

TENNESSEE

FALL 2014

ENGINEER

THE UNIVERSITY OF TENNESSEE, KNOXVILLE • COLLEGE OF ENGINEERING

A Five-Year Analysis: Past, Present, and Future

An Exclusive Interview with Dean Wayne Davis



THE UNIVERSITY of TENNESSEE **UT**
KNOXVILLE
COLLEGE OF ENGINEERING

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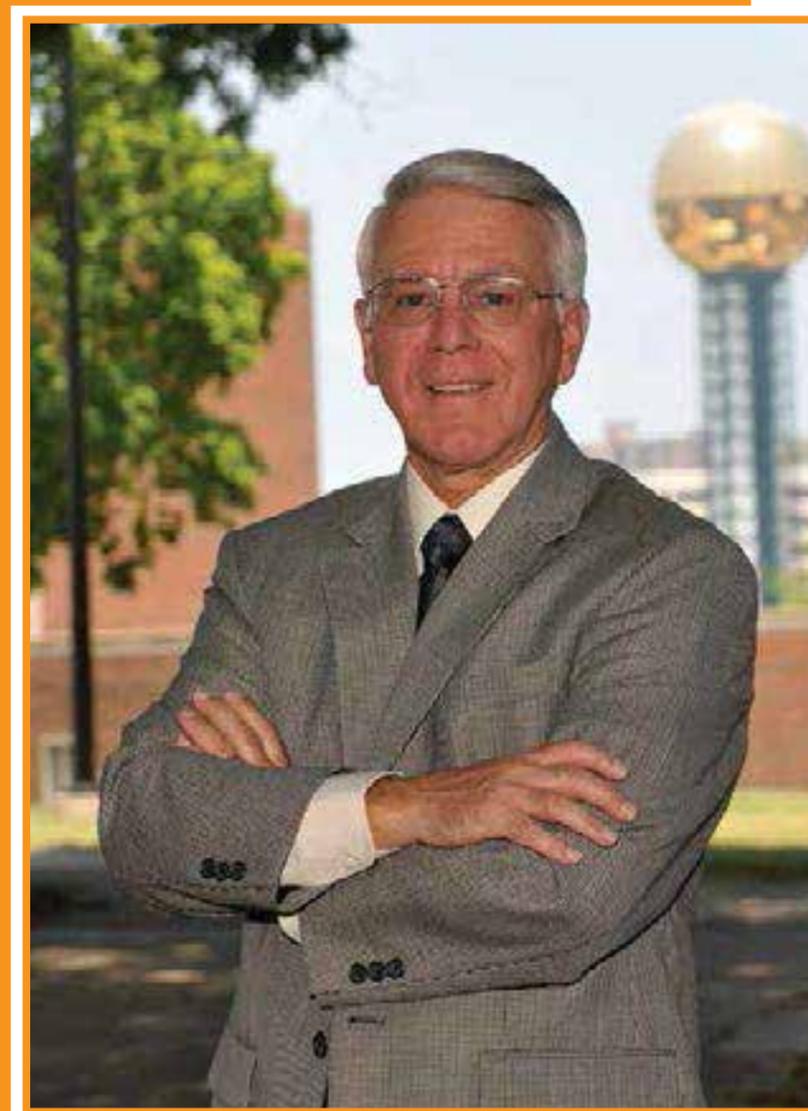
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Dean's Message

Welcome to the Fall 2014 edition of *Tennessee Engineer*! I am not writing a formal dean's message for this issue since our cover article, "A Five Year Analysis-Past, Present, and Future," offers an in-depth look at what has been happening in the College of Engineering since I was named as dean in March of 2009. The past five years and a half years have been a time of exciting change and progress for the college, and I'm happy to share with you detailed information about our faculty, staff, students, facilities, research, and development efforts. My next five-year appointment as dean was recently renewed, so this article also provides a glimpse at what might happen over the next five years, although the future is impossible to predict in a dynamic college like engineering!

I'll return to the regular deans message format in the Spring 2014 edition. I hope you enjoy this issue and that it will provide you with ideas on how you can be a part of helping us to achieve our college's vision and goals!

Wayne T. Davis
Dean of Engineering



A Five Year Analysis-Past, Present, and Future

A One-on-One Interview with Dean Wayne T. Davis

Wayne T. Davis was named dean of the College of Engineering in March of 2009 after serving as associate dean for research and Technology from 2004 to 2008 and as interim dean from 2008 to 2009. In this article, he offers an in-depth look to *Tennessee Engineer* readers about what has been happening in the College of Engineering during his term as dean.

Overview

TE: You were named interim dean of the UT College of Engineering in May of 2008 and as dean in March of 2009. During this time, what have been some of your greatest challenges?

WD: This question is an interesting one! I became interim dean just two weeks before the great recession and a thirty percent budget cut at the university, followed by three years with no raises for staff or faculty. Assuming a leadership role under those conditions would clearly have to be the greatest challenge that our college has faced in many years—at least as long as I have been at UT. But engineering is a very resilient profession—one dedicated to solving problems. So, challenges create opportunity and our college chose to accept the challenge and beat the odds. We have excelled in every way, as I will share in my comments. We have also included some graphics and charts to illustrate our progress.

TE: This year, 2014, marks your fortieth year with the University of Tennessee. You began your career at UT as an instructor in the Department of Civil and Environmental Engineering in 1974. What are the most remarkable changes that you have seen at the university, and more specifically, within the College of Engineering?

WD: It hardly seems possible that I have been on the faculty for forty years. Probably one of the most important characteristics of this university is that I was never hampered in my desire to be an excellent teacher and to pursue my dreams as a researcher. I believe the university provides the opportunity for all of the faculty to achieve their goals—some will choose to do so at UT, and some will leave for other venues.

In particular, for me, I was provided the opportunity to be an associate dean of the UT Graduate School half time relatively early in my career—it was one of my most valuable experiences from an administrative perspective. Throughout my career, UT's focus on research has expanded, allowing our college to excel and to graduate students who, through intensive research training, have been accomplished problem solvers. Engineering research helps to produce better materials, new products, and applied applications that benefit the public. I came back to engineering full time after my sixth year in the graduate school as the result of a very significant research contract that I received from the State of Tennessee related to air quality nonattainment issues in the state and the Southeast region.

I would consider this institution's transition to becoming a research-intensive university and its ability to involve faculty, staff, and students in this endeavor to be one of the most remarkable changes in the university and the college—and the good news is that the change is still in progress. Research contracts provide tuition waivers and stipends to graduate students, allowing us to recruit great students. The college and departments also receive research incentive funds related to external grants, which in turn benefit the research programs. We have also been able to add

Research Expenditures (FY 2009-2013)



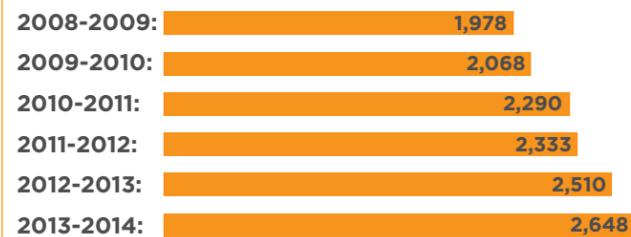
faculty because of this research return. You have to only look at our college's externally funded research expenditures to see how the activity of our faculty has provided critical financial resources that, today, are our single largest source of funds used to support both faculty and students.

TE: What do you see as your greatest accomplishments as dean over the past five years?

WD: Accomplishments within the context of being a dean or in any other leadership role can never be attributed to the individual. It is, without question, a team effort that resulted in the accomplishments that we have had. The college has a great group of associate deans, department heads, faculty, and administrative staff at all levels. I don't want to overlook our brilliant students and our alumni, a number of whom serve on our college and department boards of advisors. A quote from Jack Welch's book *Winning*, illustrates my answer to this question: "Having good people is hard. Hiring great people is brutally hard...all the clever strategies and advanced technologies in the world are nowhere near as effective without great people to put them to work." I am extremely blessed to be surrounded by great people.

Students

Undergraduate Enrollment Trends by Academic Year



TE: Student undergraduate enrollment in the college has grown from 1,978 in 2009 to 2,648 in academic year 2013. Do you anticipate continued growth in the undergraduate student population in the future, and how will the college handle the additional students?

WD: This thirty-four percent increase in the undergraduate population over the last five years is very typical of colleges of engineering across the country as more and more students have realized the value of a science, technology, engineering, and math (STEM) degree. The good news that goes along with this growth is the recognition that engineering disciplines typically have the highest starting salaries for graduates of its undergraduate engineering programs as well as the lowest unemployment rates for the various disciplines. While this growth has been unusually higher than in past decades, I do anticipate continued growth of our undergraduate programs in the four to seven percent range per year for the next several years. The interest of both high school students and employers remains very strong.

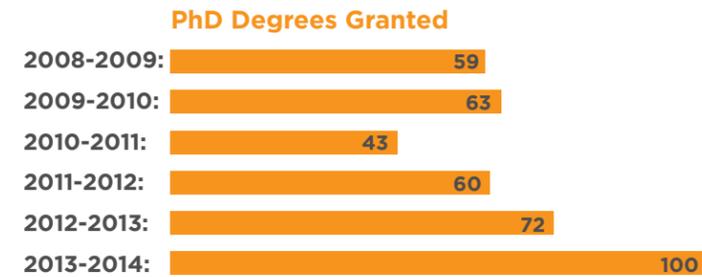
The quality, retention, and graduation rates of our undergraduate students have increased continuously over the last ten years and all three are at an all-time high. One of my responsibilities as dean is to work with the administration, our departments, and our alumni to insure that we have the faculty and staff resources and the facilities to handle the growth in our undergraduate student enrollment. I hope that the day will never come that we have to tell our entering freshmen (who currently have an average high school GPA of 4.06 and a composite ACT score of 29.6) that we cannot accept them due to a lack of resources. These high-achieving students deserve an opportunity to achieve their dreams of entering the engineering profession.

TE: The PhD program has also experienced tremendous growth during the past five years, from three hundred forty four students in 2009 to five hundred and sixty-six in academic year 2013. What are the factors that you see as contributing to this successful expansion of the doctorate program?

WD: The growth in our PhD programs has been unprecedented. This sixty-five percent increase in the last five years is over three times the national average. We graduated over one hundred PhD students this year compared to seventy-two last year (also the highest ever).

The growth is due, for the most part, to the fact that our faculty has increased its involvement in funded research. On the average, those funds increased from \$191,000/faculty member to over \$450,000/faculty member in the last ten years, a factor of 2.5—and ironically, the number of PhD students per faculty increased by that same amount. Our faculty deserves the credit for this amazing transformation in our college. This has happened even before the recent increases in faculty, which I predict will have an even greater impact in the coming years.

Growth in PhD Graduates by Academic Year



Faculty

TE: In 2013, the State of Tennessee and Governor Bill Haslam responded to your very specific request for recurring funds with a \$3 million allocation for the college's base budget, to be matched by combined funds from the chancellor's office, the college, and private gift support through the efforts of the development office. Beginning in fiscal year (FY) 2013, the funds were used to significantly expand the number of engineering faculty and staff. How do you think that this initiative has improved the college's ability to provide an engineering education?

WD: We were at a crisis point three years ago with the realization that we had reached our capacity to increase our student enrollment, given the number of faculty and staff. We had approximately one hundred and thirty-five tenured/tenure track faculty. Considering the anticipated growth of our college's enrollment, the state's investment and the associated matching funds provided us the opportunity to continue growing. The \$3 million of recurring funds from the state is to be matched by a combination of the chancellor's/provost's office and college and gifts from our donors over the five year period beginning in FY 13. We also committed to an additional twenty-five percent growth in our college.

We are currently at sixty percent of our goal in securing the matching funds after the first two years, so we are well on our way to meeting the matching requirements. Our freshman engineering program has grown by fourteen percent in FY 14 and by nine percent in FY 15 (which started on July 1, 2014) so we are clearly headed toward meeting the twenty-five percent growth in the college enrollment at the undergraduate level and have already surpassed the twenty-five percent growth at the graduate level.

The program has already resulted in full or partial funding for twenty-one faculty members and ten staff members. If not for the strong growth case presented by the college and the chancellor's office, along with Governor Haslam's vision for our future and the state's assistance, we would have had to place additional enrollment limitations on our freshman programs. This support has allowed us to continue to admit the best and the brightest students in our state. I anticipate additional faculty/staff hires as we fully meet the match for the governor's funding.

TE: The College of Engineering has played a significant role in the UT-ORNL Governor's Chair program, hiring eleven Governor's Chairs since 2009 in areas such as advanced manufacturing, global nuclear security, and power electronics. What are the advantages of these outstanding faculty associated with the UT College of Engineering, and do you have plans to hire more Governor's Chairs?

UT Engineering Governor's Chairs

	Dr. Suresh Babu <i>Governor's Chair in Advanced Manufacturing</i>		Dr. Ramamoorthy Ramesh <i>Governor's Chair in Nanomaterials Engineering</i>
	Dr. Howard Hall <i>Governor's Chair in Global Nuclear Security</i>		Dr. William Weber <i>Governor's Chair in Radiation Effects on Materials</i>
	Dr. Terry Hazen <i>Governor's Chair in Environmental Biotechnology</i>		Dr. Brian Wirth <i>Governor's Chair in Computational Nuclear Engineering</i>
	Dr. Yilu Liu <i>Governor's Chair in Power Electronics</i>		Dr. Thomas Zawodzinski <i>Governor's Chair in Electrical Energy Storage</i>
	Dr. Frank Loeffler <i>Governor's Chair in Microbiology and Civil and Environmental Engineering</i>		Dr. Steve Zinkle <i>Governor's Chair in Nuclear Materials</i>
	Dr. Art Ragauskas <i>Governor's Chair in Biorefining</i>		

WD: When I became interim dean, UT had hired only one Governor's Chair. However, our college has always had a strong relationship with ORNL, so it was a natural fit for us to work with the associate lab directors to find synergies between the appropriate ORNL divisions and our departments. This has been a very successful program for us in that our Governor's Chairs were able to hit the ground running at both ORNL and UT and develop strong externally funded research programs very quickly.

In addition, a number of Governor's Chairs hold joint appointments with other colleges and programs within the university, further enhancing the multidisciplinary activities of our college. The Governor's Chair program also provided us an opportunity to hire a select number of supporting faculty hires that were guaranteed for a three to five year period. The funds provided by the state through the Governor's Fund Program allowed us to insure the long-term sustainability of these supporting faculty hires. The university is coming to the point where the Governor's Chair program funds are fully committed, but I am optimistic that the success of the program will provide opportunity for expansion sometime in the future.

TE: In 2013, the college hired one of the most diverse groups of new faculty in its history. Why is this such an important accomplishment?

WD: The engineering profession (at both universities and corporations) has always had a major challenge with diversity. However, it is essential that we provide role models and mentors that will attract an increasingly diverse student body. We were able to focus on hiring a very diverse faculty, and we have a substantial number of programs at the pre-college level to help us attract a diverse student body.

While we are close to the national average with respect to women, African-American, and Hispanic faculty, we are still far below where we should be to provide the truly diverse experience that our students deserve, so this continues to be a high priority for both our college and university.

TE: The college now has six National Academy of Engineering members. Please explain the significance of this increased number of NAE members to the university and the College of Engineering.

WD: The National Academy of Engineers (NAE) is a non-profit organization under the National Academies consisting of members who are elected to this academy on the basis of their engineering expertise. The NAE members provide independent advice to the federal government and society in general on matters involving engineering and technology, including the "Grand Challenges" established by NAE in 2008 (visit www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=02152008 for more information of issues that face our world today).

UT Graduates Named Grand Challenges Scholars



Mark Walker
Nuclear Engineering Degree
Received 2012



Katelyn Elizabeth Hasse
Nuclear Engineering Degree
Received 2013



Morgan Raney Baltz
Chemical Engineering Degree
Received 2013



Blake Alexander Palles
Nuclear Engineering Degree
Received 2014



Ethan Zachariah Cansler
Aerospace Engineering Degree
Received 2013



GRAND CHALLENGES FOR ENGINEERING

Facilities

TE: The college now has two new, state-of-the-art facilities, dedicated in 2012 and 2013: The Min H. Kao Electrical Engineering and Computer Science Building and the John D. Tickle Engineering Building. How have these two buildings improved the college's ability to meet the goals of its research and teaching mission?

WD: These two new buildings have been a central focus of our college for the last ten years, as we completed the planning, design, and construction phases, and it is exciting to see both of them now open! Both facilities are excellent examples of the synergy between our alumni commitments, the university, and the State of Tennessee. These buildings would not have happened except for the funds provided by Dr. Min Kao and Mr. John Tickle and the state's appropriations. The buildings helped to relieve part of the pressures on space created by the rapid growth of our student enrollment, faculty size, and critical needs for research space. I will be forever thankful to these two friends and their families for their transforming investments in our college and to the success of our current and future students, faculty, and staff who are served by these facilities.

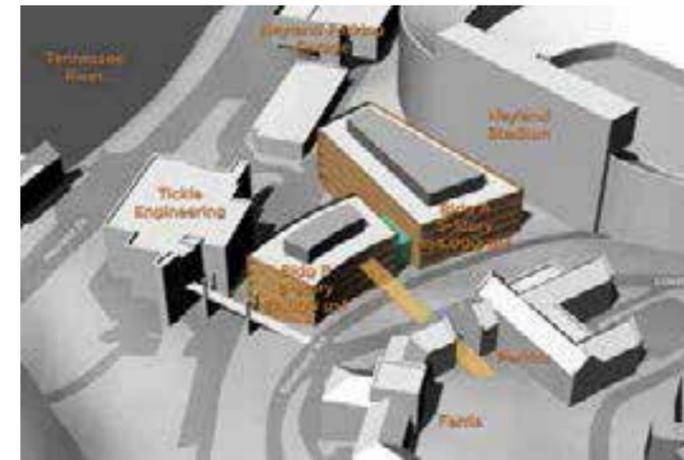
TE: Funding of \$10 million in alumni support is in place to build a new engineering complex to house the freshman engineering program, the Engineering Honors Program, advising-related program offices, and the Department of Nuclear Engineering (NE). What is the current status of this new facility?

WD: Thanks to the continuing generosity of Mr. Tickle and Dr. Kao, we have met the college's commitment for private philanthropy needed to initiate the planning phase for this third, much-needed engineering complex that will house NE, the freshman programs, and additional research laboratories. The building as planned with approximately two-hundred and twenty thousand square feet will cost approximately \$100 million and is currently second on UT Knoxville's building priority list with the state.

We are hoping that the architectural design will begin within the next year. The building will be built on the site of the current Pasqua Nuclear Engineering Building (originally UT's steam plant, built in 1928), Berry Hall, and Estabrook Hall (originally built in 1898 and also in part a former steam plant). Preparations have also been initiated to modify Perkins Hall, which will be the temporary home of the freshman engineering programs while the complex is being constructed. We are currently waiting on state appropriations to be allocated to cover approximately seventy-five percent of the building's costs.

TE: What is being done to upgrade the Dougherty Engineering Building into a state-of-the-art facility?

WD: The Dougherty Engineering Building has been the focus of a number of significant upgrades over the last two years, including laboratory renovations funded by a \$1.8 million ARA grant from the National Science Foundation, in addition to \$350,000 in funding from the UT central administration. Eastman Chemical has also provided \$1 million as part of a \$2 million gift to completely renovate the Chemical Engineering Unit Operations Laboratory; that work should be completed by February 2015. These renovations provide significant new teaching and research laboratories for three departments: the Department of Chemical and Biomolecular Engineering, the Department of Materials Science and Engineering, and the Department of Mechanical, Aerospace, and Biomedical Engineering.



One of the design options for the new engineering complex.

Alumni/Giving

TE: The college has also seen a significant increase in the number of endowed Chairs, Professorships, and Faculty Fellows during the past five years. How do these positions influence the college's reputation nationally and internationally, and what benefit do these high-profile faculty members provide to students?

WD: These named endowments actually provide opportunities for us to attract and retain the very best faculty—a direct benefit to the students. We have many deserving faculty and this area is the college's highest fundraising priority. Fortunately, our alumni and friends (both individuals and corporations) have really responded to our needs in this area and are continuing to do so. Recently announced endowed positions include the John Prados Professorship; the Gibson Chair in Engineering; the Wayne T. Davis Endowed Dean's Chair in Engineering, funded by John and Ann Tickle, Chad and Ann Holliday, Joe and Judy Cook, and Eric and Elaine Zeanah; the Gonzalez Family Professorship; the Cook-Eversole Professorship; the Jerry and Kay Henry Professorship; the UCOR, Ferguson, and Heath Fellows; three Eastman Professors of Practice, and the UL Professor of Practice. Others have been previously announced and several are in progress or have been established as estate bequest gifts.

TE: What message would you send to engineering alumni who want to support the college but are unsure how to start giving?

WD: Call us. Our development team, headed by Dorothy Bryson, has come to appreciate this college as much as we do. They know how to make each gift fit what will work for you—whether it is your first gift to an annual fund, establishing an endowment, or putting us in your estate plans for the future. First and foremost, alumni giving has allowed our college to increase the quality of the education that we are providing. Large gifts, like endowed faculty positions, named rooms in buildings, and fellowship endowments have a significant impact on the college's and our seven departments' abilities to enhance the educational experience of our students. Yet, the large number of smaller gifts such as those

received through annual giving programs collectively provide critically needed funds that allow the college and the heads of the departments/programs to respond to shorter term needs such as purchasing equipment and supplies for student teaching/research experiences, and student design experiences such as freshman and senior capstone design.

My message to alumni and friends is that we need "you" to be involved with our college as we continue on the journey to becoming a Top 25 public college of engineering and Top 25 departments.

TE: What are other ways for alumni to become involved?

WD: Involvement comes in many ways: financial gifts, as an advisor on one of our boards, serving as a speaker to a student chapter of a professional group, or bringing your expertise into the classroom or laboratory. You are involved when you wear orange at your office and tell the UT engineering story to your colleagues. You are involved when you recruit new students to the university and the college. Come to our engineering alumni events when we are in your area, and always try to come back for the Homecoming event. We always want to stay engaged with our alumni.

The Next 5 Years

TE: What are your primary goals for the college in the next five years in terms of students, faculty, and facilities?

WD: I will focus here on my primary goals, realizing that there are many secondary goals and that none of the goals could be accomplished without the help and support of our faculty, staff, university administration, state, alumni, and friends. With regard to students, it is to identify and secure adequate resources to ensure that we never have to turn away the high quality students who meet our entrance requirements and that we would provide each of them with world-class quality education. From a faculty perspective, my goal is to attract and retain the outstanding faculty that we currently have and that we will hire in the future—they are the key for us to achieve excellence. As mentioned earlier, my highest priority in facilities is to see the much needed new engineering complex funded, designed, constructed, and housing our freshman engineering programs, the NE department, and college-wide research laboratories.

TE: What are some of the difficulties facing the college in the next five years?

WD: The word "difficulties" sounds negative to me. I prefer to think about challenges and uncertainties that often present opportunities. The biggest uncertainty that our college faces is the same one that we face as a nation—the economy. In general, the engineering profession is resilient. We were able to excel and grow during and since the last recession. Critical thinking and teamwork are key skill sets within the engineering profession, so I am optimistic that our college is in a good position to address any challenges and uncertainties that might arise.

TE: What would you like to see as your legacy as dean when you retire or step down?

WD: First of all, I want to say that I have had the most fun in my position as dean than anytime in the history of my forty-three years of employment at UT (as a graduate student, faculty member, and as dean)! I've just signed an additional five-year contract with the university to remain as engineering dean for the foreseeable future.

When I do retire, I would like to believe that everyone associated with our college has caught and felt the excitement that I have had and still have about the transformation that our college has seen during my tenure as dean. I also hope that I can recognize the right time to leave and that I will be able to provide the college and the university ample time to identify my successor.



UT College of Engineering National Academy of Engineering Members



Dr. Mark Dean
Electrical Engineering and Computer Science



Dr. George Pharr
Materials Science and Engineering



Dr. Robert Dodds
Civil Engineering



Dr. Ramamoorthy Ramesh
Materials Science and Engineering



Dr. Jack Dongarra
Computer Science

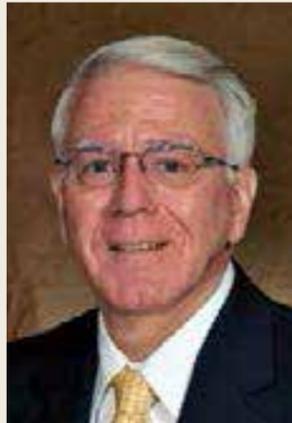


Dr. Steve Zinkle
Nuclear Engineering

We are very fortunate to have four tenured professors and two part time faculty who are members of NAE. This increase from one to six in the last two years provides us another opportunity to showcase the cutting edge research being conducted in our college and to provide students the opportunity to interact with these outstanding contributors to engineering innovations.

A select group of our undergraduate engineering students also participate in the NAE Grand Challenge Scholars Program, a national initiative established under the NAE for students who are addressing one of the NAE Grand Challenges.

COE Dean Wayne T. Davis Addresses Conference in China



Dr. Wayne T. Davis

COE Dean Wayne Davis was one of the invited speakers at the 2014 International Conference on Engineering Science and Technology in Beijing.

The conference, "Engineering and the Future of Humankind,"

was sponsored by the United Nations Educational, Scientific, and Cultural Organization, known better as UNESCO; the International Council of Academies of Engineering and Technological Sciences; and the Chinese Academy of Engineering.

Chinese President Xi Jinping addressed the conference, saying that innovation will lead the way in his country's intensified efforts to

protect the environment and develop into a country with "blue skies and clean water."

More than one thousand five hundred leading researchers from around the world attended the two-day event June 2 and 3, which was broken down into parallel sessions dealing with engineering issues pertaining to the environment.

Davis, in a session labeled "Environment and Green Development," provided a presentation titled "Reduction of Sulfur Emissions From Fossil Fuels—Successes and Challenges," which was based on his extensive experience in air quality management and pollution control.

The report involved comparing the successes the United States has had in reducing sulfur emissions and the associated profound drop in the reduction of particulate air pollution with TVA's successes in addressing how to economically reduce carbon dioxide and sulfur and nitrogen oxides emissions, and the ensuing improvement in air quality that has occurred in the United States.

With its economy having rapidly modernized over the last generation, China

has found itself in a position where it must weigh economic growth with environmental and health concerns.

Air quality indicators there have shown pollution to be in excess of World Health Organization and US standards to the tune of ten to twenty times the accepted limits.

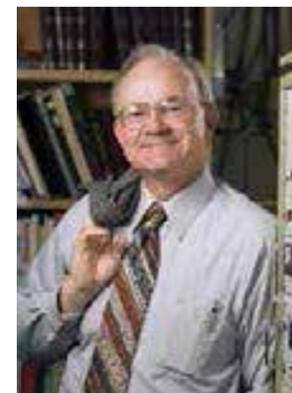
China is now making an effort to address the issue, with President Xi's comments to the conference indicating that he understands it is one of the biggest challenges facing his country today.

The burning of fossil fuels for power generation and for transportation in China is a major contributor to climate change, but the health risks associated with air quality are alerting Chinese leaders and civilians to look for alternatives.

Davis was invited to the conference due to his expertise in air quality concerns, his years of research in the area, and his understanding of management and control of air particulates as related to power production in particular.

For more information on the conference, visit www.icest2014.cae.cn/highlight.html.

Dr. Gregory Reed Returns to Department of Civil and Environmental Engineering as Interim Head



Dr. Gregory Reed

Dr. Gregory Reed, the former associate vice chancellor of research with the University of Tennessee Office of Research and Engagement, is returning to the College of Engineering as interim head of the Department of Civil and Environmental Engineering (CEE) effective August 1, 2014.

Reed, who was department head of CEE for twenty-one years until accepting the position in the research office in 2007, initially had plans to retire in 2014. At the request of COE Dean Wayne Davis, he agreed to stay on at the university to act as the interim CEE head, where he will serve until a permanent department head is selected. The college will be conducting a national search beginning in the fall of this year, with the goal of selecting a new department head by the spring of 2015.

Reed received his PhD from the University of Arkansas. He is a Fellow in the National Society of Professional Engineers and the American Society of Civil Engineers and is the former president of the Tennessee Society of Professional Engineers and the Tennessee Engineering Foundation.

"I thoroughly enjoyed being department head in the past, so I am excited to be back to help the department to continue to make significant progress during this time of transition," Reed said.

"The college is excited about Greg's willingness to assist in this very important role, and we look forward to his return as interim head of the civil and environmental engineering department," Davis said.

CEE Faculty Member Receives NYIP Award



Dr. Stephanie TerMaath

Dr. Stephanie TerMaath, an assistant professor in the Department of Civil and Environmental Engineering, recently received a \$510,000 research grant from the Office of Naval Research (ONR) Young Investigator Program (YIP). TerMaath received the award for her work in repairing ship hulls. TerMaath and several of her students will continue this research at the Naval Surface Warfare Center Carderock Division in Potomac, Maryland. The team will be looking at ways to optimize the reliability of composite patches for aluminum ship hulls.

The ONR YIP is one of the oldest and most selective scientific research advancement programs in the country. The purpose of the awards are to fund early-career academic researchers-called investigators-whose scientific pursuits show exceptional promise for supporting the Department of Defense, while also promoting the selected awardees' professional development. A total of twenty-four YIP winners were selected in 2014 from a competitive, diverse pool of nearly two hundred and eighty candidates. Each selectee receives annual monetary awards over a three-year period for their research work.

For a full list of award winners, visit www.onr.navy.mil/en/Media-Center/Press-Releases/2014/ONR-Announces-2014-YIP-Winners.aspx

Hairong Qi is First Female Faculty Named to an Endowed Professorship



Dr. Hairong Qi

The College of Engineering is continuing its recent growth and making a little history in the process thanks to a recent endowment announcement by Ralph and Connie Gonzalez.

Dr. Hairong Qi will become the first female to hold an endowed position in the College of Engineering thanks to the Gonzalez Family Endowed Professorship in the Department of Electrical Engineering and Computer Science.

"Receiving this honor, and in particular thanks to Dr. Gonzalez's support, sets a high bar and encourages and stimulates me to live up to his legacy," said Qi. "The resources provided will allow us to build a world-class image processing program and add to that legacy."

For Ralph Gonzalez, a former head and longtime member of the department, the opportunity to continue his support of UT even in retirement was too good to pass.

Gonzalez came to UT in 1970 and joined what was then called the Electrical and Computer Engineering Department. He spent more than a quarter century there, rising to department chair for his last few years before retiring. In an unusual way, that retirement helped spark today's announcement.

"I was first hired to fill his position after his retirement and now, fifteen years later, I've been selected for his named professorship," said Qi. "My gratitude and excitement are beyond words."

Even while working for UT, Gonzalez began to give back, making a major gift in 1989 and continuing to do so in the intervening years, including the Gonzalez Family Faculty and Staff Endowment and the Gonzalez Family Engineering Global Initiatives Endowment.

Qi was chosen for the professorship because of her knowledge of image processing and computer vision. Her expertise in image processing, in particular, ties into a key part of Gonzalez's background, as he founded Perceptics Corporation in 1982 and molded it into a leader in that field, eventually selling it to the Westinghouse Corporation in 1989.

Qi has won numerous awards for research and papers, including recognitions from the National Science Foundation and the Institute of Electrical and Electronics Engineers.

NE Department Head Receives ASEE Award



Dr. J. Westley Hines

Dr. J. Wesley Hines, professor and head of the Department of Nuclear Engineering, received the American Society of Engineering Education's (ASEE) Glenn Murphy Award on June 16, 2014, at the 2014 ASEE Annual Conference and Exposition in Indianapolis, Indiana. Hines was selected by the ASEE Nuclear Engineering Division based on his contributions to engineering education and achievements in the nuclear engineering field.

For more information about the conference, visit monolith.asee.org/conferences-and-events/conferences/annual-conference/2014.

MABE Department Head Makes List of Highly Cited Researchers



Dr. Matthew Mench

Dr. Matthew M. Mench, professor and head of the Department of Mechanical, Aerospace, and Biomedical Engineering, recently made the 2014 list of Highly Cited Researchers. This list represents the world's

leading scientific minds, and over three thousand researchers earned the distinction by writing the greatest numbers of reports officially designated by Essential Science Indicators SM as Highly Cited Papers—ranking among the top one percent most cited for their subject field and year of publication, and designating them as making an exceptional impact on the science and research community.

For more information, visit highlycited.com/

CBE Professor Stephen Paddison Named Gibson Endowed Chair in Engineering



Dr. Stephen Paddison

Dr. Stephen Paddison, professor and Ferguson Fellow in the Department of Chemical and Biomolecular Engineering, has been named the first Gibson Endowed Chair in Engineering.

The position is funded by a \$1.5 million endowment from the Gibson Family Foundation, and was created with the specific goal of expanding research into environmentally friendly, sustainable energy. The Gibson Family Foundation was established by UT industrial engineering alumnus Jim Gibson.

Gibson owned and operated Gibson Tube, a company founded by his father that manufactures specialized tubing for the oil and gas industry. After selling the company in 1999, Gibson founded Pressure Tube Manufacturing LLC, which he later sold. A longtime supporter of UT, Gibson's past gifts have gone to benefit the Jerry E. Stoneking engage™ Engineering Fundamentals Program, research projects, and construction of the John D. Tickle Engineering building, where the fifth-floor conference room is named in his honor.

Paddison has garnered worldwide acclaim for his role in developing membranes for fuel cells, including membership in Britain's Royal Society of Chemistry.

In addition to the awards he has won and the research he has conducted in the United States, the United Kingdom, and Germany, Paddison also spent a number of years at Los Alamos National Laboratory and now leads the Paddison Research Group in the quest for more efficient fuel cells.

While the endowment itself is a major plus for the college, the impact on research, funding, and breakthroughs that it could generate are even greater.

An internal study indicates that over the next twenty years the initial investment could lead to as much as \$10 million in additional funding and that as many as thirty doctoral candidates will have their careers launched by research related to the work.

Faculty Focus: Dr. Thanos Papanicolaou



Dr. Thanos Papanicolaou joined the College of Engineering (COE) in the spring of 2014 as the Henry Goodrich Chair of Excellence Professor in the Department of Civil and Environmental Engineering (CEE). He arrived from his previous position at the University of Iowa (UI) with barely a break in his workflow, successfully landing eleven grants over the summer and bringing literal truckloads of research capability along with him to establish the new Hydraulics and Sedimentation Laboratory (HSL).

The truckloads—three semi-trailers and seven smaller trucks—brought the large amount of equipment that enables Papanicolaou to study the way sediments and soil interact with flowing water and precipitation. He and his team members have kept busy setting up two large flumes, pumps, gauges, and other gear—including a boat.

“It has been a challenge for my personnel, research engineers, post docs, and graduate students working with me,” said Papanicolaou. “I appreciate their patience, too. I think this change is for good for everyone involved.”

His move to UT connects CEE with a multi-university research effort to improve the resilience of natural systems that have been modified for agriculture and other uses. Papanicolaou is co-director of the Critical Zone Observatory for Intensively Managed Landscapes (IML-CZO), a project funded by the National Science Foundation (NSF) with study sites in Iowa, Illinois, and Minnesota.

“The emphasis of the IML-CZO is to understand if we have exhausted the earth’s critical resources in an intensively managed

landscape,” said Papanicolaou. “Can these landscapes support the increased demands for bioenergy and food production without further deteriorating natural ecosystem resources?”

Other important angles of Papanicolaou’s research involve increasing the understanding of how sediment builds up behind dams and affects infrastructure such as bridge supports, and also tracing the biology and source of the water-borne soil. Multiple national and regional agencies—from the Department of Transportation to NASA to TVA—look for beneficial information from these studies.

Papanicolaou grew up on his family’s farm in what he calls the “Midwest” of Greece, experiencing diverse landscapes from mountain rivers to fertile valleys and the sea coast.

“I also witnessed first-hand the different interactions that we humans must have with our environment to sustain our livelihood,” he said. “All these sights have shaped who I am as a researcher and a teacher.”

Papanicolaou’s teaching focuses on the fundamentals of fluid mechanics and continuum, mechanics of sediment transport, and methods of hydraulic measurements. He likes to interact with students on a daily basis, encouraging involvement from early in their undergraduate years.

“I follow a Socratic approach by poking student participation through questions,” he said. “I really believe in fostering the idea of taking initiatives and in hands-on demonstrations.”

Papanicolaou earned his own undergraduate degree in civil engineering in 1990 from Aristotle University of Thessaloniki, Greece. He earned his MS degree in 1993 and his doctorate in 1997 from Virginia Polytechnic Institute and State University.

Multiple elements attracted Papanicolaou to join the UT community, with the dynamic nature of the college and the CEE department at the top of his list.

“I was impressed with the changes in the department and the desire to grow,” he said. “The commitment at the university level has been amazing. CEE is well balanced and, with the John D. Tickle building, provides state-of-the-art facilities for training future engineers.”

He feels encouraged in his work by his appointment as the Goodrich Chair of Excellence Professor, and additionally from winning the 2014 ASCE Hunter Rouse Hydraulics Award.

“Certainly it is an honor and recognition of my research efforts and efforts in the classroom,” said Papanicolaou. “The position allows me to lead an effort towards the establishment of an internationally-renowned laboratory with state-of-the-art facilities.”

Papanicolaou’s wife, Dr. Julie Andsager, was another influence in his move to Knoxville—she earned her PhD in journalism at UT in 1993. She has also joined the UT faculty after serving as a professor and interim director of the School of Journalism and Mass Communication at UI.

“She has good friends here and excellent memories,” he said. “She is a Volunteer!”

Outside of academics, Papanicolaou enjoys linguistics, math, and music, and keeps tabs on sports and politics. He and Andsager are eager to explore the Tennessee region, and find out where to get the best barbeque.

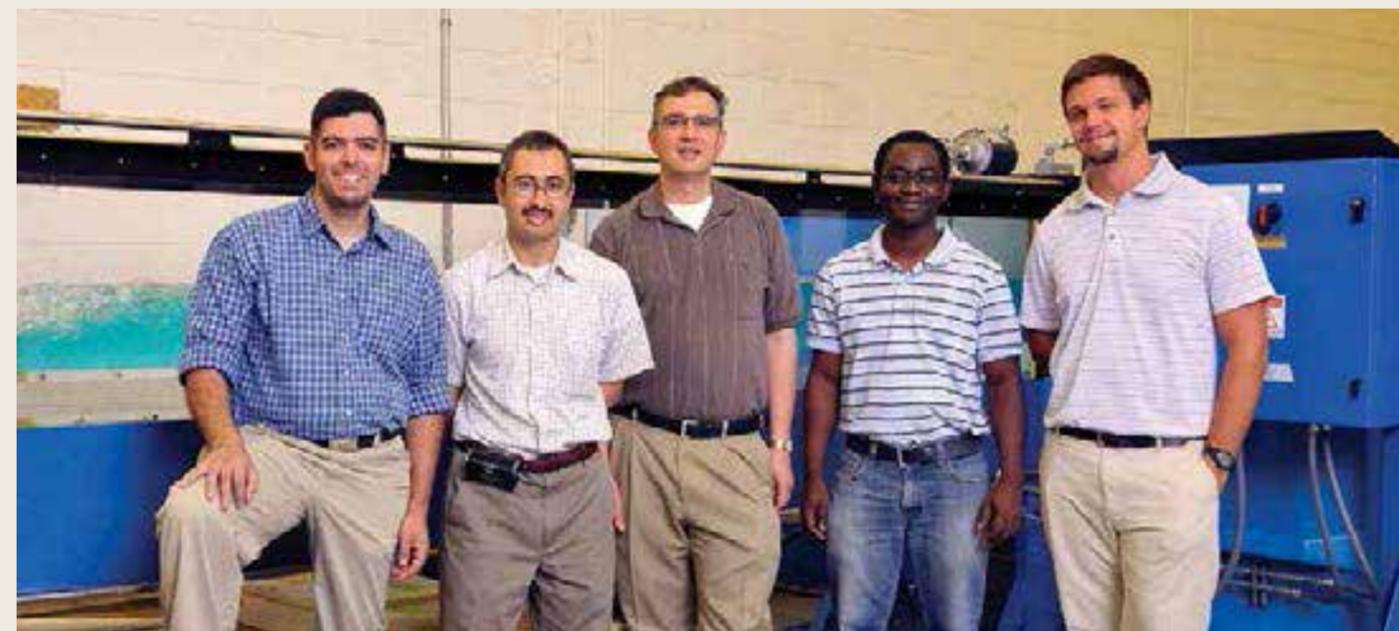
“I would love to visit the mountains whenever the opportunity arises,” he added.

Even with the flurry of activity accompanying their relocation and the establishing of new facilities, the couple has settled in smoothly to the UT community.

“My colleagues have been fantastic in welcoming me here, and the main office extremely helpful,” said Papanicolaou. “The campus appears to be a very dynamic place.”



Postdoctoral research associate and lab manager Achilleas Tsakiris, center, assists Dr. Thanos Papanicolaou, right, in a demonstration of the large flume at the Hydraulics and Sedimentation Laboratory as, from left, Dr. Mohamed Elhakeem and civil engineering graduate student Micah Wyssmann look on.



Hydraulics and Sedimentation Laboratory team members include, from left, postdoctoral research associate Achilleas Tsakiris, Dr. Mohamed Elhakeem, Dr. Thanos Papanicolaou, graduate student Ben Abban, and graduate student Micah Wyssmann.

NE Professor Receives Power Grant



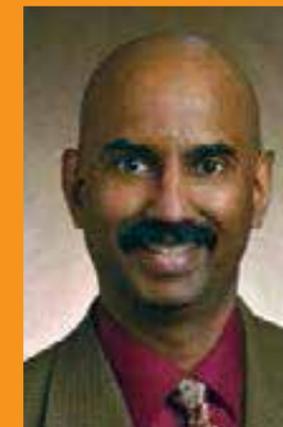
Dr. Steven Skutnik

Dr. Steven Skutnik, an assistant professor in the Department of Nuclear Engineering (NE) was among thirty-five awardees to receive the Ralph E. Powe Junior Faculty Enhancement Awards from Oak Ridge Associated Universities (ORAU). The funds are designed to “enrich the research and professional growth” of young faculty members at universities that are part of the Oak Ridge-based consortium. ORAU has awarded more than \$2.7 million in grants through the Powe program since 1991.

Visit www.orau.org/university-partnerships/faculty-student-programs/powe/powe-winners.aspx for more information.



CEE’s Nambisan Elected President of Council of University Transportation Centers



Dr. Shashi Nambisan

Dr. Shashi Nambisan, a faculty member with the Department of Civil and Environmental Engineering (CEE) and the Center for Transportation Research (CTR) has been elected president of the Council of University Transportation Centers.

Nambisan is one of the leading researchers in the area of transportation, whose expertise led the governor of Nevada to proclaim “Shashi Nambisan Day” in recognition of his efforts to improve transportation safety in that state.

“To be elected by my peers is both a great honor and a great responsibility,” said Nambisan, who, along with DeAnna Flinchum, serves as co-director of education and workforce development for the

Southeastern Transportation Center. “I’m excited to be in a position to help address education, research, and outreach in my field of transportation. To be the spokesperson for such a diverse, well-respected group is a privilege.”

The Council of University Transportation Centers—CUTC—is a leading proponent of safety, research, education, and development in relation to the upkeep and expansion of the nation’s transportation system.

While its beginnings can be traced to a 1971 federal mandate calling for the establishment of transportation-focused research centers, CUTC itself was founded in 1979 and now includes almost ninety public and private institutions.

The growth of the group has led to collaboration between institutions that might not have otherwise had a chance to work together, and has led to an increase in the sharing of ideas. Along the way, the spectrum of topics the group can cover has increased as well.

Nambisan, who has been on the CUTC executive committee since 2010, will serve until June 2015. He has previously been director, treasurer, secretary, and vice president of the group.

New Faculty



Dr. John (Zhanhu) Guo



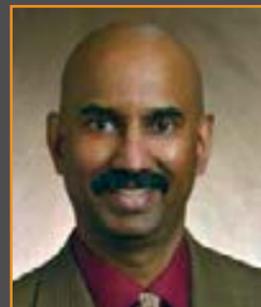
Dr. Arthur Ragauskas



Dr. Islam El-adaway



Dr. Kan Huang



Dr. Shashi Nambisan



Dr. Donatello Materassi



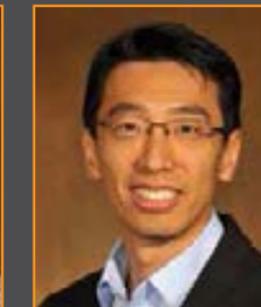
Dr. Audris Mockus



Dr. Hector Pulgar-Painemal



Dr. Garret Rose



Dr. Chao Tian



Dr. Thanos Papanicolaou



Dr. Abbas Rashidi



Dr. Christopher Wilson



Dr. Michael Jantz



Dr. Andreas Koschan



Dr. Yan Xu



Dr. Anahita Khojandi



Dr. Janice Tolk



Chris Wetteland



Dr. Emam Abdel-Fatah

As in 2013, the College of Engineering (COE) continues to build its community with a roster of more than two dozen new faculty members for 2014, moving forward to strengthen the college's opportunities for teaching and research.

Department of Chemical and Biomolecular Engineering

Dr. John (Zhanhu) Guo

Associate Professor
PhD: Louisiana State University, Baton Rouge

Research Areas: Multifunctional polymer and carbon nanocomposites; electrochemical energy storage; supercapacitors and electrode materials; polymer nanocomposite membrane, fuel efficiency improvement; electropolymerization/electrodeposition; giant magnetoresistance sensors; electrochromic materials, microwave absorption materials development; environmental sustainability and remediation.

Dr. Arthur Ragauskas

Governor's Chair Professor for Biorefining
PhD: University of Western Ontario

Research Areas: Converting plant matter into biofuels; bio-based chemicals and materials for use in areas ranging from health care to packing materials.

Department of Civil and Environmental Engineering

Dr. Islam El-adaway

Associate Professor
Construction Engineering and Management Program Coordinator
PhD: Iowa State University

Research Areas: Sustainable infrastructure systems, risk and financial engineering; holistic management for natural and man-made hazards; contractual and legal affairs in construction; agent based simulation and system dynamics modeling; engineering education; and engineering ethics.

Dr. Kan Huang

Research Assistant Professor
PhD: Fudan University, China

Research Areas: Atmospheric science related to aerosol formation, transport, and impacts.

Dr. Shashi Nambisan

Professor
PhD: University of California, Berkeley

Research Areas: Transportation safety, risk analysis; data-enabled decision support systems; vulnerable road users; education and work-force development.

Dr. Thanos Papanicolaou

Goodrich Chair of Excellence Professor

PhD: Virginia Polytechnic Institute and State University

Research Areas: Hydrodynamics, modeling, sediment transport, sensors.

Dr. Abbas Rashidi

Assistant Professor
PhD: Georgia Institute of Technology

Research Areas: Applications of information technologies for managing infrastructure systems; applications of machine learning, computer vision, pattern recognition, robotics, and image and signal processing techniques for automating different processes in construction industry.

Dr. Christopher Wilson

Research Assistant Professor
PhD: Case Western University

Research Areas: Bank erosion; conservation practices; isotopic tracers; runoff and infiltration; sediment source partitioning; soil organic carbon biogeochemistry.

Department of Electrical Engineering and Computer Science

Dr. Michael Jantz

Assistant Professor
PhD: University of Kansas

Research Areas: Compilers, operating systems, and runtime systems (virtual machines); innovative system tools and techniques to enable more efficient execution on modern architectures.

Dr. Andreas Koschan

Professor of Practice
PhD: Technical University Berlin, Germany

Research Areas: Image processing, computer vision, biometrics, robotics, multispectral and color vision, industrial inspection, and homeland security.

Dr. Donatello Materassi

Assistant Professor
PhD: Universita degli Studi di Firenze, Florence, Italy

Research Areas: Development of a general theoretical framework for the reconstruction of networks of dynamical systems.

Dr. Audris Mockus

Harlan Mills Chair Professor
PhD: Carnegie Mellon University

Research Areas: Software engineering, data science, digital archeology.

Dr. Hector Pulgar-Painemal

Assistant Professor
PhD: University of Illinois at Urbana Champaign

Research Areas: Power systems dynamics and stability; power system operation and control; renewable energy integration; energy storage systems, wind farm modeling; voltage collapse and bifurcation analysis.

Dr. Garrett Rose

Associate Professor
PhD: University of Virginia

Research Areas: Nanoelectric circuit design; low power VLSI; neuromorphic computing;

circuits for reconfigurable computing architectures; hardware security and the crossroads of nanoelectronics and computer security.

Dr. Chao Tian

Associate Professor
PhD: Cornell University

Research Areas: Data storage systems; information theory; data communication and networks; joint source-channel coding; image/video coding and processing.

Dr. Yan Xu

Eastman Professor of Practice
PhD: University of Tennessee

Research Areas: Power systems and power electronics, including utility applications of power electronics, renewable energy integration, smart grid, microgrid, communication, control, protection; energy management of power systems.

Department of Industrial and Systems Engineering

Dr. Anahita Khojandi

Assistant Professor
PhD: University of Pittsburgh

Research Areas: Sequential decision making under uncertainty; medical decision making; reliability; maintenance optimization; stochastic processes; Markov decision processes.

Dr. Janice Tolk

Assistant Professor
UT Space Institute
PhD: Texas Tech University

Research Areas: High Reliability Organizations (HRO); performance measurement; deferred maintenance; strategic management.

Department of Materials Science and Engineering

Chris Wetteland

Lecturer

Research Areas: Simulating the role of high-energy protons in primitive solar system materials; radiation damage in nuclear materials; ion beam analysis; ceramic processing; development of solar thermal and solar electric renewable energy systems; STEM outreach.

Department of Mechanical, Aerospace, and Biomedical Engineering

Dr. Emam Abdel-Fatah

Research Assistant Professor
PhD: University of Tennessee

Research Areas: Process modeling, healthcare engineering, pervasive computing, medical imaging, computer vision, machine learning, biomechanics, computational anatomy, anthropology.



Dr. Elizabeth Barker



Dr. John Schmisser



Dr. Seungha Shin



Dr. Matthew Young



Dr. David Donovan



Dr. Isaac Jeldes



Dr. Rachel McCord

Dr. Elizabeth Barker

Lecturer
PhD: University of Tennessee Health Science Center

Research Areas: Synthesis and characterization of novel biomaterials; development of hydrogel drug delivery systems; local drug delivery to solid tumors; drug penetration through tumor tissue.

Dr. John Schmisser

Goethert Professor and H.H. Arnold Chair
UT Space Institute
PhD: Purdue University

Research Areas: Computational fluid dynamics focusing on high-speed viscous flows; turbulent and transitional shock interactions; integration of empirical and numerical simulations within a comprehensive framework.

Dr. Seungha Shin

Assistant Professor
PhD: University of Michigan, Ann Arbor

Research Areas: Fundamentals and innovative applications of energy transport and conversion (heat transfer physics); multiscale, multiphysics simulations (ab initio, molecular dynamics, and meso or Boltzmann); thermal energy transport and conversion in nonequilibrium, heterostructures (interfaces, molecular junctions), graphene, and energy conversion devices (solar cell, fuel cell, etc.).

Dr. Matthew Young

Eastman Assistant Professor of Practice
PhD: University of Tennessee

Research Areas: Engineering pedagogical methods; robotics and controls; machine design.

Department of Nuclear Engineering

Dr. David Donovan

Assistant Professor
PhD: University of Wisconsin-Madison

Research Areas: Nuclear fusion science and technology through experimental, theoretical, and computational methods.

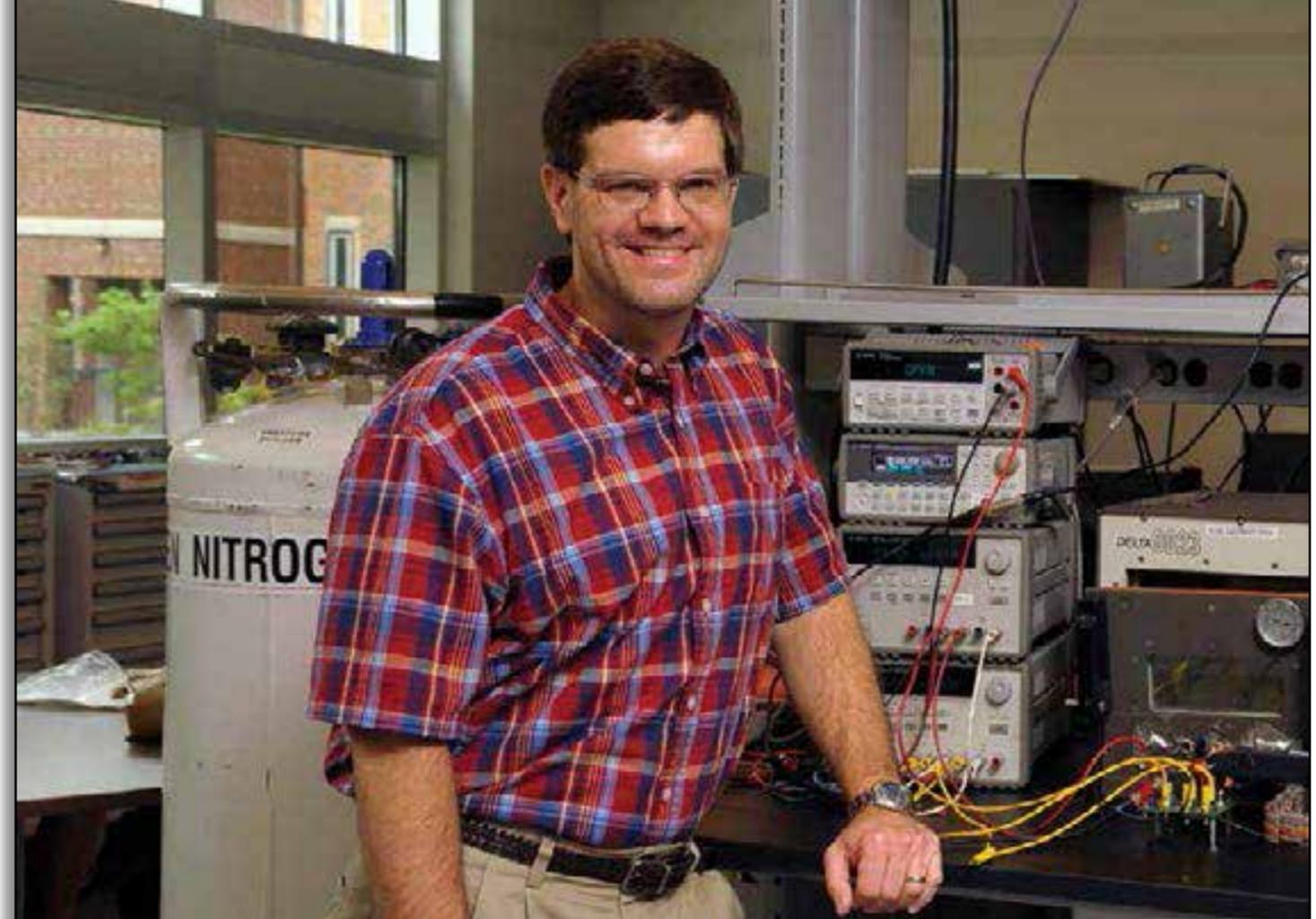
Engineering Fundamentals Division

Dr. Isaac Jeldes

Lecturer
Research Areas: Numerical modeling; geomechanics of slope stability; restoration of mine-reclaimed sites; soil erosion; retaining structures; partially saturated soils.

Dr. Rachel McCord

Lecturer
PhD: Virginia Polytechnic Institute and State University
Research Areas: Problem solving and metacognition; self-regulated learning in engineering; academic motivation.



The Blalock, Kennedy, Pierce Analog Electronics Professorship offers me valuable opportunities to involve my graduate and undergraduate students in important research projects that greatly enhance the value of their engineering education. Our research team in the Integrated Circuits and Systems Laboratory partnered with the Jet Propulsion Laboratory, a NASA Center of Excellence for robotic space exploration, in the design and development of the Mars Science Laboratory Quad Operational Amplifier microchip. This microchip was used in the motor actuator electronics on the exploration rover Curiosity, which landed on the surface of Mars almost two years ago and is still transmitting data to NASA researchers. I am grateful for the chance to involve my students in such a once-in-a-lifetime venture, and I hope their excitement about this project and others we are currently working on with the support from this endowment will help their research efforts aspire to new groundbreaking innovations.

Dr. Benjamin Blalock

*Blalock, Kennedy, Pierce Analog Electronics Professor
Department of Electrical Engineering and Computer Science*

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Student News

Civil Engineering PhD Candidate Wins Award and Scholarship



Hyeonsup Lim, a PhD candidate in the College of Engineering's Department of Civil and Environmental Engineering, earned an award and a scholarship in 2014 for his work in transportation studies.

Lim became the first student from UT to win the Intelligent Transportation Society (ITS) of Tennessee Scholarship Award and its \$2,000 prize. The award was presented at the ITS conference in Chattanooga, Tennessee, in April 2014.

In June, Lim received another \$2,000 via the T. Darcy Sullivan Scholarship from the Tennessee Section Institute of Transportation Engineers (TSITE). The award was presented at the TSITE Summer Meeting, held July 30-August 1, 2014, in Gatlinburg, Tennessee.

Lim also holds a Chancellor's Scholarship and works with the Southeastern Transportation Center in Major Research Initiatives.

"I'm so happy to get these scholarships and opportunities to keep working on my desired research," said Lim. "I'm getting a lot of benefits from our program. I really owe a lot of thanks to the great

instructors in CEE. Dr. Lee Han's support and encouragement and his referral of me were all significant factors in me winning this."

Lim's essay, "The Meaning and Value of ITS in Our Community," was born out of a bit of introspection on his part.

"Many times I sat and thought to myself, 'I study ITS, but what does that really mean,'" said Lim. "The big takeaway was that more focus needed to be put on how data was used, what people did with it, rather than just focusing on the quality or amount of data we got."

Often referred to as big data, the amount of information coming in wasn't just numerous in and of itself, but often came from multiple sources as well. Finding ways to sort through that, to analyze that for practical results became Lim's goal.

"Dr. Han, my advisor, has encouraged me often to think about the fundamental purposes and meaning of using those data," said Lim. "Coming at it from that angle was different from the sort of things I was used to doing, so I was thrilled to think about values of everything I do."

Putting the goals stated in his essay into practice has become a priority, one made more important by advances in technology.

"The smartphone revolution has really brought about rapid changes and developments in information technology," said Lim. "The boundaries related to services and systems of ITS are crumbling. The key now is that it is not just simply adapting new technologies; it's more about how intelligently we use them.

"It's a reminder of the 'intelligent' part of ITS."

Engineering Students Win in Vol Court Competition



Engineering students Dave Seeman and Christopher Saah took first and second place, respectively, in the Spring 2014 Vol Court pitch competition.

Seeman, senior in mechanical engineering and founder of Willow List, an innovative gift registry that used crowd sourcing to fund gifts, won first

place and received \$1,000. In addition to the cash prize, he also received space in the UT Research Foundation's business incubator, consulting services from Pershing Yoakley and Associates, legal services from Morehous Legal Group PLLC, and mentoring from the College of Business Administration's Anderson Center for Entrepreneurship and Innovation.

Seeman discontinued operations for Willow List in June 2014 to focus on other projects and new professional opportunities in the Knoxville area.

Saah, junior in mechanical engineering, took the \$500 second-place prize for founding MyPTshop.com, a web application that allows fitness professionals to start and manage an e-commerce fitness shop. Saah received space in the UT Research Foundation's business incubator, legal support from Morehous Legal Group PLLC, and mentoring from the Anderson Center for Entrepreneurship and Innovation.

Vol Court is a speaker series and pitch competition presented by the College of Business Administration's Anderson Center for Entrepreneurship and Innovation. The goal of the program is to help people develop new business ideas and gain entrepreneurial skills. It is sponsored by the Anderson Center for Entrepreneurship and Innovation, UT Federal Credit Union, Morehous Legal Group, Launch Tennessee, Pershing Yoakley and Associates, and the UT Research Foundation.

Vol Court is offered every fall and spring semester and is open to students, faculty, and the general public.

ISE Students Received Honors and Scholarships from IIE and Chancellor



David Herberich



Isaac Atuahene

Students in the Department of Industrial and Systems Engineering (ISE) won two prestigious scholarships from the Institute of Industrial Engineers (IIE) for 2014-2015.

David Herberich, an ISE sophomore, won the Marvin Mundel Memorial Scholarship in the amount of \$1,650. ISE graduate student Isaac Atuahene won the Lisa Zaken Award for Excellence in the amount of \$1,000.

In other awards and honors, multiple ISE students were recognized at the Chancellor's Honors Banquet. Gabrielle Knoll and Henry Harding McCall received 2014 Extraordinary Academic Achievement awards. Chamblee Collier, Nathan Cole Irwin, Nathaniel Truett Siler, Harshitha Muppaneni, and Girish Upreti earned 2014 Extraordinary Professional Promise awards.

Bredesen Center Graduates First Class As Program Grows

Scott Curran and Vincent Kandagor received their doctorates in energy science and engineering at the College of Engineering's graduate hooding on May 8, 2014, becoming the first graduates of the program founded by former Governor Phil Bredesen in partnership with the University of Tennessee and Oak Ridge National Laboratory (ORNL).

The Tennessee General Assembly approved the program in a special session on education in January 2010. The first class enrolled in the Bredesen Center for Interdisciplinary Research and Graduate Education in fall 2011, and it is now one of UT's fastest-growing graduate programs.

"We're awfully proud of Scott and Vincent," said Bredesen Center Director Lee Riedinger. "They both transferred into our program once we'd started and were able to really shine, to really do some positive things."

Curran, who focuses on alternative fuels, works at the National Transportation Research Center. Kandagor, who focuses on renewable energy, hopes to one day return to Kenya and use his knowledge to help his homeland deal with its energy challenges.

"It's gratifying to see the first graduates finish the program and be able to take what they've learned out into the world," said Bredesen. "The center has been amazing in the way that it has been able to grow without losing its focus."

The UT Board of Trustees renamed the program in 2011 to honor Bredesen's leadership in education and support of the UT-ORNL partnership. UT Chancellor Jimmy G. Cheek said the former governor laid the groundwork for the center to build a national reputation for its innovative interdisciplinary approach and opportunities for research between UT and ORNL.

"We're pleased that the Bredesen Center has been so successful in recruiting top-caliber students who are quickly becoming leaders in their fields," said Cheek. "The center is helping to advance our goal



Oak Ridge National Laboratory Director Thom Mason (seated, at left) and former Tennessee Gov. Phil Bredesen (center) sign certificates for the Bredesen Center's first two graduates, Vincent Kandagor and Scott Curran (standing, from left) while center director Lee Riedinger (at right) watches.

for growing research and graduate programs, all key steps in our journey to become a Top 25 public research university."

Curran served as outreach advisor for UT's EcoCAR 2 team, a US Department of Energy competition. He says the Bredesen Center helped to sharpen his focus on different fuels and fuel sources.

"Energy research is increasingly interdisciplinary, and the Bredesen Center is well suited to give both the knowledge depth and breadth needed to succeed in today's environment," Curran said.

The center is now a top choice for some of the most promising young scientists, thanks to a combined recruiting effort from UT and ORNL that has attracted students from Ivy League schools and top public universities. The center welcomed twenty-nine new students in fall 2013 and has more than one hundred students enrolled for fall 2014. For more on the Bredesen Center, visit bredesencenter.utk.edu/index.php.

Yang wins TSITE paper award

Jianjiang Yang, a PhD student in the Department of Civil and Environmental Engineering (CEE), has been awarded first place in the Tennessee Section Institute of Transportation Engineers (TSITE) annual student paper competition. His paper, "Short-Term Freeway Speed Profiling Based on Longitudinal Spatial-Temporal Dynamics," addresses, from a scientific standpoint, the concept of predicting traffic flow. The Southeastern Transportation Center helped support his project.

Much like meteorologists using data and instrumentation to forecast the weather, Yang's idea focuses on officials using various means to calculate where problems and slowdowns might occur before they happen.

"Using the data cleverly can achieve a level of accuracy in short-term traffic forecasting," Yang said. "In turn, that will provide the public with more accurate travel time information when planning for a trip, instead of having to rely on 'best-case scenario' travel time calculations like we have now."

Along with the award itself, Yang received \$500 and presented his paper at the group's summer meeting, held July 30-August 1, 2014, in Gatlinburg, Tennessee.

Not only could his research help drivers in the future, but it also could help the state meet a key government mandate.

"Our state can use his findings to help meet the federal goal of providing real-time traffic updates," said Dr. Lee Han, CEE professor. "Not only that, but having his work published in a respected publication like *Transportation Research Record*, a journal published by the National Academies, reflects well on him, on the department and on the college."



Jianjiang Yang stands with his award-winning poster.

The award isn't the first time Yang's traffic-related work has put a spotlight on UT. In 2013, Yang, Bryan Bartnik, and Zane Pannell were on UT's Traffic Bowl team that finished second in the national competition, losing in the finals by only one point.

College of Engineering Hosts International Lean Summer Program



Students participating in the Lean Summer Program enjoy breakfast at the opening ceremony on July 7 at the Foundry.



The opening ceremony featured speakers and specific information on participation in the Lean Summer program.



Students from around the world pose for a photo at the Lean Summer Program event.

Students from universities and institutes around the world arrived at UT this past summer as part of the International Lean Summer Program in the College of Engineering.

Sponsored by the Department of Industrial and Systems Engineering, the program attracted almost one hundred and twenty students to campus for a chance to study ways of reducing waste and increasing efficiency while partnering with students from countries around the world, beginning with an opening ceremony at the Foundry at World's Fair Park on July 7, 2014.

"Studying the manufacturing process is one of the components, but the bigger opportunity is to have students from China, Brazil, Ghana, Colombia, Mexico, Venezuela, Chile, and the US getting together, learning to work together, and sharing ideas," said program founder Dr. Rupy Sawhney, the Heath Faculty Fellow in Business and Engineering and a professor in the Department of Industrial and Systems Engineering.

While students get the benefit of the experience of the camp both scholastically and interpersonally, Sawhney said UT also gets a world of good out of the exposure.

"You have all of these students coming from a diverse array of places, and they all get to see UT, get to experience what UT has to offer, get to talk about UT when they get back home," said Sawhney. "You really can't undersell how much of an impact it makes. People at Monterrey University in Mexico had no idea what UT was when we started this. Now, if you go to their campus and ask 'What do you know about the University of Tennessee?' they will tell you that is where they learned Lean. From a university perspective, you can't put a price on that kind of exposure."

The future for the Lean Summer Program looks brighter still, with UT's Enrique Macías de Anda laying the groundwork for future partnerships with universities in France, Russia, and Italy.

If at least one of those European universities joins before next summer, it will mean the program will draw upon students from five of the six inhabited continents, with only Australia not represented.

Students began studies online at their home university before flying to UT for the remainder of the courses. While at UT, students had access to facilities, laboratories, and research in addition to faculty input during their progress through four distinct phases.

As part of the process, students also had the opportunity to take the systems that they have developed and travel with faculty to sponsoring companies to see how their ideas translate into a real-world scenario. The visits have included such diverse sponsors as East Tennessee Children's Hospital, Boeing Corporation, Aqua Chem, Pharma Packing, Monterey Mushrooms, Techmer PM, and the Brunswick Boat Group.

AICHE Chem E Car Team Competes in Puerto Rico



Chem E Car Team members included, from left, Nikhil Patel, Christian Wilson, Megan Farrell, Aston Thompson, and William Hawks.

UT's American Institute of Chemical Engineers (AIChE) Chem E Car Team followed its 2013 successes with a trip to the 2014 AIChE Southern Regional Conference, held at the University of Puerto Rico March 13-16, 2014.

The team placed second in the Chem E Car poster competition, adding to its list of awards from 2013, which included the National SACHe Award: Inherent Safety in Design for the best application of the principles of chemical process safety to the Chem E Car competition.

The team also succeeded in funding its trip to the Puerto Rico conference through a department-specific call to action crowd-funding project, raising \$1,330 in addition to a contribution from the Department of Chemical and Biomolecular Engineering.

Nuclear Engineering Students Receive DOE Scholarships

Nuclear Energy University Programs (NEUP) took notice of students in the Department of Nuclear Engineering (NE) in May 2014, bestowing nine undergraduate scholarships and three graduate fellowships.

Sponsored by the US Department of Energy (DOE) Integrated University Program, undergraduate winners receive a \$5,000 scholarship, while the graduate fellowship winners receive \$50,000 annually over three years, as well as \$5,000 toward summer internships at national laboratories or other approved locations.

The nine undergraduate students awarded scholarships are Sarah Combee, Kaitlyn Darby, Travis Labossiere-Hickman, Tucker McClanahan, Danielle McFall, Gregory Meinweiser, Mikah Rust, Whitney Smith, and Alyxandria Wszolek.

The three graduate students awarded fellowships are Daniel Hamm, Elizabeth Jones, and Ryan Sweet.

"Having our students selected for these honors is a validation of the things we've got going on in our college," said Dean Wayne Davis. "For our students to be recognized like this speaks to their dedication, innovation and commitment to their work."

The goal of the program is to strengthen ties between students and the DOE's nuclear energy research programs. Students are expected to take on studies of some of the challenges facing the industry today, including sustainability and efficiency.

The nine scholarships break UT's previous high of six, and represent the most awarded to any university, while the three fellowships are tied for the most in this year's awards.



NEUP undergraduate scholarship winners are, standing from left, Whitney Smith, Alyxandria Wszolek, Gregory Meinweiser, Mikah Rust, and Tucker McClanahan. Seated from left are Danielle McFall, Sarah Combee, and Travis Labossiere-Hickman. Not pictured, Kaitlyn Darby.



The NEUP graduate students awarded fellowships are, from left Daniel Hamm and Elizabeth Jones. Ryan Sweet, not pictured, also won a fellowship.

College of Engineering Recognizes Outstanding Achievers at 2014 Faculty and Staff Awards Dinner



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

The UT College of Engineering held its annual Faculty and Staff Awards Dinner on Thursday, April 3, 2014, at the Knoxville Hilton.

Longtime Knoxville and Knox County political icon Dwight Kessel was the guest of honor, receiving the 2014 Nathan W. Dougherty Award, the college's most prestigious honor, at the event.

The recognition is far from the first for Kessel, as several buildings or spaces—including the auditorium at UT's Science and Engineering Research Facility—already bear his name. He and his wife, Gloria, also established a scholarship in his name in the Department of Industrial Engineering at UT.

"It's always been a real pleasure to work with the university," said Kessel. "It has provided so much for me, I'm just grateful to give back."

The award was established in 1957 to honor Dougherty, who was the dean of the college, where the Nathan W. Dougherty building now bears his name, from 1940 to 1956. He was a star Vol football player from 1906 to 1909 and was also credited with helping recruit Robert R. Neyland to coach at UT. He was inducted into the College Football Hall of Fame in 1967.

Kessel, who graduated from UT in 1950 with a degree in industrial engineering, is best known as the first Knox County executive, serving from 1980 to 1994 after beginning his career on the Knoxville City Council from 1963 to 1966 and then serving as Knox County clerk from 1966 to 1980.

"Dwight Kessel is one of the true success stories from the College of Engineering," said Dean Wayne Davis. "When you take a look at all he has accomplished, you can see why we're honored to be associated with him."

Outside of politics, Kessel helped start one of the first Knoxville-area Internet companies—U.S. Internet—and has been involved in various charitable causes such as the Boy Scouts of America, the Kiwanis Club, and the Girls Club, as well as business-related activities like the Greater Knoxville Chamber of Commerce and the Tennessee Center for Research and Development. He also was a member of the executive board of the 1982 World's Fair.

"He's used his success to help his community thrive," said Davis. "Everyone from those of us at the university to the people of Knox County in general have benefited from his generosity and from all he has given back."

In addition to what he has done for his alma mater and his community, Kessel has contributed to the area where he first made his mark, thanks to an endowment he and his wife established with UT's Institute for Public Service to assist county governments in the state.

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

Outstanding Support Staff: Samantha Allen, Business Manager, Department of Civil and Environmental Engineering; Justin Forbes, Senior IT Technologist II, College of Engineering; and Rita Gray, administrative specialist III, Department of Chemical and Biomolecular Engineering.

Outstanding Faculty Advisor Award: Dr. Paul Frymier, Department of Chemical and Biomolecular Engineering

Moses E. and Mayme Brooks Distinguished Professor Award: Dr. Richard Bennett, Professor and Director, the Jerry E. Stoneking engage™ Engineering Fundamentals Division

Leon and Nancy Cole Superior Teaching Award: Dr. Lynne Parker, Professor and Associate Head, Department of Electrical Engineering and Computer Science

Charles Edward Ferris Faculty Award: Dr. David "Butch" Irick, Research Assistant Professor, Department of Mechanical, Aerospace, and Biomedical Engineering

The COE Teaching Fellow Award: Dr. Edwin Burdette, Fred N. Peebles Professor in the Department of Civil and Environmental Engineering and Dr. Hahn Choo, Associate Professor, Materials Science and Engineering.

College of Engineering Professional Promise in Research Award:

Dr. Christopher Cherry, Department of Civil and Environmental Engineering

Dr. Jason Hayward, UCOR Faculty Fellow and Professor, Department of Nuclear Engineering

Dr. Jeremy Holleman, Assistant Professor, Department of Electrical Engineering and Computer Science

Dr. Jackie Johnson, Associate Professor, Department of Mechanical, Aerospace, and Biomedical Engineering and the UT Space Institute

College of Engineering Research Achievement Award:

Dr. Lee Han, Professor, Department of Civil and Environmental Engineering

Dr. Baoshan Huang, Professor, Department of Civil and Environmental Engineering

Dr. Bin Hu, Professor, Department of Materials Science and Engineering

Dr. Belle Upadhyaya, Professor, Department of Nuclear Engineering

Translational Research Award:

Dr. Douglas Birdwell, Department of Electrical Engineering and Computer Science



Dean Davis (left) and Associate Dean for Faculty Affairs Veerle Keppens (right) with the college-wide award winners (left to right): Dr. Paul Frymier, Dr. Edwin Burdette, Dr. Lynne Parker, Dr. Butch Irick, and Dr. Hahn Choo.



Dean Wayne Davis (left) and Associate Dean for Academic and Student Affairs Masood Parang (right) present the Outstanding Staff Award to Samantha Allen from the Department of Civil and Environmental Engineering.



Dean Davis (left) and Associate Dean Parang (right) present the Outstanding Staff Award to IT Specialist Justin Forbes.



Dean Davis (left) and Associate Dean Parang (right) present the Outstanding Staff Award to Rita Gray from the Department of Chemical and Biomolecular Engineering.



Dr. Douglas Birdwell (center), the recipient of the Translational Research Award, poses with Dean Davis (left) and Associate Dean Dunne.

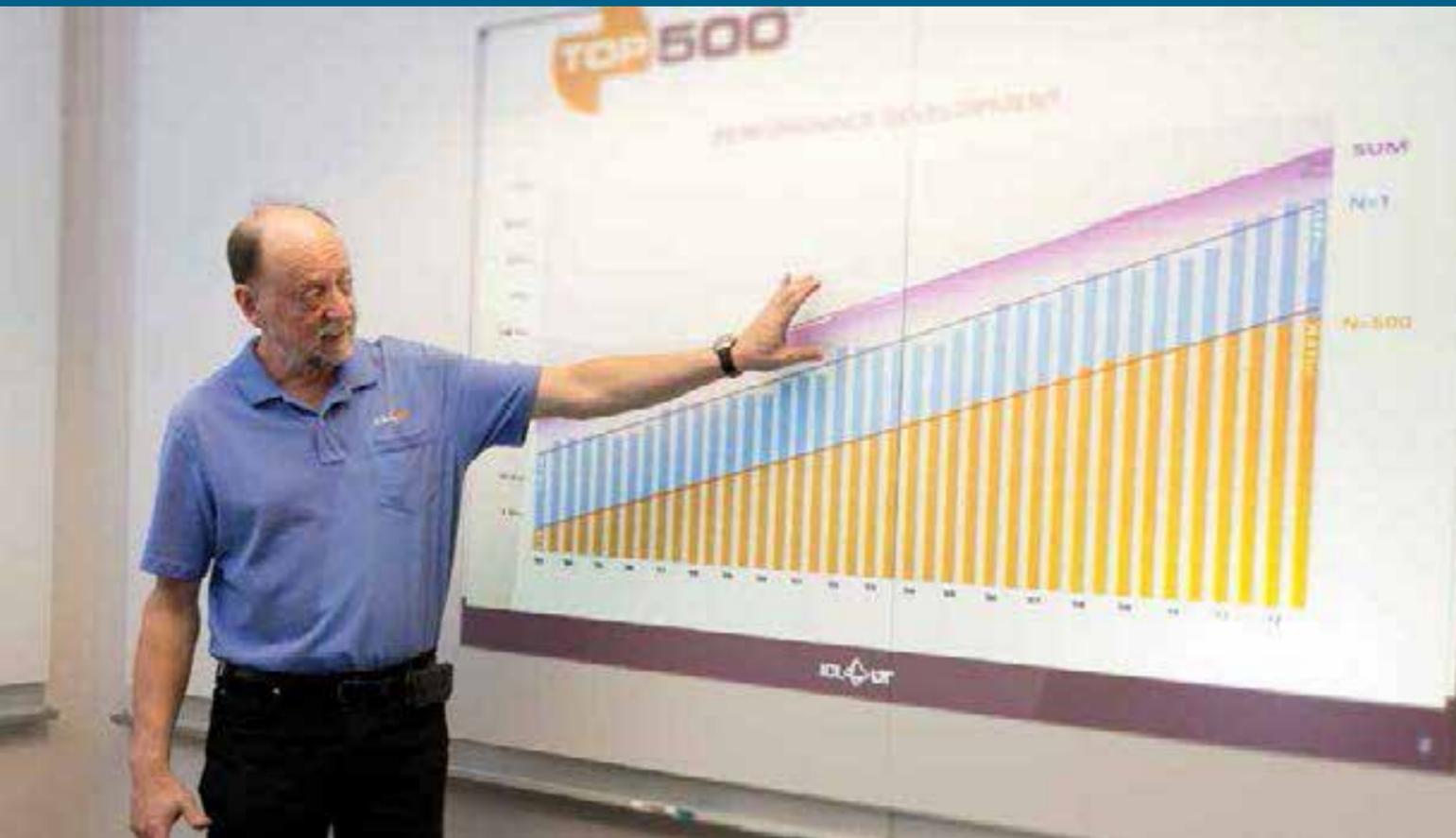


Dean Davis (left) and Associate Dean Dunne (right) with the recipients for the COE Research Achievement Awards (left to right): Dr. Lee Han, Dr. Baoshan Huang, and Dr. Belle Upadhyaya.



Dean Davis (left) and Associate Dean for Research and Technology William Dunne (right) with the recipients for the COE Professional Promise in Research Awards (left to right): Dr. Jason Hayward, Dr. Jeremy Holleman, Dr. Jackie Johnson, and Dr. Christopher Cherry.

College of Engineering Research Center Spotlight: The Innovative Computing Laboratory



Innovative Computing Laboratory director Dr. Jack Dongarra presents information on the TOP500 list of the world's fastest supercomputers.



Innovative Computing Laboratory director Dr. Jack Dongarra speaks at the SC13 Conference in Denver, Colorado, in November 2013.

The Innovative Computing Laboratory (ICL) at UT keeps a close watch on the ever-evolving nature of the fastest, most powerful computers in the world. ICL director Dr. Jack Dongarra set the standard for measuring these computers with the benchmark system called Linpack. This benchmark has been used since 1993 to compile the TOP500, a list of the world's five hundred fastest supercomputers.

In 2013, Dongarra announced that the standard needed a reset. Linpack measures linear equation calculations. Newer applications often require computations of more complex differential equations. Dongarra and team launched a new benchmark, the High Performance Conjugate Gradient (HPCG), to measure supercomputer performance more accurately and work in tandem with Linpack.

"We have reached a point where designing a system for good Linpack performance can actually lead to design choices that are wrong for the real application mix, or add unnecessary components or complexity to the system," said Dongarra. "The hope is that this new rating system will drive computer system design and implementation in directions that will better impact performance improvement for real applications."

This kind of advancement is the hallmark of ICL, now in the twenty-fifth year of its mission to establish and maintain UT

as a world leader in advanced scientific and high-performance computing through research, education, and collaboration. Headquartered in the Claxton Building in the heart of the UT campus, it is part of the Department of Electrical Engineering and Computer Science (EECS) in the College of Engineering. It serves as the cornerstone laboratory of the Center for Information Technology Research (CITR), one of UT's nine Centers of Excellence.

Since Dongarra established ICL in 1989, it has grown into an internationally recognized research laboratory. Companies such as NVIDIA and Intel regularly collaborate with the lab's researchers. NVIDIA designates ICL as a CUDA Center of Excellence (CCOE), and this collaboration benefits ICL with hardware, financial support, and other resources.

ICL is also part of the SciDB project of the Intel Science and Technology Center for Big Data. The lab helps improve the efficiency of large-scale data analytics by providing efficient codes for linear algebra on the Intel Xeon Phi co-processor, and also provides expertise on other Big Data applications and operations.

ICL employs around forty researchers, students, and staff, and has earned many accolades, including four R&D100 awards. Among recent accolades, Dongarra won the ACM-IEEE Ken Kennedy Award at the 2013 SC13 conference, and also received a Professional Achievement Award from the Illinois Institute of Technology, where he earned his master's degree.

In 2013-2014, ICL has produced ninety-four publications, including journals, conference proceedings, tech reports, and book chapters. ICL research scientists and co-authors earned Best Paper awards at a number of conferences, including an award for "Implementing a Blocked Aasen's Algorithm with a Dynamic Scheduler on Multicore



Innovative Computing Laboratory director Dr. Jack Dongarra (right) receives the Ken Kennedy Award at the SC13 Conference in Denver, Colorado, in November 2013.



Innovative Computing Laboratory director Dr. Jack Dongarra gives a research presentation at the SC13 Conference in Denver, Colorado, in November 2013.

Architecture" at the 2013 IEEE International Parallel & Distributed Processing Symposium (IPDPS); an award for "A New Algorithm for Computing Eigenvectors of the Symmetric Eigenvalue Problem" at the Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC); and for "Mixed-Precision

Orthogonalization Scheme and Adaptive Step Size for CA-GMRES on GPUs" at the International Meeting on High Performance Computing for Computational Science (VECPAR).

Academically, ICL offers the Interdisciplinary Graduate Minor in Computational Science (IGMCS) degree. This program has twenty-nine students enrolled and forty-five graduates as of 2014. Eighteen departments from four UT colleges contribute more than one hundred thirty courses to the IGMCS.

ICL research keeps pace with high-performance computing (HPC) through three primary areas: numerical linear algebra, distributed computing, and performance evaluation and benchmarking.

Numerical linear algebra algorithms and software form the backbone of many scientific applications in use today. As computer architectures change and grow more complex, these applications must also evolve to keep up with the hardware, and ICL has a long history of meeting this demand.

The latest project to address this challenge is the Bench-testing Environment for Automated Software Tuning (BEAST). BEAST embraces the nature of accelerators—such as graphic processing units (GPUs) from NVIDIA and AMD, and the Xeon Phi coprocessors from Intel—to enable performance tuning at higher magnitudes of computing power and memory bandwidth than that of standard processors.

A lead project in ICL's distributed computing area is to design software for the next generation of supercomputers, machines that operate at a level called exascale (capable of a quintillion floating-point operations per second). These computers could help solve some of the most demanding problems in numeric modeling, to answer questions across the scientific spectrum.

"You can't wait for the exascale computers to be delivered and then start thinking about the software and algorithms," said Dongarra. "The exascale computers are going to be dramatically different than the computers we have today."

Dongarra received a \$1 million grant from the US Department of Energy (DOE), starting in 2013 and spread over three years, to develop the techniques and software to effectively use exascale machines. Called the Parallel Runtime Scheduling and Execution Controller (PaRSEC), the project aims to address the issues created by the increasing complexity of supercomputer designs.

The addition of HPCG to the TOP500 is ICL's latest development in performance evaluation and benchmarking. This adds to a collection of evaluation tools that allow programmers to increase the efficiency when mapping source/object code to a computer's architecture. ICL's

benchmark software is widely used to profile the performance of HPC machines and plays an essential role in the management of computer infrastructure used by government and industry.

ICL's three-part focus on these projects, and others, maintains its position on the front lines of computer evolution. In this regard, the US DOE appointed Dongarra in 2014 to a subcommittee studying the goal of achieving exascale computing within the next decade. The subcommittee issued a report detailing the top ten research challenges in reaching exascale computing. Meeting these challenges would have far-reaching impact on the scientific world.

"The need to advance our understanding of the universe is without bounds, as is the need for modeling and computing the phenomena around us," said Dongarra. "For example, everyone is concerned about climate change and we need computers to help in modeling the climate. The computational challenge for doing oceanic clouds, ice, and topography are all tremendously important. And today we need at least two orders of magnitude improvement on that problem alone."



Innovative Computing Laboratory (ICL) director Dr. Jack Dongarra, front center, stands with faculty, staff, and students of the ICL.

Dedication of Fred D. Brown Residence Hall is Highlight of Homecoming Weekend



The 2014 Homecoming weekend will be kicked off with two exciting events this year. On Friday, October 10, the new Fred D. Brown Residence Hall, named for the original director of the Minority Engineering Program (MEP) in the College of Engineering and the first building on the university's Knoxville campus named after an African-American, will be dedicated during an afternoon ceremony. Prior to the dedication, the College of Engineering and the Engineering Diversity Programs Office will host an invitation-only luncheon in the University Center Ballroom from 11:30 to 1:00 p.m.

The Fred D. Brown Jr. Residence Hall is the first new residence hall to be built in forty-three years. Located on Andy Holt Avenue, the two hundred fifty thousand square foot facility accommodates seven hundred men and women and includes a dedicated art gallery to showcase students' work, two dining locations, video message boards, a workout facility and recreation room, a full catering kitchen, a conference room, living area, an internet lounge on each floor, and a multipurpose meeting room.

Brown graduated from Hall High School in Alcoa, Tennessee, and earned his college degree from the Tuskegee Institute. He studied as a post-graduate at UT, Tennessee State University, Fisk University, and Vanderbilt University. Brown taught at Hall High School and Oak Ridge High School and was the first African-American member of the Alcoa Board of Education.

Dean Fred Peebles established the Minority Engineering Program in 1973, an initiative designed to motivate highly qualified African American young people to pursue engineering coursework at UT, and designated Brown as its first director. Brown launched the initial Minority Engineering Scholarship Program (MESP) with an enrollment of only seventeen African American students. Under his guidance, MESP grew rapidly over the years.

MEP evolved into the Engineering Diversity Programs (EDP) Office and incorporated pre-college summer programs for middle and high school students; bridge programs for new freshmen; recruiting initiatives targeted at underrepresented students; and retention and mentoring programs.

In the four decades since the program was established, UT has consistently ranked among the top fifty universities and colleges in the nation for graduation rates of African American engineering

students. The college has graduated more than nine hundred minority students.

UT Trustee and industrial engineering graduate Spruell Driver submitted a letter to the UT Board of Trustees detailing his gratitude to Brown for influencing his own career.

"He made it his mission to personally identify and successfully recruit the best students in Tennessee and neighboring states with a high aptitude for engineering studies," Driver said. "Mr. Brown went to great length to ensure that his students got off to a strong start academically and that we had a cohesive support structure to ensure successful persistence to graduation."

The events will be part of the Homecoming 2014 festivities, which will include a parade on Friday afternoon and the college's annual Alumni Barbeque on the Hill, which will be held on Saturday, October 11, three hours prior to kickoff of the Tennessee Volunteers football game. Tickets to the Engineering Alumni Barbeque will be available for purchase online this fall.

For more details on the Fred D. Brown Jr. Residence Hall, visit uthousing.utk.edu/construction/construction.html or housing.utk.edu/students/new-construction/.

For more information about Homecoming 2014 and the Engineering Diversity Alumni Luncheon, contact the Engineering Development Office at (865) 974-2779/engrdev@utk.edu.



Fred Brown with students Robert Phillips and Marily Horhn in 1973.

Research Update

Institute of Biomedical Engineering Hosts Cross-Discipline Symposium



(From left to right) Jim Stefansic, of Launch TN, addresses panel members Chuck Witkowski, CEO of Hubble Telemedical; Grady Vanderhoofven, co-founder of Meritys Ventures; and David Page, partner member of Third Dimension Technologies; as they discuss fundraising strategies for medical device companies at the iBME Research Symposium.



Jim Stefansic, director of commercialization for LaunchTN, delivers the keynote address "Fundraising Strategies for Medical Device Companies" at the Institute of Biomedical Engineering's annual symposium at the UT Conference Center.

Cutting-edge ideas in medical, mechanical, and biological technology were on display at the UT Conference Center April 21-22, 2014, for the annual two-day symposium sponsored by the Institute of Biomedical Engineering.

Bringing together representatives from six UT colleges and the Graduate School of Medicine, the UT Health Science Center in Memphis, and various businesses and

government laboratories, the event served as a way for faculty and researchers to brainstorm ideas about the next wave of medical breakthroughs.

"iBME bringing all of these various disciplines and real-world partners together is a wonderful idea and the perfect example of how the colleges here at UT can work together," said College of Engineering Dean Wayne Davis. "Sharing ideas between colleges can not only help solve problems that one group or another might have had, but it can help alert you to things, both good and bad, that you might not have considered."

Medical personnel and equipment manufacturers in attendance provided immediate thoughts and feedback about which ideas have merit and the potential pitfalls of various programs and proposals, while at the same time getting the chance to present their own concerns to the very faculty and innovators who could help solve their problems.

"The Institute of Biomedical Engineering and our annual symposium exist to provide an intellectual bridge between highly talented researchers throughout the state of Tennessee in academia, industry, and the national laboratories," said iBME chairman Dr. Mohamed Mahfouz.



Chris Stephens, research and outreach director for iBME, addresses attendees at the conclusion of the iBME Research Symposium April 21-22 in Knoxville.

In addition to the College of Engineering, the College of Veterinary Medicine; College of Education, Health, and Human Sciences; College of Arts and Sciences; College of Business Administration; and the College of Agricultural Sciences and Natural Resources all took part in the event.

The near-term goal of the group is to come up with sustainable ideas and file a number of patents on those innovations within the next five years.

Along those lines, and perhaps as a preview of what is to come, topics at the symposium ranged from regenerative medicine and

biomechanics to sensor technology and simulations.

"By bringing together researchers from across disciplines we were able to discuss and develop teams around highly complex topics," said Mahfouz. "We were able to address topics like cancer, neurological trauma rehabilitation, regeneration of damaged tissue, and how to provide quality treatment for patients with decreasing insurance reimbursement and rising costs."

For more information on the iBME, visit ibme.utk.edu.



iBME chair Dr. Mohamed Mahfouz poses a question to panel members during the iBME Research Symposium.

CURENT Honored With Spot In USA Science and Engineering Festival



A young visitor investigates one of CURENT's interactive displays at the USA Science and Engineering Festival.



Karena Mary Ruggiero, a graduate student in the UT Department of Theory and Practice in Teacher Education, guides a boy who is wiring lights, motors, and buzzers together as a parallel circuit at the CURENT booth at the USA Science and Engineering Festival. The lights, motors, and buzzers are under the plastic sheeting and arranged around an apartment floor plan so students can visualize the structure and make a direct connection from the concept to the application.

The National Science Foundation area of the USA Science and Engineering Festival in April had representation from the University of Tennessee thanks to a spot in the prestigious event going to CURENT, the Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks.

“Being able to take part in events like this helps serve as a way to educate the public about what CURENT does, but to do so in an engaging, entertaining way,” said UT College of Engineering Dean Wayne Davis. “Any time you have a chance to make a positive impression on young minds it’s a great opportunity.”

The largest science festival in the country, the gathering was sponsored by groups like Lockheed Martin, 3M, Northrop Grumman and the National Security Agency, and included appearances from speakers as diverse as Bill Nye the Science Guy and television host Mike Rowe.

Housed in the Min H. Kao Electrical Engineering and Computer Science Building in UT’s College of Engineering, CURENT is a UT-led multi-institution research group focused on making the electrical grid more efficient, particularly in the area of energy transportation.

The research center’s presentation at the festival was “Powering Today and Tomorrow,” a look at solar energy and how it could be better utilized.

Participants were able to design their own energy circuits and race solar-powered cars as part of the exploration of how the sun’s energy—said to be twenty thousand times more than what is consumed—might hold the key to our future energy needs.

As part of the festival, students and adults had the chance to take part in more than three thousand activities or presentations.

“CURENT was honored to represent the National Science Foundation and the University of Tennessee as one of sixteen engineering research centers at the festival,” said CURENT Communications Coordinator Adam Hardebeck. “Being a part of the largest science festival in America provides us with an opportunity to connect with young people and showcase the fascinating research going on in our center.”

Participating groups included universities, museums and public television stations, and featured everything from robotic snakes to tsunami simulations. Additionally, there was music, magic, and other entertainment.

The fair took place April 25-27, 2014, at the Walter E. Washington Convention Center in Washington, D.C.

For more on CURENT, visit curent.utk.edu.

For more on the USA Science and Engineering Festival, visit www.usasciencefestival.org.

Smaller, Flexible Tablets and TVs Possible Thanks in Part to UT Researchers

Researchers from UT recently garnered national attention for their part in a study that could lead to the development of tablets, TVs, and mobile devices the width of a piece of paper.

First published in *Nature*, the article details how researchers have been able to create wires only three atoms wide using an electron beam.

The lead researcher on the project was Vanderbilt PhD student Junhao Lin, who was a visiting scientist at Oak Ridge National Laboratory at the time.

Through the ORNL connection, UT’s Dr. Stephen Pennycook, Dr. David Mandrus, and Dr. Jiaqiang Yan—all of the College of Engineering’s Department of Materials Science and Engineering—got involved.

It’s the second time Yan and Mandrus have found recognition in *Nature* in less than two months. The pair’s research also was part of an article in early March on a University of Washington-led effort to reduce the size of LEDs.

“The role of my group was to supply some of the materials used in the study,” said Mandrus. “It’s very similar to the way we worked with the University of Washington group on the LEDs. The materials were grown in my lab in the Science and Engineering Research Facility.

The eventual products, called nanowires, are of a flexible metallic nature, and only one one-thousandth the width of the current microscopic wires used to connect transistors in today’s circuits.



Junhao Lin



Dr. Stephen Pennycook



Dr. David Mandrus

The idea is that it would now be possible to stack such small wires together in clusters—researchers used a Lego block analogy—to build layers and circuits that would allow for a great reduction in the size of electronic products.

In addition to a reduction in size, the process could also make TV screens and tablets flexible, something that could prevent countless repairs.

Read the article in *Nature* at: <http://www.nature.com/nnano/journal/v9/n6/full/nnano.2014.81.html>

COE Professor’s Research Could Lead to Breakthroughs in Detection, Clean Water



Dr. Andy Sarles

The ability to pull water out of fog is just one of many possibilities made real by research involving Sarles, an assistant professor in the College of Engineering’s Department of Mechanical, Aerospace, and Biomedical Engineering.

The project Sarles took part in—Air-Stable Droplet Interface Bilayers on Oil-Infused Surfaces—was published recently in the *Proceedings of the National Academy of Sciences*.

The team, made up of Sarles and scientists from Oak Ridge National Laboratory’s Center for Nanophase

Material Sciences and the ORNL Energy and Transportation Science Division, discovered that water droplets placed on oil-infused surfaces formed stable, interconnected volumes without fusing into increasingly larger droplets.

Creating networks of connected droplets is key to future breakthroughs.

While the physics of droplets on an oil-coated surface shows the promise of pulling water from fog, the ability to form air-stable lipid membranes will allow researchers to do everything from detecting airborne species like chemical or biological toxins, pollutants, or synthetic nanoparticles, as well as converting energy using biological molecules contained in the membrane.

“The first goal of this work was to understand the mechanisms that allow for droplets to remain as separate entities on the oil-coated surfaces,” said Sarles. “After that, we want to apply those principles to a variety of sensing, energy conversion, and even protein study applications.”

Along with this discovery came the awareness of how to create artificial cell membranes—called lipid bilayers—between droplets in air.



Dr. Andy Sarles and researchers at Oak Ridge National Laboratory have developed a method to create air-stable water droplet networks that are valuable for applications in biological sensing and membrane research. Photo by Kyle Kuykendall

Previous work had established that when water droplets submerged in oil collided, the oil between the droplets would be excluded, allowing the droplets to coalesce in just seconds.

But by placing droplets on an oil-coated, superhydrophobic surface rather than submerging them, Sarles and the team showed that droplets would spontaneously join together and yet not coalesce when they collided. Instead, a thin layer of oil was wicked

between the adjoined droplets, making a stable connection that lasted for up to days at a time.

“I measured the thicknesses of oil films that spontaneously assembled between colliding droplets,” said Sarles. “I pierced them with thin electrodes so that I could monitor how well electrical charge was stored at the interface between droplets, which allowed us to estimate the thickness of the oil film over time as the oil slowly drained.”

And while this thin layer of oil does eventually drain out—leading to coalescence—Sarles and the team showed that the fluid physics that caused the droplets to draw together could also be used to assemble artificial cell membranes.

This breakthrough enabled the team to extend the lifetime of the interface between droplets and marks the first time that droplet interface bilayers were formed in air.

Intercollegiate Summer Bridge Program



Students in the Intercollegiate Summer Bridge Program visited DENSO Manufacturing during their three-week experience.

The College of Engineering joined forces with the Colleges of Agriculture and Natural Resources and the College of Arts and Sciences in July of 2014 to host the Intercollegiate Summer Bridge Program July 8–30, 2014. This three-week session provided a transition in study from high school to the university for underrepresented students majoring in science, technology, engineering, and math (STEM) areas.

The bridge program is based on the established model of the Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP), a statewide collegiate alliance funded by the National Science Foundation (NSF) that seeks to improve graduation rates among underrepresented students who choose STEM majors.

“It is always a rewarding experience to watch the students grow throughout the duration of the program,” said Erica Echols, coordinator for Engineering Diversity Programs (EDP). “Through three weeks of mentorship, academics, and campus life preparation, our goal is that the students not only realize the expectations of their upcoming freshman year, but also identify and improve their weakness in order to meet the demands of their respective curricula.”

The Intercollegiate Summer Bridge offered nineteen STEM students an overview of courses in their upcoming freshman curriculum in a stimulating, nurturing environment for learning, exploration, and studying. Students became familiar with expectations of their freshman year through the three weeks of mentorship, academics, and campus life preparation.

Students also visited area companies to give insight into different aspects of STEM careers. The group visited DENSO Manufacturing in Maryville, Tennessee, on July 18; Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee, on July 11; and Sweetwater Valley Farms in Philadelphia, Tennessee, on July 25.

These field trips allowed students to hear from engineers and scientists about their respective careers, and also engage in discussion about current projects and future internship/research opportunities.

In addition to the educational field trips, students also participated in a leadership retreat and teambuilding day at New Horizons Center for Experiential Learning in Knoxville on July 12. This excursion was an opportunity for the students to get to know one another, learn to work as a team, and the importance of being an effective leader.

The success of the program will be measured by testing before and afterward, and by the transformation in the students’ perception and attitude over the three weeks. In the long term, student success will be tracked from their freshman year through graduation.

UT Chapter of NSBE Receives Recognitions, Awards at National Conference

UT’s chapter of the National Society of Black Engineers was recognized as the 2014 National Medium Chapter of the Year and senior Tiffany Sithiphone became the first female from UT to be elected regional chairperson, capping a highly successful national convention for members from the College of Engineering. The NSBE national convention was held on March 26–30, 2014, in Nashville, Tennessee.

“This is truly a tremendous recognition for our group to receive, and it highlights the successes being made here at UT toward a more diverse campus,” said College of Engineering Dean Wayne Davis. “To be recognized for those efforts is nice enough, but to be singled out in front of peer institutions makes it all the more special.”

Sithiphone, from Nashville, is only the second UT student overall to be elected regional chairperson, after Trevor Williams—her mentor—in 2007.

“It was just such an incredible feeling when they called my name,” said Sithiphone. “As I stood there taking the oath I felt like I was having an out-of-body experience. I hope I never lose this feeling.”

Sithiphone, an industrial engineering major, said that as nice as the award is for her personally, the real happiness in winning the award is what it says about the opportunity for underrepresented students at UT.

“For the national society to take notice of us, to single us out as a chapter is really special, and it makes you proud to be a Vol,” said Sithiphone. “You see the opportunities that have been created here at Tennessee, you see the progress we’ve made, and hopefully that can serve as an example to other universities and inspire them to do some of the great things we’ve done here at UT.”

UT chapter president Diamond Wallace, from Memphis, was equally enthused about the chapter’s success. In addition to winning the national award this year, UT was honored as a top regional chapter for the second consecutive year.

“We can proudly say that this year we had three national scholarship recipients, an educator of the year, and our first female region chair,” said Wallace, a biomedical engineering major. “We’re producing leaders, and more specifically leaders in STEM fields, and I am excited that our national society has taken notice.”

Isaac Atuahene, a graduate student from Ghana in industrial and systems engineering at UT, received a Golden Torch as winner of the Dr. Janice A. Lumpkin Educator



Isaac Atuahene, a graduate student in the UT Department of Industrial and Systems Engineering, accepts the Golden Torch Dr. Janice A. Lumpkin Educator of the Year Award for contributions related to research and education at the NSBE event in Nashville.



Jasmine Keene (far left) 2013–2014 National NSBE Programs Chairperson, and Sossena Wood, 2013–2014 National NSBE Chairperson (far right), recognize the UT College of Engineering student group as national chapter of the year at the NSBE event in March: (left to right) Sierra Ellis, Melanie Smith, Kalesse Howse, Dennis Norfleet, DeAnna Walker, Olufunke Tina Anjonrin-Ohu, Nathaniel Ige, Damiyelle Smith, Courtney Dennis, Kelvin Mbugua, Diamond Wallace, and Jermaine Chairs.

of the Year Award for contributions related to research and education, while undergraduates Sierra Ellis, from Memphis, Markyth Smith, from Nashville, and DeAnna Walker, from Chattanooga, were chosen as a Board of Corporate Affiliates Fellow Scholar, a Lockheed Martin Scholar, and a Major Fellow Scholar, respectively.

Ellis and Smith are mechanical engineering majors, while Walker is in civil engineering.

“Our chapter continues to excel and take on new challenges,” said UT Engineering Diversity Programs Director Travis Griffin. “They have a keen vision to fulfill the NSBE’s mission and increase the success rate of our engineering students, and I think that was on display for all to see in Nashville.”

STEAM Program Scheduled for 2014–2015

Students studying engineering and agriculture and natural resources will participate in the STEAM Minority Mentoring Program in during the 2014–2015 academic year. The purpose of this program is to provide incoming minority students with vital tips, strategies, and opportunities in an effort to serve as a catalyst

for both academic and professional success. The program focuses on three major areas—academic success, career development, and retention. Through the implementation of specialized programs, workshops, guest speakers, and outings/trips, participants will be able to successfully master their first year, and beyond.



As a student I am constantly challenged, but because I enjoy majoring in biomedical engineering, it is a responsibility I eagerly accept. However, financing tuition is one of the greatest problems students face. The Fred D. Brown Jr. Engineering Scholarship has been an extremely critical and supportive aspect for me in my academic career. It has allowed me to devote my time and efforts into pursuing a career I truly love as well as maintaining my GPA without going into debt. As the newest dormitory is dedicated to Fred D. Brown Jr., he leaves behind an inspiring legacy for me that I hope to one day emulate.

Olufunke "Tina" Anjonrin-Ohu
Fred D. Brown Jr. Minority Engineering Scholarship

Inspire

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 enr.utk.edu/give



Development Update

Giving 2014: Focus on Scholarships

CONTRIBUTE TO *Big* IDEAS

Act as if what you do makes a difference. It does.

-William James

The hardest part about writing this article twice a year is deciding exactly what to highlight. There is enough material for a book—or two! In reality, every gift points back to students. Endowed professorships recognize and support the faculty who help us attract great students and then provide the mentoring and instruction that is the hallmark of a great education. Program support allows engineering leaders flexible funds to enhance instruction or student services.

Every gift multiplies our strength as a college to create a better educational experience for students.

Scholarships are perhaps the best understood gift. After all, we were students once—perhaps struggling financially to pay tuition. These awards that recognize academic excellence or help meet financial needs make a difference with impact that is both immediate and far-reaching. Scholarships help individuals and so are extremely personal gifts with numeric impact.

The oldest scholarship in the College of Engineering is the Colonel Samuel H. Lockett, established in 1938. Although our records don't go back that far, if our current award numbers can be extrapolated over that seventy-four years, we very conservatively estimate that over 1100 students have received a Lockett Award.

Another scholarship was created by Herbert G. Duggan, who received his BS degree in mechanical engineering in 1945. Before his death in 1994, Mr. Duggan and his wife, Lilian, put UT Engineering in their wills. After her passing, a bequest of \$1,995,478 was transferred to UT. Today, the Herbert G. and Lilian C Duggan Scholarship endowment has increased in value to \$2.1 million and has already provided \$1,090,125 in scholarship dollars to 429 students.

This past academic year 807 students received over \$1.4 million in scholarship awarded by the College of Engineering from 247 established scholarships! But that's just one year. Imagine the power of those endowments over time.

A permanent scholarship can be named and endowed for gifts beginning at \$25,000. At that level the annual award would offset a bit more than the differential tuition for one student each year. An endowed scholarship of \$100,000 provides an amount approximately equal to one of today's Tennessee Hope Scholarships. A \$250,000 scholarship endowment provides in-state tuition.

For more information about how endowments work and how you can begin your own legacy, contact me. What you begin now will resonate powerfully into the future.

In another section of this magazine is a list of donors who gave somewhere to engineering in 2013-14: to support scholarships, to fund student projects, to endow a professorship, or to augment one of the many endowments or program funds throughout the college. To each of you we say—thank you.



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Start-up Co-Founded by COE Engineering Alumnus Finds Success on ABC-TV's Shark Tank



Participants in the *Shark Tank* competition included Packback's founders (left to right): Jessica Tenuta, Kasey Gandham, Mike Shannon, and Karl Hughes.

Karl Hughes (*BS/ME '12*) and his team of entrepreneurs who founded the startup company Packback Books recently found success on the ABC-TV reality show *Shark Tank*. Billionaire businessman Mark Cuban, owner of the NBA Mavericks and one of the hosts of the show, liked the premise of the fledging company and signed off to pay \$250,000 for a twenty percent stake in Packback.

Packback affords college students the option of renting digital versions of textbooks online for five dollars or less instead of paying larger dollars for traditional and pricier physical textbooks.

Hughes said the TV show gave Packback invaluable exposure.

"Being on *Shark Tank* was a big boost," Hughes said. "We had publishers calling us after we were on the show."

The company's service is now available nationwide at packbackbooks.com and Hughes said they are offering about two thousand five hundred textbooks to approximately five thousand students.

For more info on the company and the episode of *Shark Tank*, visit blog.packbackbooks.com/page/2.

1970s



Terry Begley

Terry Begley (*BS/ChE '69, MS/EA '74*) was appointed to the board of directors of Wellmont Health System in Kingsport, Tennessee.

He serves as vice-chairman of the board at Holston Valley Medical Center. Begley retired as Eastman Chemical Company's vice president of global supply chain and chief procurement officer. He has also served on the boards of Girls Inc. and the former Tri-Cities Bank and is currently on the UT College of Engineering board of advisors and UT National Alumni board of directors. He will become president of the alumni board in 2015.

1980s



John Hanula

John Hanula (*BS/Architecture '83, BS/CE '84*) has joined MWH Global as its director of global business development for government and

infrastructure. He rejoins MWH after a nine-year hiatus at CH2MHILL, where he most recently held the role of business development director. In his previous tenure with MWH, Hanula was vice president, holding leadership positions including director of strategic programs and international business

development. Hanula holds an MS degree in civil engineering and a bachelor's degree in architecture from UT. He is a registered architect in twelve states, and is a board member of the WasteReuse Foundation and the California Foundation on the Environment and the Economy (CFEE). He was recently appointed to the Sonny Astani Department of Civil and Environmental Engineering Advisory Board at the University of Southern California (USC) Viterbi School of Engineering.

Marsh Named CEE Outstanding Alumnus; President-Elect of Renowned Seismic Engineering Consulting Firm



Dr. M. Lee Marsh, left, holds the Department of Civil and Environmental Engineering's Outstanding Alumnus award while standing with Dr. Edwin Burdette, right, and their wives.

The Department of Civil and Environmental Engineering's 2014 Outstanding Alumnus award has been given to **Dr. M. Lee Marsh** (*BS/CE '82, MS/CE '83*), president-elect of BergerABAM, an engineering consulting firm in Washington.

Marsh completed his bachelors and masters degrees in civil engineering at UT before earning his PhD at Washington State University.

Marsh first joined BergerAMAN in 1994, and has been involved in a number of structurally-focused designs as related to seismic activity and earthquake-resistant engineering. He also teaches a course geared toward bridge design as related to seismic activity for the National Highway Institute, and serves in various capacities with the American Association of State Highway and Transportation Officials Subcommittee on Bridge and Structures and is considered an expert in the field of seismic-resistant construction

Robert Sanders (*BS/NE '85, MS/NE '86*) was named by his employer, AREVA Inc., as a Senior Technical Expert in nuclear severe accident phenomena. An individual must be recognized within their field at the international level to be named Senior Technical Expert. During his time with AREVA, Sanders' accomplishments include rebaselining of the MAAP model for the US EPR, development of a MAAP model for the Bellefonte Nuclear Plant, and expansion of the capabilities of the MAAP program, specifically with respect to hydrogen production and distribution.

1990s

Chadwick A. Wallace (*BS/AeroE '96*) graduated from the Rice University Jones Graduate School of Business Executive MBA program in the spring of 2014. He also received the Jones Citizens Award, given to the top five percent of the school's students. Wallace works at General Electric Oil & Gas in Houston, Texas.

2000s

Brian Givens, PE (*BS/CE '03*), of ARCADIS accepted the American Council of Engineering Companies of Tennessee (ACEC of TN) 2014 Engineering Excellence Award in the Water & Storm Category for the ARCADIS project "City of Chattanooga Area 2 Closure Construction." ACEC of TN president David Harrell, PE (*BS/CE '86, ME/CE '87*) presented the award.



Tyler Guldán

Tyler R. Guldán, PE, (*BS/ChemE '09, MS/ME '12*) has passed the required examination and is now a licensed professional engineer.

He works as a mechanical engineer in the Knoxville office of Barge, Waggoner, Sumner, and Cannon Inc., a professional services firm that includes engineers, architects, landscape architects, and surveyors employed in offices in Tennessee, Alabama, Ohio, and Georgia. Guldán graduated Magna Cum Laude from UT with a bachelor of science in chemical engineering as well as a master of science in mechanical engineering. He was previously a research associate with Oak Ridge National Laboratory (ORNL) and an engineering extern with the Eastman Chemical Company.



Dr. Mohammad Qureshi

Dr. Mohammad Qureshi (*PhD/CE '00*) has been appointed to the California Board for Professional Engineers, Land Surveyors, and Geologists. Qureshi has been chief of traffic at the San Bernardino County Department of Public Works of since 2012. He was regional director and senior project manager at LIN Consulting from 2007 to 2012, director of the Jackson State University Institute for Multimodal Transportation from 2006 to 2007 and assistant

professor and director at the University of Missouri-Rolla's Missouri Local Transportation Resource Center from 2000 to 2006. Qureshi was a research specialist at the University of Tennessee Center for Transportation Research from 1998 to 2000 and senior associate at the Resource Systems Group Inc. from 1995 to 1997.

Dr. Hash Hashemian (*MS/NE '76*), president and CEO of AMS Corporation in Knoxville, Tennessee, has been elected as a Fellow of the American Nuclear Society (ANS). Hashemian will be honored during the ANS Winter Meeting which will be held at the Disneyland Hotel in Anaheim, California, at the Opening Plenary ceremony on Monday, November 10, 2014.

AMS is a multimillion dollar enterprise that is one of the world's premier nuclear instrumentation and control services companies. Hashemian has received other accolades in recent years, including being named as the 2013 Tennessee Small Business Person of the Year by the US Small Business Administration in Washington, DC, and he was the recipient of the prestigious University of Tennessee Alumni Professional Achievement Award in 2012.



Memorials

Faculty



Hall Roland

Dr. Hall Carmack Roland (*MS/NE '60, PhD/EngrSci '65*), of Knoxville, died on March 3, 2014. Roland was a professor emeritus in the Department of Nuclear Engineering (NE), and also earned his masters and doctorate in nuclear engineering at UT. He served as a commissioned Naval Officer during both World War II and the Korean War, and was a longtime member and flight instructor for Knoxville Flyers. He is remembered for his dedication to his family, as well as his enjoyment of teaching career and students.

Dr. H. Lee Dodds, professor emeritus and retired head of NE, was a student of Roland's.

"Dr. Hall Roland was an outstanding teacher who was always eager to help his students, both inside and outside of the classroom," said Dodds. "He was the first faculty member hired by Dr. Pietro Pasqua, who founded the UT Department of Nuclear Engineering. He was also an expert in many areas of engineering, not just nuclear engineering. For example, he was an airplane instructor and he built a small airplane in his garage, which he flew on its maiden voyage. Roland touched the lives of many people in a very positive way. He is sincerely missed by everyone who knew him."

Roland authored a textbook and also wrote a weekly column in the Knoxville News Sentinel during the 1980s. His columns were later compiled into a book titled *The Armchair Engineer*. Roland retired from teaching in 1990.

Alumni

Michael N. Armstrong (*BS/CE '79*) died on March 14, 2014. He was a resident of Kingsport, Tennessee.

Satyanarayana S. Cherukuri (*MS/IE '76, MBA/BusAdmin '78*) died on August 5, 2014. He was a resident of Scott Township, Pennsylvania.

James Edward "Jim" Geiger Sr. (*BS/EE '54*) died on July 19, 2014. He was a resident of Knoxville.

Larry Doby Horton (*BS/CE '93*) died on July 13, 2012. He was a resident of Knoxville.

Jack H. Kahn (*BS/EngrPhys '47, MS/Physics '49, PhD/Physics '51*) died on May 24, 2014. He was a resident of Dallas, Texas.

Curtis LaMarr Jr. (*BS/IE '58*) died on March 21, 2014. He was a resident of Knoxville.

Former NASA Astronaut and UT Graduate Henry Hartsfield Dies



Henry Hartsfield

Former NASA astronaut and UT graduate **Henry W. (Hank) Hartsfield Jr.** (*MS/EngrSci '71*) died on July 17, 2014, after an illness. He was 80 years old. Hartsfield earned a master's degree in engineering science from the UT Space Institute in 1971. He served as commander of space shuttle Discovery's maiden mission and flew on three shuttle flights. After his final shuttle flight, Hartsfield served in a number of NASA administrative posts, including deputy chief of the astronaut office, deputy

director for flight crew operations, and director of the Technical Integration and Analysis Division at NASA Headquarters.

Next he became deputy manager for operations in the Space Station Operations Office at NASA's Marshall Space Flight Center in Huntsville, Alabama. Back at the Johnson Space Center in Houston he worked in the Space Station Freedom Program and later as manager of the International Space Station Independence Assessment Team. He later became NASA's director of independent assurance for Human Exploration and Development of Space.

Hartsfield was one of ten current or former astronauts who received a degree from the UT Space Science Institute. One of them, Barry "Butch" Wilmore, a 1994 UTSI graduate, will take command of the International Space Station in November. Another astronaut, Margaret Rhea Seddon, earned her medical degree from UT.

Erby Roy Nankivell Jr. (*BS/EE '43*) died on June 7, 2014. He was a resident of Fort Myers, Florida.

Billy Mac Newberry (*BS/EngrPhys '76*) died on March 16, 2014. He was a resident of Sugar Land, Texas.

Don Sewell Robinson (*BS/EE '59*) died on February 5, 2014. He was a resident of Knoxville.

Zack Thompson (*BS/EE '57, MS/EE '67*) died on May 6, 2014. He was a resident of Huntsville, Alabama.

James Ferrell Webb (*BS/IE '01*) died on March 9, 2014. He was a resident of Knoxville.

Alumni Profile



Mitch Patel

Mitch Patel (*BS/CE '91, MS/CE '93*), the president and CEO of Vision Hospitality Group, based in Chattanooga, Tennessee, has seen his life come full circle, back to the industry that was part of his youth.

He was born in India, but Patel's family immigrated to the United States when Patel was four years old. His father had only eight dollars in his pocket, but he also had a dream to further his education and to make a better life for his family. After working as a research scientist, his father decided to lease an eleven-room motel in Stockton, California, and the family moved into the owner's apartment behind the motel office.

In 1980, Patel's father purchased a Scottish Inn in Cleveland, Tennessee, and the family moved across the country from California to the South. Although it was quite a cultural change, Patel eventually adapted and enjoyed life in the small city.

Patel attended several elementary schools in Davis and Stockton, California, and in Cleveland. He graduated from Cleveland High School in 1987. Although his family continued to operate the motel, he wasn't interested in working in the hospitality industry.

"Because I grew up in the motel business cleaning rooms, taking out the trash, and even checking in guests, the last thing I wanted to do was pursue it as a career," Patel said. "Growing up, I had a strong interest in math and physics. I was always interested in solving problems. Solving problems is what engineers do best."

In addition to his interest in math and science, Patel also wanted to learn more about the design and development of buildings. He decided to pursue a career in civil engineering to help align his personal interests and career goals. He selected the University of Tennessee for his academic studies in engineering for its proximity to Cleveland and the reputation of UT's civil engineering program.

"Some of my favorite memories at UT were just building great relationships and friendships with fellow students," Patel commented. "I still have those friendships. And who can forget football Saturdays in the fall?"

After completing his BS and MS degrees at UT, Patel took a position with W.L. Jordan and Company in Atlanta, Georgia as a transportation engineer, where he designed roads, developed transportation plans, and conducted traffic studies.

Patel had been working as an engineer for three years when an interesting opportunity in the hotel business came along. One of his uncles was developing a hotel in Chattanooga and thought that Patel would be a perfect choice to develop and manage a relatively new Hilton brand at that time, the Homewood Suites. Although his engineering career was stable, Patel decided to take a chance on a new and exciting venture.

"I found out that building a hotel was not easy, but somehow I was able to get it done. Sometimes, there is no better way to learn than baptism by fire," Patel said. "When the hotel was completed, I literally took off my hard hat and put on a tie, and became the opening general manager of the hotel. The hotel struggled early, but I am proud to say that after eighteen months of hard work and determination, that hotel became the number-one hotel in the market. More importantly, something else happened in those eighteen months; a fire started burning inside of me. It took me a little while, but I found my passion where I never expected to, in hospitality. That passion, along with some confidence, allowed us to grow."

Today, Vision Hospitality Group, founded in 1997, is one of the top hotel development and management companies in the US. Patel's initial foray into hospitality gave him the self-assurance to seek out other opportunities. Vision now has more than one thousand associates, a portfolio of thirty-one hotels in five states, and a current pipeline of fifteen hotels associated with the industry's premier hotel brands. The company just recently moved into its new twenty-eight thousand square-foot headquarters in downtown Chattanooga to support its associates who stand behind the company's values and have embraced Patel's shared vision to be the best, most respected hotel company in the country.

"Establishing a strong associate-focused service culture is the key," Patel said. "We surround ourselves with great people and simply take care of them. Happy and loyal associates equate to happy and loyal guests. Happy and loyal guests lead to greater market share, which in turn shows a premium return on investment—then, you invest back into your associates."

Vision Hospitality Group owns and operates hotels associated with Hilton, Marriott, Hyatt, and InterContinental Hotels Group family of brands. Patel said the company decides what demand drivers a particular location might have, and what brand best serves the site when pursuing a particular venture.

"For example, some brands are better located in transient locations such as immediately off of a highway exit, while others are fine being located deep within an office park," Patel said. "Each situation poses its own set of criteria and challenges, and that's one of the things that keeps it interesting."

The company's associates pride themselves as being part of a hands-on company. From concept to design, through construction and to the hotel opening, Vision is always focused on the details, and that's one of the things that Patel believes has been essential to its success.

"As we continue to grow, and efficiency becomes a priority, it is more and more difficult to maintain that culture," Patel said. "As it relates to the hospitality industry, we are in one of the best periods of growth and performance that the industry has seen in many people's careers. My biggest concern is hubris. We have just come through the worst period in the recorded history of the lodging industry and I think that a short institutional memory poses the greatest risk to the industry today."

Patel said his engineering background has enabled him to be more analytical and more disciplined in his business approach.

"I am proud to have become an engineer," Patel stated. "I believe engineering can be a great background for anything you would want to pursue. We engineers are trained to just figure things out."

Patel and his wife, Parul, have been married for seventeen years and have three children, ages thirteen, nine, and seven. In his spare time, he enjoys traveling, reading, and sports, and especially values spending time with his family.

For more information on Vision Hospitality Group, visit www.vhghotels.com.

COE Brings Distinguished Leaders Back as Board of Advisors Emeritus

The University of Tennessee College of Engineering's Board of Advisors has long been recognized for its leadership strength. The executives from government, education, business, and industry serve as advisors to the dean and many of the BOA members are UT-COE alumni.

Dean Wayne Davis, not wanting to lose the engagement and expertise of former board members, recently created a new status—Board of Advisors Member Emeritus—for those individuals rotating

off the board. The group's first introduction was at the college's 2014 Faculty and Staff Awards Dinner on April 3.

The emeritus group will be invited to the awards dinner each year, and will have other opportunities for engagement with engineering college activities and events.

The following individuals are the new COE board of advisors emeritus members:



Dr. Norbert J. Ackermann, Jr. (*NE '65, '67, '71*)
Knoxville, TN
Spinlab Utility Instrumentation, Inc.
Chief Executive Officer



Karyl P. Bartlett (*ME '84*)
Lake Trapps, WA
Sea Marvelous, LLC
Owner & Chief Executive Officer



Thomas R. Blose, Jr. (*CE '70*)
Brentwood, TN
Atmos Energy Corporation
President – Mid States Division (Retired)



Donald V. Borst (*ChE '57*)
Vonore, TN
Millennium Inorganic Chemicals
President & Chief Executive Officer (Retired)



Thomas V. Byerley (*EE '66*)
Knoxville, TN
Alcoa
Manager, Engineering Construction, Environmental & Procurement (Retired)
University of Tennessee
Director, Reliability & Maintainability Center (Retired)



Michael K. Carroll (*ME '80*)
Knoxville, TN
Tventure Laboratories, Inc.
Chief Executive Officer



Dr. Tom F. Cheek, Jr. (*EE '61, '69*)
Garland, TX
Texas Instruments
Senior Member, Technical Staff (Retired)



Nancy C. Cole (*MetE '69, '88*)
Fernandina Beach, FL
NCC Engineering
Owner



Dr. Ronald B. Cox (*ME '65, '68*)
Signal Mountain, TN
University of Tennessee,
Chattanooga
Burkett Miller Chair of Excellence



L. Michael Cuddy (*ME '67*)
Knoxville, TN
Technology 20/20
Chief Executive Officer & President (Retired)



Dennis A. Denihan (*ChE '72*)
Shallotte, NC
RaceTrac Petroleum
Consultant



Spruell Driver Jr. (*IE '87*)
Nashville, TN
Driver Law Firm, PLLC
Principal Attorney



John F. Germ (*ME '61*)
Soddy Daisy, TN
Campbell & Associates, Inc.
Chairman of the Board (Retired)



Dr. Ralph "Gil" Gilliland (*ChE '58, MetE '63*)
Pittsburgh, PA
Oak Ridge National Laboratory
Associate Lab Director (Retired)



Dr. Hashem M. Hashemian (*NE '77*)
Knoxville, TN
Analysis and Measurement Services Corp.
President & Chief Executive Office



Dr. Michael W. Howard (*EE '80, Eng. Sci '96*)
Knoxville, TN
Electric Power Research Institute (EPRI)
President & Chief Executive Officer



Dwight Hutchins (*IE '86*)
Singapore
Accenture
Asia Pacific Managing Director - Management Consulting, Products



W. Dwight Kessel (*IE '50*)
Knoxville, TN
Knox County Executive (Retired)
Magnolia Enterprises Co., Inc.
President (Retired)



Steven D. Lucas (*CE '81, '83*)
Vonore, TN
Denark Construction
Executive Vice President



Dr. H. Lee Martin (*ME '78, '86*)
Knoxville, TN
Trinity Health Foundation of East Tennessee
President



Mark A. Medley (*ME '69*)
Knoxville, TN
Control Technologies, Inc.
President & Chief Executive Officer



Edwin A. McDougle (*CE '69, '75*)
Brentwood, TN
Ross Bryan Associates, Inc.
President (Retired)



James B. Porter, Jr. (*ChE '65*)
Chadds Ford, PA
DuPont
Chief Engineer, 2nd Vice President of Engineering & Operations (Retired)



Richard T. Snead (*IE '73*)
Dallas, TX
Gatti's Pizza
President & Chief Executive Officer (Retired)
Rosinter Restaurant Holdings (Moscow, Russia)
Board Member



John D. Tickle (*IE '65*)
Bristol, TN
Strongwell Corporation
Chairman of the Board of Directors

Events & Awards

College of Engineering Collaborates with College of Nursing to Build Simulated Health Care Facility



Cutting the ribbon at the dedication of the HITS Laboratory are (right to left): Dean of Nursing Victoria Niederhauser; Dean of Engineering Wayne T. Davis; ISE professor and co-director of HITS Xueping Li; co-Director of HITS Dr. Tami Wyatt; ISE department head John Kobza; and Susan Fancher, simulation coordinator for HITS.



Dr. Xueping Li discusses the HITS Laboratory at the ribbon-cutting ceremony.



One of the rooms in the HITS Laboratory with a patient mannequin.



COE Dean Wayne Davis addresses the crowd at the HITS Laboratory dedication.

The College of Engineering (COE) and the College of Nursing collaborated on the renovation of an existing building to improve simulated instruction and research for students across multiple disciplines.

The Health and Information Technology and Simulation (HITS) Laboratory is housed in the former Student Health Center at 1818 Andy Holt Way. The HITS Lab features simulated learning experiences and opportunities to explore research scenarios. The building adds more than seven thousand square feet to simulation learning and health information technology development and research.

“Gaining first-hand knowledge of the impact that health technology has on improving patient care, quality, and safety is critical for nursing students,” said Dean Victoria Niederhauser. “Research has shown that when students engage in simulated scenarios in a safe learning environment, they are better prepared to enter into the work force upon graduation.”

The \$1.5 million project involved renovating the three-story building. The HITS Lab takes two floors and one floor houses a rare plant herbarium for the Department of Ecology and Evolutionary Biology in the College of Arts and Sciences.

The second floor includes four patient exam rooms; a pediatric unit; a room that functions as an operating room, a birthing room and an emergency department; storage space; and lockers. It also contains a debriefing room with an observation and control laboratory where students and professors can observe how other students are handling simulated scenarios live. The experiences can be taped so that students can review how they responded to situations.

The basement level contains an apartment with a bedroom, living room, and dining room for simulated learning and collaborative nursing and engineering research projects to tackle health care challenges. For example, HITS co-directors Dr. Tami Wyatt, associate professor of nursing, and Dr. Xueping Li, associate professor of industrial engineering, plan to conduct a study using new smart-home technologies to assist with independent living for elderly people. These technologies will allow older adults to live safely and independently in their own homes.

“Our primary goal for the HITS Lab is to advance the science of health information technology and discover ways to enhance consumer health and interprofessional health education,” Li said. “We will integrate clinical simulation, distance education, process optimization, and delivery of care using telehealth into an intraprofessional education (IPE) learning experience involving students in pharmacy, social work, advance practice nursing, medicine, and industrial engineering. I am excited about this collaboration and cannot wait to see HITS in operation!”

An open house and ribbon cutting for HITS was held on March 27, 2014, at Temple Hall on Andy Holt Avenue.

Student Health Services moved from its former Andy Holt Avenue building to the corner of Pat Head Summitt Street and Andy Holt Avenue. The facility opened to students in January 2012.

For more details, visit <http://ilab.engr.utk.edu/hits/>.

College of Engineering Well Represented at Chancellors Honors Banquet

The annual Chancellor’s Honors Banquet is a showcase of the best and brightest at the University of Tennessee, and the 2014 edition proved to be quite a night for students and faculty of the College of Engineering.

James McConnell Professor and associate head of the Department of Electrical Engineering and Computer Science (EECS) Syed Kamrul Islam took home the Alexander Prize, named for former UT president and current US Senator Lamar Alexander and his wife, Honey. It recognizes excellence in teaching and research, and is only given to one faculty member across the entire campus each year.

Also on the faculty side, and also in the EECS department, associate professor Dr. Bruce MacLennan received an Alumni Outstanding Teacher award, given by the UT Alumni Association to those who best exemplify teaching excellence.

Another James McConnell Professor in the EECS department, Dr. Aly Fathy, took home the Excellence in Graduate Mentoring and Advising, given to graduate advisors and faculty members who have distinguished themselves as being highly committed to the advising and mentoring of graduate students.

The college had three faculty members win Research and Creative Achievement awards as Department of Civil and Environmental Engineering professor Dr. Lee Han took one award for his research into transportation safety, EECS professor Michael Langston won one for his work advancing high-performance computing and related applications, and Department of Nuclear Engineering assistant professor and UCOR Faculty Fellow Dr. Jason Hayward earned a Professional Promise award for the research into nuclear safety, arms control and nonproliferation.

Another EECS spotlight came when the Success in Multidisciplinary Research award went to the Infant-Inspired Robotic Systems team, which includes MacLennan, associate professor Itamar Arel and Dr. Lynne Parker as members, along with two faculty members from psychology.

The National Society of Black Engineers chapter—recently named the top chapter in the country at its annual conference—was the only group on campus to win an Extraordinary Community Service award, given for their efforts in reaching out to schools and children in an effort to generate interest in engineering-related activities.

Elsewhere on the student side, Vols swimmer Carl Svagerko, a materials science and engineering major, won a Scholar Athlete Award. A participant in fly and freestyle events, Svagerko was a two-time SEC Academic Honor Roll member during his two years at UT.

Yi Ying Chin, of chemical and biomolecular engineering, Joseph R. Creekmore, a materials science and engineering major, Gabrielle Knoll, an industrial and systems engineering major, Henry McCall, an industrial and systems engineering major, and Samantha Webb of chemical and biomolecular engineering all took home Extraordinary Academic Achievement awards.

Top Collegiate Scholar awards went to Samantha Ann Hawks and Rebekah Kathryn Patton, both of whom are chemical and biomolecular engineering majors.

More than twenty others won Extraordinary Professional Promise awards:

From Chemical and Biomolecular Engineering: Rebekah Patton

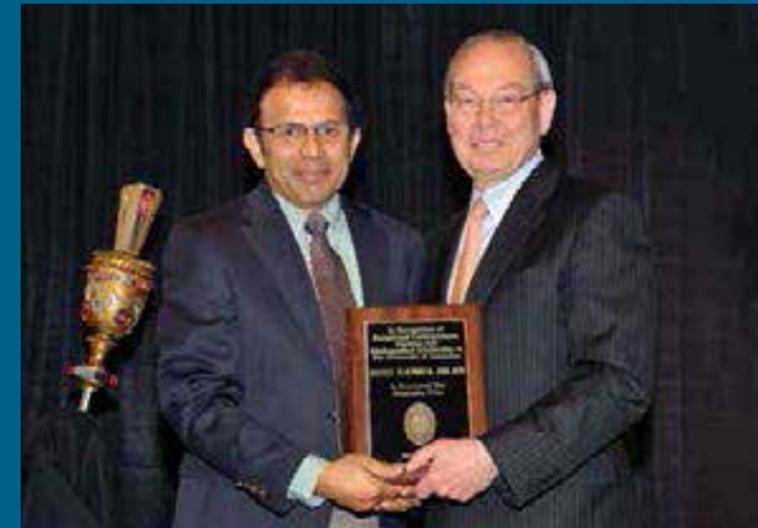
From Civil and Environmental Engineering: Taekwan Yoon

From Electrical Engineering and Computer Science: Margaret Drouhard, Sang Hyeob Lee, Ifana Mahbub, Khandaker Abdullah Al Mamun, Charles A. Phillips, Terence Cordell Randall, Sisi Xiong, Yao Xu, and Yanjun Yao.

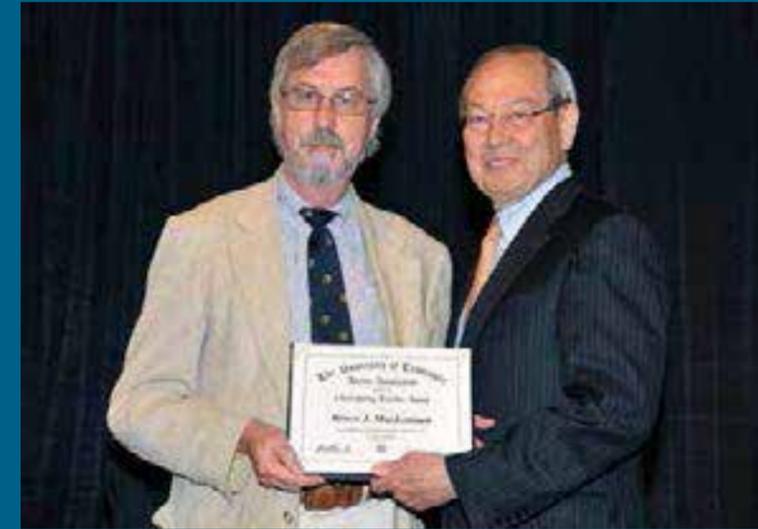
From Industrial and Systems Engineering: Isaac Atuahene, Victoria Chamblee Collier, Nathan Cole Irwin, Harshitha Muppaneni, Nathaniel Truett Siler, Kaveri Ajit Thakur, and Girish Upreti.

From Materials Science and Engineering: Haoling Jia and Shuangcheng Tang.

From Mechanical, Aerospace, and Biomedical: Sean F. Elverd, Jason Charles Howison, and Lu Huang.



Dr. Jimmy G. Cheek (right) presents the Alexander Prize to Dr. Syed Kamrul Islam at the Chancellor’s Honors Banquet.



Dr. Bruce MacLennan (left) receives the Alumni Outstanding Teacher Award from Chancellor Jimmy G. Cheek (right).



Dr. Jimmy G. Cheek (right) presents the Excellence in Graduate Mentoring and Advising Award to Dr. Aly Fathy (left).

UT Team Selected for Next Round of Advanced Vehicle Technology Competition



The EcoCAR2 3 Team, left to right: Dr. David Irick, Grace McGinnis, Chris Woudstra, Sarah Zimmerman, Preston Jacobsen, Ellie Boehmer, Alex Cox, Michael Potts, Dean Wirth, Nick Ponzio, and Ben Allen.

The University of Tennessee has been selected to compete in the EcoCAR 3 Advanced Vehicle Technology Competition (AVTC), continuing a tradition of extended participation in all but one competition series in the twenty-six-year history of AVTCs.

"It is a tremendous honor for us, once again, to be able to be a part of such a prestigious competition," said College of Engineering Dean Wayne Davis. "Dr. (David) Irick and his team really put in a lot of effort, and I think that is reflected on their continual inclusion in the event."

Sixteen universities will be competing, using a Chevrolet Camaro as their stock car.

"EcoCAR is an opportunity for the next generation of automotive engineers to help design and build innovative advanced vehicles that will reduce greenhouse gas emissions, protect the environment and save American families and businesses money at the pump," US Energy Secretary Ernest Moniz announced. "Through this competition, North American students gain valuable real-life experience that they can use to bring the auto industry into the cleaner energy future."

Advanced Vehicle Technology Competitions began in 1988 when the US Department of Energy partnered with various automakers to sponsor the first AVTC. This will be the eleventh overall competition in a string that began with the "Methanol Marathon" and has included topics such as vehicle design, fuel challenges and vehicle electrification, and has expanded to include communications and business teams.

Established by the Energy Department and General Motors, and managed by Argonne National Laboratory, EcoCAR 3 is the latest AVTC aimed at developing the next generation of automotive engineers. The four-year program will conclude in the summer of 2018.

"Being selected to EcoCar3 validates our efforts in all of the AVTC competitions we've been in," said Irick, a research assistant professor in the Department of Mechanical, Aerospace and Biomedical Engineering and the ongoing faculty advisor for UT's AVTC teams. "It's an endorsement not just for our program and the support that the college has given, but also for the collaboration we have with the College of Business Administration and the College of Communication and Information."

"The competition used to be geared more toward alternate fuels, but it's been focused on hybrid vehicle technology since around 1992," said Irick.

Each competition lasts multiple years, with EcoCAR 2—including UT's current team—wrapping up this summer.

For EcoCAR 3, the goal will be for teams to focus on reducing costs and coming up with new innovations that make hybrid or electric vehicles more accessible and more likely to be adopted by the general public. The added challenge to teams this time is to make improvements in fuel efficiency and emissions reduction while maintaining performance, safety, and consumer appeal.

"That's the other part of the challenge," said Irick. "The end result of your car needs to be that you can't tell it apart from a stock model. It needs to look completely like something you could get at the dealer."

As part of the of the competition, teams are composed of engineers, researchers and even their own media representatives. Typically, they contain fifteen to twenty team members, but some have as many as seventy-five.

UT's past teams—including the current EcoCAR 2 team—have been sponsored in part by local industries including DENSO and the Electric Power Research Institute, as well as the support that they've received from the university and alumni.

Support also comes in expertise, as General Motors and other auto-related businesses will be available to mentor and provide advice and feedback along the way.

"The help they give is just as important as anything financial," said Irick. "They really do give a lot to all of the teams in terms of support and advice."

In addition to the assistance that industry partners can lend teams along the way, students also have the added benefit of having worked with them throughout the process, leading many to employment with those companies.

"That's the great thing: It's not just simulated experience, it's honest real-world experience that these team members have once they are finished," said Irick. "At a minimum, it's like having a year of on-the-job training when they report to work. They're used to the software, the tools, the vehicle development process, so they can be immediately productive."

General Motors, in particular, has been a successful landing pad for UT's graduates.

"GM's EcoCAR 2 team quotes the statistic that approximately fifty percent of the students that go through AVTCs and then work for them have applied for a patent on a new idea or design within two or three years at the company," said Irick. "They've hired ten or so of our students from the last two AVTCs, and having that relationship is beneficial to the teams, to GM and to the students individually."



US Energy Secretary Ernest Moniz, at right, greets the UT EcoCAR Team. Photo by Amy Smotherman Burgess for the Knoxville News Sentinel.

COE Celebrates Spring 2014 Commencement

The College of Engineering recognized two hundred ninety graduates at the Spring 2014 commencement ceremony at Thompson-Boling Arena on Wednesday, May 7, 2014.

Parents, friends, and family were present for the ceremony, which started at 1:00 p.m. with a procession of faculty from both the college and the university.

University of Tennessee president Joe DiPietro, Knoxville Chancellor Jimmy G. Cheek, and Dean Wayne Davis led the procession, with Associate Dean Masood Parang handling the emcee honors for the event.

The keynote address was given by Kathy Caldwell, a 1985 graduate of the Department of Civil and Environmental Engineering. Caldwell held a number of civil engineering jobs throughout the south before becoming president of JEA Construction Engineering Services Incorporated in Gainesville, Florida. She has since retired, and she and her husband, Ron Cook—who earned both his bachelor's degree in civil engineering in 1975 and his master's in 1981 from UT—now run a private consulting firm.

Caldwell served as president of the American Society of Civil Engineers (ASCE) in 2011, and serves on the Board of Directors of Engineers Without Borders (EWB) and the American Association of Engineering Societies (AAES). She has testified about transportation before Congress and served as a "Champion for Change" for the White House.

In her address, Caldwell told the story of Henry Knox, for whom Knox County and Knoxville were named. She related how his breakthrough success was engineering a way for Continental Army cannons to climb a hill overlooking the British occupation of Boston, and how UT's engineers have also had to climb the Hill to get their education, concluding by encouraging them to never stop climbing.

The college's top students, Samantha Ann Hawks and Rebekah Kathryn Patton, both of the Department of Chemical Engineering, were recognized, as was the Department of Nuclear Engineering's Blake Alexander Palles for being the National Academy of Engineering Grand Challenges Scholar.

Special recognition was also given to the college's ambassadors—Paige Louise Black (mechanical engineering), Joshua Michael Clark (computer science), Toniqua Shaunte Hunter (mechanical engineering), Emily Anne Leturno (mechanical engineering), Rebekah Kathryn Patton (chemical engineering), David Aaron Seeman (mechanical engineering), and Victoria Dixie Vest (biomedical engineering).

Following the conclusion of the conferral of degrees and the reading of names, US Air Force Lt. Colonel Brian J. Lancaster swore in engineering graduates Phillip A. Butler, Harrison A. Jerrolds, and Henry N. Loewenkamp as the Air Force's newest Second Lieutenants, drawing a standing ovation from the crowd.

The ceremony concluded with the UT Alma Mater.

For a short video about the commencement ceremony, visit: www.youtube.com/watch?v=W0aC6h1wpJg&feature=youtu.be

For a video presentation of the entire commencement ceremony, visit: <https://www.youtube.com/watch?v=XUOmVAmktQw&feature=youtu.be>

For a closed-caption presentation of the entire ceremony, visit: www.engr.utk.edu/commencement/



COE Dean Wayne T. Davis (left) presents a plaque to Kathy Caldwell, former president of JEA construction and former national president of the American Society of Civil Engineers, the speaker for the college's spring 2014 commencement ceremony.



The graduating engineering students are all smiles at the 2014 College of Engineering Commencement Ceremony.



Lieutenant Colonel Brian J. Lancaster commissions Phillip A. Butler, Harrison A. Jerrolds, and Henry N. Loewenkamp as officers in the US Air Force.



Get it while it's hot!!!

Check out the new items for sale in the CoE Store.

We also have clearance items marked down up to 40% off selected items!!



Show your school pride while supporting the students of the UT Knoxville College of Engineering!

<http://www.shgstores.com/utkce/>

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Calendar

Fall 2014		Spring 2015	
Classes Begin	Aug 20	Classes Begin	Jan 7
Labor day	Sept 1	2nd Session Begins	Feb 26
Fall Break	Oct 16-17	Spring Break	Mar 16-20
Classes End	Dec 2	Classes End	Apr 24
Study Day	Dec 3	Study Day	Apr 27
Exams	Dec 4-5, 8-11	Exams	Apr 28-30, May 1, 4-5
Graduate Hooding	Dec 12	Graduate Hooding	May 7
Commencement	Dec 13	Commencement	May 6-9
Official Graduation Date	Dec 13	Official Graduation Date	May 9

Contact Information

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		Engineering Diversity Programs	974-1931
Dr. Veerle Keppens, <i>Associate Dean for Faculty Affairs</i>		Engineering Fundamentals	974-9810
		Engineering Professional Practice	974-5323
		Engineering Research	974-8360
Dr. Masood Parang, <i>Associate Dean for Academic & Student Affairs</i>		Engineering Student Affairs	974-2454
		Finance & Admin. Affairs	974-5279
Departments		Research Centers	
Chemical & Biomolecular	974-2421	Materials Processing	974-0816
Civil & Environmental	974-2503	Maintenance & Reliability	974-9625
Electrical & Computer Science	974-3461	Scintillation Materials	974-0267
Industrial & Information	974-3333	Transportation Research	974-5255
Materials Science	974-5336	Intelligent Systems and	
Mechanical, Aerospace &		Machine Learning	974-5803
Biomedical	974-2093	CURRENT	974-9720
Nuclear	974-2525	Innovative Computing Laboratory	974-8295
Administration & Programs			

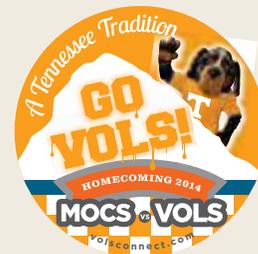
Save the Date

College of Engineering Alumni BBQ On the Hill

The University of Tennessee College of Engineering invites you to Homecoming 2014 and the Annual Alumni Barbeque on the Hill.

Saturday, October 11, 2014

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



Join us for a barbeque lunch, including hot dogs for the kids, catered by Dead End BBQ.

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 Tennessee Tradition.

Costs:

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

Register online at: www.volsconnect.com

For more information, contact Juliette McClure at (865) 974-2779 or e-mail jmccclu10@utfi.org.