



College of Engineering Today

September 2006 Edition

WELCOME TO THE COLLEGE OF ENGINEERING E-NEWSLETTER!

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NEWS

The **Center for Engineering Outreach** led by Dean Fontenot and John Chandler and in collaboration with Provost William Marcy; Bob Hickerson, chief operating officer for Texas Tech's higher education teaching sites; Susan Talkmitt from the Howard Hughes Medical Institute/Center Integrating Science Education and Research, College of Education; and Kristin Whittenburg at the Region 17 Education Service Center led our effort to obtain a T-STEM (Texas Science, Technology, Engineering, and Math) center, funded by the Texas Education Agency. Only five centers were funded and each will provide science, technology, engineering, and math (STEM) curricular materials and training to Texas T-STEM academies as well as middle and high school teachers. Our Texas Tech T-STEM Center will focus on the integration of engineering design principles into 6-12 education using that as a framework for students to learn math, science, and engineering principles. The grant of over \$1 million over the first two years recognizes that the work of the Center for Engineering Outreach has been an example of best-practices for integrating engineering into school curricula. <http://www.tstem.ttu.edu>

Senator Kay Bailey Hutchison (R-TX) announced that the full Senate has approved the Fiscal Year 2007 Department of Defense Appropriations bill which includes \$1 million for research and development of nanophotonic devices at the **NanoTech Center** (NTC). "Texas Tech is a leading institution with a proven track record in research," Senator Hutchison said. "This funding will support existing research initiatives and create new opportunities in defense and the private sector." The NTC, organized in 2001, conducts research in active optoelectronic devices, passive optical structures, integrated systems, and advanced materials. The NanoTech Center plans to focus their efforts on new optoelectronic technologies made possible by unique phenomena at the nanoscale.

Randy Neugebauer (R-TX), nineteenth district congressman, announced that the **Center for Pulsed Power and Power Electronics** is included in the House of Representatives FY07 Department of Defense appropriations bill for a \$1.8 million award. Much of this funding will be used to strengthen the center's infrastructure and explore ways to defeat improvised explosive devices.

The College of Engineering is hosting a two-day **Summit on Energy Sustainability** September 13-14. It will address technical and scientific challenges and opportunities facing the region's energy industry including nuclear, coal, wind, and biofuels, as well as policy and economic development matters. Speakers will include state leaders such as Texas State Representative Buddy West (R-Odessa) and Railroad Commissioner Michael Williams, as well as technical experts such as Dr. Dan Arvizu, director of the

National Renewable Energy Laboratory (and a Lubbock native) and National Academy of Engineering members Dr. Rakesh Agrawal and Dr. Hans Mark. To register or for more information, visit the Web site: <http://www.depts.ttu.edu/coe/energysummit>.

Dean Pamela Eibeck organized a panel session on "Education, Technology, and Economic Development" for **Leadership Texas** when they met in Lubbock on August 7. TTU President Jon Whitmore, Lubbock Mayor David Miller, Dale Gannoway from the Lubbock Economic Development Alliance, and investor Gary Pankonien were panelists. They discussed the importance of research and strong graduate education as catalysts for technology-based start-up companies. In addition, Dean Eibeck was the featured speaker during lunch. Her topic was "Building our Nation's High Tech Strengths."

<http://www.womensresources.org>

http://www.lubbockonline.com/stories/080706/loc_080706028.shtml

Genesis Networks, a software testing facility, is opening a new office in Abilene. The Development Corporation of Abilene, along with Abilene Christian University, Texas Tech, Texas State Technical College, and the Workforce Development Board, worked together to attract the facility to Abilene. This company was drawn to Abilene in part by TTU's **Abilene teaching** site that offers computer science master's and doctoral degrees.

http://www.reporter-news.com/abil/nw_business/article/0,1874,ABIL_7948_4827780,00.html

A midyear report recently released by the American Wind Energy Association ranks Texas as the nation's top producer of wind energy. Success in the field of alternative fuel sources is attributable in no small way to the ongoing work of Texas Tech wind researchers. Texas Tech's **Wind Science and Engineering Research Center** has expanded its studies into harnessing wind as a power supply.

http://lubbockonline.com/stories/072706/edi_072706014.shtml



Texas Tech's **College of Engineering** (www.coe.ttu.edu) is ranked in the top 100 of America's Best Undergraduate Engineering Programs by U.S. News & World Report in their most recent issue. The undergraduate program is tied for the 86th spot, up from 87th last year.

<http://www.usnews.com>

The crew from Electric Sky, an innovative film company based in the United Kingdom, is filming a special documentary for History Channel about the sunken liberty ship Montgomery. This ship was loaded with 1,400 tons of TNT when it sank under unclear circumstances in the river Thames in London, UK. The ship and its cargo are still there. To prove that even 60-year-old TNT is still highly explosive, the **Center for Pulsed Power and Power Electronics** provided their explosive chamber to test "old" TNT. The end of August, Dr. Andreas Neuber, associate professor electrical engineering, and Daniel Garcia, senior technician electrical engineering, with a combined experience of 20 years in handling explosives, spent 12 hours with the film crew to shoot exciting footage of small-scale explosions close up. As expected, no difference between "old" and "new" TNT was detected.

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FACULTY AWARDS

Horn Professor **Magne Kristiansen** has served for 40 years as a faculty member in TTU's Electrical and Computer Engineering department.

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DONATIONS

Texas Instruments, Inc. donated \$160,000 to support the Program for Semiconductor Product Engineering, in the form of student scholarships and other expenses.

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GRANTS AND CONTRACTS

Electrical and Computer Engineering faculty Drs. Brian Nutter, Mary Baker, and Mohammad Saed were awarded nearly \$285,000 by the Technology Workforce Development Grants Program to study "Curricular Development, Multidisciplinary Team Internship, and Undergraduate Peer-Mentors for West Texas Students." Drs. Richard Gale and Tanja Karp were awarded over \$278,000 for "Integrated Outreach, Mentoring, and Placement of Texas Youth in Engineering Careers." TTU was the only institution to receive multiple awards.



Chemical Engineering Assistant Professor **Lenore Dai**, in partnership with Rick Bley of Eltron Research & Development (Boulder, CO), has received a Department of Defense Small Business Technology Transfer (SBTT) Phase I award for their proposal titled, "A Non-invasive Method to Functionalize Single Walled Carbon Nanotubes." In addition, Professor Dai has received two research grants from the National Science Foundation: "Exploring the Fundamentals and Applications of Pickering Emulsions" and "SGER: Microrheology of Liquid-Liquid Interfaces."



Zhaoming He, mechanical engineering assistant professor, received an award of \$130,000 over a two-year period from the American Heart Association, Texas Affiliate, for his research project titled "Edge-to-Edge Repair Effect on the Mitral Valve Function and Improvement of the Repair Procedure."



Texas Tech University and Texas Tech Health Sciences Center are partnering to advance the status of women faculty in engineering, science, medicine, and research by addressing specific problems identified by task force studies and administrators at both institutions with "best practices" from proven National Science Foundation (NSF) ADVANCE-supported programs. Using a grant obtained from NSF, the team will address programs that will be implemented in the eight College of Engineering departments, four science departments in the College of Arts and Sciences, two departments in the School of Pharmacy, and four departments in the School of Medicine. The project

will be directed by principal investigator **Karlene Hoo**, professor of chemical engineering and associate dean for research in the College of Engineering.



Yanzhang Ma, mechanical engineering assistant professor, and his team of researchers, received a National Science Foundation Major Research Instrumentation grant for \$433,872 titled, "MRI: Development of an In Situ High-Pressure, High-Temperature Raman Scattering System: Research and Education."



Researchers in the Nano Tech Center were recently awarded a Nanoscale Interdisciplinary Research Team (NIRT) grant from the National Science Foundation. The program, titled "Nano-Engineering Efficient Optoelectronic Devices," funds research over a four-year grant period. The principal investigator is Associate Professor **Sergey Nikishin** of the Electrical and Computer Engineering department, with collaboration from Mechanical and Electrical Engineering and Physics department faculty. <http://www.depts.ttu.edu/ntc/>

NASA recently made an award for the project, "Control Systems, Water Recovery, Human Factors and Plant Growth Research." The College of Engineering portion is \$870,892. Principal investigators are James Smith (professor, industrial engineering) on behalf of the Center for Advanced Intelligent Systems, Daniel Cooke (computer science professor), Michael Gelfond (computer science professor), Karlene Hoo (associate dean for research and chemical engineering professor), Andrew Jackson (associate professor, civil and environmental engineering), Eric Sinzinger (assistant professor, computer science), Audra Morse (assistant professor, civil and environmental engineering), Nelson Rushton (assistant professor, computer science), and Darryl James (associate professor, mechanical engineering).

Lockheed Martin awarded \$305,000 for "Development of Novel RF Transmitters and Antennas" to James C. Dickens, associate professor, electrical engineering and co-director of the Center for Pulsed Power and Power Electronics.

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STUDENT ACCOMPLISHMENTS



Texas Tech faculty and students attended the **IEEE International Power Modulator** conference in Washington, D.C. this past May. Back row (left to right): Harvey Veselka, Gregory Edmiston, Associate Professor Andreas Neuber, Professor Michael Giesselmann, and Shad Holt. Front row (left to right): David Belt, Yeong-Jer Chen, Brent McHale, and Kim Morales. Foreground: John Krile, recipient of the Tom Burkes Outstanding Graduate Student Award, presented at the conference.



The **Society of Petroleum Engineers** has named TTU's student chapter as a finalist in the 2006 Outstanding Student Chapter competition. The winner will be named at the annual banquet on September 25. The TTU chapter was selected as the Outstanding Student Chapter in 2000 and 2001, and has been a finalist in all other years since 1999. This group also received distinction as an Outstanding Student Organization by TTU's Campus Life department, and recognized by the local blood bank for its efforts in on-campus blood drives. http://www.spe.org/spe/jsp/basic/0,,1104_1037804_1037806.00.html

Pictured left to right: Lonnie Grohman, Spencer Franks, Julie Mayol, Vincente Ruiz, Giovanni Paccaloni, Ashley Wetzel, Justin Neiderhofer, Jason Kincaid. Not pictured: Lindsey Patin, David Hunter, Assistant Professor Dr. Paulus Adisoemarta, advisor.

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ALUMNI RECOGNITION

Robert Black, '58, retired Texaco, Inc. senior vice president, has been elected to the Nova Energy Holding, Inc. board of directors, headquartered in Houston. Mr. Black graduated from TTU in 1958 with a petroleum engineering degree. He has been honored by TTU with the Distinguished Alumni Award (1979) as well as the Distinguished Engineer Award (1980).

Renée Dupuis Green graduated from TTU with a degree in petroleum engineering in 1981. She was recently named Bexar County (Texas) county engineer, the first female to hold that position. She oversees a \$70 million, 250-employee Public Works department that is responsible for the maintenance of all the county's roads and bridges, and the construction of new ones.

<http://www.mysanantonio.com/news/metro/storiees/MYSA070306.5B.greenengineer.167ebe7.html>



Natalie Y. Harvill, '97, received the Leadership in Energy and Environmental Design Accredited Professional (LEED AP) designation. LEED provides a complete framework for assessing building performance and meeting sustainability goals, emphasizing state of the art strategies for sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. She also recently received corporate associate standing in her firm - Parkhill, Smith & Cooper, Inc. in Lubbock.



Lubbock-based Parkhill, Smith & Cooper, Inc., an engineering and architectural design firm, named new principals. **John T. Hamilton**, '93, '99, graduated with a chemical engineering bachelor's degree followed by a master of business administration. His area of expertise is the design of transportation related projects (airport, highway, and rail). He is joined by **Troy D. Swinney**, '86, an electrical engineering technology graduate. He provides engineering services for educational, commercial, industrial, institutional, medical, and governmental facilities. In that capacity, he recently upgraded the life safety systems of several TTU dormitories.

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EVENTS OF INTEREST

The first Fall Seminar in **Chemical Engineering** was given by Professor Steven Cramer of Rennselaer Polytechnic Institute on September 8 at TTU. He spoke on prediction of protein affinity and displacer selectivity in chromatographic systems using structure-property multiscale modeling techniques.

Electrical engineering professors **James Dickens**, **Magne Kristiansen**, and **Andreas Neuber** have been invited to attend the first EURO Asian Pulsed Power conference this month and to tour several Chinese research laboratories while in the country.

Andreas Neuber, associate professor of electrical engineering, has been invited to present his work on high power microwave breakdown at the 48th meeting of the American Physical Society Division of Plasma Physics in Philadelphia this fall. He will also give a plenary presentation at the spring conference (March 2007) of the German Physical Society in Duesseldorf, Germany.

Raiders Rojos, an alumni association that works to increase TTU Hispanic graduates, held the sixth annual Back-to-School Fiesta on August 5. President Jon Whitmore greeted the 2,700 youths in attendance, and encouraged them to start thinking about their future now. The COE donated a model F-16 jet as one of the door prizes.

http://www.lubbockonline.com/stories/080606/loc_080606071.shtml

Andy Swift, director of the Wind Science and Engineering Research Center and professor of civil and environmental engineering, addressed attendees at the August 9 inaugural Texas Wind Industrial Network Summit in San Angelo. His presentation focused on the wind energy resource available in the southern great plains and on the technical elements that comprise wind power systems. The group, hosted by Greg Wortham and the West Texas Wind Energy Consortium, met to assess opportunities to expand existing and new Texas industries in the booming wind energy sector.

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NEW FACULTY

The College of Engineering Dean's office sends best wishes for a successful fall semester to all faculty, staff, and students in the college. New faculty for the fall 2006 semester include:

- Bill Lawson, assistant professor, Civil and Environmental Engineering
- Pat Patterson, professor and chair, Industrial Engineering
- Shameem Siddiqui, assistant professor, Petroleum Engineering
- Derrick Tate, assistant professor, Mechanical Engineering
- Eunseog Youn, assistant professor, Computer Science
- Malgorzata Ziaja, associate professor, Petroleum Engineering
- Delong Zuo, assistant professor, Civil and Environmental Engineering

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CALENDAR OF EVENTS

- September 8 and 15: Co-op Orientation
 - Engineering Center 104
 - 3:00 p.m. to 4:30 p.m.
 - www.depts.ttu.edu/coe/co-op
- September 13 - 14: Energy Sustainability Summit
 - International Cultural Center
 - For time and other details:
 - <http://www.depts.ttu.edu/coe/energysummit/>
- October 3 - 5: Engineering Job Fair
 - Student Union Ballroom
 - 10:00 a.m. to 3:00 p.m.
- October 6: Dean's Council and Joint IAB Meeting
 - International Cultural Center
- October 7: Homecoming Breakfast
 - Highlighting the Classes of 1981 and 1996
 - United Spirit Arena - 8:00 a.m. - \$5.00/adults
 - Claudia.Thornton@ttu.edu for tickets

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IS YOUR NEWS LISTED HERE?

If not, submit it through your department's editor:

Civil and Environmental	Andrews, Glenna
Petroleum	Blackmon, Joan
Computer Science	Digby, Mysti
Mechanical	Hernandez, Carmen
Chemical	Hudson, Jan
Engineering Technology	McMurray, Jodi
Electrical and Computer	Willingham, Sandi
Industrial	Wilson, Terry

The COE e-newsletter will be posted online on the first week of the month. News submission deadline is the 28th of the month for inclusion in the following month's e-newsletter.

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