



# Engineering *Our* Future

Winter 2011-2012

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



Captain John D. Alexander, a 1982 Texas Tech graduate with a Bachelor of Science in mechanical engineering, is commanding officer of the USS Abraham Lincoln — one of 11 aircraft carriers in the U.S. Navy.

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# Dean's Report

## Engineering Our Future

Winter 2011-2012 Issue

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Happy New Year and greetings from Lubbock.

This has been a very good year for the Whitacre College of Engineering. We continue to see an increase in enrollment: 9% this fall. We fared very well in our accreditation review by ABET, Inc., and I expect we will receive the maximum time of accreditation (six years) in all programs reviewed. Most importantly, our faculty and students are receiving national recognition for their teaching, scholarship and research.

I am pleased to announce that Dr. Louisa Hope-Weeks is our new associate dean for research and Dr. Rattikorn Hewett is our new chair of the Department of Computer Science. Dr. Hope-Weeks is an associate professor of chemistry at Texas Tech. Dr. Hewett assumed the role of department chair on January 1, 2012. I would like to thank Dr. Bill Marcy for the wonderful job he did with the department as the interim chair over the last several years. Dr. Marcy will continue helping us as the director of the Murdough Center for Engineering Professionalism and the National Institute for Engineering Ethics.

Progress on the new Petroleum Engineering Building continues. The Exercise Sciences Center will be razed in the spring semester and construction will begin on the new building in May 2011.

Since January, we have hired 10 new faculty in the college: one faculty member each in computer science, construction engineering and engineering technology, electrical and computer engineering, and industrial engineering; two each in civil and environmental engineering and petroleum engineering; and four in mechanical engineering.

I have placed a high importance on safety within laboratories and facilities in the college as we create a culture of safety at Texas Tech. The Whitacre College of Engineering will be an example of safe procedures and research activities as we move forward to become one of the elite engineering schools in the nation.

Our students fared well at the American Institute of Chemical Engineers (AIChE) Annual Meeting in October. Abel Cortinas, a senior chemical engineering major, took first place in the student paper competition (page 3), and the ChemE Car Team won the safety award (page 3). A team of electrical and computer engineering students won the "Novel Design" category at the Sandia MEMS design competition in April (page 4).

I would like to welcome Dr. Luciano Castillo, formerly a professor at Rensselaer Polytechnic Institute. He will hold the Don-Kay-Clay Cash Distinguished Engineering Chair in Wind Energy and serve as the National Wind Resource Center (NWRC) Executive Director/President (page 6). Dr. Castillo is a world expert on turbulence and wind engineering.

Texas Tech hosted the ExxonMobil Bernard Harris Summer Science Camp for the second year in a row. The camp allows middle school students to experience science, technology, engineering and math in a fun setting with practical applications (page 7). Dr. Harris, a former astronaut and personal friend, was here to encourage and cheer on the students.

Our faculty members are receiving national recognition for their research, teaching, and scholarship (page 8).

In this issue, we feature profiles of three alumni. Captain John D. Alexander, a 1982 B.S.M.E. graduate, is commanding officer of the USS Abraham Lincoln — one of 11 aircraft carriers in the U.S. Navy. (page 10). A further note of pride is that Captain Tushar Tembe, a 1983 B.S.P.E. graduate, also served as one of these select few to command one of the nation's eleven aircraft carriers until his death earlier this year (page 11). Roger Jeschke, a 1974 B.S.M.E. graduate, and Allen Hobrathschk, a 1976 B.S.E.T. graduate are making an impact on the international pump industry through National Pump Company (page 12).

Our alumni news section features updates from graduates of the college (page 14) and some recent successes of our alumni. Send us your updated information or stories at [www.TTUalum.com](http://www.TTUalum.com).

I hope you enjoy reading about the accomplishments of our students and faculty and the activities and events of the college. If you would like to see other features added or taken away, please give us your thoughts.



Dean Al Sacco Jr., Ph.D.

*Al Sacco, Jr.*

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# Student News



## Cortinas Wins AIChE National Student Paper Competition

Abel Cortinas, a senior chemical engineering major from Floydada, Texas, took first place in the National Student Paper Competition at the American Institute of Chemical Engineers (AIChE) Annual Meeting in Minneapolis, Minn. on October 17, 2011.



Cortinas

Cortinas presented his undergraduate research project on "Flow-Aligned Graphene/PVA Nanocomposite Films." He is advised by Dr. Micah Green, an assistant professor of chemical engineering.

Cortinas advanced to the national competition after taking first place at the Southwest Regional Competition at Texas A&M in March 2011.

At nationals, he competed against students from universities such as MIT, the University of Kentucky, Penn State University, and the University of British Columbia. This paper competition is the premier chemical engineering undergraduate research competition in the nation, and this first place finish represents a major accomplishment for Cortinas and the department's undergraduate research program.

Cortinas' research on graphene-based nanocomposites is applicable to low-density, high strength aerospace materials.

His research is funded by Texas Tech and the Howard Hughes Medical Institute (part of the Texas Tech Center for the Integration of Science Education and Research).

He plans to attend graduate school in chemical engineering after finishing his degree at Texas Tech in May 2012. **E**

## ChemE Car Team Wins Safety Award at AIChE National Competition

At the American Institute of Chemical Engineers (AIChE) National ChemE Car Competition at the 2011 AIChE Annual Meeting in Minneapolis, Minn., the Texas Tech University ChemE Car Team was awarded the "Safety Award."

The goal of the competition is to provide chemical engineering students with the opportunity to participate in a team-oriented hands-on design and construction of a small chemical-powered model car. This vehicle must be designed to also carry a specified cargo. The winner is determined by a combined score based on several factors, for traveling the correct distance, and for creativity.

Teams compete at the regional conferences and the winners of each regional conference compete at the national conference. The Texas Tech team took second place at the 2011 Southwest AIChE Regional Student Conference on March 25-27 in College Station, Texas. **E**

## Kumfer Receives ASCE Student Leadership Award

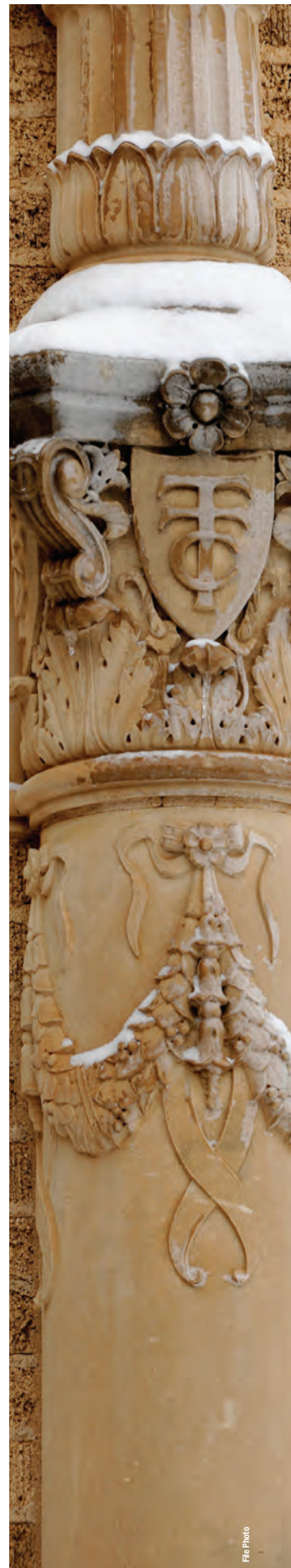
Wesley Kumfer, a civil and environmental engineering student, was awarded the 2010 American Society of Civil Engineers (ASCE) Student Leadership Award.



Kumfer

The award is granted to students who have demonstrated leadership in a student chapter or international student group through activities such as service as an officer, leading special events, interaction with university administration, and interaction with ASCE sections and branches.

Kumfer is focusing his graduate studies on transportation. He is conducting research on bicycle planning in mid-sized communities. The project will provide a synthesis of what cities with populations of 100,000 to 300,000 have done to accommodate bicyclists. **E**







# Student News

## Students Win Sandia National Laboratories MEMS Contest

Texas Tech students won the “Novel Design” Category at the 2011 Sandia National Laboratories MEMS University Alliance Design Competition that was held in April. Student researchers presented their microelectromechanical system (MEMS) designs to the scrutiny of Sandia engineers. The competition offers universities the opportunity to take part in an exciting program geared around MEMS design, fabrication and testing.

The team consisted of electrical and computer engineering students and included Sahil Oak, a doctoral student; Ashwin Vijayasai, a doctoral student; Gautham Ramachandran, a master's student; Jarrod Haning, a master's student; and Jeremy White, an undergraduate student.

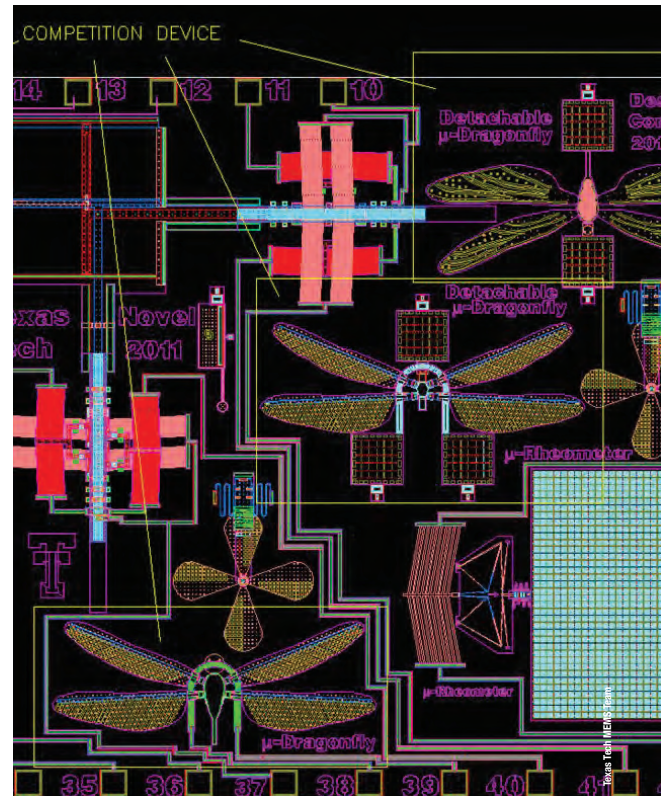
Texas Tech students won the category for their MEMS-based dragonfly design. The dragonfly opens new possibilities in the design of aerial surveillance devices, which have many uses, from quantifying the radiation leaking from damaged nuclear reactors to delineating enemy positions.

Components in current state-of-the-art micro air machines range from 15 centimeters to slightly less than 1 centimeter. This insect-inspired device is smaller, with biologically mimetic wings approximately 0.5 millimeters long (about the width of five human hairs) and 0.1 millimeter wide.

The MEMS dragonfly is intended to generate aerodynamic lift and thrust by flapping its wings instead of a motor-driven propeller or jet thrust. Flapping is achieved when small intermittent electric currents cause thermal expansion and contraction in the wings.

Clever engineering uses the wing material's response to create strokes that are more aerodynamic and hence more efficient. The team chose to mimic dragonfly wings because dragonflies achieve flight by flapping their wings in the vertical direction, whereas most of the other insect species move their wings back and forth or in a rotary fashion to create a bound vortex.

The work was supervised by faculty advisor Dr. Tim Dallas, associate professor of electrical and computer engineering. **E**



The Texas Tech device featured dragonflies with operational wings that are approximately 0.5 millimeters long.

## Laity Receives Skibbie Graduate Scholarship

George Laity, a doctoral student in the Center for Pulsed Power and Power Electronics, has been awarded the Lawrence F. Skibbie Graduate Scholarship from the National Defense Industrial Association (NDIA).



Laity

The award value is \$10,000 and is given to Ph.D. students at research universities who are pursuing degrees in science and engineering and have a stated interest in working in the defense sector.

His research is funded by the U.S. Air Force Office of Scientific Research and he is investigating the impact of vacuum ultraviolet (VUV) radiation on the generation of fast atmospheric plasmas. This could lead to new technologies for NASA and the U.S. Air Force. Applications of this technology include ultra-wideband radar, high power gas lasers, and understanding plasma breakdown — which is a limiting factor in the power density of high power microwave (HPM) platforms. **E**



# Student Profile



## Marlon Hodge: Overcoming Life to Fulfill a Dream

Marlon Hodge always dreamed of being an inventor. He loved math and science and he loved to learn. As a kid, he designed and built a two-story tree house in his back yard and ran electricity to it so that he could watch his favorite television shows.

The first in his family to complete college, his ambition drove him to learn all that he could about mechanical engineering. At the beginning of his first semester at Texas Tech in 2005, he tried out for the Texas Tech track team as a walk-on in an attempt to earn an athletic scholarship. His high school did not have any sports teams, but his tryout run at Texas Tech was good enough to put him on the team. He determined, however, that a football scholarship might be even more beneficial. So, he tried out for the Texas Tech football team as a walk on. As with track, he had no varsity football experience. Nevertheless, his speed and athleticism landed him on the team.

Both track and football were enjoyable, but he began to see his grades declining. Soon thereafter, he decided to leave athletics and focus on his studies.

Hodge excelled in his classes and developed good relationships with his professors, but after a few semesters, his grades began to decline again. The pressures of his studies, the loss of his father a few years before, a job, and a growing addiction to video games were taking a toll. He left Texas Tech on academic suspension and began working full time for AutoZone, an automotive parts store, in Lubbock.

During this time, he met Shauna Peart, the woman that would become his wife. She was finishing a dual-degree at Texas Tech. After Shauna finished her degree, she returned to her country Jamaica. Hodge began to work full time to support himself and to prepare to ask for Shauna's hand in marriage. He enjoyed working at AutoZone because he was learning about the practical applications of engineering. His ambition drove him to start taking home materials from work so that he could learn more about automotive systems. After working for AutoZone for six months, Hodge took and passed the appropriate exams at AutoZone to become a manager. His friendly and helpful attitude, coupled

with his desire to learn, helped him to become a manager at age 22. He would often see some of his Texas Tech professors as they came in for parts. They always encouraged him to come back and complete his degree.

Hodge was not satisfied with the amount of knowledge that he had gained, so he began to study for the Automotive Service Excellence (ASE) Parts Specialist Certification Test. He absorbed the material, studying at every chance that he had, and he soon passed the test.



Hodge

After a year apart, Shauna and Hodge decided to get married and move to the Dallas area. He transferred to an AutoZone in Dallas. Shauna got a job that she enjoyed, and for the young couple, life was going well. In time, though, Shauna saw Hodge's ambition begin to wane. He had climbed the ladder at AutoZone, but he had not fulfilled his dream of becoming an engineer. Shauna asked him, "Are you ever going back to school?" This question reignited his spirit. He recalled all of his professors at Texas Tech and their encouraging words. He decided to return and complete his bachelor's degree.

After several years away, Hodge jumped right in. The classes were challenging at first, as he was going to school in Lubbock while his wife lived and worked in Dallas. He met with his professors regularly and started excelling in all of his courses. His ambition to complete the degree soon became an insatiable appetite for engineering knowledge. He completed the courses required for both a nuclear engineering and a mathematics minor, he took classes outside his degree plan because he found them interesting, and he tried a robot and machine dynamics graduate-level course. He also accepted a prestigious internship at a Lubbock engineering firm.

It was through his success in the graduate-level course, upper-level classes, and through some encouragement from Drs. Jordan Berg and Alan Barhorst, that he decided that he should go to graduate school. Before this time, he had never considered graduate school.

Seven years after graduating from high school, Hodge graduated from Texas Tech in December 2011 with a GPA greater than 3.0, and more ambition than ever before. He will attend graduate school in the spring at the University of Texas at Dallas to further pursue his love for controls and robotics. **E**





## News

### Castillo Named Inaugural Cash Chair in Wind Energy

Dr. Luciano Castillo is joining Texas Tech University as Don-Kay-Clay Cash Distinguished Engineering Chair in Wind Energy, National Wind Resource Center (NWRC) Executive Director/President, and professor of mechanical engineering.

Before joining Texas Tech, Castillo was a professor in the Department of Mechanical, Aerospace & Nuclear Engineering at Rensselaer Polytechnic Institute, an adjunct Professor at Johns Hopkins, and at the Universidad del Turabo in Puerto Rico.

Castillo will work closely with wind engineering professors and researchers at Texas Tech. He believes that West Texas can become the "Silicon Valley of Wind" through Texas Tech's strong expertise in wind engineering, wind science, and wind energy.

His research in turbulence using experimental techniques, direct numerical simulations and multiscale asymptotic analysis has injected new ideas in turbulent boundary layers and our understanding of initial conditions on large scale turbulence, particularly on wind energy.

Some of his awards include: the NASA Faculty Fellowship, the Martin Luther King Faculty Award, the Robert T. Knapp Award on complex flows from the ASME among others.

Castillo's teaching interest is primarily in thermal and fluid science. In the classroom and laboratory, he works to integrate theory with experiments by using visual experimental examples and computer tools, thus increasing students' understanding of the subject by doing and seeing.

He has published more than 100 articles, including a seminal paper on turbulent boundary layers and scaling laws. He is currently leading various initiatives on wind energy in the U.S. and Europe.

NWRC is a nonprofit organization that works through Collaborative Research and Development Agreements (CRADA's) with national laboratories, academic institutions and trade organizations to



**Castillo comes to Texas Tech as the Cash Chair in Wind Energy and as the NWRC Executive Director/President.**

develop industry-leading research projects. Created by Texas Tech University in 2010, the organization aims to be the research and development arm of the rapidly growing wind energy industry.

The NWRC will have one research and development site managed by Texas Tech University. This site will be located on land owned by Texas Tech, consisting of more than 5,800 acres and located directly adjacent to the Pantex plant near Amarillo, Texas.

The NWRC and campus will be established in conjunction with the wind farm installation. The wind farm will be made available for research projects by the partners in this project and their collaborators. This aspect of the project addresses a national need for access to an operating wind farm to provide operations research, turbine-to-

turbine wake interaction investigations, and the need to provide a demonstration platform for new turbine technology accelerating acceptance and adoption by the commercial sector. **E**







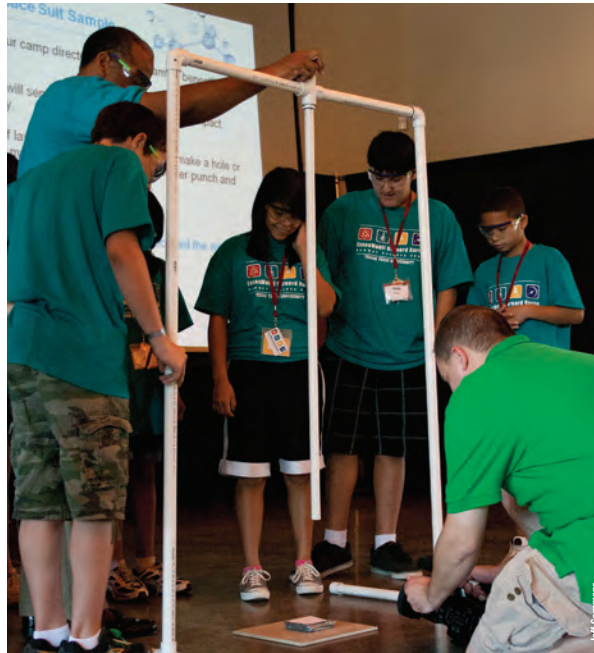
## Texas Tech Hosts ExxonMobil Bernard Harris Summer Science Camp

Lubbock area middle school students had the opportunity to cure the summer “brain drain” this past summer with a heavy dose of science, technology, engineering and math (STEM) fun at the ExxonMobil Bernard Harris Summer Science Camp hosted by Texas Tech. The hands-on program offered students an exciting way to beat the heat as they designed space suits, built rockets and more, while experiencing life on a college campus.

“Summer learning opportunities are crucial to continued academic success,” said Dr. Bernard A. Harris Jr., veteran astronaut and camp founder. “In partnership with the ExxonMobil Foundation, we are able to offer students a tremendous opportunity to hone the math, science, communication and leadership skills needed to realize their full potential. Our goal is to inspire them to reach beyond the classroom and pursue careers in critical technology fields.”

For the sixth consecutive year, the ExxonMobil Foundation has partnered with Harris and his nonprofit organization, The Harris Foundation, to provide residential camps to underrepresented and underserved middle school students at 25 universities across the country. This was the second year Texas Tech has had the honor of participating in the program. The camp ran July 21-29.

Among the hands-on projects that the campers participated in, they were then given the opportunity to become space suit engineers for the day. Students were tasked with designing and creating a space



Students test a sample “space suit” swatch, made of household materials, by using a simple impact tester.

suit swatch capable of absorbing the impact of space debris. Using household items to mimic essential protective materials, students assembled a test sample to submit for friendly competition. Using an “impact tester” to imitate the rigors faced during spacewalks, students were able to test the durability of their sample.

“We have seen this experience positively impact youth in our community, and look forward to witnessing our students’ dramatic growth as they gain valuable knowledge and a passion for math and science this summer,” said Dr. Beccy Hambright, executive camp director and program manager for Texas Tech’s T-STEM Center. “At Texas Tech University, we understand the important role STEM programs such as these play in preparing students for the high-tech careers of tomorrow.” **E**

**Dr. Bernard A. Harris Jr. discusses the properties of various materials with a team of students as they design a “space suit” swatch that is capable of absorbing the impact of space debris.**







## Faculty News

### Green Wins AFOSR Young Investigator Research Award

Dr. Micah Green, an assistant professor of chemical engineering, recently received a \$360,000 grant as a part of the Air Force's Young Investigator Research Program (YIP). The Air Force Office of Scientific Research (AFOSR) awarded approximately \$16.5 million in grants to 43 scientists and engineers who submitted winning research proposals.

The YIP is open to scientists and engineers at research institutions across the United States who received Ph.D. or equivalent degrees in the last five years and show exceptional ability and promise for conducting basic research.

Green's grant is for his research on interfacial engineering for low-density graphene nanocomposites and fluids.

Before coming to Texas Tech, Green part of a Rice University-led team that developed processes to completely disperse carbon nanotubes, a major breakthrough for scientists and engineers.

The experience that Green gained on carbon nanotubes in his previous research was instrumental in securing the AFOSR YIP grant in graphene research.

Graphene is similar to carbon nanotubes in many ways. Physically, carbon nanotubes are essentially graphene sheets rolled into a tubelike shape rather than a flat sheet. The properties of both carbon nanotubes and graphene sheets make these items very desirable for materials scientists. Both have outstanding mechanical, thermal, and electrical properties, as well as unusual quantum properties.



Green

Graphene is less expensive to produce, however, because it can potentially be produced from inexpensive graphite.

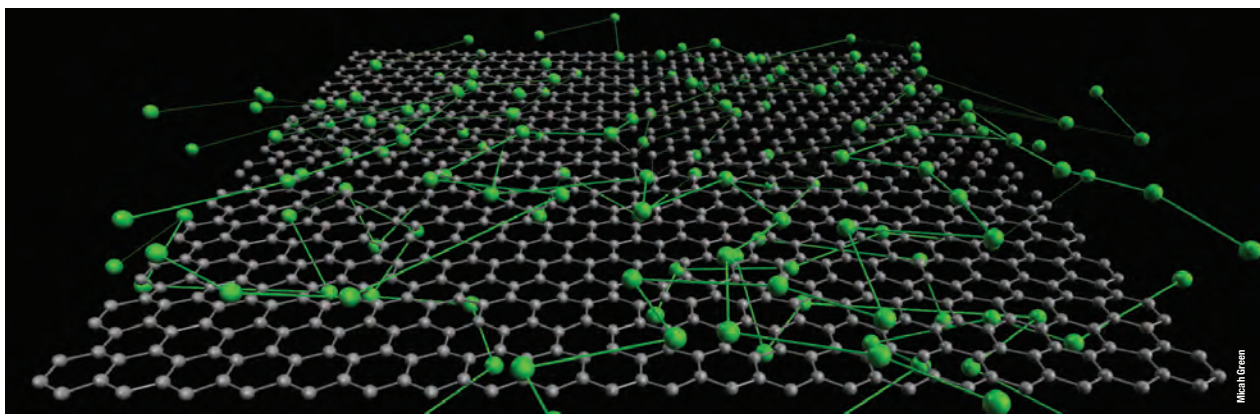
In the past, it was difficult for scientists to isolate individual graphene sheets because graphene sheets strongly adhere to one another. These sheets are found naturally in graphite, as graphite is a collection of many layers of graphene.

In the last few years, scientists have employed techniques that functionalize graphite by bonding oxygen and COOH groups. These techniques isolate individual sheets of graphene successfully, but often diminish their desirable properties, particularly the electronic properties.

Green's research attempts to produce non-functionalized, pristine graphene sheets through new methods. He is developing numerous liquid-phase techniques that do not involve functionalization or covalent bonds so that the graphene properties are maintained; his techniques include the use of surfactants, wrapping polymers, and in-situ polymerization. In some cases, he and his team will use surfactants to separate the sheets, and then apply an interfacial polymer coating to stabilize the sheet. This coating, when applied strategically, can have minimal effects on desired graphene properties and can be used to prepare graphene nanocomposites with excellent dispersion and reinforcement.

The AFOSR is looking for specific properties in lightweight composites or materials, and Green will customize his methods to provide the materials at the specifications that are required. Eventually, Green will help to produce materials such as graphene-based composites, thermal fluids, and carbon fibers. These materials, through the nature of graphene, will have low-densities and low weight, all while maintaining high strength and durability. **E**

**Graphical representation of a single graphene sheet with an interfacial polymer coating. The polymer coating is used to stabilize the sheet.**







## Anderson Receives Premier Award for Engineering Courseware

Dr. Edward E. Anderson, professor of mechanical engineering, has been named a recipient of the 2011 Premier Award for Excellence in Engineering Education Courseware.



Anderson

Anderson's tool, M-Model8: An Online Homework Tool for Engineering Mechanics, is a full simulation of traditional engineering mechanics homework solutions including free-body diagram construction, known/unknown variables listing and mathematical modeling. M-MODEL8 is an open-ended system that utilizes an intelligent tutor, hints/tips, error checking, grading, iteration and repeated solutions to motivate students, help them practice in-depth thinking, develop their problem solving skills, cause them to reflect and help them develop intellectually. **E**

## Hanson Receives ASME IPTI PD Outstanding Faculty Advisor Award

Dr. Jeff Hanson, an instructor in the Department of Mechanical Engineering, has been named the recipient of the 2011 American Society of Mechanical Engineers International Petroleum Technology Institute (IPTI) Petroleum Division Outstanding Faculty Advisor award.



Hanson

IPTI was founded to provide mechanical engineers working in the petroleum industry with the opportunity to participate in technical workshops and conferences while fostering the continued growth of engineering education and promotion of mechanical engineering as a career choice.

The award honors those faculty who demonstrate remarkable commitment to their students in pursuit of a mechanical engineering education and career. **E**

## Lawson Wins Engineering Education Excellence Award

Dr. William Lawson, assistant professor of civil and environmental engineering, has been awarded the 2011 "Engineering Education Excellence Award" from the Sustaining Universities Program of the Professional Engineers in Higher Education of the National Society of Professional Engineers.



Lawson

This national award recognizes engineering faculty who have demonstrated the ability to link engineering education with professional practice. The recipients must be licensed and have a tenure-track faculty appointment in an ABET-accredited engineering program. **E**

## Engineering Job Fair Welcomes Record Number of Students

The fall 2011 Engineering Job Fair was held on September 21, 2011, and welcomed a record number of students. More than 2,500 students had the opportunity to visit with approximately 145 companies and more than 450 recruiters.

Companies attending the job fair scheduled more than 2,800 interview slots for Texas Tech engineering students in the days before and after the event. **E**

**Students from all disciplines of engineering sought full-time, part-time, internship, and co-op positions.**





## Alumni Profile

### Captain John D. Alexander: Commanding Officer of the USS Abraham Lincoln

Mechanical engineering graduates are often employed in the design and manufacturing industry, shaping machines, devices, and the products that we use every day. However, U.S. Navy Captain John D. Alexander, a 1982 Texas Tech graduate with a Bachelor of Science in mechanical engineering, took a different path; he joined the Navy shortly after his graduation. And in January 2010, after 28 years of distinguished service as an officer, he took command of the USS Abraham Lincoln — one of 11 aircraft carriers in the U.S. Navy.

As a boy, Alexander dreamed of flying Navy jets. When he came to Texas Tech, he enrolled as a mechanical engineering major with the ultimate plan of joining the Navy after he graduated. He knew that a Texas Tech degree would make him competitive when he joined the Navy.

The strong academic reputation of the Whitacre College of Engineering soon paid dividends for Alexander. He was quickly given the opportunity to further his education and completed a Master of Arts in defense studies at King's College London. He knew the importance of an education and continued his studies at several institutions, including: the

Royal Naval Staff College Greenwich, the U.S. Navy Nuclear Propulsion Program, Joint Forces Staff College, and the Darden School of Business at the University of Virginia.

During his 29 years in the U.S. Navy, Alexander has been executive officer of the nuclear-powered aircraft carrier USS Dwight D. Eisenhower as well as commander of the amphibious transport dock ship USS Juneau.

During a visit to Texas Tech in October 2011, Alexander visited with students, faculty and staff and expressed the importance of an education and great communication, “The Navy wants to see smart individuals as part of their team, keep up those GPAs — they matter.”

Education is only one of Alexander's focuses. He and his family understand the sacrifice that U.S. Navy and other U.S. military personnel and their family make. Alexander oversees not only the communication with his men and women on the ship, but also with their family members. He knows that there are 5,000 people on the carrier that want to know about schedules and daily activities, but there are just as many or more family members back home who want to know what's going on with their loved ones.

“It's clear to me that Captain Alexander is not only a terrific leader but also a phenomenal engineer. The

(L-R) Captain John D. Alexander; Dr. Jharna Chaudhuri, chair of the Department of Mechanical Engineering; and Dr. Al Sacco Jr., dean of the Whitacre College of Engineering, during Alexander's visit to Texas Tech in October







**Captain John D. Alexander addresses a group of Texas Tech faculty, staff, and students at a presentation in October. Alexander discussed his time in the Navy and the role that engineering has played in his career.**

profession of engineering relates to critical thinking and problem solving, along with sound math and science skills, and he certainly exemplifies that. He is responsible for the well-being of 5,000 men and women aboard his ship while overseeing major military operations in a hostile environment”, said Dean Al Sacco Jr. when asked about what makes Alexander excel at his job.

Through his education at Texas Tech, Alexander saw his childhood dream come true. He now has more 3,200 flight hours and more than 685 carrier landings. He met his wife Charlotte Scott (BSE '82) at Texas Tech and together they have two children: Andrew and Casey.

*Engineering Our Future asked John some questions about his time at Texas Tech and his career.*

*The questions and his responses are recorded here:*

**What is your fondest memory of your time on campus?**

Meeting my wife, Charlotte (married 28 years) and participating in campus activities with my Sigma Chi brothers (many still best friends to this day).

**What is most interesting about being an engineer?**

Self-sufficiency. Dissecting root causes of shipboard mechanical malfunctions and determining a repair course of action with little or no outside assistance.

**What do you want your legacy to be, both professionally and personally?**

Professionally - To instill an understanding that high standards, integrity and positive leadership are the key to success.

Personally - To commit myself to a lifelong service to my family and our great nation **E**

## Captain Tushar Tembe Passes Away in November

U.S. Navy Captain Tushar Tembe, a 1983 Texas Tech graduate with a Bachelor of Science in petroleum engineering and the commanding officer of the nuclear powered aircraft carrier USS Harry S. Truman, died suddenly on Nov. 8 at Norfolk Naval Shipyard.



**Tembe**

Born on November 15, 1961 in Bombay, India, he immigrated to the United States as a child and grew up in New York City. He attended high school in Brooklyn and he also attended the Naval War College.

Tembe served as commanding officer of the Austin-class amphibious transport dock USS Nashville and Strike Fighter Squadron 87. He also served as executive officer aboard USS Dwight D. Eisenhower and as chief of staff at the U.S. Joint Forces Command in Norfolk, Va.

He fulfilled his dream of being a strike fighter pilot and the commanding officer of a nuclear powered aircraft carrier, USS Harry S. Truman.

He assumed command of USS Harry S. Truman in August 2011. **E**







## Alumni Profile

### Roger Jeschke and Allen Hobratschk: National Pump Company

Roger Jeschke, a 1974 graduate with a Bachelor of Science in mechanical engineering, and Allen Hobratschk, a 1976 graduate with a Bachelor of Science in engineering technology, had no idea that they were going to grow National Pump Company (NPC) into an international success. However, through teamwork and strategy, along with quality engineering, that is exactly what they have done. NPC engineers and sells a wide range of vertical turbine and submersible pumps. They also manufacture custom pumps using special alloys and coatings to meet customers' specific needs. The level of service provided to the customer, however, is most important to Jeschke and Hobratschk.

NPC was established in 1969 in Lubbock, and after a few years, expanded to a new location in Arizona. The owner of the company at the time knew that hiring top-notch engineers was going to help them become a major supplier internationally, and so he hired Jeschke in 1979.



Jeschke



Hobratschk

As Jeschke began his career with NPC as an applications engineer, he had the opportunity to assist with the finalization of a large project in Thailand. The once-small West Texas company was now being thanked by the prime minister of Thailand. Speaking of the project, the prime minister said, "The water came up as if from the gods – the company is like our brothers. Often, at their own expense, they have kept the pumps running to give us extra water to save our crops. We want them among us forever."

After three short years, Jeschke had made a significant impact on the company and was asked to start Saudi National Pump in Saudi Arabia. He led the manufacturing of column, tube, shaft, and vertical turbine pumps, as well as the oversight of assembly for the Saudi irrigation market. After a few successful years in Saudi Arabia, Jeschke moved back to Phoenix to continue his career with the company.

**(L-R) Roger Jeschke and Allen Hobratschk have played a large role in National Pump Company's success for more than 30 years.**







Jeschke soon realized the great potential that his company possessed, so in 1980, he called a friend and former co-worker, Hobratschk, and asked him to become a part of NPC. Hobratschk joined Jeschke in Phoenix and was promoted to president of Hamworthy USA/NPC, which was a division of NPC's parent company at the time.

Together, they took minority ownership of NPC in 1994, after Hobratschk had been president from 1989 to 1994, while Jeschke was once again in Saudi Arabia expanding the existing business. In 1994, Jeschke became president of NPC, and Hobratschk traded places by going to Saudi Arabia to continue the expansion of that business. In 1998, they both

purchased all the shares of NPC and Hobratschk returned from Saudi Arabia in 2000 to help grow NPC.

Through acquisitions of other companies, such as Georgia Pacific Pump and Golf Course Irrigation Services, NPC was making vast progress and was growing at a remarkable rate. To Jeschke and Hobratschk, this meant the opportunity to serve larger markets, hire more engineers, and most importantly, continue with the same excellent customer service for their customers.

In 2010, NPC was sold to Gorman-Rupp. Jeschke and Hobratschk continue to lead the company.

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*Engineering Our Future asked Roger and Allen some questions about their time at Texas Tech and their careers. The questions and their responses are recorded here:*

*Roger Jeschke*

**What is your fondest memory of your time on campus?**

I have enjoyed being able to meet a variety of people from across the country while attending a large university. By contrast, my high school graduating class had 29 people – all from a farming background.

**What is most interesting about being an engineer?**

I have been able to travel extensively in various parts of the world through my time at NPC. With an engineering degree, I have been able to work with technical staff of NPC and build an understanding of business as I continued to work and later own my own company.

**What do you want your legacy to be, both professionally and personally?**

I would like to be remembered for my honesty, integrity, loyalty, and fair treatment of all people that I have met along the way. I hope that people enjoy my sense of humor as much as I do.

*Allen Hobratschk*

**What is your fondest memory of your time on campus?**

I enjoyed dorm life and all the camaraderie that we had. There was always something (mostly good) going on.

**What is most interesting about being an engineer?**

After I left Texas Tech, I was involved in project engineering and basic pump design and applications – which was really enjoyed as a profession. After a few years in this field, I moved into management and the basic engineering practice diminished during this evolution. However, I still enjoy solving problems and find satisfaction with the results when successful.

**What do you want your legacy to be, both professionally and personally?**

I would like to be known as a person of strong ethics. I have found that if you work hard and treat people fairly, you will definitely be successful. This may not be in dollars (which I am not), but wealth/success is not always measured in dollars. **E**





# Alumni Updates

## Whitacre College of Engineering Alumni Updates

### 1938

**Hillery Leslie Sr.**, a 1938 graduate with a Bachelor of Science in electrical engineering, lives in Whitmore Lake, Mich.

### 1959

**Gerald Sayer (Seemann)**, a 1959 graduate with a Bachelor of Science in mechanical engineering, works for G L International in Laguna Hills, Calif.

### 1964

**Adrian Hill**, a 1964 graduate with a Bachelor of Science in mechanical engineering, and is retired from Westinghouse in Idaho Falls, Idaho.

### 1971

**Joseph Holley**, a 1971 graduate with a Bachelor of Science in mechanical engineering, works for Halliburton Energy Services in Houston, Texas.

### 1975

**Stephen Taylor**, a 1975 graduate with a Bachelor of Science in mechanical engineering, works for Natural Gas Services Group in Midland, Texas.

### 1982

**Timothy Miller**, a 1982 graduate with a Bachelor of Science in mechanical engineering, works for Chevron in Amarillo, Texas.

### 1984

**Guy Kerrick**, a 1984 graduate with a Bachelor of Science in mechanical engineering, works for Lockheed Martin Aeronautics in Fort Worth, Texas.

### 1994

**Chris Leney**, a 1994 graduate with a Bachelor of Science in mechanical engineering, works for Cura Emergency Services in Plano, Texas.

### 1996

**Girish Kamala**, a 1996 graduate with a Master of Science in mechanical engineering, lives in Bangalore, India.

### 2005

**Michael Peterson**, a 2005 graduate with a Bachelor of Science in computer science, works for the Tampa Bay Lightning in Tampa, Fla.

### 2006

**Kipchirchir Boit**, a 2006 graduate with a Bachelor of Science in chemical engineering and a 2008 graduate with a Master of Science in chemical engineering, works for Dow Chemical Company in Houston, Texas.

### 2007

**Christian Vega**, a 2007 graduate with a Bachelor of Science in mechanical engineering, works for Chevron Phillips Chemical Company in Houston, Texas.

### 2008

**Edward Alvarado Jr.**, a 2008 graduate with a Bachelor of Science in electrical engineering, works for Southwest Research Institute in San Antonio, Texas.

**Tyler Thompson**, a 2008 graduate with a Bachelor of Science in mechanical engineering and a 2010 graduate with a Master of Science in systems and engineering management, works for Cameron International Corporation in Oklahoma City, Okla.

### 2009

**Santhi Malasani**, a 2009 graduate with a Master of Science in civil engineering, works for Navjoy Consulting Inc. in Denver, Colo.

**Sahil Oak**, a 2009 graduate with a Master of Science in electrical engineering, lives in Lubbock, Texas.

Submit your updates online at [www.TTUalum.com](http://www.TTUalum.com).  
Find us at [www.facebook.com/TexasTechEngineering](https://www.facebook.com/TexasTechEngineering). **E**





## Demarest Named One of "100 Women Making a Difference"

Michelle Demarest of Orlando, Fla., a 2000 graduate with a Bachelor of Science in industrial engineering, was honored for her lifelong dedication to protecting people, property and the environment by the American Society of Safety Engineers (ASSE).



**Demarest**

The ASSE Women in Safety Engineering Common Interest Group has honored 100 women from around the world for making a difference in safety, health and the environment.

With more than 20 years of experience in the safety, health and environmental field, Demarest is currently a senior safety manager for Walt Disney World. Her responsibilities include supporting rides and attractions, and through this role she has become an active member of the ASTM F24 committee, where she assists in writing standards that apply to amusement park rides and devices. **E**

## Verhines Named New Mexico State Engineer

Scott Verhines, 1979 Texas Tech graduate with a Bachelor of Science in civil engineering, has been named the state engineer of New Mexico.



**Verhines**

As state engineer, Verhines will be the state's top water manager. His responsibilities will include supervising the state's water resources through the measurement, appropriation, and distribution of the state's ground and surface water, including streams and rivers that cross state boundaries. He will also assume his new duties as the secretary of the Interstate Stream Commission and as a member of the New Mexico Water Trust Board.

Verhines is a registered professional engineer in New Mexico, and has more than 34 years experience focusing on water resources, transportation, and drainage and flood control projects. **E**

## Young Named 2011 State of Texas Young Engineer of the Year

The Texas Society of Professional Engineers (TSPE) has selected Jack Young, E.I.T., C.F.M. as the 2011 State Young Engineer of the Year.



**Young**

He received a Bachelor of Science in civil engineering in 2008 from Texas Tech with a minor in mathematics.

Young joined Halff Associates, Inc. in 2008 as a civil engineer focused on water resources engineering projects in the firm's Richardson office. Since joining Halff, he has served as project engineer for several municipal projects including emergency action plans, municipal hydrology and hydraulic studies, as well as stormwater analysis and design. He has also done extensive work with the FEMA Map Modernization project.

He is currently the TSPE Dallas Chapter's 2011 Young Engineer of the Year. **E**

## Wetzel Named a U.S. Professor of the Year

Dr. Kathy Wetzel, a 1995 Texas Tech graduate with a Doctor of Philosophy in interdisciplinary engineering, has been named a "U.S. Professor of the Year" by The Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support of Education.



**Wetzel**

The U.S. Professors of the Year program salutes the most outstanding undergraduate instructors in the country — those who excel in teaching and positively influence the lives and careers of students.

Wetzel is department chair of mathematics, sciences, and engineering at Amarillo College, and has taught there for 25 years. She has received several large National Science Foundation grants over the last few years at Amarillo College for developmental math and science. **E**





TEXAS TECH UNIVERSITY

# Edward E. Whitacre Jr. College of Engineering™

**Engineering Our Future**

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Winter 2011-2012

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Heather Yards (left), human resources business partner, and Mike Catt (right), human resources manager at Chevron Phillips Chemical Company, stand with students from AICHE, ASME, SWE, NSBE, SHPE, Tau Beta Pi, and the Engineering Ambassadors. These organizations benefited from a donation from Chevron Phillips.

Jeff Sammons