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## Department of MECHANICAL ENGINEERING

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# ME News



**Engineering Innovation and Creativity**  
Dr. Julie Linsey, assistant professor, has been focusing her research on understanding and improving engineering innovation and creativity. Innovation and engineering creativity are highly sought after but not well understood. Linsey's research focuses on creating new design methods, approaches and tools that compliment and account for human cognitive processes. Her research seeks to improve the "fuzzy-front end" of the design process, which is the part of the engineering design process from gathering customer needs to idea generation and ends with a defined system with enough detail such that engineering analysis may be applied. Ultimately, these early phases of the design process have the most significant impact on the cost and quality of the product.

Three current projects include creating new design-by-analogy methods, measuring the effectiveness of group idea generation methods with globally distributed design teams, and evaluating how physical models improve engineering design creativity. The first project, design-by-analogy, is when an engineer borrows ideas from devices they have seen before, for example from nature.

The second project consists of globally distributed design teams that are a reality of the current engineering work environment. To be successful, engineers must be effective and innovative in this new environment. The undergraduate curriculum must prepare students for this environment. The current project evaluates a series of group idea generation approaches in a simulated global design environment providing information on which methods are effective and should be taught.

The third project seeks to understand how physical models support the engineering design process and the limitations they inherently impose. Physical models within the engineering design process range from quick mock-ups created during idea generation to full working models and prototypes. Physical models during the early idea generation phases of design have the potential to both enhance and limit engineering innovation. Currently, a controlled experimental study is evaluating the effects of physical models during idea generation. Students are either provided with materials to build their concepts or are only allowed to sketch their ideas. Preliminary results indicate that physical models increase the number of effective functional ideas but also may have the potential to cause design fixation. Design fixation leaves an engineer or design team stuck on a particular solution causing it to be difficult to generate additional alternative solutions.

## Academy of Distinguished Graduates 2009 Inductees



Baker

Quentin Baker is President of Baker Engineering and Risk Consultants, Inc. (BakerRisk). He is also presently serving as program manager and lead author to rewrite a book for the Center for Chemical Process Safety, a group within AIChE. Mr. Baker has managed a number of projects to develop computer programs to calculate the blast loads on structures from high explosive, vapor cloud explosion, and bursting pressure vessel sources considering ground reflection, Mach stem formation, receptor structure orientation, and reaction rate.

Baker received a B.S. in Mechanical Engineering from Texas A&M in 1978.



Best

Best has been President & CEO of St. Mary Land & Exploration Company since February of 2007. He has been in the oil industry and energy business for over 29 years. Prior to joining St. Mary, Best worked as President & CEO of Pure Resources, Inc. from February of 2003 through September of 2005. When he started his career, he was working for ARCO in Alaska where he progressed through numerous managerial positions, advancing to Prudhoe Bay Field Manager, Vice President of External Affairs for ARCO/Alaska, President of ARCO Permian in Midland, Texas, and President of ARCO Latin America headquartered in Caracas, Venezuela.

Best received a B.S. in Mechanical Engineering from Texas A&M in 1972.



Markham

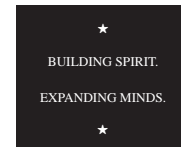
Markham's areas of expertise include project management and supervision, construction cost estimating, contract maintenance management and construction safety programs. He has been responsible for the design and construction of large industrial facilities such as oil terminals, specialty chemical plants, newspaper plants, pipeline, compressor stations, wastewater treatment facilities and forest product plants. He also owns and operates a registered Red Brangus beef cattle operation on Brazoria County, Texas.

Markham received a B.S. in Mechanical Engineering from Texas A&M in 1972.

## Mechanical Engineering Friends

Financial support from former students and friends of the Department of Mechanical Engineering at Texas A&M University provides funding for student scholarships, equipment upgrades for our undergraduate labs, and program needs that are not met by general state and university appropriations. By contributing to the "Mechanical Engineering Friends," you can become an active participant in our future successes.

Your contributions to the Department of Mechanical Engineering provide support for our academic programs and our students. You can donate with a check or on-line through the A&M Foundation. If donating by check, make your check out to "Mechanical Engineering Friends" and mail to Department of Mechanical Engineering, Texas A&M University, Mail Stop 3123, College Station, Texas, 77843-3123, ATTN: Pam Hoestenbach. If you want to donate by credit card on-line, go to [giving.tamu.edu](http://giving.tamu.edu), then click "Give Now" and use the drop down menu to pick mechanical engineering.





### A Few Words...Dennis O'Neal '73



As I go through the day, it's hard not to be reminded of the impact that mechanical engineers have on our society. From the car I drive to the work, to the cooling fan on the computer that I'm using to write this column, to the power plants that provide our electrical power, to the air conditioning systems that keep us comfortable in the hot summers in south Texas, mechanical engineers have a major hand in touching our lives.

Maybe that's one reason why mechanical engineers, particularly Aggies, are in such demand. In a recent on-line article, Yahoo listed "The Top 5 In-Demand Majors." Guess what was listed as number one? You guessed it, mechanical engineering! We're continuing to see an exceptionally strong demand by incoming freshmen. We were the first engineering program at A&M to reach our cap of incoming students back in December for students entering in fall 2009.

We said a final goodbye to two of our retired faculty (Jack Perry and Dick Thornton) since our last newsletter. Many of you probably had a machine design class with Jack Perry or a metallurgy class with Dick Thornton if you were here in the 70s, 80s, or early 90s.

In this issue of the newsletter, we have short write-ups of three graduates that we inducted into our Academy of Distinguished Graduates at our spring awards banquet: Quenton Baker, Gary Markham, and Tony Best. Bud Peterson, another one of our distinguished graduates, was named president of Georgia Tech. All four of these individuals are excellent examples of how successful our graduates are. ASME had a very successful scholarship golf tournament at the Traditions Golf Course in early April. They raised nearly \$10,000 for scholarships for our students.

Some of you remember when we moved from the Zachry Engineering Center to the Engineering Physics Buildings in 1986. Since then, we have shared these buildings with the Physics Department. We're in for some big changes in late fall when Physics will move to their new building. This will provide us with some much needed space for faculty and graduate student offices as well as laboratories.

### In Memoriam



Dick Thornton passed away on May 9 after fighting end-stage renal disease for the past 12 years.

Thornton was a Professor Emeritus in the department and a former Associate Department Head. He completed significant research before and at Texas A&M, specifically in composite materials. While at A&M, he was advisor to both the ASME and Society of Women Engineers chapters and coached the "ME Bunch" intramural football team.

Thornton was very active in his local church, and was also active in many community organizations. He had a brilliant mind, achieved many professional accomplishments and gave his time and energy to his community and church. When asked how he wanted to be remembered, Thornton said he wanted people to remember him as a good son, husband, father and grandfather.



Dr. John V. "Jack" Perry, Jr., a former professor in the Department of Mechanical Engineering, passed away January 2, 2009, at the age of 84.

Perry received his undergraduate degree from Virginia Polytechnic Institute while enlisted in the Army. In 1948, after completing an Army Specialized Training Program at Texas A&M, where he met his wife, Helen, and after being temporarily based in the Panama Canal Zone for the Army, he decided to settle down in College Station with his family and teach mechanical engineering at Texas A&M. At the same time he was still involved with the 420th Reserve Unit in Bryan and working toward a master's degree. He was offered a job as a design engineer for Douglas Aircraft in California and Convair in Fort Worth. In 1979 he was given the opportunity to teach at West Point Military Academy for that academic school year. He then returned to Texas A&M to continue teaching for the department of mechanical engineering until his retirement in 1995. In 1996 he was accorded the rank of Professor Emeritus.

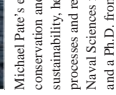
### NEW FACULTY: Spring 2009

The department is in the process of hiring new faculty as part of Texas A&M's "vision 2020" project. Vision 2020 is designed to guide the university to become a "top 10" public university by the year 2020. The new faculty will help the department and university improve the institution's faculty/student ratio, enhance the faculty, and improve the students' educational experiences.

New department faculty for spring 2009 are:



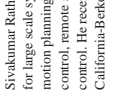
Kalyana Bibu Nakshatrani's expertise is in theoretical and computational aspects of mechanics of heterogeneous porous media and developing mathematical tools to model and study various multiscale, multiphysics phenomena. He received Ph.D. in 2007 from the University of Illinois at Urbana-Champaign.



Michael Pate's expertise is in alternative energy, energy conservation and efficiency, green building technology and sustainability, heat transfer and heat exchangers, and thermal processes and refrigeration properties. Pate received his B.S. in Naval Sciences from the United States Naval Academy in 1970, and a Ph.D. from Purdue University in 1982.



Devesh Ranjan's expertise is in experimental fluid mechanics, inertial confinement fusion, turbulent mixing and supersonic combustion, and shock tube applications. He received his Ph.D. in from the University of Wisconsin-Madison in 2007.



Sivakumar Rathnam's expertise collaborative decision making for large scale systems, autonomous systems, combinatorial motion planning, approximation algorithms, vision based control, remote sensing of infrastructure systems, and air traffic control. He received his Ph.D. in 2007 from the University of California-Berkeley.



David Stauck's expertise is in plasma engineering, micro-fabrication, nanotechnology, spacecraft propulsion, green energy, reacting flows, spectroscopic diagnostics, optics and lasers, non-equilibrium kinetics, statistical thermodynamics, experimental methods, fluid dynamics, and thermodynamics. Stauck received his Ph.D. from Drexel University in 2008.



Texas A&M's student-designed and -built gas-electric hybrid race car won the 2009 SAE Formula Hybrid competition in Loudon, New Hampshire. The Texas A&M team beat out 29 teams from other institutions in the United States, Canada, Taiwan and Russia to win the title in its first attempt.

### ASME Scholarship Golf Tournament a Smashing Success



The second annual ASME Scholarship Golf Tournament was held at the Traditions Course on March 30. This year's tournament raised over \$10,000 for scholarships for mechanical engineering students. ASME would like to thank the corporate sponsors who made it possible: BH, Halliburton, Cameron, Chevron, and Baker Hughes. If you are interested in sponsoring or participating in next year's tournament, please contact Neda Moayyedi at nmf6@nso.tamu.edu.

### Department receives new endowments

The Department of Mechanical Engineering is grateful for the gifts and donations it receives from its many friends, former students, and industry. These gifts help many of our students receive a quality education from the department. If you are interested in endowment opportunities available in the department, please contact Ms. Jennifer Hester at 979-845-5113 or j-hester@tamu.edu.



Fred G. & Merri O. Walsh Scholarship. Fred G. & Merri O. Walsh have established a scholarship in memory of Thomas Christopher O'Leary, Merri Walsh's son and Fred Walsh's stepson, who passed away October 26, 2008. Christopher was a student in the department of mechanical engineering. The scholarship will be given to one or more students pursuing an undergraduate degree in mechanical engineering from Texas A&M University.

Industry Advisory Council Scholarship. At the fall 2008 Department of Mechanical Engineering Industry Advisory Council meeting, the advisory council members unanimously approved the creation of a new scholarship that will be funded by the council. The fund was started with an initial cash donation from Gary Markham, a current council member, and was setup through an account with the Texas A&M Foundation.

### In Memoriam



Ursula Magliolo Gull passed away December 2, 2008 at the age of 89.

Gull earned a degree in Zoology from the University of Texas in 1941 and went on to teach science at Ball High School in Galveston, TX. She was also a volunteer for organizations such as the Red Cross Bloodmobile and Meals on Wheels.

In 1994 she established a Texas A&M Mechanical Engineering Scholarship in her husband's name, the A.W. Gull '41 Scholarship. A.W. Gull was a graduate of the department mechanical engineering.

### Peterson appointed President of Georgia Tech University



Dr. G.P. "Bud" Peterson was appointed as President of the Georgia Institute of Technology. Peterson previously served as chancellor of the University of Colorado at Boulder, a position he has held since 2006. Peterson also has worked as a research scientist for the NASA Johnson Space Center in Houston, and in the private sector for Black & Veatch Consulting Engineers in Kansas City, Missouri. Peterson earned bachelor of science degrees in mechanical engineering and mathematics from Kansas State University, Manhattan. He earned a master of science degree in mechanical engineering from Kansas State University and a Ph.D. in the same discipline from Texas A&M University, College Station.

### Attia accepts TTEngines executive position



Dr. Magdy Attia has agreed to accept the executive position of Chief Operating Officer for Turbine Truck Engines, Inc.

Attia is currently an Assistant Professor in the Department of Aerospace Engineering at Embry Riddle University and Engineering Consultant to major corporations such as Siemens Westinghouse Power Corporation. Attia also holds a patent for High Temperature Compression and Reheat Gas Turbine Cycle and Related Method. Attia also participated on a NASA-Lewis funded project to create a complete engine performance code that simulated the design and off-design performance of gas turbine engines. He was responsible for the writing and validation of the code, resulting in the publishing of his research findings.

Attia received his Ph.D. in mechanical engineering from Texas A&M in 1985.