

University of Tennessee, Knoxville

TRACE: Tennessee Research and Creative **Exchange**

Tennessee Engineer Newsletter

Engineering -- Other Materials (Newsletters, Reports, Etc.)

Fall 2013

Tennessee Engineer Fall 2013

College of Engineering

Follow this and additional works at: https://trace.tennessee.edu/utk-tennengineer



Part of the Engineering Commons

Recommended Citation

College of Engineering, "Tennessee Engineer Fall 2013" (2013). Tennessee Engineer Newsletter. https://trace.tennessee.edu/utk-tennengineer/21

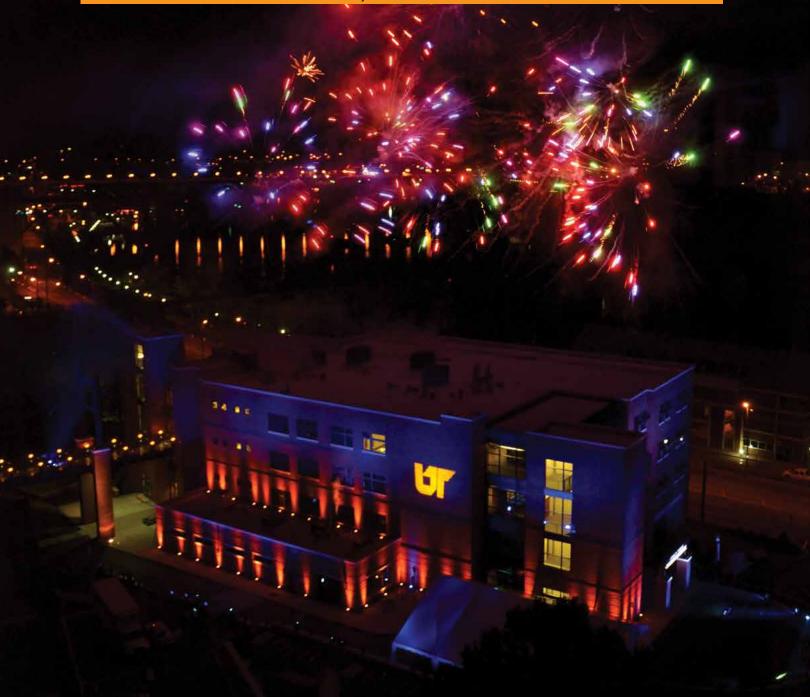
This Newsletter is brought to you for free and open access by the Engineering - Other Materials (Newsletters, Reports, Etc.) at TRACE: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Tennessee Engineer Newsletter by an authorized administrator of TRACE: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

TENNESSEE

G

Fall 2013

THE UNIVERSITY OF TENNESSEE, KNOXVILLE • COLLEGE OF ENGINEERING



The John D. Tickle Engineering Building: Bridge to a Bright Future for UT Engineering

THE UNIVERSITY of TENNESSEE

KNOXVILLE

COLLEGE OF ENGINEERING

Contents



..... Dean's Message

Dedication of the John D. Tickle Building

6 Faculty Updates

12 New COE Faculty

Faculty Focus: Dr. Brian Wirth

Research Feature: Dr. Mingjun Zhang

17 New Siemens Software for CEE Students

18 International Outreach

20 EcoCar 2 Event

College of Engineering 2013
Commencement

22 175 Years of Engineering at UT Gala

. 24 40th Anniversary Celebration of Engineering Diversity Programs

26 EDP Summer Program

29 Alumni Profile: Jamie Thomas

30 Development Update

52 Events & Awards

35 UT Alumni Awards

6 Alumni News

37 Memorials



Tennessee Engineer is published in the spring and fall by the University of Tennessee, Knoxville, College of Engineering

Dr. William L. Eversole *Chair, Board of Advisors*

Dr. Wayne T. DavisDean, College of Engineering

Dorothy Barkley Bryson

Executive Director, Engineering Development

Kim Cowart

*Director, Engineering Communications*Editor, Tennessee Engineer

Mitchell Williamson Graphic Designer

Grapine Designe

Randall Brown

Writer/Proofreader

Nick Myer

University of Tennessee Photo & Video Photography

Jack Parker

Jack Parker Photography

Address correspondence to the editor:
The University of Tennessee, Knoxville
College of Engineering
Engineering Communications Office
207 Perkins Hall
Knoxville, TN 37996-2012

coe@utk.edu (865) 974-0533

Visit the College of Engineering web site at **www.engr.utk.edu**



www.facebook.com/coe.utk



Dean's Message

Welcome to our latest issue of Tennessee Engineer. It is exciting to capture in print a summary of our yearlong celebration of the 175th anniversary of offering engineering courses at the university. This issue includes features on the opening/ribbon cutting of the new one hundred ten thousand sq ft John D. Tickle Engineering Building this fall (housing the Department of Civil and Environmental Engineering and the Department of Industrial and Systems Engineering), the celebration of the 40th anniversary of the college's diversity programs, and the 175th anniversary event which were all held on October 4. We are deeply appreciative to John and Ann Tickle for the investments that they have made and continue to make within our college and university. They, along with others who helped solidify the funds for the building, as well as numerous other alumni and friends who have made investments in other buildings and programs, have provided a foundation for our college for years to come. We sincerely thank each and every one of you for helping us achieve our mission of providing the highest quality education to our students.

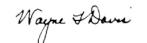
Based on the outstanding growth of our college, the strong demand for engineering graduates, the quality or our students, and the need for faculty/staff growth to meet those demands, FY13 was a pivotal year for our college during which the university administration submitted a proposal to the governor's office to provide a matching request for recurring funds to be provided to the college to address faculty/staff needs and to provide the opportunity for the college to grow an additional twenty-five to thirty percent over the next five years. The state provided a \$3 million increase in the college's base budget effective July 1, 2013. This commitment is being matched by combined funds from the chancellor's office, the college, and from the UT Foundation (development) over the next several years to allow the college to continue its forward momentum. In anticipation of these funds, the college was able to move forward with searches for new faculty and staff hires in FY13, many of who are now part of the College of Engineering team. We feature several of our most recently hired faculty in our newsletter. These commitments, which occurred in FY13, have provided us with the opportunity to initiate searches for twenty two new faculty lines starting this fall, ranging from lecturers to chaired faculty positions.

Our newsletter also features a number of faculty members, students and alumni—as examples of the team effort being made by everyone to help meet the vision of our college. Even as we celebrate, I have included our Vision Statement as we look to the challenges and excitement of the future. I hope you will join us in our efforts to achieve our vision.

Vision Statement

The College of Engineering is resolved to become one of the country's top 25 public engineering educational institutions. To bring this vision to reality, our college is committed to these five charges:

- Attaining national and international recognition among peer institutions for excellence in both research and teaching.
- Assembling a dynamic body of faculty who exemplify excellence and innovation in the pursuit and delivery of knowledge that will perpetuate the highest standards of engineering education for future generations.
- Graduating students who are well educated in technical knowledge, with solid communication and teamwork skills, who can compete successfully in the global business world and contribute significantly to the national base of engineering education and technology.
- 4. Investing strategically in the college's most important resources—students, faculty and programs—through the vigorous acquisition of private gifts from individuals, corporations, and foundations.
- 5. Partnering with academic, industrial, and government entities that share and enhance the mission of the College of Engineering, so that our educational and collaborative efforts result in the maximum, positive economic impact locally, regionally, nationally, and globally.



UT COLLEGE OF ENGINEERING

The John D. Tickle Engineering Building is Dedicated

October 4, 2013



The John D. Tickle Engineering Building



John and Ann Tickle by the naming plaque for the John D. Tickle Engineering Building.

On the evening prior to the dedication ceremony of the John D. Tickle Engineering Building, an elegant pre-dedication affair took place on the seventh floor of the Neyland Stadium East Skybox, a location that boasted a magnificent view of the Tickle building, dramatically lit for the evening by Bandit Lites. The evening included a reception, dinner, and a spectacular fireworks display from the top of the building. John D. Tickle, and his wife, Ann, whose generous gift to the university made the building possible, were the guests of honor. Tickle, a UT industrial engineering graduate who received his BS degree in 1965, is the chairman of Strongwell Corporation in Bristol, Virginia. Several Tickle family members were in attendance, and guests also included UT Chancellor Jimmy Cheek and Ileen Cheek; Dean of Engineering Wayne Davis and Sylvia Davis; College of Engineering Board of

Advisors Chair Dr. Bill Eversole and Jenny Eversole; BOA Chair -elect Eric Zeanah and Elaine Zeanah; Department of Civil and Environmental Engineering Head Dr. Dayakar Penumadu with Marie Penumadu; and Department of Industrial and Systems Engineering Head Dr. John Kobza with Katherine Kobza.

On Friday, October 4, 2013, Tickle helped dedicate the new, state-of-the-art engineering building named in his honor in front of a crowd of over five hundred University of Tennessee students, faculty, and staff as well as engineering donors and supporters from around the country. The event took place outside of the building, which faces Neyland Drive, on a beautiful fall day.

Speakers at the event included Chancellor Cheek, UT President Joe DiPietro, civil and environmental engineering student John Scobey, Dean Davis, and Tickle.

"This building is a beautiful addition to campus," Tickle said in his remarks during the event. "This is a constantly forward-moving campus, and it's going to continue moving forward."

Guests at the dedication event included three former UT presidents: Ed Boling, Joe Johnson, and Jan Simek, as well as Chancellor Emeritus Bill Snyder; Congressman John J. Duncan and Senator Becky Duncan Massey; and representatives from professional engineering organizations including Jim Froula, executive director emeritus, and Curt Gomulinski, executive director of Tau Beta Pi, the national engineering honor society, which is housed on the UT campus in the Dougherty Engineering Building; Marc Apter, president, the Institute of Electrical and Electronics Engineers; Larry Satkowiak, vice president, the Institute for Nuclear Materials Management; and Stacey DelVecchio, president of the Society of Women Engineers. Numerous members of the college's Board of Advisors were also in attendance.



The ribbon-cutting team for the dedication of the John D. Tickle Engineering Building, left to right: COE Board of Advisors Chair Bill Eversole; building donor Jim Gibson; building donor and COE Board of Advisors Chair-elect Eric Zeanah; CEE department head Dayakar Penumadu; Chancellor Jimmy G. Cheek; primary building donors John Tickle and Ann Tickle: COE Dean Wayne T. Davis; UT President Joe DiPietro; ISE department Head John Kobza; student speaker John Scobey; and COE Associate Dean for Research and Technology Bill Dunne.

After the dedication, the Tickles, UT administrators, and honored guests cut the ribbon in front of the building and attendees then headed out to a reception on the building's fourth floor. Open houses, demonstrations, and receptions took place in all of the seven engineering departments later that day, along with a networking luncheon hosted by student engineering organizations.

The dedication ceremony and related events were part of the college's recognition of 175 years of engineering instruction at the University of Tennessee.

The \$23.1 million, five-story, one hundred and ten thousand square-foot Tickle building houses the Department of Civil and Environmental Engineering and the Department of Industrial and Systems Engineering. It anchors a new gateway to campus and features a pedestrian bridge that includes fiberglass-reinforced large I-beams manufactured by Strongwell, Tickle's company, which provides a closer link between Neyland Drive and the Hill.

The project began in December 2009, and the facility opened to students just prior to the fall 2013 semester.

John Tickle graduated from UT in 1965 with a bachelor's degree in industrial engineering. He was president of Morrison Molded Fiber Glass Company in his hometown of Bristol, Virginia, before he purchased it and renamed it Strongwell in 1997. Today, Strongwell is a worldwide operation, with the Bristol division serving as its headquarters.

Ann Tickle graduated with a bachelor's degree from the College of Education, Health, and Human Sciences. She hosted the popular syndicated TV show *Romper Room*—which predated *Sesame Street*—at a Bristol TV station from 1969 to 1976 and is extensively involved in philanthropic work.

In his remarks, Davis also recognized three couples who provided significant funding for the facility: Chad Holliday, chairman of the Bank of America and the former CEO of DuPont, and his wife Ann; Jim Gibson, former CEO of Pressure Tube Manufacturing LLC, and his wife Jill; and Eric Zeanah, president of American Accessories International, a Knoxville-based company, and his wife Elaine.

The Tickle Building has twenty-four laboratories, three conventional classrooms, one lecture hall, three student work spaces, and sixty-three faculty and graduate student offices. The laboratories include a high-bay area for structural testing and asphalt road surface testing as well as a geotechnical laboratory. The three classrooms promote collaborative learning through the use of movable chairs and Smart Boards.

"This building continues to fuel the excitement about our research and teaching programs," Davis said. "Our college always aspires to be better and better. The Tickles' continual support of and belief in UT allows us to keep moving forward and create initiatives that will benefit students for generations to come."

The John D. Tickle Building was designed by Grieve Associates Architects of Knoxville, working in association with three engineering firms: Cannon & Cannon Inc. and IC Thomasson Associates Inc., both of Knoxville, and Ross Bryan Associates Inc. of Nashville. Messer Construction of Knoxville was the general contractor.

For more information about the building, visit *engr.utk.edu/tickle*.



Dean of Engineering Wayne Davis (far right) and Chancellor Jimmy G. Cheek (right) present a special gift to Ann Tickle (far left) and John Tickle (left).



COE Board of Advisors Chair Dr. Bill Eversole and his wife, Jenny, view the ice sculpture of the John D. Tickle Building pedestrian bridge at the dinner held the evening before the dedication ceremony.



Guests enjoy refreshments after the dedication ceremony of the John D. Tickle Engineering Building.



Former UT presidents Joe Johnson and Ed Boling at the dedication ceremony John Scobey, the student speaker at the dedication ceremony for the John D. Tickle Engineering Building.





COE staff members enjoy the networking luncheon after the Tickle building dedication.



Dr. Leon Tolbert (right), head of the Department of Electrical Engineering and Computer Science, EECS staff member Kevin Bogle, and student Mwamba Bowa wait to greet guests at the EECS reception after the dedication event.



A demonstration in the Tickle building's civil and environmental engineering concrete lab.

Faculty Updates

COE Welcomes Three New Governor's Chairs







Dr. Sudarsanam Suresh Babu, an authority in the production, design, and performance of transforming materials into parts, has been named the eleventh University of Tennessee-Oak Ridge National Laboratory (ORNL) Governor's Chair. Babu will serve as Governor's Chair for Advanced Manufacturing and will be a professor based in the Department of Mechanical, Aerospace, and Biomedical Engineering (MABE). He will also have a joint professorship with the Department of Materials Science and Engineering, and as a Governor's Chair he will have an appointment in the Energy and Environmental Sciences Directorate and in the Energy Materials Program at ORNL.

Babu, a former professor in the Welding Engineering Program in the Department of Materials Science and Engineering at The Ohio State University, directed a National Science Foundation Industry and University Cooperative Research center focused on materials joining for energy applications. He joined The Ohio State University faculty in 2007 following several years at the Edison Welding Institute in Columbus, Ohio. Babu has also served in multiple roles at ORNL, including as a postdoctoral scholar, research professor, and member of both the research and development staff and the senior research and development staff.

Babu's research helps widen the scope of advanced manufacturing and additive manufacturing, also known as 3D printing, which is the process of adding successive layers to make a three-dimensional solid object from a digital model.

As Governor's Chair, Babu will lead efforts to integrate the advanced manufacturing

research and design activities between UT, ORNL, and industry. In collaboration with industry, faculty, students, and researchers at ORNL's Manufacturing Demonstration Facility, he will conduct basic and applied research focusing on hybrid composite products, energy-efficient design and development, and understanding a product's life cycle and the implications of design on the product's purpose.

Babu received a bachelor's degree in engineering from the PSG College of Technology in 1986, a master's degree in technology from the Indian Institute of Technology in 1988, and his doctorate in materials science from Cambridge University.

Ramki Ramesh, an authority in the physics of functional materials, has been named the twelfth UT-ORNL Governor's Chair. He has also been appointed as deputy director for science and technology at ORNL.

Ramesh serves as Governor's Chair for Nanomaterials Engineering, based in the Department of Materials Science and Engineering.

Ramesh arrived from the University of California, Berkeley, where he will continue to serve as the Purnendu Chatterjee Endowed Chair in Energy Technologies in the Department of Materials Science and Engineering and on the physics faculty. In addition, he serves as a faculty senior scientist in the Materials Sciences Division at Lawrence Berkeley National Laboratory. From 2011 to 2012, he served as director of the US Department of Energy's SunShot Initiative and Solar Energy Technologies Program, which seeks to make solar energy cost-competitive with other forms of electricity by the end of the decade.

Ramesh's research is important to the development of the next generation of thin film technology used in solar panels and computer memory. His work advances solar and information storage technology by improving energy transfer while making products

His breakthrough research has led to a new generation of computer memory devices that can retain stored information even when not powered, termed Ferroelectric Random Access Memories.

Ramesh was elected to the National Academy of Engineering in 2011 and is a recipient of the 2001 Humboldt Senior Scientist Prize. He has published more than four hundred papers and been cited more than thirty-five thousand times, making him one of the world's most highly cited scientists.

Ramesh has been a driving force in moving innovation to the marketplace, most recently at SunShot and as director of the Berkeley Nanoscience and Nanoengineering Institute and the Singapore-Berkeley Research Institute for Sustainable Energy. Prior to his SunShot duties, Ramesh served as associate chair of the Materials Science and Engineering Department at UC Berkeley. He joined UC Berkeley in 2004 after several years as a distinguished professor at the University of Maryland and a member of the technical staff at Bell Communications Research.

Ramesh received a bachelor's degree in chemistry in 1980 from Madras University, Madras, India, and masters and doctoral degrees in materials science from UC Berkeley in 1987.

Dr. Steve Zinkle, an authority on the effect of radiation on materials in fission and fusion nuclear reactors, has been named the thirteenth UT-ORNL Governor's chair and he is the tenth Governor's Chair in the engineering college.

Zinkle will serve as Governor's Chair for Nuclear Materials and will be based in the Department of Nuclear Engineering and the Department of Materials Science and Engineering.

Zinkle was previously a UT-Battelle Corporate Fellow at ORNL and was chief scientist for the laboratory's Nuclear Science and Engineering Directorate. In 2012, he was elected to the prestigious National Academy of Engineering, one of the field's top professional honors. He joined ORNL in 1985 as a Eugene Wigner Fellow and led the laboratory's nuclear materials and science technology group from 2001 to 2006 and directed the Materials Science and Technology Division from 2006 to 2010.

Zinkle's research provides an important component toward understanding how structural materials inside fusion and fission reactors handle radiation. His research goal is to develop highperformance, radiation-resistant materials for advanced nuclear fission and fusion energy applications.

Zinkle received a bachelor's degree in nuclear engineering, master's degrees in materials science and engineering, and a doctorate in nuclear engineering from the University of Wisconsin, Madison.

The UT-ORNL Governor's Chair Program is funded by the state of Tennessee and ORNL. It is designed to attract exceptionally accomplished researchers from around the world to boost joint research efforts that position the partnership as a leader in the fields of biological science, computational science, advanced materials, and neutron science.

Dr. Mark Dean (BS/EE '79), an IBM Fellow and the company's former vice president of Technical Strategy and Worldwide Operations, has been named as the Fisher Distinguished Professor with a tenured appointment in the Department of Electrical Engineering and Computer Science

Dean, who received his MS degree in electrical engineering from Florida Atlantic University and his PhD from Stanford, had a long and illustrious career at IBM, where he began working with personal computers as a chief engineer at IBM in Boca Raton, Florida. Dean holds three of the original nine patents on the standard IBM personal desktop computer that serves as a basis for all personal computers and has more than forty patents or patents pending.

Dean served in numerous executive positions during his tenure at IBM, and was named the first African-American IBM Fellow in 1995. His long list of honors and awards includes the University of Tennessee's highest honor, the Distinguished Alumnus Award, in 2012; the National Institute of Science (NIS) Outstanding Scientist Award in 2006; the UT College of Engineering's Nathan W. Dougherty Award in 2005; membership in the prestigious National Academy of Engineering in 2001; the Black Engineer of the Year Award from the Career Communications Group in 2000; Distinguished Golden Torch Award, National Society of Black Engineers, 1999; and induction into the National Inventors Hall of Fame in 1997.

He also received the US Department of Commerce's Ronald H. Brown American Innovators Award and is a Institute of Electrical and Electronics Engineers (IEEE) Fellow and a National Society of Black Engineers (NSBE) Distinguished Engineer.

Dean was also a longtime member of the UT College of Engineering's Board of Advisors.



Two COE Professors Receive NSF CAREER Awards

Dr. Jason P. Hayward, an assistant professor in the Department of Nuclear Engineering, and Dr. Jeffrey A. Reinbolt, an assistant professor in the Department of Mechanical, Aerospace, and Biomedical Engineering, have both received the Early Career Research Program Awards (CAREER) from the National Science

The CAREER award is the NSF's most prestigious honor for junior faculty who demonstrate outstanding research, excellent education, and the integration of education and research within the context of the mission of their organizations.

Hayward's award includes total funding of \$750,000 over five years to develop the research outlined in his proposal "Neutron Scattering Instrumentation Research and Development for High Spatial and Temporal Resolution Imaging at Oak Ridge National

Reinbolt's award includes a \$417,000 grant over five years for his research proposal "Research and Education on Control of Human Movement." The CAREER project will allow Reinbolt and his graduate students to develop scientific tools and simulations to improve rehabilitation for stroke victims.





In addition, the professors will perform outreach activities related to their research.

For more information, visit http://science.energy.gov/early-career



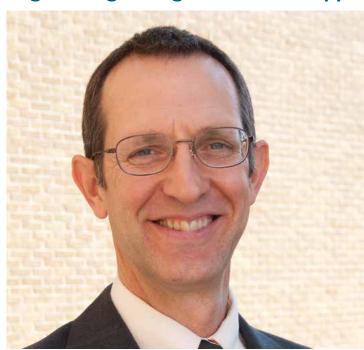
Dr. Eric Lukosi, an assistant professor in nuclear engineering, received a prestigious Ralph E. Powe Junior Faculty Enhancement Award from Oak Ridge Associated Universities (ORAU) and matching funds from the UT Office of Research. The award is given to thirty young faculty members at ORAU member institutions with the goal of enriching their research and professional growth and spurring new funding opportunities. ORAU provides innovative scientific and technical solutions for the US Department of Energy (DOE) and other federal agencies to advance national priorities in science, health, education, and national security. A nonprofit corporation and federal contractor. ORAU manages the Oak Ridge Institute for Science and Education



TENNESSEE ENGINEER • engr.utk.edu

Faculty Updates

Engineering College Announces Appointments of Two New Department Heads



Dr. John E. Kobza

Dean Wayne T. Davis has recently named two new department heads for the College of Engineering.

Dr. John E. Kobza, previously the Interim Department Chair of Industrial Engineering and Senior Associate Dean at the Edward E. Whitacre College of Engineering at Texas Tech University in Lubbock, Texas, is the new professor and department head of the Department of Industrial and Systems Engineering (ISE).

Kobza received his BS degree in electrical engineering from Washington State University, his MS degree in electrical engineering from Clemson University, and his PhD in industrial and systems engineering from Virginia Polytechnic Institute and State

He began his career as an assistant professor in the Department of Industrial and Systems Engineering at Virginia Polytechnic Institute and State University, then joined the Department of Industrial Engineering at Texas Tech as an associate professor and was promoted to full professor in 2006. He was the associate department chair from 2006-2008 and was named senior associate dean in 2009. He served as interim department chair beginning in 2012. Kobza also was an instructor for the Department of Industrial Engineering at Kasetsart University in Bangkok, Thailand, in 2004 and was a visiting professor in the Department of Systems Engineering at the US Military Academy at West Point from 2005-2006.

Kobza received the Texas Tech Alumni Association New Faculty Award in 2003; he was chosen as one of three researchers to represent Texas Tech at "Research Education for Texas," an engineering and technology event in Austin in 2003; and he was inducted into the Texas Tech University Teaching Academy in 2002. He also received the Texas Tech Industrial Engineering Professor of the Year Award, presented by the Texas Tech chapter of the Institute of Industrial Engineers, in 2000.

Kobza has provided expertise for numerous media reports and articles with outlets including Fox News, Dateline NBC, the British Broadcasting Corporation, National Public Radio, U.S. News & World Report, the Saturday Evening Post, The London Times, and

He is a Fellow of the Institute of Industrial Engineers, the Institute for Operations Research and the Management Sciences, the



Dr Matthew M Mench

Institute of Electrical and Electronic Engineers Communications Society, and the American Society for Engineering Education. He is a licensed Professional Engineer in the state of Texas.

Dr. Matthew M. Mench, the UT Condra Chair of Excellence in Energy Storage and Conversion and a professor in mechanical engineering at the University of Tennessee, is the new department head of the Department of Mechanical, Aerospace, and Biomedical Engineering (MABE).

Mench received his BS, MS, and PhD degrees, all in mechanical engineering, from Pennsylvania State University.

He began his career as an assistant professor and research associate in the Department of Mechanical Engineering at Pennsylvania State University. He was promoted to associate professor a year early in 2007. Mench joined the faculty of MABE at UT in 2010 as a professor and the Condra Chair of Excellence in Energy Storage and Conversion. Mench also has a joint faculty appointment with Oak Ridge National Laboratory (ORNL) and has a joint courtesy faculty position with the Department of Chemical and Biomolecular Engineering.

Mench was awarded a National Science Foundation Early Career Development (CAREER) Award in 2007 to support his research on fuel cells. He is the author of the textbook Fuel Cell Engines, over one hundred research publications, and holds several patents. His research work has been supported by numerous industrial and government agencies.

In 2013, Mench was named as a UT College of Engineering Research Fellow. He received the Premier Teaching Award in 2009 and the Outstanding Teaching Award in 2006 from the Penn State Engineering Society.

Mench also serves as the executive vice president of the International Society for Hydrogen Energy and is an associate editor and a former member of the editorial board of *The* International Journal of Hydrogen Energy.

Mench is a Fellow of the American Society of Mechanical Engineers. He is also a member of the Electrochemical Society and the American Society for Engineering Education.

Both appointments were effective August 1, 2013.

EECS Professor Leads Two High Profile Supercomputer Projects



Dongarra, a distinguished professor of computer science, is designing software that will be critical in making the next generation of supercomputers operational.

Supercomputers have been tackling the world's most

pressing challenges, from sequencing the human genome to predicting climate changes, for years. So far, though, the power of these machines has been limited. The next generation of supercomputers, called exascale (a quintillion floating point operations per second), holds promise for solving some of the most demanding problems in numerical modeling.

Dongarra recently received a \$1 million grant over three years from the US Department of Energy to find a solution. His project, the Parallel Runtime Scheduling and Execution Controller (PaRSEC), will address the critical situation facing the supercomputing community due

to the introduction of more complex supercomputer designs.

The current generation of supercomputers has processor counts in the millions. The exascale computers will have roughly a billion processors. In addition, the general makeup of the machines will differ dramatically through the use of multiple central processing units and hybrid systems to overcome barriers limiting today's supercomputers. These barriers include large amounts of heat and power consumption, leaking voltage, and a limited bandwidth of data through the pins on a single chip.

The goal is to reach exascale by 2020. Plans are for the next generation of supercomputers to provide a broad range of industries, including energy, pharmaceutical, and transportation, the ability to more quickly engineer superior new products, which will translate into better consumer technology.

Dongarra is also developing an algorithm to overcome a reliability problem associated with the increasing number of

In addition to PaRSEC, Dongarra is part of an international group working to evaluate potential rewards and obstacles in designing exascale supercomputers. Workshops, called Big Data and Extreme-Scale Computing, hosted by the National Science Foundation, are held around the world annually. To learn more, visit exascale.org.

To learn more about PaRSEC, visit cl.cs.utk.edu/parsec.

Dongarra, who has compiled the biannual TOP500 list of the world's top five hundred computers since 1993 using the Linpack system that he created, also recently announced a new benchmark for measurement that will be released in time for the next TOP500 list release in November 2013. Working with his colleague, Michael Heroux, from Sandia National Laboratories in Albuquerque, New Mexico, Dongarra is developing a new assessment method, the High Performance Conjugate Gradient (HPCG). HPCG will allow more accurate measurement of computation and data access patterns found in many applications.

The next TOP500list will be announced at the Supercomputing Conference-SC2013, which will be held in November in Denver, Colorado. For more information on the TOP500, visit http://www.top500.org.

COE Faculty Receive B. Otto and Kathleen Wheeley Award



present J. Douglas Birdwell and Tsewei Wang with the B. Otto and Kathleen Wheeley Award for Excellence in Technology Transfer.

The University of Tennessee Research Foundation (UTRF) recognized many outstanding university researchers on September

The UTRF presented the B. Otto and Kathleen Wheeley Award for Excellence in Technology Transfer to Dr. J. Douglas Birdwell, a professor in the Department of Electrical Engineering and Computer Science, and Dr. Tsewei Wang, an associate professor emeritus in the Department of Chemical and Biomolecular Engineering. The award is a cash prize given to the member of the UT faculty who has had a major impact on the tech transfer success

Birdwell has been a faculty member at UT since 1978 and is currently the director of the Laboratory for Information Technologies. He has over one hundred publications and has directed over \$10 million in sponsored research projects at UT.

Wang joined the College of Engineering faculty in 1989. She has authored over fifty publications, presentations, and peer reviewed



Vice Chancellor for Research Taylor Eighmy (right) presents J. Douglas Birdwell (left) and Tsewei Wang (middle) with plagues commemorating a patented technology. Birdwell and Wang were each listed on a total of fourteen issued patents in the last three years.

journal articles and has directed \$7 million in sponsored research projects at UT. Wang retired from UT in December of 2012 but continues to be active with her research team.

Together, Birdwell and Wang have twenty-three issued patents and licensing agreements on their technologies have generated \$1,124,012 in revenue.

"The work of Drs. Birdwell and Wang and their team has had a tremendous impact on the ability of law enforcement agencies around the world to exchange and compare forensic DNA evidence to help solve crimes," said David Washburn, president and CEO of the UTRF. "From inventions in parallel data processing architectures, DNA forensics analysis, and advanced DNA database search techniques-their work aids in identifying missing persons and victims of disasters and crime."

For more information, visit http://utrf.tennessee.edu/ techtransfer/news/innovation-13.shtml

Gift Establishes UT Joint Faculty Fellowships of Business and Engineering





Dr. Rupy Sawney

A major gift from two University of Tennessee graduates has established the first-ever joint faculty positions between the colleges of engineering and business administration.

A gift from Ralph (BS/EE '70, MBA '75) and Janet Heath through the Heath Family Charitable Fund in the Community Foundation of North Texas has established the Heath Endowed Faculty Fellowship in business and engineering with the goal of enhancing the relationship between the two fields.

Chanaka Edirisinghe, professor of statistics, operations, and management science, is the Heath Faculty Fellow in the College of Business Administration. Rupy Sawhney, a professor of industrial and information engineering, is the fellow in the College of

Heath recently retired as president of Lockheed Martin Aeronautics. He is a founding and current member of the College of Business Administration's Aerospace and Defense Advisory Board, a lifetime member of the college's Advisory Council to the Dean, a member of the College of Engineering's Board of Advisors, and a recipient of UT's Alumni Professional Achievement Award. He inspired the College of Business Administration to create its unique Aerospace and Defense MBA Program.

"I believe strongly that engineering and business need to become more engaged at the university level so that when our graduates begin to practice and lead in industry they are better prepared," said Heath.

Janet Heath graduated in 1976 with a degree in food systems administration through the university's registered dietitian program. She enthusiastically supports the interaction between business and

engineering and collaborated with her husband on the proposal for the joint faculty fellowship.

Edirisinghe is the director of the management science doctoral program, co-director of the Business Analytics Forum, and director of the business college's Financial Engineering Research Laboratory. He specializes in operations research/management science with applications to financial investments, project management, supply chain coordination, reservoir scheduling, and fleet routing. He is the developer of the financial trading strategy optimization and simulation software called Mi\$OFT and a recipient of the prestigious 2009 Citation of Excellence Award by Emerald Management Reviews.

"There is great wisdom, foresight and creativity in this gift from Ralph Heath, born from his lifetime of management experience in both engineering and business," said Steve Mangum, dean of the College of Business Administration. "The Heath Faculty Fellowship program provides specific opportunities for two leading faculty members from these two colleges to permeate barriers, be innovative, and initiate constructive dialogue and programming."

Sawhney is a faculty member of the Center for Interdisciplinary Research and Graduate Education, a joint effort between UT and Oak Ridge National Laboratory focused on renewable energy; a 2006 Boeing Welliver Fellow; and a recipient of the Lean Fellowship since 1998. He specializes in the development of supply chain management models and enterprise improvement strategies, and integrating reliability into lean systems. Through his Lean Fellowship, he has worked to develop new methodologies and tools to make US manufacturing more competitive. He has worked with more than one hundred fifty industrial and governmental organizations, including

"The Heath Fellow program provides a unique opportunity to identify and encourage interaction and collaboration between our two colleges," said Wayne Davis, dean of the College of Engineering.

This gift answers Chancellor Jimmy G. Cheek's challenge to private supporters to help recruit and retain UT's most talented faculty.

Funding to recruit and retain top faculty is part of the chancellor's roadmap to achieve Top 25 status. Through the Chancellor's Faculty Challenge, his office funds interest income immediately on all new gifts and five-year pledges that donors intend to establish over a period of time in support of faculty. By providing immediate endowment income to be used for salary support, the chancellor is enabling academic units like the colleges of business administration and engineering to have an immediate impact in recruiting and retaining outstanding faculty.

NE Department Head to Serve as NEDHO Vice Chair



nuclear engineering departments and programs in North America. NEDHO was formed to provide a forum for discussion, coordination, and collaboration on issues facing academic programs emphasizing nuclear and radiological science, engineering, and technology. Hines will serve as vice chair beginning in 2014 and will be the chair of the organization in 2015.

Dr. J. Wesley Hines

EECS Professor Wins 2012 IBM Faculty Award

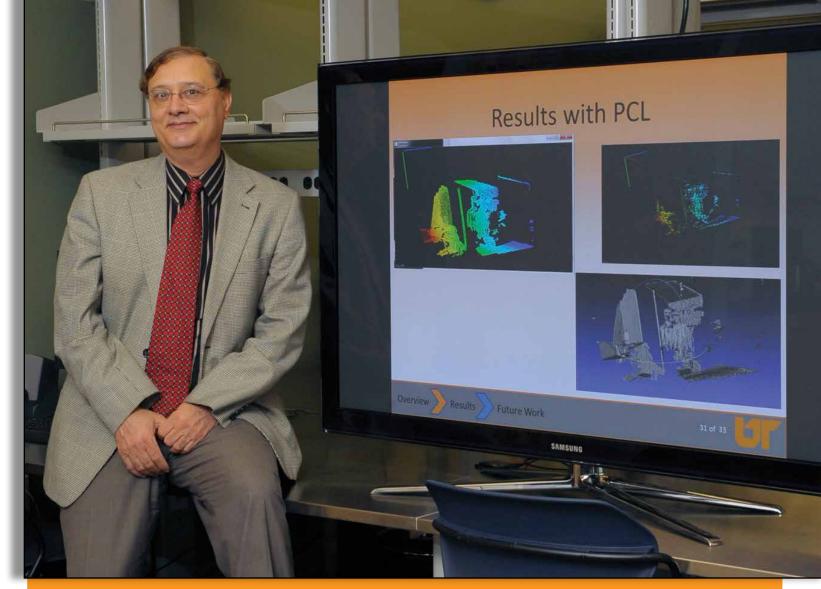
Dr. James Plank, a professor in the Department of Electrical Engineering and Computer Science, is the recipient of a 2012 IBM Faculty Award. The thirty thousand dollar award is highly competitive and recognizes the quality of an academic program and its importance to industry.

The award originated out of a collaboration with Jim Hafner, a researcher at IBM, with whom Plank worked on fault-tolerant storage systems. The project is to enrich the failure handling capabilities of Key-Value stores, which allow systems like Facebook and Twitter to store and propagate the millions of simultaneous



Dr. James Plank

updates that they get from their millions of distributed users. Plank will be using the award to fund student research.



"The Cook-Eversole Professorship allows me to expand my research in the area of robotics and artificial intelligence. It also offers an opportunity to provide both undergraduate and graduate students with hands-on projects that will enhance their engineering education experience both in and out of the classroom."

> Dr. Mongi Abidi Cook-Eversole Professor Department of Electrical Engineering and Computer Science

INVEST

Support a UT professor forging new frontiers of knowledge. Learn how you can invest in a professorship.

Call 865-974-2779 or visit engr.utk.edu/give



TENNESSEE ENGINEER • engr.utk.edu

Dr. J. Wesley Hines, the Charles

P. Postelle Distinguished Professor

in Nuclear Engineering and head

of the UT Department of Nuclear

engineering has been named the

Engineering Department Head

Organization (NEDHO). NEDHO

is an alliance of heads (chairs) of

vice chair/chair elect for the Nuclear

COE Hires Record Number of New Faculty







Dr. Joshua Sangoro







Dr Asad Khattak



Dr. Timothy Truster



Dr. Daniel Costinett







Dr. Oleg Shylo



Dr. Andrew Yu









Dr. Oleg Shylo

Gainesville, FL

networks

Dr. Andrew Yu

technology

Dr. Maulik Patel

Associate Professor

UT Space Institute

Assistant Professor

systems engineering,

models in healthcare.

stochastic optimization, parallel

PhD: Louisiana State University

Department of Materials

Science and Engineering

Research Assistant Professor

Center, University of Mumbai

Research areas: Radiation

induced modifications in

neutron diffraction

Assistant Professor

PhD: University of Florida,

Dr. Haixuan Xu

Gainesville

ceramics, crystallography of

complex oxides using x-ray and

PhD: Bhabha Atomic Research

Research areas: Operations

research and supply chain

engineering, information

management, systems

computing, communication

PhD: University of Florida,





Dr. Adrija Sharma



Dr. Eric Wade

The high-caliber faculty roster in the College of Engineering (COE) continues to grow, steadily enhancing the college's opportunities for teaching and research. More than two dozen new professors have joined the COE community in 2013. This is also the college's most diverse group of new faculty hires.

Department of Chemical and Biomolecular Engineering

Dr. Steven M. Abel

Assistant Professor PhD: Stanford University

Research areas: Abel's group applies theoretical and computational methods to investigate fundamental problems in cell biology and immunology. A major focus is on the development of a multiscale, spatiotemporal understanding of cellular processes involving the interplay of signal transduction networks, membranes, and the cvtoskeleton

Dr. S. Michael Kilbey II

Professor Jointly appointed in the Department of Chemistry PhD: University of Minnesota

Research areas: Synthesis and characterization of polymeric

materials used for surface and interface engineering; intrinsic links between assembly, structure and properties of ultrathin polymer films at surfaces and of molecular assemblies in solution

Dr. Joshua Sangoro **Assistant Professor**

PhD: University of Leipzig,

Research areas: Novel materials for electrochemical energy applications, nanoscale confinement and interfacial effects in soft materials, diffusion in soft condensed matter, and broadband dielectric spectroscopy and its applications

Department of Civil and Environmental **Engineering**

Dr. Joseph Amoah Lecturer

PhD: Florida A&M University

Research areas: Sustainable water supply, infrastructure GIS, watershed and floodplain management, water quality modeling, low impact design, urban storm water modeling, climate change on water systems, green water infrastructure planning and optimization

Dr. Kimberly Carter

Assistant Professor PhD: University of Arizona

Research areas: Analysis of trace metal content of synthesis gas derived from coal; oxidation and adsorption of perfluorinated carbons and trichloroethene; remediation of brine spills with hay; correlation of plant growth with brine content in soil

Dr. Jon Hathaway

Assistant Professor PhD: North Carolina State University

Research areas: Innovative stormwater management, green infrastructure, low impact development, ecological engineering, fecal indicator bacteria/pathogens, surface water quality, natural treatment systems

Dr. Asad Khattak

Beaman Professor of Civil & Environmental Engineering PhD: Northwestern University

Research areas: Intelligent transportation systems, transportation safety sustainable transportation

Dr. Timothy Truster

Assistant Professor PhD: University of Illinois at Urbana-Champaign

Research areas: Computational mechanics, interface mechanics, composite material modeling, stabilized methods, high performance computing

Department of Electrical Engineering and Computer Science

Dr. Daniel Costinett

Assistant Professor PhD: University of Colorado,

Research areas: High efficiency power conversion, energy harvesting, implantable devices, and electric vehicles

Dr. Mark Dean

John Fisher Distinguished Professor PhD: Stanford University

Research areas: Advanced computer systems architectures and structures

Department of Industrial and Systems Engineering

Dr. John Kobza

Professor and Department Head PhD: Virginia Polytechnic Institute and State University

Research areas: Stochastic processes, quality, systems involving risks and uncertainty

in advanced structural and energy materials Research areas: Healthcare optimization and simulation

Engineering Dr. Steven Brooks

and Biomedical

Associate Professor **UT Space Institute** PhD: Catholic University of America, Washington, DC

Research areas: Electronic and

defect properties and evolution

Department of Mechanical, Aerospace,

atomic-level simulations of

Research areas: Atmospheric turbulence, atmospheric dispersion and transport. atmospheric trace gas chemistry, instrumentation, polar studies

Dr. Anming Hu

Assistant Professor PhD: University of Waterloo, Canada

Research areas: Additive manufacturing, nanophotonics, nanomaterials for energy storage and environment application, femtosecond induced nonthermal nanosintering and additive manufacturing for flexible electronics, li rechargeable battery, water treatment, ultrasensitive substrates for surface enhanced optical spectroscopy, femtosecond

laser-nanosurgery and cell transfection

Dr. Caleb Rucker

Assistant Professor PhD: Vanderbilt University Research areas: Robotics, solid mechanics, medical applications, computer-aided surgery

Dr. Adrija Sharma

Research Assistant Professor PhD: University of Tennessee

Research areas: Musculoskeletal biomechanics, experimental and computational methods to study movement disorders

Dr. Eric Wade

Assistant Professor PhD: Massachusetts Institute of Technology

Research areas: Biological signal processing, wearable sensor design, assistive robotics, neuro-rehabilitation, health-care technologies

Department of Nuclear Engineering

Dr. Ondrej Chvala

Research Assistant Professor PhD: Charles University in Prague, Czech Republic

Research areas: Highperformance computing applications to nuclear engineering, reactor core physics, molten salt based nuclear systems

Dr. Jamie Coble

Assistant Professor PhD: University of Tennessee

Research areas: Fault detection, diagnostics, and prognostics; equipment condition assessment; process monitoring for safeguards and control; risk-informed maintenance and control

Dr. Niklas Juslin

Research Assistant Professor PhD: University of Helsinki,

Research areas: Fusion reactor materials plasmasurface interactions, atomistic simulations

Dr. Maik Lang

Assistant Professor PhD: University of Heidelberg, Germany

Research areas: Ion-matter interactions, radiation damage, high-pressure studies, nuclear materials, materials science

Dr. Jae-Hyeok Shim

Research Assistant Professor PhD: Seoul National University, Korea

Research areas: Energy materials, computer simulation, thermodynamics, phase transformation

TENNESSEE ENGINEER • engr.utk.edu











Dr. Joseph Stainback IV Research Associate Professor Joint Appointment with the Y-12 National Security Complex

PhD: University of Tennessee

Research areas: Performing research for the University of Tennessee's Institute for Nuclear Security focusing efforts on five principal thematic areas within the nuclear industry, namely policy, law and diplomacy, education and training, science and technology, operational and intelligence capabilities, and real-world missions while taking a systems engineering approach to these matters

Four new faculty members will join the COE in early 2014. **Dr. Robert Coridan** will be an assistant professor in the Department of Chemical and Biomolecular Engineering. In the Department of Civil and Environmental Engineering, **Dr. Shashi Nambisan** will join as a professor and **Dr. Thanos Papanicolaou** will be the Goodrich Chair of Excellence Professor. **Dr. Janice Tolk** will join the Department of Industrial and Systems Engineering as an assistant professor in February 2014, working from the UT Space Institute.

COE Professors and Collaborators Receive Chancellor's Multidisciplinary Research Award for Engineering and Arts & Sciences Faculty



A multidisciplinary team that includes

two colleges and four departments was

recognized by the Chancellor's Office with

a Multidisciplinary Research Award at the

Chancellor's Honors Banquet Ceremony

on April 8, 2013 for the research project

"Transformational Scintillation Materials

for Neutron and Gamma Detectors and

of Homeland Security had tasked the

group with developing needed radiation

measurement capabilities through a \$2

million grant from the National Science

Foundation (NSF) and Department of

Homeland Security (DHS). In addition to

team mentored many UT undergraduate

and graduate students throughout the

globe and has forged partnerships with

researchers in Germany and Switzerland.

the significant intellectual contribution, the

project, and the results of this research has

been presented at conferences around the

Education Integration." The US Department

The Principal Investigators (PIs) for this five year NSF/DHS ARI award are:

Dr. Laurence Miller, Department of Nuclear Engineering; Dr. Dayakar Penumadu, Department of Civil and Environmental Engineering; and Dr. Charles Melcher. Scintillation Materials Research Center (SMRC)

Other significant contributors include:

Dr. George Schweitzer, Department of Chemistry

Dr. Indraneel Sen, post doc in civil and environmental engineering

Dr. Rohit Uppal, post doc in civil and environmental engineering

Dr. Mariya Zhuravleva, post doc in SMRC, research assistant professor in the Department of Materials Science and Engineering



Dr. Zheng Chang, professor, South Carolina State University (SCSU)

Dr. Ken Lewis, former dean, SCSU

Merry Koschan, research associate, SMRC

Stephen Young, PhD student in engineering science and mechanics

Andrew Mabe, PhD student in chemistry John Auxier, PhD student in chemistry

Matthew Urffer. PhD student in nuclear

Martin Williamson, PhD student in nuclear engineering, currently working at Y-12 in Oak Ridge

The PIs also acknowledge Dr. Andrew Stephan, Steven Wallace, and Dr. Sheng Dai for previous research that contributed to a successful proposal.

Faculty Focus: Dr. Brian Wirth



Dr. Brian Wirth, second from left, talks with, from left, nuclear engineering graduate student Nathan Capps, research scientist Dr. Faiza Sefta, and nuclear engineering graduate student Aaron Selby.

Dr. Brian Wirth joined the College of Engineering to focus on computational nuclear engineering as the ninth University of Tennessee and Oak Ridge National Laboratory (ORNL) Governor's Chair in the summer of 2010. He came to UT from the University of California, Berkeley, where he was a tenured faculty member with a joint appointment at Lawrence Berkeley National Laboratory.

Wirth's main area of research involves combining computational materials modeling with select experimental characterization techniques to better understand the changes that occur in materials used in extreme environments, such as in current nuclear power plants or future fusion reactors.

"I believe that we have been very successful in working with experimental collaborators to better understand the composition of nanometer-sized, copper-rich precipitates that are responsible for reactor pressure vessel embrittlement and determining the safe operating lifetime of our current fleet of nuclear reactors," said

Students at both the undergraduate and graduate levels are actively involved with Wirth in this investigation into understanding the behavior of materials over time.

"I think research and teaching are inherently intertwined," said Wirth. "I strive to provide a rigorous theoretical foundation in my teaching, and then encourage dialogue and questioning of our understanding."

In class, Wirth tries to call on students as much as possible to encourage dialogue, and he also likes to let them know that there are new answers to explore.

"It can be humbling to realize how little we know, but also incredibly satisfying to ask questions about why a material performs as it does, and then devise the research to provide the answers. I hope that I can teach students how to approach the answer that, 'I don't know, but this is how I would attack the problem," "Wirth said.

In addition to working towards a three-dimensional, engineering scale assessment of reactor pressure vessel embrittlement, Wirth and his group are also involved within the Consortium for Advanced Simulation of Light Water Reactors (CASL) to develop highly accurate, three-dimensional models of nuclear fuel performance. Another recently initiated project—jointly funded by the Department of Energy (DOE) Office of Advanced Scientific Computing Research (ASCR) and the Office of Fusion Energy Sciences (OFES)— is an effort to simultaneously develop "bottomup" and "top-down" computational models of the performance of materials subjected to plasma surface interactions.

"I believe this last effort will help lead us to the practical realization of fusion as an energy source," said Wirth.

Outside of his research pursuits, Wirth and his family—his wife, Christine; their two sons, Alden and Cooper; and their two dogs, Roco and Ruby-stay in motion around the Knoxville area-hiking and visiting the nearby mountains, and watching and participating in sports. He is also driven by the future opportunities for the university, COE, and nuclear engineering.

"I am thrilled to be part of the rapid growth and development within the Department of Nuclear Engineering," said Wirth. "I now believe that we are arguably one of the top three or four departments of nuclear engineering in the country, and it is my goal for us to be the top department, and be the place that the nation looks to for answering critical questions about the safety and sustainability of nuclear reactors, and driving the future research enterprise to ensure a sustainable future growth for nuclear power, and the many aspects of nuclear science and engineering."

Research Feature: Dr. Mingjun Zhang



Dr Mingiun Zhanc

Dr. Mingjun Zhang, an associate professor in the Department of Mechanical, Aerospace, and Biomedical Engineering has a long-term goal for his research: to develop fundamental theory and engineering principles for building nanoparticle-based systems that have sensing actuation and decision-making capability for disease diagnosis and treatment. To address the challenges for small-scale propulsion, he also works on bioinspired energy-efficient propulsion systems for robotics.

"Two fundamental questions to be addressed in my research are related to healthcare and energy utilization," Zhang said. "One is about characterization and fabrication of naturally occurring/bioinspired nanoparticles. The other is the development of bioinspired energy-efficient aquatic propulsion systems."

Zhang's initial interest in the clinging properties of the English ivy plant inspired some of the research on nanoparticle-enhanced adhesion. He, along with colleagues, developed an approach to isolate, purify, and characterize nanoparticles secreted from adventitious roots of the English ivy. He sees applications from this discovery as having merit for military and medical applications.

Zhang was also inspired by nature's design principles of energy-efficient swimming and robust attachment mechanisms from several microorganisms, employing principles learned from biology for innovation in propulsion system design for underwater unmanned vehicles and robots.

"We have made several original discoveries about naturally occurring nanoparticles, and biological propulsion mechanisms for microorganisms," Zhang said. "In 2008, we discovered that ivy secretes nanoparticles for surface affixing, and that the ivy nanoparticles might be used for sunscreen to replace metal-based nanoparticles. In 2010, our group found that the highly elastic adhesive secreted from sundew plants could be used to create nano-scaffolds for tissue engineering. In 2011, we discovered the

unique multiflagella-based swimming mechanism of Giardia, and proposed a bio inspired energy-efficient propulsion mechanism for micro/nano-robots. In 2012, our group discovered that the curved swimming trajectories were more energy efficient than linear trajectories for whirligig beetles, which explains why they are more often observed in nature. Recently, we discovered that the nanoparticles secreted from a carnivorous fungus can stimulate immune response, and kill tumor cells. We have developed a sitting drop culture method to massively produce the fungus-based nanoparticles. We have also developed an approach to produce tea nanoparticles from tea leaves for drug delivery and therapeutics."

Zhang's research has drawn increasing recognition internationally. Results from his research have been well archived in leading journals, including *Proceedings of National Academy of Sciences, Advanced Functional Materials, Journal of the Royal Society Interface, PLoS Computational Biology, Nano Letters, Nanomedicine, Journal of Nanotechnology, Journal of Biomedical Nanotechnology, and many others. His projects on naturally occurring and bioinspired nanoparticles are supported by three National Science Foundation (NSF) Awards, one Army Research Office (ARO) award, and an ARO Defense University Research Instrumentation Program (DURIP) award. His research on micro/nano-scale propulsion was sponsored by the prestigious Office of Naval Research (ONR) Young Investigator Program (YIP) award and a new ONR DURIP award in 2013.*

While the recognition and funding support are gratifying, it is also extremely important to Zhang that students are also included in all of his research.

"Undergraduate and graduate students are heavily involved in research projects in my lab," Zhang said. "In general, each funded project in my group has at least one undergraduate student contributing to experimental studies or computer simulation."

Special Feature

Department of Civil and Environmental Engineering Receives In-Kind Software Grant from Siemens PLM Software



Students (front row, left to right) Yuan Jing, Jonathan Weigand, Geoff Goodmiller, and (standing, left to right) Jacob Holloway, along with Dr. Stephanie TerMaath, work with the new Siemens PLM Software.

UT students will soon get the chance to gain practical engineering analysis skills using technology that companies worldwide rely on to design sophisticated products for aerospace, mechanical, biomedical, and other industries.

The classroom enhancements are made possible through an in-kind software grant with a commercial value of \$2.7 million from Siemens PLM Software. The product lifecycle management (PLM) software helps users make better products using complex modeling techniques. The in-kind grant includes FemapTM software with NXTM Nastran* software for finite element modeling.

Students in Department of Civil and Environmental Engineering Assistant Professor Stephanie TerMaath's three classes will use the software to investigate fundamental concepts in structural engineering; for example, how applying different boundary conditions such as loads and supports to a part affects structural performance.

"This technology allows class to be very hands-on," said TerMaath. "We can interactively investigate customizable problems very quickly instead of me just showing them pictures in a PowerPoint presentation. Use of this software provides a much improved learning environment by providing the flexibility to explore an unlimited number of configurations in real time based on student questions."

The software will impact close to a hundred students through TerMaath's classes and research, and is available through UT's app to anyone at the university who wants to use it.

TerMaath, who used the technology as an engineer at Boeing, Lockheed Martin, and Applied Research Associates, said this grant gives students access to technology that companies around the world use every day to develop innovative solutions in a wide variety of industries, including automotive, aerospace, defense, machinery, medical, and electronics.

Training with this software also makes students highly marketable for advanced technology jobs.

"This software is very user-friendly and is widely used by industry," said TerMaath. "Codes can be very frustrating to learn, and students end up spending more time figuring out which button to push instead of working on their analysis. This software eliminates that problem and allows us to focus on the engineering fundamentals."

TerMaath also will use the PLM software for her own multidisciplinary research in computational structural mechanics which spans problems in civil, aerospace, mechanical, and biomedical engineering.

Siemens' academic program delivers PLM software technology to more than a million students from grade school to graduate school around the world each year.

"Siemens PLM Software is dedicated to equipping today's students with the knowledge and skills necessary to serve in the next generation of engineers. UT serves a key role in filling the science, technology, engineering, and mathematics job skills gap and producing highly qualified future employees," said Bill Boswell, senior director, partner strategy, Siemens PLM Software.

Siemens PLM Software is a leading global provider of product lifecycle management software and services with seven million licensed seats and more than seventy-one thousand customers worldwide. Femap and NX are trademarks or registered trademarks of Siemens Product Lifecycle Management Software Inc. or its subsidiaries in the United States and in other countries. Nastran is a registered trademark of the National Aeronautics and Space Administration. For more information, visit the Siemens website at http://www.siemens.com/entry/cc/en/.

Outreach Update

Global Initiatives: Engineering Students Travel to Costa Rica, Madrid, and Peru



COE students visit the Irazu volcano in Costa Rica. From left in back are Michelle Morin, Victoria Vest, Vick Singh, Matt Lloyd, and Kiley White. Megan Ferrell is in the foreground.

Three trips organized by the College of Engineering (COE)
International Coordinator Judith Mallory allowed participating
students to experience engineering in other parts of the world
starting in the spring of 2013. Mallory oversaw an Alternative Spring
Break in Cartago, Costa Rica; an end-of-semester visit to Madrid,
Spain; and an Alternative Summer Break trip to Cuzco, Peru.

Mallory accompanied nine students—Faith Frye, Avik Purkayastha, Vick Singh, Matt Loyd, Victoria Vest, Emma Hollman, Megan Ferell, Kylie White, and Michelle Morin—to Cartago, Costa Rica, in March, 2013, for service projects each morning and cultural activities in the afternoons.

The students divided their time between two orphanages for the daily service projects. The first is a long-term home to more than one hundred children; the other is a home in an urban setting with thirteen children who live there on a temporary basis. COE students conducted classroom science and engineering experiments, which were enjoyed by the resident children.

The group also had two small building projects at each location. At the campus facility, COE students constructed a small stage for use in an outdoor gymnasium. At the second location, the students built a fence to protect a vegetable garden. For both projects, students worked without power tools and used less-than-ideal, sometimes recycled, materials.

Cultural activities in Costa Rica included a walking tour of Cartago, which is the home of the most significant basilica in Central America, the Basilica de Nuestra Señora de los Angeles (Our Lady of the Angels Basilica); a visit to the artisans' market and produce/meat market; a dance class; two Spanish language lessons; a visit to the Irazu volcano and a trip to the rain forest of the Tapanti National Park.

COE students Zachary Wood, Kevin Gayler, and Jason McDonald participated in the trip to Madrid, Spain, from May 11-18, 2013, at the end of the spring semester. The Council on International Education Exchange (CIEE) served as the provider for the trip. The trip exposed the group to Spanish culture with a strong emphasis on engineering in another country.

The UT students began their week with lab tours and lectures at the Universidad Carlos III Madrid in Leganes. Later, the group took



COE students help construct a research platform with staff from the Manu Learning Center in Peru. From left, foreground, are Mark Nichols, Shivam Zaveri, Stephanie Kerrigan, Drew Keller, Nathan Siler, and Bryan Medina.

a three-hour bike ride that included a visit to one of the largest parks in Europe, which is constructed over the top of a highway. Afterward, they attended a lecture on alternative energy sources, given by a Spanish engineer/entrepreneur.

A cultural excursion took the trio to the town of Segovia, where they viewed aqueducts constructed in the first century by the Romans, as well as the Castle of Queen Isabella's Court, erected in the twelfth century.

Near Segovia, they visited the Instituto Nacional de Tecnica Aerospacial (INTA), a contingent of NASA. Its budget of more than \$150 million comes from the Spanish Ministry of Defense and from its own projects with industry. Some of the scientists and engineers at INTA design and build unmanned craft used in drone strikes, and several of these craft were on display. At the site's astrobiology facility, the group viewed a lab that replicates rivers believed to have once existed on Mars.

Six COE students traveled to Peru August 10-20, 2013. They visited the city of Cuzco and the Manu Biosphere Reserve in the Amazon Rainforest, both designated UNESCO World Heritage Sites. Students involved were Stephanie Kerrigan, Bryan Medina, Mark Nichols, Drew Keller, Shivam Zaveri, and Nathan Siler.

The host organization, Conservation Research and Environmental Education towards Sustainability (CREES), asked for help in the design and construction of an observation platform to be used by researchers collecting data at a remote lake. In addition to review by students, COE professors Dr. John Schwartz, Dr. James Mason, and Dr. Masood Parang provided assistance in the design.

The service project site was within the Amazon Rainforest and accessible only by boat. Students helped set posts in concrete and moved river sand and rock to the site for use in the construction. They also had a two-hour hike to a primary forest, a significant focus of CREES since portions of the area suffer from deforestation.

Cultural activities included a walking tour of Cuzco, the historical capital of Peru with an elevation of 11,200 feet. The group also traveled four hours by car and train to the historic site of Machu Picchu, the "Lost City of the Incas." A site specialist pointed out construction techniques and discussed daily life in the ancient city.

For more information, visit http://www.engr.utk.edu/global.

Students Enjoy Faculty-led Study Abroad Programs



Outreach Director Dr. Roger Parsons (far left) and EECS professor Dr. Michael Berry (left) with the Engineering in London student group.

Inspired by the Chancellors Honors Program decision to require an intercultural or international experience for honors students, the Office of Engineering Outreach began a targeted effort to increase engineering-student participation in study-abroad programs by offering faculty-led courses.

The effort has shown healthy results. In the 2009-2010 school year, eighteen students participated in study abroad, but only three took engineering courses. Fifty-eight COE students participated in 2011-2012, with twenty-nine taking engineering courses. For 2012-2013, a total of eighty-five COE students participated, with forty-seven taking engineering courses.

For 2013, Engineering in London combined two programs from the summer of 2012, with students taking two out of three course offerings in a five-week format. Courses were: Development of Computing, taught by Dr. Michael Berry, professor in the Department of Electrical Engineering and Computer Science; Thermodynamics, taught by Dr. Roger Parsons, director of Engineering Outreach; and an electrical engineering course, Electromechanical Components, taught by Dr. Paul Crilly, associate professor in the EECS department.

Students experienced multiple trips to sites related to the Industrial Revolution and the development of computing, providing context and enrichment opportunities.

"The London trip is amazing," said James Allred, a junior in computer science. "There is a lot to experience and discover."

A new course for 2013 was Sustainable Energy Engineering, taught by Dr. Madhu Madhukar, an associate professor in the Department of Mechanical, Aerospace, and Biomedical Engineering (MABE) and based in Dublin, Ireland. Ireland produces a significant portion of its energy from wind turbines, so this class visited wind farms as part of the curriculum.

"This was a great opportunity to see this important technology up close and actually interact with the people who implemented it," said Madhukar.

In another new trip for 2013, Dr. Wes Hines, Charles P. Postelle Professor and head of the Department of Nuclear Engineering, led twelve students on a tour of nuclear facilities in Prague, Czech Republic, during a mini-term program abroad in May of 2013. Research Assistant Professor Dr. Ondrej Chvala, who is from Prague, also accompanied the group and proved to be an invaluable tour guide.

"This study abroad program will be a yearly event and should be the highlight of any student's nuclear-engineering education experience at UT," said Hines, who gave a seminar during the trip at the Czech Technical University of Prague.

During their stay, the students participated in a reactor-physics training program for which they received upper-division laboratory credit in the nuclear engineering program. The class had a first-hand look at a uranium yellow cake processing facility; two Czech research reactors at the country's national laboratory; and reactors at the Temelin Power Station.

Another initiative that resulted in a significant engineering study-abroad experience in 2013 was the UT COE/Department of Mechanical, Aerospace, and Biomedical Engineering partnership with the Polytechnico de Torino (PdT), in Turin, Italy. Six mechanical engineering seniors spent their final semester in spring of 2013 at PdT. Turin is the home of FIAT, and PdT has a significant reputation in automotive engineering and design.

Water Resources and Climate Change in the European Alps (now a joint trip with the University of Alabama) was also offered again in 2013, led by Dr. Glenn Tootle of the civil engineering department and based in Innsbruck, Austria. This course offered technical elective credit that was applicable to most engineering curricula.

For information, visit http://www.engr.utk.edu/outreach.



COE Students at the Temelin Nuclear Power Plant in the Czech Republic

COE Supporters Wayne and Barbara Coleman

Welcome EcoCAR2 Team to California



EcoCAR 2 team faculty advisor Butch Irick (left), Michael Potts, and John Stevenson enjoy the event at the home of Wayne and Barbara Coleman.

When it comes to the University of Tennessee College of Engineering, Dr. Wayne Coleman (PhD/NE'69) and his wife Barbara have always generously served and promoted the mission of the college. As a student, Coleman was president of the Student Government Association, a member of Tau Beta Pi Honor Society, Sigma Chi Fraternity, and a Torchbearer (by the way, he also played on the football team). Today, he serves as a member of the College of Engineering's Board of Advisors. The Colemans' Volunteer spirit was apparent again when they hosted a group of alumni, students. and faculty for a reception at their home in Solana Beach, California, on the evening of May 22, 2013. The event was an opportunity for UT engineering alums in the San Diego area to gather and connect. It was also an opportunity for those alumni to meet a team of talented students and faculty who had been participating in the prestigious EcoCAR2 competition in nearby downtown San Diego.

The setting of the reception on the back lawn of the Coleman's home provided a spectacular view of the Pacific Ocean. After the guests had arrived, everyone mingled and were introduced to each other, then settled down to a delicious outdoor dinner. Alumni who attended the reception included Dr. Calvin Burgart (*PhD/NE '69*) and his wife Michelle (*JD/Law'71*), Howard Chambers (*BS/ME'64*), Richard Rosenberg (*BS/ME'54*) and his wife Ellen, and John Stevenson (*MS/EE'60*) and his wife Dalys. Future UT engineering student Stephen Kwan and his mother Lina also attended the reception.

After dinner, Dr. Butch Irick of the Department of Mechanical, Aerospace, and Biomedical Engineering, who is a faculty advisor to the UT Knoxville EcoCAR2 team, spoke about the competition and his team's role in it.

"The competition's mission is a vital one: offer an unparalleled hands-on, real-world experience to educate the next generation of automotive engineers. The competition challenges fifteen universities across North America to reduce the environmental impact of a Chevrolet Malibu without compromising performance, safety, and consumer acceptability," said Irick.



Barbara Coleman (left) and Wayne Coleman (right) at the EcoCAR2 event at their home in Solana Beach. California.

After taking a few questions, Dr. Irick, his co-advisor Dr. David Smith, and the students presented the Colemans with official EcoCar2 Team Tennessee polo shirts and thanked them for hosting the event.

As the evening drew to a close, Wayne and Barbara remarked, "It was really great to see the alumni that came this evening, but also the interaction we got to have with the students and faculty was a helpful experience. After all, the students are our future."

College of Engineering Spring 2013 Commencement

The College of Engineering Spring 2013 graduation ceremony took place on Wednesday, May 8, 2013, with two hundred eighty-four engineering graduates participating in the ceremony. Approximately two thousand six hundred parents, friends, and relatives attended the event, which took place in Thompson-Boling Arena on the UT-Knoxville campus at 11:30 a.m.

Dr. Wayne T. Davis, dean of engineering, and Dr. Jimmy G. Cheek, University of Tennessee chancellor, led the academic procession that signaled the beginning of the ceremony. The procession included the UT president, associate deans, department heads, and faculty representatives.

Dwight Hutchins, the Global Managing Director of Washington, D.C.-based Accenture's Health and Public Service Strategy practice, was the ceremony's keynote speaker. Hutchins, a 1986 UT chemical engineering alumnus, leads project teams around the world at Accenture, helping clients define their strategy, reorganize, increase effectiveness, reduce costs, and transform their operations to become high performing public sector organizations.

Hutchins received an MPA from the John F. Kennedy School of Government at Harvard University, an MBA in marketing and finance from the J.L. Kellogg Graduate School of Management at Northwestern University, and a BS in chemical engineering from here at the University of Tennessee. He co-oped at the Dupont plant in Old Hickory, Tennessee, and after graduating from UT, he began working at Procter and Gamble in Jackson, Tennessee.

Prior to Accenture, Hutchins consulted with McKinsey & Company and Bain & Company, focusing on marketing strategies for Fortune 500 banks and business products companies.

Hutchins joined Accenture seventeen years ago to build a strategy practice focused on improving the performance of government agencies. Over the course of building this practice he has made contributions across a number of areas, including homeland security, healthcare reform, economic development, and student loans.

In healthcare, he worked with the Commonwealth of Massachusetts to develop its strategy and performance plans and assisted with the launch and improvement of their Health Insurance Exchange, an agency that has served as a model for national healthcare reform.

At the federal level, Hutchins has led teams that have developed and implemented strategies to increase international trade and reduce delays at the border while increasing security. Specifically, he helped the Department of Homeland Security develop its plan for protecting US ports from threats and risks, including those posed by terrorists and weapons of mass distruction. This plan became part of the White House's Homeland Security Council policy and was hand-delivered by the department to every member of Congress. Internationally, he has led efforts for infrastructure investment in developing countries on behalf of the US as well as the World Bank and the United Nations.

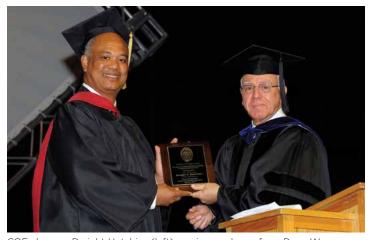
Hutchins also led the initial phases of transforming the Federal Student Aid (FSA), the US Department of Education's one hundred billion per year program, into a world-class financial services operation and the government's first performance based organization (PBO). Accenture designed, built, and runs the system that originates all the federal grants and loans in the country. The Congressional Budget office has determined that this service provided via the department versus the banks saves taxpayers over \$60 billion while improving services to students.

Dr. Joseph DiPietro, president of the UT System, was also a special guest speaker at the event. He congratulated the graduates on their achievements, wished them a successful career, and expressed pride in the College of Engineering's accomplishments.

The college's top students, Jordan Richard Kreitzman, an aerospace engineering major, and Scott Michael Strickler, a biomedical engineering major, were recognized. Three National Academy of Engineering (NAE) Grand Challenge Scholars were also saluted during the ceremony for completing additional challenging academic requirements as stipulated by NAE: Morgan



Engineering students celebrate during the College of Engineering's Spring 2013 Commencement Ceremony.



COE alumnus Dwight Hutchins (left) receives a plaque from Dean Wayne T. Davis in recognition of his role as keynote speaker at the college's 2013 commencement ceremony.



COE graduates are commissioned into the US Air Force during the

Raney Baltz, a chemical engineering major; Ethan Zachariah Cansler, an aerospace engineering major; and Katelyn Elizabeth Hasse, a nuclear engineering major.

In addition to the commencement activities, the event also featured an ROTC ceremony, where Lt. Colonel Brian Delamater, Commander of the Air Force ROTC Detachment 800 and a professor of aerospace studies at UT, officially commissioned two COE graduates into the US Air Force. The new second lieutenants are Joseph Andrew Applebee and Thomas David Winter.

Beginning in the spring of 2004, the university's colleges have been conferring diplomas during smaller, more individualized graduation events.

College of Engineering Celebrates 175 Years of Engineering at UT with Gala Event



Tennessee Governor Bill Haslam (center) with (left to right) Eileen and Chancellor Jimmy G. Cheek; Ann and John Tickle; and Sylvia and COE Dean Wayne To Davis at the college's 175 Years of Engineering gala reception.



CEE professor Ed Burdette and his wife, Patsy, greet guests at the reception.

uest speaker Celeste Baine talks about engineering education

The College of Engineering celebrated 175 years of engineering instruction at the University of Tennessee with a gala event on Friday, October 4, at the Knoxville Convention Center. A crowd of over five hundred and fifty engineering alumni, faculty, and staff gathered to recognize this significant milestone.

At the elegant reception, guests enjoyed the opportunity to visit with all seven COE department heads and connect with former classmates and professors. Tennessee Governor Bill Haslam dropped by and greeted several attendees, including John and Ann Tickle, who were special guests at the event. The Tickles provided generous support for the new John D. Tickle Engineering Building, which was dedicated earlier that day in an impressive outdoor ceremony.

Other special guests at the event included family and friends of John and Ann Tickle from around the country. Representatives from professional engineering organizations included Jim Froula, executive director emeritus, and Curt Gomulinski, executive director, of Tau

Beta Pi, the national engineering honor society, which is housed on the UT campus in the Dougherty Engineering Building; Marc Apter, president, the Institute of Electrical and Electronics Engineers; Larry Satkowiak, vice president, the Institute for Nuclear Materials Management; and Stacey DelVecchio, president of the Society of Women Engineers. Numerous members of the college's Board of Advisors were also in attendance.

After the reception, guests moved into the main ballroom, highlighted with dramatic lighting donated by UT alumnus Michael Strickland, the CEO of Bandit Lites, for the dinner and program. UT Board of Trustees member and industrial engineering graduate Spruell Driver was emcee for the event, which featured remarks from Chancellor Cheek and Dean Davis.

Guest speaker Celeste Baine, a biomedical engineer, director of the Engineering Education Service Center in Oregon, and the award-winning author of over twenty books on engineering careers and education, provided educational

entertainment during her presentation, titled *The Wow! Is Engineering*.

A video on the history of engineering, introduced by veteran UT faculty member and chemical engineering emeritus professor Dr. John Prados, a member of the college's planning committee for the event, received an enthusiastic ovation from the crowd.

The surprise came at the end of the evening, when John Tickle took the stage and announced that he and donors Chad and Ann Holliday, Joe and Judy Cook, and Eric and Elaine Zeanah had established the Wayne T. Davis Chair in Engineering. The chair was named in honor of Davis, the current engineering dean.

The gala was the final event in a two-day celebration of engineering that included a dinner with fireworks honoring the Tickles on Thursday, October 3; the dedication and ribbon cutting at the John D. Tickle Engineering Building on October 4; and the luncheon program featuring alumni and students to celebrate the 40th anniversary of Engineering Diversity Programs that same day.



Dean of Engineering Wayne Davis addresses the crowd at the gal



John Tickle (right) announces the creation of the Wayne T. Davis Chair in Engineering at the 175 Years of Engineering at UT gala



Dr. John Prados introduces the History of Engineering at the University of Tennessee special video presentation.



IT alumnus Spruell Driver serves as the emcee for the 175 Years of Engineering at UT gala



Enjoying the 40th anniversary luncheon (left to right): Trevor Williams, Tiffany Grant, former EDP director James Pippin, Darius James, and Erica Echols.

EDP Celebrates 40th Anniversary

On Friday, October 4, at noon after the dedication ceremony, a group of engineering alumni, faculty, students, and special guests gathered at The Foundry, where the College of Engineering hosted a luncheon honoring the 40th anniversary of its Engineering Diversity Programs (EDP).

The crowd of over one hundred and twenty attendees was welcomed by COE Dean Wayne T. Davis, and Chancellor Jimmy G. Cheek also offered remarks recognizing the 40th anniversary of the college's diversity programs.

Rodney Brooks (*BS/ME '85. Group 8*), a mechanical engineering alumnus and vice president of ABB in Alamo, Tennessee, also spoke, recognizing the origins of engineering diversity initiatives that began with the Minority Engineering Scholarship Program (MESP) which was established by the college in 1973 under the direction of the late Fred Brown, Jr.

"The university has shown its greatness in the College of Engineering through its commitment to the diversity programs over the past forty years. To be able to celebrate forty years of diversity demonstrates the unwavering commitment by the leadership at UT," said Brooks. "The future is bright to be a Top 25 university through the efforts of the engineering leadership along with the campus administration. Seeing the new Fred Brown Dormitory validates his efforts to provide opportunities to many students whose lives were impacted in a very positive manner by being a part of the College of Engineering. I am very proud to be a VOL!"

Special tributes were given to the National Society of Black Engineers; the National GEM Consortium; the EDP summer precollege programs; the Society of Hispanic Professional Engineers; and the Tennessee Louis Stokes Alliance for Minority Participation.

The two previous directors of the program, Brown and James Pippin, also received recognitions. Pippin was present at the event

and graciously acknowledged the current EDP director, Travis Griffin.

"An exciting event to behold was the return of the first group of students recruited by Mr. Fred Brown and those whom I recruited when they converged for the 40th Anniversary Celebration of the Minority/Diversity Engineering Programs," Pippin said. "The establishment of the James T. Pippin Diversity Engineering Scholarship and the increased number of PhD degrees in medicine, engineering, and law as well as MBA degrees for underrepresented students as a result of the EDP, I consider to be two of my greatest contributions to the College of Engineering."

Special guests at the event included Cavanaugh Mims (*BS/NE* '86, Group 9), a nuclear engineering graduate and president of the UT Alumni Board of Directors, and his wife, Telicia; and Dr. Mark Dean (*BS/EE* '79, Group 2), co-inventor of the personal computer, former IBM Vice President and Fellow, and the new John Fisher Distinguished Professor in Electrical Engineering and Computer Science, and his wife, Denise, along with his parents James and Barbara Dean.

"The 40th Anniversary Luncheon for the Engineering Diversity Programs brought me back to the place and connected me with the people where engineering and I became one," said Tiffany Grant, CEO of TEGrant Consulting and a member of MESP Group 25. "I walked up to the third floor of Perkins Hall and went straight to the lecture hall. Filled with emotions of gratitude and pain, I said, 'STATICS!'-that was my beginning, and I am grateful to Mr. James T. Pippin, the engineering diversity initiatives, and Group 25 for the support, love, encouragement, and access over the past sixteen years. The importance of what I received is almost impossible to put into words, but I hope for all students to be recipients."



EDP Director Travis Griffin addresses the crowd at the 40th anniversary celebration.



Michael Sawyers (right) presents the Fred D. Brown Jr. Outstanding Service Award to Darius James at the EDP 40th anniversary luncheon.



Dr. Mark Dean and Denise Dean (center) at the 40th anniversary of EDP with (left to right) EECS professor Dr. Doug Birdwell; Mark Dean's parents, James and Barbara Dean; and Angela Blakely.



Mea Reeves, Rhonda Collier, and Cheryl Sawyers at the EDP 40th anniversary event.

Engineering Diversity 2013 Summer Programs



Students start day one of the eVOLS9 program.



CBE professor Dr. Siris Laursen explains engineering design elements to participants in the Eastman HITES program.



Dr. Richard Bennett (far right) presents certificates of achievement to AT&T MITES program participants.

For more than twenty-five years, the College of Engineering has hosted summer engineering experiences for seventh through twelfth graders. During the summer of 2013, the college hosted five sessions, including two new summer initiatives for rising ninth and tenth graders. Each session kicked off with an orientation for students and parents, housing accommodations at Hess Residential Hall, and a closing awards ceremony.

The 26th annual Middle School Introduction to Engineering Systems (MITES) commenced on June 16-21, 2013, with thirty-one rising seventh and eighth grade students. From day one to four, the "dyno-MITES" participants engaged in "Engineering 101" with Dr. Jenny Retherford, a lecturer within the Department of Civil Engineering; "Engineering Design" with Dr. Chien-fei Chen and Erin Wills of the Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks (CURENT); and "Engineering Discovery" with Betsy White of the Engineering Fundamentals program.

The dyno-MITES participants discovered new engineering experiences through activities titled "Simple Machines," "Tennis Buggy Cars," "Gummy Bear Towers," and "Hover Puck Shuffleboard." Dyno-MITES participants were divided into groups of two to three and worked on engineering design projects focused on green energy. Participants worked in teams to design, construct, and present model houses and cars that operated on solar energy. The program provided an engineering field trip to the American Museum of Science Energy as students learned the history behind Oak Ridge, the first atomic bomb, how nuclear power works, and more. The week was one full of laughter, competition, and fun.

After surveying the dyno-MITES participants, 100% are interested in pursuing a career in engineering. The participants rated "Engineering 101" with Retherford as the best experience.

The first Engineering Volunteers for Ninth Graders (eVOL9) kicked off on June 23-28, 2013, with thirty-one rising ninth grader students, of which 52% were past MITES participants. Battelle and the Tennessee Science, Technology, Engineering, and Math (STEM) Innovation Network sponsored the 2013 eVOL9 program. The purpose of eVOL9 is to engage students in hands-on engineering activities, ACT math preparation, and help them learn the engineering design process.

From day one to day four, the eVOL9 participants engaged in "Introduction to Engineering" with Retherford; "ACT Math Preparation" with Michael Gilbert, lecturer within mathematics; and "Engineering Design" by Travis Griffin.

The eVOL9 participants engaged in experiments featuring newspaper bridges, global warming, marshmallow catapults, and aerodynamics. Gilbert provided an introduction to ACT math through workshops and workbooks focused on pre-algebra, elementary algebra, and intermediate algebra. Based on pretest and post-test assessment, 71% of the participants improved their pre-ACT math scores by 25%.

The eVOL9 participants were divided into groups of three to four and worked on engineering design projects focused on strength of materials. Participants were introduced to the engineering design process by working on teams to design and construct chairs that would support a minimum weight of two hundred pounds. The materials provided were three twenty by thirty inch pieces of foam board, one roll of duct tape, and one bottle of Elmer's glue. In addition, participants developed and presented a PowerPoint presentation outlining their chair's engineering design process and a commercial to market their chair to their peers, faculty, sponsors, and special quests.

On Thursday, eVOL9 students participated in a special presentation on STEM Careers and competed in a "Candy Car Competition" sponsored by Boeing. The program provided an engineering field trip to Alcoa Aluminum in Alcoa, Tennessee, as students learned the history behind Alcoa and the aluminum engineering design process, took an official plant tour, and more.

After surveying the eVOL9 participants, 97% are interested in pursuing a career in engineering. The participants rated the best experiences as "Engineering Design" and "ACT Math Preparation."

The first Engineering Volunteers for Tenth Graders (eVOL10) took place July 7-12, 2013, with twenty-eight rising tenth graders, of which 32% were past MITES participants.

The purpose of eVOL10 is to provide an introduction to chemistry, ACT math preparation, and show the application of math and science in the engineering design process. From day one to day four, the eVOL10 participants engaged in "Chemistry 101," instructed by Dr. Brian Long, assistant professor, and Dr. Michael Best, associate professor, both from the UT chemistry department; "ACT Math Preparation" by Gilbert; and "Engineering Design" by Griffin.

Gilbert started off the program by providing ACT Math review through workshops and workbooks focused on pre-algebra, elementary algebra, intermediate algebra, coordinate geometry, plane geometry, and trigonometry.

The eVOL10 participants were introduced to chemistry through lectures and experiments featuring atoms, molecules, compounds,

reactions, and more. The participants' lab experiment with chemical reactions included the use of a balloon, sodium bicarbonate, acetic acid, and a tape measure. The participants tested the ratios of sodium bicarbonate, acetic acid, and water that yielded the most CO2 (carbon dioxide). Students used tape measurers to measure the balloon's radius after all the CO2 was released into the balloon. With these calculations, the participants were able to determine which reaction would be best for their chemical car design project.

The chemical car design project introduced the engineering design process, allowed students to work in teams to brainstorm, design, build, test, and improve a car powered by a chemical reaction. The materials provided were K'Nex materials, one roll of duct tape, and a twenty fluid-ounce water bottle. In addition, participants developed and presented a PowerPoint presentation outlining their car's engineering design process and a commercial to market their car to their peers, faculty, sponsors, and special guests.

The program provided an engineering field trip to the Proctor & Gamble (Duracell) plant in Cleveland, Tennessee, where students learned the history behind the company and the battery design process, took an official plant tour, and more.

After surveying the eVOL10 participants, 100% are planning to pursue a career in engineering. The participants rated the chemical car design project as the best experience of the week.

The college hosted two sessions of the 13th Annual High School Introduction to Engineering Systems (HITES) program, one sponsored by Eastman and one by Bechtel.

Eastman HITES was hosted July 14-19, 2013, and Bechtel HITES on July 21-26, 2013, providing engineering immersion to fifty-eight participants from nine states. The purpose of the HITES program is to provide rising eleventh and twelfth grade students an opportunity to explore engineering and campus life at the University of Tennessee.

From day one to day four, the HITES participants engaged in activities titled "Engineering Discovery," "Admission 101," "Financial Aid/Scholarships 101," "Campus Life Experience," and "Engineering Design Project."

Each HITES session visited all seven departments of the college, with faculty guides and hosts including: Dr. Stephanie TerMaath, civil and environmental engineering; Adam Hardebeck, electrical engineering and computer science and CURENT; Dr. Rupy Sawhney, industrial and systems engineering; Carlos Gonzales, materials science and engineering; Dr. Toby Boulet, mechanical, aerospace, and biomedical engineering; and Dr. Lawrence Heilbronn, nuclear engineering.

Each session participated in college life programs featuring an introduction to the College of Engineering with Lisa Byrd and Margie Russell from the Engineering Advising Office; financial aid and scholarships with Tim Woods in the UT Office of Financial Aid; and campus recreation at the Recreational and Fitness Center. Dr. Cong Trinh and Dr. Siris Laursen, assistant professors in chemical and biomolecular engineering, hosted the engineering design activity.

Eastman HITES activities were divided into two sets of projects: energy catalysis, to develop finding a new way to transform solar energy into fuels; and biocatalysis, to develop a biological device to turn bacterium green or make it have a certain scent.

Betsy White, a lecturer in Engineering Fundamentals, hosted the Bechtel HITES "Engineering Design Project." Students were divided into groups of three to four to build a band by constructing a set of musical instruments from common materials. In addition, Eastman and Bechtel HITES participants presented a PowerPoint presentation outlining their engineering design process and project outcomes to their peers, faculty, sponsors, and special guests.

The programs provided an engineering field trip to the Eastman Chemical Company in Kingsport, Tennessee, and the American Museum for Science and Energy in Oak Ridge, Tennessee, as students learned the history behind the programs, and had the opportunity to network with engineers and interns, take official tours, and more.

After surveying the both session participants, 85% are planning to pursue a career in engineering. The participants rated the "Engineering Design Project" and "Engineering Discovery with Departments" activities as the best experiences.

Special Feature: MABE Heads Join Together to Create Endowment





Dr. Bill Hamel

Dr. Matthew Mench

William R. "Bill" Hamel, longtime professor and head of the University of Tennessee, Knoxville's Mechanical, Aerospace, Biomedical Engineering (MABE), stepped down from that position at the end of July 2013. He will continue working for the College of Engineering on various research initiatives. During his time as department head, the MABE program has become known for its studies in fuels cells, hybrid electric vehicles, robotics, and emerging nanobioscience just to name a few. MABE also includes faculty, graduate programs, and research located at the University of Tennessee Space Institute in Tullahoma, Tennessee.

"It was an amazing nine years that seemed to go by very quickly," Hamel said. "The success we experienced could not have been realized without an ongoing great faculty and staff, super bright students, support from the UT administration and from industry."

On August 1st, Hamel officially passed the baton to the new head of MABE, Matthew Mench. Mench received his BS, MS, and PhD degrees, all in mechanical engineering, from Pennsylvania State University. After a post-doctoral assignment, he began his career as an assistant professor in the Department of Mechanical & Nuclear Engineering at Pennsylvania State University. Mench joined the faculty of MABE at UT in 2010 as a professor and the Condra Chair of Excellence in Energy Storage and Conversion. Mench also has a joint faculty appointment with Oak Ridge National Laboratory (ORNL) and has a joint courtesy faculty position with the Department of Chemical and Biomolecular Engineering.

"I am really excited to be taking on this role of MABE Department Head", said Mench. "The football program uses the analogy of building their program brick by brick. Using that same analogy here, we already have a great foundation in place to continue a great department thanks to all the work Dr. Hamel did as department head."

The two men have such a passion for the MABE program that they jointly established an endowment in July to benefit the department's business management functions in perpetuity.

"Bill and I believe strongly in the continuing mission of this department," said Mench.

Dr. Hamel could not agree more.

"That's not just sentiment; Matthew and I have invested our careers in enhancing the education of our future engineers. Hopefully this will encourage others to give back to a program that continues to bless us every day," Hamel said.

For information on how you can give to the MABE Department Head's Endowment or establish your own legacy, email the Engineering Development Office at engrdev@utk.edu or call 865-974-2779.



"I am a senior studying civil engineering and Spanish at the University of Tennessee. I chose UT for its excellence in engineering, and with graduation in the fall of 2013 quickly approaching, I can confidently say that my undergraduate education has put me on the right track to a successful and enjoyable career.

I feel honored and humbled to have been awarded the Charles Edward Ferris Scholarship for leadership in campus and community organizations. Receiving this scholarship allows me to devote less effort to the financial obligations of higher education and more to my studies. One day, I hope to be able to give back to the University of Tennessee just as the Charles Edward Ferris Scholarship has so graciously given to me."

John Scobey '13 Charles Edward Ferris Scholarship Recipient

aspiration

Invest in the future. Support a student's dream. Learn how you can eliminate a student's financial barrier to a world-class college education by investing in a student scholarship.

Call 865-974-2779 or visit engr.utk.edu/give



Alumni Profile: Jamie Thomas



Jamie Thomas

Jamie Thomas (BS/CS '85), a general manger with international corporation IBM, got interested in engineering early through the influence of her father, who was an electrical engineer and was a textile engineering major at Georgia Tech.

Thomas, who was born in Louisville, Georgia, and grew up for the most part in Chattanooga, saw her father's interest in information science broaden within his career in the textile industry, and with his encouragement she chose to major in computer science at UT.

"The software engineering field was not well understood when I was in high school, but I was interested in science in general and decided to give it a try in college," Thomas said. "UT had a solid computer science program with the College of Arts and Sciences at that time. I also was offered a first year scholarship as a valedictorian and I later won an upper class Roddy Scholarship."

Thomas enjoyed the people she met on the university's campus, particularly those in the computer science program who already had workforce experience coming back to school for the second round to major in the discipline. Thomas also co-oped with the Department of Energy in Oak Ridge.

"The co-op job is one of my most memorable experiences with UT and it really enabled me to be more competitive when I graduated," Thomas commented. "The faculty were also great at the university-I was a math minor as well as a computer science major. The faculties in both departments were dedicated to the students and to learning overall."

Thomas was a College of Arts and Sciences top graduate, and had the exciting experience of having Alex Hailey as the commencement speaker during her ceremony in 1985. Haley's book *Roots* was a national phenomenon, and getting the opportunity to meet the internationally famous author was a real highlight of Thomas' tenure at UT.

After UT, Thomas joined IBM as a programmer in the Research Triangle Park location in North Carolina. After four years, she moved into management, and over the years moved up the management chain within the software organization Thomas managed networking software, the WebSphere Product Software and Strategy, Rational Product Software and Strategy, and the Tivoli Product Software and Strategy. The WebSphere brand was created organically within IBM but both Rational and Tivoli were acquired initially. Today, Thomas is a General Manager for the Software Defined Environment Strategy within IBM's Server and Technology division, responsible for how software will enable the next generation of automation for data centers.

"My most proud accomplishments at IBM are really what I was able to achieve for my clients I worked with over the years and for our employees," Thomas said. "With clients, I've formed relationships with certain organizations that have lasted for more

than ten years across various industries. I've chosen to focus on specific regions of the world, including the United Kingdom, Germany, Japan, and Indonesia to better build relationships in those regions with both our sales teams and the clients. I've been managing global teams for more than fifteen years, and working with employees from North America, South America, Europe, and Asia has been very rewarding. In my last role, I managed over twenty sites worldwide. I've also seen so many acquired organizations join our company in the software arena and am very proud of the employees I've mentored in these companies."

Thomas said the electrical engineering and computer science field will experience tremendous growth in the years to come, with topics like cloud computing, big data, social media, and mobile being a few of the driving forces behind this growth.

"I think that UT is in a unique position to capitalize on this growth, through its cooperative work with ORNL, and its investments in both engineering and computer science over the last several years," Thomas commented. "Being able to understand the implications of computing in the arenas of energy and smarter infrastructure will serve the university well in the years to come. These are huge issues that affect global economies."

Thomas is also encouraged by the increasing numbers of women who are becoming engineers.

"I believe that this is a great arena for women. Women are often more interested in the human element of their careers and engineering allows you to have a huge impact on people, either within the organization you choose to work or in organizations that you serve," Thomas said.

Outside of work, Thomas enjoys spending time with her husband, Richard Thomas, and their two "furry children," dog Morgan and cat Leo. The couple loves the outdoors, and has a vacation home near Asheville, North Carolina. They also spend time golfing and hiking in the beautiful national parks between North Carolina and Tennessee, and also like to travel and learn about different cultures across the globe.







Celebrate Impact

The John D. Tickle Engineering Building

The tent was huge! Still, the crowd of around six hundred spilled out beyond to celebrate the dedication of the John D. Tickle Engineering Building — the largest attendance of a ribbon cutting that UT can remember. In a letter to students Ann Tickle expressed the significance of this event writing, "We are here today to dedicate a building, but the students and faculty are what bring life to a building. You [the students] are the inspiration for us to remain engaged and committed to the university."

The Tickles' gift and the building named for John have inspired others, evidenced with over twenty donors acknowledged for their major support in plaques throughout this building. Gift recognition opportunities are still available in this beautiful one hundred ten thousand square foot facility. For information about naming one of the other available rooms, please contact Dorothy Bryson.

The College Fund for Engineering

Together with seven individual department funds, annual giving to these discretionary gift accounts provides the impact of a \$10 million endowment! Over \$470,000 was given to these eight funds by approximately one thousand individuals last year. That sends a strong message of the power of our alumni when they come together to make a difference. "Not everyone can give millions or even thousands, but I challenge each UT engineering graduate to give something worthy of the students we serve and educate," states Dean Wayne Davis.

These gifts are used to enhance laboratory renovations, assist with middle and high school engineering outreach programs, encourage faculty excellence, or purchase equipment for student labs and classrooms. Today's fast-paced technology-rich engineering environment demands continual improvements if the college is to provide excellence in the classrooms and the labs.



Jim Gibson (right), donor for the The Gibson Endowed Chair in Engineering, with Associate Dean for Faculty Affairs Veerle Keppens, who is chairing the search committee for the Gibson Chair.

The Gibson Endowed Chair in Engineering

A \$1.5 million commitment from Jim Gibson (*BS/IE '71*) has established the Gibson Endowed Chair in Engineering to focus on research pointed towards answers to the world's tremendous energy challenge. "This gift allows us to leverage funding for engineering provided in Governor Bill Haslam's budget in a powerful way. The Gibson Endowed Chair will complement and expand our already considerable scope of work in the energy disciplines." explains Davis. With key faculty in multiple departments already working on leading-edge energy solutions, the Gibson Chair will be a senior-level professor who can augment current research collaborations and help the college create new clusters of strength. A national interdisciplinary search began fall 2013.

"Over the past several years I have met some of UT's incredible young graduate students and have seen their research presentations," states Gibson. "Their enthusiasm and dedication gives me great hope for the future. They inspire me and my intent is to help the college bring in more great professors who will continue to inspire students."

The Wayne T. Davis Endowed Dean's Chair

Announced at the conclusion of the 175th Anniversary Celebration Gala, this new \$3 million endowment is another fund that will enable UT's current dean-for whom it is named-to propel the College of Engineering forward. It is in recognition of Davis' extraordinary service and leadership that John and Ann Tickle, Chad and Ann Holliday, Joe and Judy Cook, and Eric and Elaine Zeanah came together to establish the Wayne T. Davis Endowed Dean of Engineering.

"An endowment that establishes a Dean's Chair is tremendously important," notes Dr. Susan Martin, who as provost is the university's chief academic officer. "It is a visible affirmation of the importance of great leadership in the academic enterprise."

The Davis endowment is specifically designated to be used by the dean to advance the educational mission of the college.

We celebrate the impact of giving at every level because the difference it makes for engineering students is real.

For information about making an impact of your own contact:

Dorothy Barkley Bryson

Executive Director of Development • The University of Tennessee, Knoxville • College of Engineering 114 Perkins Hall • Knoxville, Tennessee 37996-2012 • dbryson@utk.edu • 865-974-2779

UT COLLEGE OF ENGINEERING

Events & Awards

COE Student Named UT Torchbearer

The Chancellor's Honors Banquet was held on April 8, 2013, and a College of Engineering student received one of the university's highest honors.

Akshitha Yarrabothula was named a Torchbearer. She is a chemical and biomolecular engineering major, a Haslam Scholar, Chancellor's Scholar, and Baker Scholar. Her dedication to research earned her a position as an undergraduate research assistant conducting graduate-level research. Her accolades include selection as the engineering first place divisional winner of the 2011 EUReCA competition and as UT's representative for the first SEC Symposium. She has helped others through volunteering with the Boys and Girls Club of Greater Knoxville and in the emergency room at Fort Sanders Regional Medical Center, among other organizations. Yarrabothula has led campus groups such as the Delta Phi Omega Sorority and the Society of Women Engineers. UT's Department of Housing honored her as one of its most outstanding resident assistants.

The Torchbearer is the highest honor the university gives to its students. The Torchbearer is awarded to seniors who have served UT with overall excellence. Recognition as a Torchbearer reminds all students that those who bear the Torch of Enlightenment shadow themselves to give light to others.



Akshitha Yarrabothula (left) receives a plaque designating her as a UT Torchbearer from Chancellor Jimmy G. Cheek (right) at the Chancellor's Honors Banquet.

COE Donor and Alum Host Randall K. Nutt Scholarships and Nutt Family Scholarship Barbeque



Tony Chilcoat (front row, far left) and Robbie Nutt (second row second from left) are joined by the Randall K. Nutt and Nutt Family Scholarship recipients and alumni, as well as COE Wayne Davis (second row, far right) at the barbeque and reunion hosted at Nutt's home.

On Monday, April 22, 2013, Robbie Nutt and Tony Chilcoat (*BS/ME '68*) hosted the Randall K. Nutt Scholarship and the Nutt Family Scholarship Barbeque at her beautiful lakeside home in Jefferson Park in Knoxville.

All past and current scholarship recipients were invited to her home. These two scholarships recognize the Nutt Family's contributions to UT. The former is named in honor of Robbie Nutt's late son, Randall, who was an engineering student at UT.

Additional hosts for the event included Robbie's son, Robert Nutt (BS/EE '88), and her daughter, Rhonda Nutt Goble (BS/EE '93). The Dean of Engineering Wayne Davis, and his wife, Sylvia, attended along with a collection of past and current recipients.

Current recipients included Michael Parker (Nutt Family Scholarship), David Hart (Randall Nutt Scholarship, and Allison Davis (Randall Nutt Scholarship).

Past recipients who attended the event included Robert Burgin (BS/NE '09) and his wife, Monte; Stephen Janson (BS/NE '07, MS/NE '09) and his wife, Jessica; Matthew Laurence (BS/EE '11) and guest, Austin Womac (BS/EE '11); Taylor Morris (BS/CompEngr '12); Daryl Smith (BS '93, MS '04, PhD/MSE '07) and his wife, Rachel.

Guests enjoyed a catered dinner by Dead End BBQ (co-owned by Robert Nutt) and the opportunity to reconnect and personally thank the Nutt family for the impact the family's gifts have had on so many undergraduate engineering students at UT.

NAE Grand Challenge Scholars Recognized



COE Dean Wayne Davis (far left); Director of Outreach Programs Roger Parsons (left) and Associate Dean for Academic and Student Affairs Masood Parang (far right) with the NAE Grand Challenges Scholars (left to right) Ethan Cansler; Katelyn Hasse; and Morgan Baltz at the college's spring Board of Advisors meeting.

Three National Academy of Engineering (NAE) Grand Challenge Scholars were saluted at the College of Engineering's spring board meeting and at the 2013 engineering commencement ceremony for completing additional challenging academic requirements as stipulated by NAE: Morgan Raney Baltz, a chemical engineering major; Ethan Zachariah Cansler, an aerospace engineering major; and Katelyn Elizabeth Hasse, a nuclear engineering major.

In 2008, the National Academy of Engineering identified fourteen Grand Challenges for engineering in the 21st century. These challenges represent each of the broad realms of human concernsustainability, health, vunerability, joy of living-as specified by the NAE qualifications and response to an online poll sponsored by the organizations that received over twenty-five thousand votes over five months.

The Grand Challenge Scholar Program is the companion program for engineering schools that have accepted the challenge of designing combined curricular and extra-curricular programs to prepare students to be the generation that solves the grand challenges facing society. In 2009, the University of Tennessee College of Engineering established an approved Grand Challenges Scholars Program. The college is one of only twelve engineering schools in the country to have this prestigious program.

For more information about the Grand Challenges Program, visit http://www.engineeringchallenges.org/cms/8996/9221/10474. aspx

AOL Founder Visits COE



Ken Huntsman

On Tuesday, April 16, Ken Huntsman (MS/CS '77), recipient of the UT Accomplished Alumni Award for 2013, presented Creating "The Internet on Training Wheels," a special seminar for University of Tennessee faculty, staff, and students.

Huntsman also is a 1974 graduate of Penn State University with a BS in computer science.

Huntsman was co-architect, at Telenet Corporation, of one of the first successful commercial e-mail systems. He then joined Control Video Corporation to work on

downloading games to the Atari VCS in early 1980s. After leaving that organization, he joined several others in 1985 to co-found the company that eventually became America Online. He retired as an "AOL Fellow" from AOL in 2007.

CEE Student Receives Scholarship from ACEC



Caleb Drummer (second from left) is congratulated by (left to right) COE Dean Wayne T. Davis; David T. Harrell of Vaughn and Melton; CEE Department Head Dayakar Penumadu; and Associate Dean for Academic and Student Affairs Masood Parang.

Caleb Drummer, a senior in civil engineering in UT's College of Engineering, was one of two students out of twelve applicants to receive a \$1,000 scholarship from the American Council of Engineering Companies (ACEC) of Tennessee. As one of the Tennessee representatives, he is now eligible for one of five scholarships given by ACEC National.

The selection committee, which included David T. Harrell, PE, of the Vaughn & Melton engineering consulting company, evaluated Drummer in five areas: his grades, an essay, his work experience, recommendations from faculty, and extracurricular college activities. He maintained a 4.0 GPA and the committee found his essay and work experience to be excellent. In his essay, Drummer wrote about the role or responsibility of the consulting engineer in mitigating the impact of natural disasters. He has worked as an assistant and research student in the Department of Civil and Environmental Engineering.

He received an outstanding recommendation by Dr. Edwin Burdette, the Fred. N. Peebles Professor in the Department of Civil and Environmental Engineering. The committee was also impressed with his extracurricular activities, which included participation in the student chapter of ASCE and volunteering.

"I am very thankful for ACEC and their scholarship program," said Drummer. "It is an honor to have received this scholarship and will really help with paying for next year's tuition. I am always thankful to organizations who lend financial support to help students achieve their goal of becoming an engineer."

ACEC of Tennessee is a member organization of the American Council of Engineering Companies, a national federation devoted to promoting the business interests of approximately five thousand six hundred engineering companies employing more than five hundred thousand engineers, architects, land surveyors, scientists, and other specialists. ACEC promotes infrastructure funding, qualifications-based selection, outsourcing, tax reform, regulatory changes, and other government actions benefiting engineering companies.

For more information about the ACEC, visit http://www.acectn.org/.



Help Support the IEEE Robotics Team Go to www.volsconnect.com/impact to give today!

TENNESSEE ENGINEER • engr.utk.edu

Events & Awards

COE Celebrates Excellence at 2013 Faculty and Staff Awards

The University of Tennessee College of Engineering gave its most prestigious honor—the Nathan W. Dougherty Award—to industrial engineering graduate John D. Tickle at the college's annual Faculty and Staff Awards Dinner, held on Thursday, April 4, 2013, at the Crowne Plaza.



COE Dean Wayne Davis presents the Nathan W. Dougherty award to John Tickle at the college's Faculty and Staff Awards Dinner in April.

The Dougherty Award was established by the college in 1957 to pay tribute to Dr. Nathan Washington Dougherty, dean of the College of Engineering from 1940-1956. The award honors engineers whose accomplishments have brought acclaim to the university.

Tickle is the owner and chairman of Strongwell Corporation. headquartered in Bristol. Virginia. Tickle and his wife, Ann Tickle, provided considerable support for the college's new John

D. Tickle Engineering Building. The \$23.1 million facility houses the Department of Civil and Environmental Engineering and the Department of Industrial and Systems Engineering.

In his introductory remarks prior to giving the award, COE Dean Wayne Davis said, "It has become a cliché to introduce someone by saying that they need no introduction, but to all of us in the UT community that is absolutely true about John. His amazing generosity, his continual support of and belief in the University of Tennessee, and his firm commitment to higher education in this state have led to initiatives at the university that will benefit students for many generations to come."

Tickle received his bachelor's degree in industrial engineering in 1965 from the University of Tennessee. He served in positions with Owens Corning Tech Center, Justin Enterprises and Krueger Metal Products before returning to his hometown of Bristol to assume the presidency of Morrison Molded Fiber Glass Company (MMFG). Tickle stayed with MMFG after its acquisition by Shell in 1985, and eventually purchased the company outright. He renamed the company Strongwell in 1997. Today, Strongwell is a world-wide operation, with the Bristol division serving as its headquarters.

Tickle has been the recipient of a host of local, regional, and national business and philanthropic awards, including having The Mall at Bristol Regional Medical Center, which was dedicated in 2004, named for him; Laureate in the Junior Achievements Business Hall of Fame, 2000; Virginia Chamber of Commerce Torchbearer Award for Western Virginia in 1999; and the Bristol Regional Hospital Chairman from 1987 to 1992.

Award from the National Court of Honor of the Boy Scouts of America in June 2012. He also recently received the 2013 ACMA Lifetime Achievement Award from the American Composites Manufacturers Association (ACMA), the composites industry's largest trade group in the world.

Tickle and his wife, Ann Tickle, who graduated with a bachelor's degree from the UT College of Education, are extensively involved in philanthropic work and are avid supporters of the university. He has been a member of the UT Athletic Board and has served on the College of Engineering's Board of Advisors and is a member of the Campaign for Tennessee Engineering Executive Committee. Ann Tickle has been an active member of the Development Council and Alliance of Women Philanthropists. Mr. and Mrs. Tickle have been contributing to the university for over forty years.

Tickle, who earned the rank of Eagle Scout, received the Heroism

A gift from the Tickles established the John and Ann Tickle Small Animal Hospital expansion within UT's College of Veterinary Medicine. Their generosity allowed construction to go forward on the \$10 million addition in 2007. The facility was opened in the spring of 2008.

Additional award recipients at the college's Faculty and Staff Awards Dinner included:

Outstanding Support Staff: Kristy Walker, business manager, Department of Industrial & Systems Engineering: and Angela Miller, administrative specialist, **Engineering Advising** Office

Outstanding Faculty Advisor Award: Dr. Roberto Benson, Department of Materials Science & Engineering

Moses E. and Mayme **Brooks Distinguished** Professor Award:

Dr. Lvnne Parker. Department of Electrical **Engineering & Computer** Science

Leon and Nancy Cole Superior Teaching Award: **Dr. Hahn Choo**, Department of Materials Science & Engineering



Kristy Walker (right), from the Department of Industrial and Systems Engineering, is presented the Outstanding Support Staff Award from COE Dean Wayne Davis (left)



COE Dean Wayne Davis (left) presents the Outstanding Support Staff Award to Angela Miller from the Engineering Advising Office.



COF Associate Dean for Faculty Affairs Veerle Keppens (far left) with the college-wide award winners; Dr. Brad Vander Zanden and Dr. Lee Han, COF 2013 Teaching Fellows; Dr. Hahn Choo, Leon & Nancy Cole Superior Teaching Award; Dr. Lynne Parker, Moses E. and Mayme Brooks Distinguished Professor Award; Dr. Roberto Benson, Outstanding Faculty Advisor Award; and Dr. David Icove, Charles Edward Ferris Award.



Associate Dean for Research and Technology Bill Dunne (far left) presents the COE Research Awards to faculty including: Dr. Xueping Li, the Translational Research Award; and COE Research Fellows Dr. Lawrence Townsend; Dr. Matthew Mench; Dr. Peter Liaw; Dr. Yanfei Gao; and Dr Joshua Fu. Not pictured: Dr. Phil Rack, Dr. Mingjun Zhang, and Dr. Fred Wang.

Charles Edward Ferris Faculty Award: Dr. David Icove, Department of Electrical Engineering & Computer Science

College of Engineering Teaching Fellow Awards: **Dr. Lee Han**. Department of Civil & Environmental Engineering and Dr. Brad Vander Zanden, Department of Electrical **Engineering & Computer Science**

College of Engineering Research Fellow Awards:

Dr. Joshua Fu, Department of Civil & **Environmental Engineering**

Dr. Yanfei Gao. Department of Materials Science & Engineering

Dr. Peter Liaw, Department of Materials Science & Engineering

Dr. Matthew Mench, Department of Mechanical, Aerospace & Biomedical **Engineering**

Dr. Philip Rack, Department of Materials Science & Engineering

Dr. Leon Tolbert. Department of Electrical **Engineering & Computer Science**

Dr. Lawrence Townsend. Department of **Nuclear Engineering**

Dr. Mingjun Zhang, Department of Mechanical, Aerospace & Biomedical Engineering

Dr. Fred Wang, Department of Electrical **Engineering & Computer Science**

A new award, the Translational Research Award, was presented to **Dr. Xueping Li** in the Department of Industrial & Systems Engineering.

COE Alumni Receive Recognitions at the Alumni Board of Directors Awards Dinner

On Friday, September 27, the Alumni Board of Directors Awards Dinner was held at the Knoxville Convention Center. Two College of Engineering alumni received distinctive awards at the event.



Wallace Dwight Kessel, an industrial engineering alumnus, received the Alumni Service Award. He has been married to Gloria Grubb Kessel for sixty-two years. Kessel, who also attended Duke University and the US Naval Academy, was working for Chapman Drugs when neighbors suggested he run for public office.

Kessel was a member of the Knoxville City Council (1963-1966), Knox County Clerk (1966-1980), and was elected the first Knox County Executive in 1980-a position he held for fourteen years. His various business interests have included real estate

investments; the conversion of the Farragut Hotel into office space; Chapman Drug Company, which he built into a multi-state chain; and the startup of one of the nation's first local Internet companies-US Internet

His community involvement goes far beyond political positions, as he has served with Boy Scouts of America, the Greater Knoxville Chamber of Commerce, the Girls Club, Knox County Health Council, Development Corporation of Knox County, Juvenile Court Advisory Board, East Tennessee Foundation, and many more. He also has been a member of the West Knoxville Kiwanis Club for sixty years.

Due to his commitment to the Knoxville community, several buildings have been named after Kessel, including the Wallace Dwight Kessel Girls Club Gymnasium, Dwight Kessel Pavilion, Dwight Kessel Metropolitan Parking Garage, and the Dwight and Gloria Kessel Auditorium in the Science and Engineering Research Facility at UT.

Kessel and his wife have been loyal supporters of the university and have established scholarships, professorships, and fellowships in the College of Engineering. They also created an endowment for UT's Institute for Public Service to assist county governments in the state. He has served on the UT College of Engineering Board of Advisors, the UT Chancellor's Associates and the UT Development



Kathy Caldwell, P.E.

Kathy Caldwell received the Alumni Professional Achievement Award. Caldwell graduated from the University of Tennessee with high honors in civil engineering in 1985. Upon graduation, she worked as a structural designer with Lockwood Greene in Oak Ridge, Tennessee. Caldwell moved to Austin, Texas, in 1987 and joined Parkhill Smith and Cooper as a design consultant to the Texas Department of Highways and Public

Caldwell joined Jones Edmunds and Associates, Inc., in Gainesville, Florida, in 1989. During her nineteen years with the

firm, she served public works clients as a design engineer, project manager, and senior construction resident engineer. She became a division manager, vice president, and executive committee member.

She led the establishment of a new market sector for the firm, ultimately resulting in her being named president of JEA Construction Engineering Services, Inc., a wholly owned subsidiary of Jones Edmunds. Caldwell retired form her position at JEAces in May 2008 and is now self-employed as president of a private

Caldwell served as president of the American Society of Civil Engineers (ASCE) in 2011, and was the first president of the consolidated Florida section. Caldwell is a long-time, passionate proponent of ASCE's Student Member program and has been a practitioner and faculty advisor for the University of Florida Student Chapter for more than twenty years.

In 2005, the University of Tennessee Department of Civil and Environmental Engineering honored Caldwell as an Outstanding Alumna. She currently services on the boards of Engineers Without Borders (EWB) and the American Association of Engineering Societies (AAES). She has also served the White House as a Champion of Change for Transportation and has testified on

Alumni News



Edwin McDougle (BS/CE '69, MS/CE '75), a longtime member of the College of Engineering's Board of Advisors, was named Outstanding Engineer of the Year by the Nashville/Middle Tennessee Chapter of the Tennessee Society of Professional Engineers at the organization's Engineer's Week Banquet on March 1, 2013.

Edwin McDougle

1970s



H.M. Hashemian

H.M. Hashemian (MS/NE '76), president and CEO of Analysis and Measurement Services Corporation (AMS) in Knoxville, has been selected by the US Small Business Administration in Washington, DC, as the 2013 Tennessee Small Business Person of the Year. The SBA honors Hashemian's achievements and role in driving the nation's economic growth, particularly for his hard work, innovative ideas, and dedication to the business and academic community.

1980s



Lt. General Mike

promoted to Lieutenant General on August 2, 2013. He now serves as Vice Commander, Air Education and Training Command, Joint Base, San Antonio-Randolph, Texas. In his previous rank as Major General he most recently served as Assistant Deputy Chief of Staff for Operations, Plans and Requirements, Headquarters, US Air Force, Washington, DC.

James M. "Mike" Holmes (BS/EE '81) was



James Conwell

James Conwell (BS/MechE '83, MS/MechE '86) was named president of the Board of Trustees at Rose-Hulman Institute of Technology in Terre Haute, Indiana, and began serving on May 1, 2013. He is the institute's fifteenth president. Before taking this position, Conwell served as vice president of the Jacobs Engineering Group, a Fortune 500 Company, where he led his group to record financial performance for the past five years. In addition to his successful and

entrepreneurial leadership at Jacobs, his background also includes teaching undergraduate engineering at Vanderbilt University in Nashville, Tennessee; Louisiana State University; and Grove City College in Pennsylvania. Founded in 1874, the Rose-Hulman Institute is an engineering college with 1,900 undergraduate students and one hundred graduate students.

John Hillman (BS/CE '86) was honored at the White House in May, 2013, as one of twelve "Champions of Change" for 2013 for his development of the hybrid-composite beam, a structural technology that helps build stronger, lighter, and longer-lasting bridges. Hillman was recognized in the transportation category, becoming the second UT College of Engineering graduate to receive this honor. Alumnus Kathy Caldwell (BS/CE '85) was recognized for this in 2011.

David Harrell (BS/CE '86, ME/CE '87), PE, Regional Vice President at Vaughn & Melton Consulting Engineers, Inc., Knoxville, was elected 2013-2014 President of the American Council of Engineering Companies of Tennessee (ACEC of TN), an organization whose membership includes more than 100 engineering firms across the state.

Harrell, a resident of Powell, Tennessee, has more than twentyfive years of experience in civil engineering, and has been with

Vaughn and Melton since 2005. He is associated with numerous high-profile projects including the redevelopment of the 100 & 200 blocks of Gay Street in Knoxville, the SR-840 by-pass around Nashville, and the redevelopment of Cumberland Avenue between Alcoa Highway and Seventeenth Street in Knoxville. Harrell was chairman of the 2008 ACEC of Tennessee Engineering Excellence Awards Committee. Harrell is a member of the Tennessee Society of Professional Engineers.



Joe Ledford

Another College of Engineering graduate, Joe Ledford (BS/CE '80), PE, Board Chairman for Barge Waggoner Sumner and Cannon, Inc., was elected Second Vice President of the ACEC of TN.

Ledford, a structural engineer, joined Barge Waggoner in 1985 and has worked in its Knoxville office for twenty-six years. He currently serves as Chairman of the Board of Directors at Barge Waggoner. He is a registered engineer in Tennessee, Georgia, South Carolina, North Carolina,

Missouri, and Alabama. Ledford is a member of the East Tennessee Industrial Council, the American Society of Civil Engineers, and the National Society of Professional Engineers.

Founded in 1968, ACEC of Tennessee is a statewide organization with chapters in Nashville, Southeast Tennessee, East Tennessee and Memphis. The organization's mission is to provide leadership on business issues affecting engineering firms and to increasing public awareness of the value of engineering

1990s

Arup Bandyopadhyay (MS/EnvE '94) is the 2013 Chair of the West and Middle Tennessee Chapter of the Air & Waste Management Association. Bandyopadhyay is a senior manager with the ENVIRON International Corporation in Brentwood, Tennessee.

Doug Brock (BS/EE '92) has been appointed manager of the Southeast Tennessee and Northwest Georgia locations of Kendall Electric Inc.

2000s



Dr. Han Lin

Dr. Han (John) Lin (PhD/CE '03), Noitom LTD's CEO, co-founded Noitom in 2010. Since then, the company has taken off. Noitom seeks to revolutionize the entire motion capture business. Based in Beijing, China, Noitom develops highly accurate and user-friendly inertial motion capture systems that allow individuals to record and digitize complex body motions anywhere and anytime. Noitom's first public application, mySwing, is a portable golf swing analysis

system. Visit Noitom online to learn more about this technological advancement (http://www.noitom.com).



Tara Mallison

Tara Mallison (MS/EnvE '08) was hired by LDA Engineering of East Tennessee in May of 2013 as an environmental engineer to provide engineeringrelated services to clients who manage and operate water, wastewater, and storm water systems. She has six years of experience as an environmental engineer, coming to LDA after five years as an engineer at CH2M Hill, a global full-service engineering firm. While at CH2M Hill, Mallison worked on sewer rehabilitation projects for the

Knoxville Utilities Board and the city of Baton Rouge, Louisiana; floodplain mapping for Clayton County, Georgia; and a wastewater plant expansion in Lenoir City, Tennessee. One of her first projects at LDA will be developing a green infrastructure master plan for the city of Chattanooga.

Memorials

Dr. Robert Uhrig, Retired Nuclear **Engineering Professor**



Dr. Robert E. Uhrig

Dr. Robert E. Uhrig, an emeritus professor in the Department of Nuclear Engineering, died on June 12, 2013, in Gainesville, Florida, at the age of 84.

From 1986 to 2002, Uhrig held a joint appointment as Distinguished Professor of Engineering at UT and as Distinguished Scientist in the Instrumentation and Controls Division at the Oak Ridge National Laboratory (ORNL) under the Science Alliance Program. His work concerned the application of artificial intelligence methods, primarily expert systems and neural networks, to nuclear power plant systems. He was the founding Director

of the UT Center for Neural Engineering and Applications.

Uhrig received a BS degree, with honors, in mechanical engineering from the University of Illinois in 1948, and MS and PhD degrees in theoretical and applied mechanics from Iowa State University in 1950 and 1954 respectively. He was a 1976 graduate of the Advanced Management Program of the Harvard Business School, and was a registered professional engineer in Florida and lowa. He authored over 250 technical and professional publications, more than 100 tutorials and seminars, a book, Random Noise Techniques in Nuclear Reactor Systems (1970, published in Russian 1974), and co-authored (with Dr. Lefteri H. Tsoukalas) a book entitled Fuzzy and Neural Approaches in Engineering (1997).

Uhrig was chairman of the Department of Nuclear Engineering Sciences at the University of Florida (UF) from 1960 to 1968, and was dean of the UF College of Engineering from 1968 to 1973. In 1974, he became vice president for advanced systems and technology at Florida Power & Light Company, and remained in that position until coming to UT. He was appointed Dean Emeritus of the UF College of Engineering in 1989.

"Bob was an incredible person with unequalled work ethic. He will be deeply missed," said Dr. Wesley Hines, head of the UT Department of Nuclear Engineering.



Inayat Husain (MS/ChE '48) died on June 11, 2013. He was a resident of Karachi, Pakistan. After earning his MS degree at UT, Husain settled in newly formed Pakistan in 1948 and helped with the developing nation's Indus Water Treaty and nuclear power program, and held a variety of government positions relating to science and technology.

Jere Ballentine (BS/EE '59) died on March 25, 2013. He was a resident of Dayton, Tennessee.

David Arthur Banford (BS/EE '69) died on June 28, 2013. He was a resident of Raleigh, North Carolina.

Herschel Bryant (BS/CE '49) died on June 11, 2013, at the age of 100. He was a formerly a resident of Stone Mountain, Georgia, and more recently of Indian Springs, Alabama.

Jack Thomas Carter (BS/EE '57) died on September 24, 2010. He was a resident of Little Rock, Arkansas.

William H. Dodson (BS/ChE '50) died on May 3, 2013. He was a resident of Knoxville.

Joseph Owen Ellis (BS/EE '59) died on November 8, 2011. He was a resident of Jupiter Farms, Florida.

Harley Ellsworth Erb III (BS/MechE '48) died on June 8, 2013. He was a resident of Old Hickory, Tennessee.

Lester Epel (MS/MechE '58) died on August 21, 2010. He was a resident of Scottsdale, Arizona.

Lewis Evans Sr. (BS/CE '54) died on March 31, 2013. He was a resident of Nashville.

Charles Fisher (PhD/MechE '69) died on July 13, 2010. He was a resident of Nashville. Tennessee.

John Andrew French (BS/EE '50) died on July 25, 2011. He was a resident of Huntsville, Alabama.

Frank Hudson Fuller Sr. (MS/MechE '50) died on June 15, 2013. He was a resident of Wilmington, Delaware.

Travis O. Fullwood (BS/EE '55) died on May 24, 2012. He was a resident of Selmer, Tennessee.

Richard Henritze (BS/MechE '50) died on April 13, 2012. He was a resident of Huntsville. Alabama.

Robert Edward Hickey (BS/EE '58) died on October 24, 2011. He was a resident of Brenham, Texas.

James Wallace Hooker (BS/EE '62) died on July 31, 2012. He was a resident of Durham, North Carolina.

Paul Jackson (BS/ChE '84) died on May 30, 2013. He was a resident of Evans, Georgia. Wesley "Wes" Martin Johnson (BS/EE '65) died on June 24, 2013.

He was a resident of Kingston, Tennessee. Robert Adam Kramer (BS/IE '59) died on October 3, 2012. He was

a resident of Beaufort.

Jesse Kenneth Langley (BS/ChE '56) died on September 30, 2012. He was a resident of Portland, Oregon.

Lennon James McAdams (BS/EE '42) died on May 10, 2013. He was a resident of Santa Fe, New Mexico. Harold Curtis McCurdy (BS/ChE '43') died on June 28, 2013. He

was a resident of Oak Ridge, Tennessee.

John L. Neely III (BS/IE '55, MS/IE '68) died on December 6, 2011. He was a resident of Knoxville.

Hal Carter Nichols Jr. (BS/EE '49) died on October 5, 2012. He was a resident of Knoxville.

John F. Phillips (BS/EE 50) died on July 28, 2012. He was a resident of Jackson, Tennessee.

Richard B. "Dick" Pruett (BS/CEE '55) died on May 15, 2013. He was a resident of Middletown. Ohio.

James Herbert Stedman (BS/EE '49) died on May 24, 2013. He was a resident of Nashville, Tennessee.

Edward Arnold Townsend (BS/EE '68) died on April 27, 2013. He was a resident of Paris, Tennessee.

James Hugh Valentine (BS/MechE '56) died on March 14, 2013. He was a resident of Huntsville, Alabama.

Rex Ray Walker (MS/EE '62) died on May 5, 2013. He was a resident of Davie, Florida.

John Morgan Wininger (BS/MechE '59) died on July 14, 2013. He was a resident of Blountville, Tennessee.

Bob Yates (BS/EE '60) died on July 8, 2013. He was a resident of Huntsville, Alabama

TENNESSEE ENGINEER • engr.utk.edu

The University of Tennessee, Knoxville College of Engineering 207 Perkins Hall

Knoxville, TN 37996-2012

Non-Profit Org. **US POSTAGE PAID** Permit No. 481 Knoxville, TN

Calendar

Guichadi				
Fall 2013	Spring 2013			
Thanksgiving Nov 28-29	Classes BeginJan 8			
Classes End Dec 3	2nd Session BeginsFeb 27			
Study Day Dec 4	Spring Break Mar 17-21			
Exams Dec 5-6, 9-12	Classes EndApr 25			
Graduate Hooding Dec 12	Study DayApr 28			
Commencement Dec 13	Exams Apr 29-30, May 1-2, 5-6			
Offical Graduation Date Dec 13	Graduate Hooding May 8			
	CommencementMay 7-10			
	Offical Graduation Date May 10			

Contact Information

Dr. Wayne Davis, Dean of Engineering
Dr. Bill Dunne, Associate Dean for Research & Technology
Dr. Veerle Keppens, Associate Dean for Faculty Affairs
Dr. Masood Parang, Associate Dean for Academic & Student Affairs
Departments Chemical & Biomolecular974

Departments		
Chemical & Biomolecular	974-2421	
Civil & Environmental	974-2503	
Electrical & Computer Science	974-3461	
Industrial & Information	974-3333	
Materials Science	974-5336	
Mechanical, Aerospace &		
Biomedical	974-2093	
Nuclear	974-2525	

Administration & Programs	
Communications	974-0533
Dean's Office	974-5321
Development	974-2779
Engineering Advising Services	974-4008
Engineering Diversity Programs	974-1931
Engineering Fundamentals	974-9810
Engineering Professional Practice	974-5323
Engineering Research	974-8360
Engineering Student Affairs	974-2454
Finance & Admin. Affairs	974-5279
Research Centers	
Materials Processing	974-0816
Maintenance & Reliability	974-9625
Scintillation Materials	974-0267
Transportation Research	974-5255
Intelligent Systems and	
Machine Learning	974-5803
CURENT	974-9720

Innovative Computing Laboratory...

The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services. All qualified applicants will receive equal consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, or covered veteran status.

College of Engineering

Homecoming 2013

Save the Date College of **Engineering Alumni BBQ** On the Hill



The University of Tennessee College of Engineering invites you to Homecoming 2013 and the Annual Alumni Barbeque on the Hill.

Saturday, November 9, 2013

Three hours prior to kickoff of the Tennessee vs. Auburn game.

Join us for a barbeque lunch, including hot dogs for the kids.

Enjoy exhibits and demonstrations, reunions with former classmates and faculty, and games for both adults and children.

Register today and be a part of the tradition.

Costs:

\$12.00/adults - \$8.00/children under ten years of age

Register online at: www.volsconnect.com

For more information, contact Christina Parsons at (865) 974-2779 or e-mail engrdev@utk.edu.