a professor, where she taught human factors and expanded her work on situation awareness in aircraft to other areas including air traffic control, driving, and military command and control. In 1997, she left academia to found SA Technologies.

Since that time, she has become a successful entrepreneur, authoring more than 200 scientific articles, reports on situation awareness, decision-making and automation, and is recognized internationally for her work in the area of situation awareness.

Her success did not go unnoticed, and Mica was recently named chief scientist of the United States



"I can see how what I designed impacts their everyday life..."

"I can make their job and life a lot better"



Air Force. In this role, Mica identifies and analyzes technical issues and brings them to the attention of the Air Force Chief of Staff and Secretary of the Air Force, and interacts with other Air Staff principals, operational commanders, combatant commands, acquisitions and science and technology communities to address cross organizational technical issues and solutions.

“When you work on a system and work directly with the users of the system, I can see how what I designed impacts their everyday life. People are working 8-10 hours a day in an engineered environment. We have a real impact on the quality of their working life. To me, that is really rewarding in that I can make their job and life a lot better,” said Mica.

As the first female chief scientist, Mica encourages young women to pursue careers in the STEM (sciences, mathematics, technology, and engineering)

“It really is a great field for women and I think more would be interested in it if they really understood what engineers actually did”

fields. Reflecting on her own decision to pursue engineering, she believes there are many elements of engineering that are appealing to women. Those key elements include the many opportunities for creativity in the engineering workplace and the need to tackle problems in a team environment. She feels that women often do not realize that as engineers, they are solving real problems for society.

“For many girls, they just don’t know a lot about engineering. It really is a great field for women and I think more would be interested in it if they really

understood what engineers actually did,” said Mica.

Through Mica’s dedication to her career, her country, and the field of science, she still finds time to spend with her family, which includes her husband and three daughters. In the small amount of free time that Mica has, she enjoys traveling abroad. Some of her excursions include an African Safari, Europe and an upcoming trip to Japan and Singapore. **E**

Mica Endsley in the cockpit of a Lockheed Martin F-35 Lightning II at Edwards Air Force Base in November 2013.



Paul Weatherman - Lockheed Martin



Staff Sgt. Larry E. Bold Jr. - USAF



Alumni Updates

Whitacre College of Engineering Alumni Updates

1964

Patrick McCarroll, a 1964 graduate with a B.S.E.E. lives in Hermosa Beach, Calif.

1970

Mohamamd Alavi, a 1970 and 1972 graduate with a B.S.E.E. and M.S.E.E., is semi-retired and provides management consulting services to the oil and gas industry. In 2011, he founded Peace Worldwide Organization with flagship publications of annual civility reports. The 2013 report reviews United Nations countries and provides each country with human rights, democracy, peace, and civility scores on the basis of 1-100. The organization has two chapters, one in Africa and another one in Houston.

1972

Stephen E. Heitzman, a 1972 graduate with a B.S.M.E., has entered the second year of his sixth start-up oil and gas exploration and production company over the past 40 years in the business. As in the current company, Talos Energy, the prior two start-up companies were funded by private equity investors. Talos is funded via up to \$600 million of commitments backed by Apollo and Riverstone. The prior two companies were founded, grown and sold to public companies.

1974

Terry Dyson, a 1974 graduate with a B.S.C.E., works for 4-D USA, Inc. and lives in Nashoba, Oklahoma.

Margaret Walker, a 1974 graduate with a B.S.Ch.E., was elected to the National Academy of Construction in October 2013.

1975

Stephen Taylor, a 1975 graduate, is chairman, president, and CEO of a NYSE publicly listed company that is celebrating five years on the New York Stock Exchange and 15 years in business. The company specializes in the fabrication, rental and sale of natural gas compression equipment.

1976

Andrew Bushnell, a 1976 and 1978 graduate with a B.S.E.E. and B.S.M.E., works in the areas of power electronics and pulsed power for General Atomics in San Diego, Calif.

1979

Robert Fisher, a 1979 graduate with a B.S.M.E., recently joined KSA Alliance, Inc. as a division manager for the Shreveport, La. office.

1980

Jean Abiassi, a 1980 graduate with a B.S.C.E. and M.S.C.E., works for Zachry Construction Corp. and lives in San Antonio, Texas.

1982

Mark Emery, a 1982 graduate with a B.S.C.E., is currently the senior construction engineer at Luminant Kosse Mine, and is the former transportation and mining manager at Johnson and Pace Inc. and the former district design engineer in the Texas Department of Transportation Tyler District. He lives in Flint, Texas.

1983

Don Terry, a 1983 graduate with a B.S.P.E., is an engineer/operations manager for Special Energy Corporation, and lives in Stillwater, Okla.

Karen Work, a 1983 graduate with a B.S.I.E., is now working in the Bakken Field in North Dakota as a senior completions engineer with ConocoPhillips. She recently moved from Midland, Texas to Houston, Texas.

1986

David Hamre, a 1986 graduate with a B.S.E.E.T., is a F-35 RF Integration & Spectrum lead engineer for Lockheed Martin Aeronautics. He lives in Fort Worth, Texas.

1989

Scott Collen, a 1989 graduate with a B.S.I.E., has started his own consulting company focusing on logistics and supply chain services called Collen Consulting Group in Dallas, Texas.

1991

Scott Ferguson, a 1991 graduate with a B.S.M.E., was promoted to general manager in June 2012 for Systems Spray-Cooled, Inc., He lives in Nashville, Tenn.

Justin Freeark, a 1991 graduate with a B.S.Ch.E., recently took on a new challenge as project manager with Austin Powder for the construction of a Greenfield Chemical plant in Midway, Tenn.

Robert Hampton, a 1991 graduate with a B.S.C.S., is now the director of global infrastructure for AECOM in Los Angeles, Calif.

1993

Chad Wiginton, a 1993 graduate with a B.S.M.E.T., is a sales engineer for H.D. Grant, and lives in Houston, Texas.

1996

Rama Yanegalla, a 1996 graduate with a M.S.C.S., is an enterprise integration architect for PepsiCo, and lives in Frisco, Texas.

1998

Christian Peterson, a 1998 graduate with a B.S.C.E.T., works for Balfour Beatty and lives in Houston, Texas.





2000

Derrick Anderson, a 2000 graduate with a B.S.P.E., is an East Team asset supervisor for Denbury and lives in Frisco, Texas.

Brent Weckar, a 2000 graduate with a B.S.C.E.T., works for Sedalco Construction Services and lives in Fort Worth, Texas.

2002

Jennifer Gallagher, a 2002 graduate with a B.S.E.T., recently became a sales engineer for Innography, an intellectual property analytics software company in Austin, Texas. She was previously the patent portfolio manager for Freescale Semiconductor for more than 8 years. She lives in Georgetown, Texas with her husband, Marc (B.A. 2000), and two kids, Isabella and Wesley.

2003

Na'Tosha Bard, a 2003 graduate with a B.S.C.S., is working as lead software developer for Unity Technologies in Copenhagen, Denmark and is primarily responsible for leading the Build and Release Engineering Team and is one of the two developers responsible for the Linux Platform Support in the Unity Game Engine.

Jorge Flores, a 2003 graduate with a B.S.I.E., has worked for two years as an operations manager and has now been promoted to assistant general manager for City of Eagle Pass Water Works System. He lives in Eagle Pass, Texas.

Aaron Tagle, a 2003 graduate with a B.S.I.E., works for Ram-Gear Mfg. Inc. and lives in Corpus Christi, Texas.

Walter Thomas, a 2003 graduate with a B.S.C.E., is a senior civil engineer for City of Irving, Texas.

2004

Mark Davis, a 2004 graduate with a B.S.I.E., was a finalist for the Best Process Improvement Project Under 90 Days Award at the 2013 PEX Conference. The project was titled "Blood Culture Contamination Reduction in Emergency Department." He works for the Texas Health Presbyterian Hospital of Dallas.

Jared Higgins, a 2004 graduate with a B.S.M.E., was elected vice president of Region IV of the Association of Energy Engineers. He is a corporate associate and mechanical engineering team leader at Parkhill, Smith, & Cooper, Inc. and lives in Lubbock, Texas.

2005

Marcello Balduccini, a 2005 graduate with a Ph.D. in computer science, joined Drexel University this past summer as a research faculty member.

2005

Joshua Evans, a 2005 industrial engineering graduate, works for ExxonMobil and lives in Dallas, Texas.

2006

Jarrad Reeves, a 2006 graduate with a B.S.C.E., works for the U.S. Navy and lives in Pace, Fla.

2007

Joseph Briones, a 2007 graduate with a B.S.C.E., was recently named the materials and pavements engineer for the Corpus Christi District of the Texas Department of Transportation. He will assist in the oversight and administration of the district laboratory operations and will be responsible for all pavement designs in the district.

2009

Mobolaji Ogundiya, a 2009 graduate with a B.S.Ch.E., works for Cytec Carbon Fibers and lives in Greer, S.C.

2010

Nicholas Nelson, a 2010 graduate with a B.S.M.E., works for Gerdau Long Steel North America and lives in Arlington, Texas.

Bindu M. Tambraparni, a 2010 graduate with a M.S.I.E., is a process manager for Humana Pharmacy, and lives in West Chester, Ohio.

Jeanette Tindall, a 2010 graduate with a B.S.Ch.E., works for Phillips 66 and lives in Lake Jackson, Texas.

2011

Blake Rupard, a 2011 graduate with a B.S.C.E., is an M.B.A. student at the Vanderbilt University Owen Graduate School of Management, and lives in Nashville, Tenn.

Jagannath Valaiyapathy, a 2011 graduate with a B.S.C.S., works for REI Systems Inc. and lives in Herndon, Va.

2012

Bassem Hraki, a 2012 graduate with a B.S.Ch.E., works for Halliburton and lives in San Antonio, Texas.

Kerri Ireland, a 2012 graduate with a B.S.P.E., works for Devon Energy and lives in Edmond, Okla.

2013

David Tomar, a 2013 graduate with a M.S.S.E.M., works for Ureno USA and lives in Hobbs, N.M.

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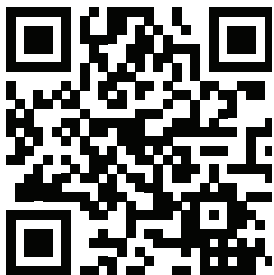
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Winter 2014



Alpha Omega Epsilon (AOE) is a social and professional sorority for women in engineering and the technical sciences. Through the bonds of sisterhood, the group promotes the ideals and objectives that help members grow both professionally and personally. Members of the sorority are not only leaders within AOE, but in other on campus organizations such as: Engineering Ambassadors, SPE, AIChE, ASME, SHPE, Tau Beta Pi, and Pi Tau Sigma.

This diverse group strives to build a supportive environment full of enriching activities that leads to a robust support system. Students find that being a member means that they have “sisters” that will be sitting next to them in classes, a built in study group, and connections in industry with alumnae of AOE.