Fall 2015

Tennessee Engineer Fall 2015

College of Engineering

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Aerospace Engineering Student Joshua Dobbs Leads the University of Tennessee Volunteer Football Team to an Exciting New Era
Welcome to our Fall 2015 Tennessee Engineer! There are many changes in the "landscape" that are occurring in and around the College of Engineering. As I sit at my desk drafting my message, the noise of trucks, saws, hammers, bobcats, and construction are all about me. They are coming from the general "quad" area outside of Perkins/Dougherty Halls as well as from within Perkins Hall. Hopefully, by the time you read this, it will have quieted down. For the first time in many years, the "quad" area—where we celebrate Engineers Day, Homecoming BBQs, Co-op activities, etc., will be completely re-landscaped with new sidewalks, landscaping, tables/seats. This includes Estabrook Drive from the Tickle Building down to Cumberland Avenue. These are occurring simultaneously with significant changes to Cumberland Avenue to make it more pedestrian friendly. While these changes are only cosmetic, they create a more inviting outdoor environment for students, faculty, staff, and our many alumni and friends who visit our part of campus! Substantial renovations have occurred in Dougherty Hall with new research/teaching laboratories on many floors and the new Eastman Unit Operations Laboratory, which opened to students for the first time this fall. A part of Perkins Hall has also being renovated and our freshman Honors and Jerry E. Stoneking engagement programs have been relocated to Perkins Hall effective this semester with a record number of freshmen (approximately 780). It will be wall to wall people in Perkins for the next several years—but well worth the inconvenience. This is in preparation for the new engineering complex that will be built at the current location of Pasqua and Estabrook Halls. The new complex will house our freshman programs and the Department of Nuclear Engineering.

The student and faculty landscape is also changing. We are striving to increase the diversity of both our students and faculty. In the summer of 2015, as a result of support from our faculty and corporations (Boeing, Eastman, and Volkswagen) and the efforts of our Office of Diversity, we were able to provide six different weeks of summer pre-college programs (MITES7,8; eVOL9,10; and HITES11,12) to rising seventh through twelfth graders. A record number of two-hundred nine students participated.

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Leads UT Vols

Aerospace Engineering Student Joshua Dobbs

Joshua Dobbs is the UT Vols quarterback,和 a global aerospace manufacturer in their first year as a student at the university’s College of Engineering, a demanding major for many students, not to mention one of the top telecommunications engineering programs in the southeast. Dobbs is a member of the Allstate AFCA Good Works Team® and Eli Manning) and as a nominee for the Sugar Bowl Watch List for the Manning O’Brien National Quarterback Award® (the college award for community service), and played football, baseball, and a little basketball. So, managing his time effectively has become a habit.

Dobbs is the son of Robert and Stephanie Dobbs, and attended high school at Alpharetta High School in Georgia. He prays his parents and cites them as “a perfect balance of success, integrity, self-determination, and the pursuit of excellence.” Mr. and Mrs. Dobbs raised Josh in a strongly Christian home, and he has become the principal of the offseason. We are excited about the opportunity to meet with Professor Robert Bond and several members of the Athletics department. So, when I looked at the academic programs, and not only offered a general engineering undergraduate degree, but more specifically had an aerospace engineering program that has the partnership with the UT Space Institute in Tennessee, Dobbs knew that it was a great fit for him.

Prior to signing with UT, Dobbs had previously committed to Arizona State University. Dobbs is a member of the class of 2013 and was named “Player of the Year” for both his region and county. In February of 2013, Dobbs was awarded the prestigious Francis F. Ryan award, presented annually by the National Football Foundation to the nation’s top African-American athletes who exemplify excellence in athletics. Dobbs was selected by the high school administrators and teachers for his/her demonstration of academics, athletics, community service, and leadership.

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Pharr Named UT Macebearer, COE Faculty Recognized at 2015 Chancellor’s Honors Banquet

Dr. Belle Upadhyaya, a professor in the Department of Nuclear Engineering, was honored for superior teaching and distinguished scholarship with the Alexander Prize. Upadhyaya is an elected fellow of both the American Nuclear Society and International Society of Automation. He is also a senior member of the Institute of Electrical and Electronics Engineers. Upadhyaya helped establish the National Science Foundation–funded Reliability and Maintainability Center at UT, which has developed state-of-the-art technologies such as smart field devices and has helped bring national attention to the nuclear engineering program, particularly for work in non-destructive testing, instrumentation, system monitoring, and diagnosis research and development.

His expertise has led him to visiting lecturer positions throughout Europe, South America, and Asia, including national nuclear energy institutes in France, the Netherlands, and South Korea. Upadhyaya has published more than three hundred and twenty five articles and helped author more than six hundred and thirty research reports. He is a fellow and has authored or co-authored more than fifty doctoral and master’s students.

The Alexander Prize is named for former UT President Lamar Alexander and his wife, Honey. The award is presented for exemplary achievement and distinguished scholarship. Additional outstanding faculty who were recognized at the Chancellor’s Honors Banquet included:

Chancellor Jeremy G. Cheek (right) presents the Research and Creative Achievement Award to Dr. Jeffrey Rätz (left), a professor in the Department of Materials Science and Engineering and the Department of Mechanical Engineering.

Chancellor Jeremy G. Cheek (right) presents the Research and Creative Achievement Award to Dr. Rick Komistek (left), a professor in the Department of Materials Science and Engineering.

Dr. George Pharr (left) receives the UT Prize from Chancellor Jeremy G. Cheek (right), as he is named the 2015 University of Tennessee Macebearer.

Dr. Belle Upadhyaya (MFT) is awarded the Alexander Prize by Chancellor Jeremy G. Cheek (right).
Dr. Janice Gilliam, president of Northeast State Community College, has been awarded the American Nuclear Society's (ANS) 2015 SEC Faculty Achievement Award. This award recognizes outstanding educational contributions to nuclear engineering, and highlights the leading role in the discovery and development of reliability-enhancing condition monitoring processes. Gilliam received the award at the ANS banquet in San Antonio in June 2015, along with three other research awards, including being named a distinguished alumni of Ohio University's Engineering Division, the 2015 SEC Faculty Achievement Award, and the American Society for Engineering Education's Nuclear Engineering Division. The award recognizes her contributions to the engineering field.
Dr. Vienie Keppens was named as head of the Department of Materials Science and Engineering (MSE) at UT.

Keppens will take over the helm of the department from Dr. Sandi Brakauskas, who is retiring from the position after four years.

"We (CMSE) express my sincere appreciation for Kurt’s leadership over the past four years, and his effort and energy for her willingness to accept the new role," said Dr. John B. Goodenough, dean of Engineering. "With the concerted effort of the faculty and staff, I am confident that Sandi will lead the CMSE department to continue its progress and journey in becoming a top 25 materials science and engineering department in the nation, and departmental vision to become Top 25 programs."

Dr. Keppens also serves as associate dean for faculty affairs in the College of Engineering and will continue to take over as department head. The pairing of those positions brings about another set of considerations, and Keppens said she will work to ensure each position gets the "attention it requires and deserves."

Keppens came to UT’s College of Engineering in 2003. She has authored or co-authored more than 80 technical papers and contributed to more than 150 academic presentations at national and international conferences, with her main area of expertise being the elastic properties and lattice dynamics of novel materials.

A native of Belgium, she earned her both her bachelor’s and doctoral degrees from Katholieke Universiteit Leuven at Leuven, Belgium and KU Leuven in Antwerp, Belgium.

She then worked with the Institute for Micromechanics and Nanostructures at the Swiss Federal Institute of Technology, Zürich, Switzerland. In 1988, she began a position as a postdoctoral researcher at the University of Florida later returning to UT in 2003.

Dr. Whalen is associate professor in the College of Engineering, with joint appointments in Aerospace Engineering Sciences and Earth Sciences. Whalen joined the University of Colorado Boulder’s faculty in 2005 after earning a bachelor’s degree from the University of Dayton in 1990, a master’s from the University of Kentucky in 1992, and a Ph.D. from the University of Colorado Boulder in 1998.

Upon joining the University of Colorado Boulder, Dr. Whalen was awarded a Faculty Research Fellowship for two years and a Visiting National Science Foundation (NSF) Postdoctoral Research Fellowship. In 1998, Dr. Whalen became faculty member at the University of Colorado Boulder. In 2017, Dr. Whalen was awarded a NSF Faculty Early Career Development Award (CAREER) for his research on low-temperature, high-velocity impact response on small-scale specimens.

Whalen’s research interests include the response of materials to impact, fracture, and shock. Specifically, he is interested in the response of materials to hypervelocity impact, with a particular emphasis on the role of microstructure and defect density on the deformation behavior of metals and ceramics. He uses experimental techniques such as high-speed photography to visualize the deformation behavior of materials under impact and shock loading.

Whalen works with the Colorado Ballistic Research Laboratory (CBRL), the High-Cycle Fatigue Laboratory (HFL), and the Hypervelocity Impact Laboratory (HIL) in the College of Engineering at the University of Colorado Boulder.

Dr. Whalen said that the new role was a "very exciting opportunity to work on projects that span nanometer to millimeter scale, extending the life of materials systems within the aging energy infrastructure, developing new generation of materials for aerospace and other industries that span the state of the art from additive manufacturing technologies within the Oak Ridge National Laboratory (ORNL) Manufacturing Demonstration Facility (MDF) and the ORNL Center for Advanced Materials Processing (CAMP)."

A professor named for an icon of civil engineering has its first recipient, as the University of Tennessee’s Department of Civil and Environmental Engineering (CEE) has named Dr. BaoShan Huang as the first recipient of the Dr. Suresh Babu (MABE) Professorship at UT.

The University of Tennessee, Knoxville, was recently notified that the university’s efforts to join the Center for Integrative Manufacturing Joining Sciences for Energy Applications (CIMJSEA), established five years ago at Ohio State University, has been funded. The CIMJSEA’s mission was defined based on input from industries, national laboratories, and academia, and has been focused on closing the gap in knowledge of material development and forming technologies, and educational programs that cut across multiple disciplines; engage the university’s research faculty and staff; and direct investment and research efforts surrounding the Deepwater Horizon oil spill; and was a senior scientist at Lawrence Berkeley National Laboratory in the Materials Sciences Division.

Dr. Lynne Parker, the Director of the Center for Materials Science and Engineering (CMSE) at UT, said that the new role will also provide a unique opportunity for multi-disciplinary research and collaboration.

The relationship between UT and ORNL was essential in the proposal including large-scale additive manufacturing of components. The call for the above technical project was overseen by establishing a team of researchers from the Center of Civil and Environmental Engineering, the Center of Manufacturing Engineering (MSE), the Department of Mechanical, Aerospace, and Biomedical Engineering (MABE) with expertise in the field of additive manufacturing.

The role of materials science—and along with it the profile of the UT’s department of Civil and Environmental Engineering, Microbiology, and Earth and Planetary Sciences. He is a faculty fellow at ORNL, and works with personnel from several different disciplines; engages in multi-disciplinary research and collaboration.

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Dr. BaoShan Huang has brought in more than $6.5 million in research funding and published more than one hundred papers. UT alumni Charlie and Kayleigh Babu have made a major gift, which established the endowment in honor of Babudere’s service and commitment to UT, in particular the CEE department and its students.

Charles Hodgcs, a 1974 graduate of the college, went on to start his own company, Pinnc, a successful company that is currently in the process of civil engineering expertise, particularly in construction.

Huang has served as the professor of the Department of Civil and Environmental Engineering (CEE), also has expertise in concrete, cement, and materials science.

In making the announcement, College of Engineering Dean Mark E. Parlier said, "Wayne Davis lauded Huang’s exemplary scholarly teaching and research record."

EECS Professor Receives 2015 IEEE RAS Distinguished Service Award

Dr. Lynne Parker, Department of Electrical and Computer Engineering, received the 2015 IEEE Robotics and Automation Society (RAS) "Distinguished Service Award. This award is given annually to recognize individuals who have performed outstanding service for the Society and advancement of the IEEE RAS. Dr. Parker was cited for her work as Editor-in-Chief of the RAS Conference Editorial Board, and her contributions to RAS conferences. For more information, see http://www.rras.org/eeconvention/recognition/society-awards/68-awards/recognition/society-awards/2015-ieee-ras-distinguished-service-award."

Dr. Lynne Parker

Dr. Lynne Parker
College of Engineering New Faculty for 2015

The College of Engineering (COE) community welcomes new faculty members for 2015, continuing the college’s growth and moving forward to strengthen opportunities for teaching and research.

Dr. Sankar Raghavan
Assistant Professor of Practice
PhD: Kansas State University
Research Areas: Process design and optimization, risk evaluation and mitigation in chemical processes; engineering data analytics

Dr. Chad Duty
Senior Lecturer
PhD: The University of Tennessee
Research Areas: Control and system design of discrete event systems and process control; industrial automation; robotics

Dr. John Auxier II
Assistant Professor
PhD: The University of North Carolina, Chapel Hill
Research Areas: Theoretical and numerical methods for the simulation of complex fluid flows; optimization and control of physical and engineered systems

Dr. Jason Fowlkes
Assistant Professor
PhD: Brown University
Research Areas: Electron, ion, and photon beam processing; nanofabrication; physical vapor deposition; laser-induced phase transformations; lithographic methods; thin film processing; microfluidics

Dr. Jerry Song
Assistant Professor
PhD: University of Illinois
Research Areas: Foundations of blockchain and distributed ledger technologies; secure, scalable, and efficient blockchain protocols for public and private ledgers

Dr. Amy Biegalski
Lecturer
PhD: Case Western Reserve University
Research Areas: Optimization, economics of energy systems, and transportation systems

Dr. John Vatsa
Assistant Professor
PhD: National University of Singapore
Research Areas: Data analytics, machine learning, and optimization in industrial engineering and operations research

Dr. David Shirmohammadi
Research Assistant Professor
PhD: University of Illinois
Research Areas: Supply chain analytics, risk optimization, and analytics in healthcare

Dr. Mingzhou Jin—Department of Industrial and Systems Engineering

He went on to earn his MS in management sciences in 1998 from the Business School at Zhejiang University. Jin completed his PhD in industrial and systems engineering in 2001 at Lehigh University in Bethlehem, Pennsylvania. He joined the industrial and systems engineering faculty at Mississippi State University (MSU) from 2002 to 2011. In 2008, he won the MSU Faculty Research Award for the Bagley College of Engineering.

Research and teaching overlap for Jin, with several of his students working on the interaction between RME and logistics management, such as the integration of inventory management and maintenance planning, advance manufacturing for spare part management, and reliability improvement. He teaches courses such as Supply Chain Engineering, Optimization in Industrial Engineering, Senior Design, Graduate Seminars, Stochastic Processes, Statistics, Operations Research I, Operations Research II, and Systems Engineering.

“I believe an effective teacher must build a strong connection with his students,” said Jin. “The connection is based on the teacher’s true love of teaching and a deep caring about students. I use many methods to make students feel that the material is connected to their current or future job assignments, to their career development, to contemporary issues, and even to their daily lives. I have developed and used unique teaching approaches and real-world problems from my research projects, current students’ internships and co-ops, or former students’ job duties.”

His approach earned Jin the 2015 College of Engineering Teaching Fellow Award; the 2014 Annual IIE Award for Excellence in the Teaching of Logistics and Supply Chain; the 2014 first place in the IIE Logistics and Supply Chain Case Study Competition (Advising); and a 2014 Distinguished Professor Award from the IIE Student Chapter at UT (voted by all IIE students). Jin’s work at UT has also benefited from the IEE’s 2013 move into the John D. Tickle Engineering Building.

“Moving to Tickle provided space for my lab,” he said. “I also enjoy the view from my office and the wonderful classrooms. It helps me invite external speakers and collaborators to visit our department.”

Dr. Mingzhou Jin, seated, discusses industrial and systems engineering research projects with grad-student friends: (left to right) Nelson Grande, Licheng Zhang, and Jerry Song.
Hundredstake Part in Inaugural WomEngineers Day

Career advice, diversity, and opportunities for engineers and scientists were key topics Saturday, April 11, 2015, at the Knoxville Convention Center as more than 350 high school and college students turned out for the first WomEngineers Day conference hosted by the College of Engineering (COE).

Highlighted by speakers such as Lockheed Martin executive vice president Lorraine Martin and Pratt and Whitney Military Engines president Bennett Croswell, the conference gave students a chance to hear from and talk to seasoned professionals in engineering and related fields.

“The support for WomEngineers Day within our college and the excitement for it among our attendees truly inspired us,” said Jessica Bole, a UT senior who helped bring about the event. “Engineering as a whole will soon be in the hands of our generation, and it’s up to us to responsibly shape its future.”

One of the big themes of the day was inclusiveness, with male and female students alike asking panelists and speakers about their experiences in the workplace and how to deal with problems when they arise. Martin, who serves as project manager for Lockheed Martin’s highly visible F-35 program, related a particular story of bias from her early days as an Air Force officer.

“One particular supervisor saw her preparing a report and told her she was learning skills that would serve her well as a PTA member later in life. She said she realized it wasn’t said with ill will, but that her supervisor honestly viewed her main worth as a future mom, not as the second lieutenant that she was.”

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“People know it by your actions.”

The day ended with discussions on ethics, an introduction to the COE—attendees got a chance to bounce questions off Dean Wayne Davis—and a panel on diversity in the workplace that featured UT quarterback and aerospace engineering major Joshua Dobbs.

“We hope the conversations begun that day are continued among students and speakers alike,” said Boles. “That’s the only way for us to truly begin making an impact on our respective fields.”

All told, nineteen UT students helped facilitate the event, with the support of the COE’s Board of Advisors.

Bias says more about them than it does you,” said Martin. “When you look at someone, don’t see their outward packaging, see what they bring to the table. What’s on the outside shouldn’t matter.”

The conference also offered up sessions on topics that weren’t specific to engineering, such as money planning, starting a business, and balancing work and family. Students had the chance to break into smaller groups with the experts and ask them any number of questions, with the most frequent area of focus seeming to be how those experts got started in their field and how they assumed leadership roles.

“You don’t have to walk around with a shirt that says ‘I’m the leader,’” said Sabrina Hampton, a UT graduate who now is a liaison for Consolidated Nuclear Security LLC. “People know it by your actions.”

Students and speakers alike were impressed upon the attendees.

“Engineering as a whole will soon be in the hands of our generation, and it’s up to us to responsibly shape its future.”
ASCE Team Places at Conference

The American Society of Civil Engineers (ASCE) student group at UT placed in the Top 4 at the Southeast Regional Conference on March 19-21, 2015. The conference consisted of challenging, exciting civil engineering competitions, with students offering their concrete canoe and steel bridge entries. UT students worked very hard all year long and continue to see success and improve in the largest conference in the nation.

Benjamin Brock Is Goldwater Scholar

Benjamin Brock, a Haslam Scholar and computer science major from Jefferson City, Tennessee, was named as a 2015 Goldwater Scholar at UT. The Barry Goldwater Scholarship and Excellence in Education Program awards scholarships to students studying mathematics, science, and engineering. Each scholarship provides a $7,500 award for undergraduate study and research. Brock has done research at Oak Ridge National Laboratory, the University of Edinburgh, and here at UT.

Benjamin Brock

Civil engineering Associate Professor John Ma, far left, stands with the College of Engineering ASCE team, celebrating strong showings at the 2015 ASCE Southeast Regional Conference in March.

Save the Date College of Engineering Homecoming 2015

Saturday, November 14, 2015
3 hours prior to kickoff
Catered by Dead End BBQ
Located in the newly renovated Engineering Courtyard (Between Ferris and Perkins Hall)

Register today at www.volsconnect.com
$12.00/adults - $8.00/children under 10 years of age

For more information, contact Juliette McClure at (865) 974-2779 or email jmcclu10@utk.edu.

Get into the Game!

With new COE logo apparel
www.shgstores.com/utkce/
Water-related issues are quickly shaping up to be a major concern around the world, and a new lab at UT hopes to tackle that concern. The Hydraulics and Sedimentation Laboratory officially opened on Tuesday, May 12, 2015, with the implications of its research already becoming apparent.

“Thanos Papanicolaou came to UT with a passion for civil engineering and its impact, and our impact on the environment,” said College of Engineering Dean Wayne Davis. “When you look around at the water crisis in California, or some of the other water-related issues closer to home like recent water woes in Atlanta, it’s clear how important this research will be moving forward. Those areas of need in our country are his areas of expertise, and we’re extremely happy to have him and his group here.”

Based in the Department of Civil and Environmental Engineering (CEE), the Papanicolaou Research Group maintains one of the most advanced laboratories of this kind in the country and is one of only a small number of such labs in the Southeast.

Papanicolaou said his research group currently has twenty-five ongoing projects.

“It’s a fast-paced field, and we’ve had phenomenal growth from when we started building this lab little more than a year ago until now,” said Papanicolaou. “We’re located in a strategic place in the Southeast to help study water issues that affect the entire region. Along with energy and food, water issues will play a huge part in society’s future moving forward, and it really feeds into both of those subjects as well.”

Papanicolaou’s group gave attendees at the event a look at some of the notable equipment and discussed partnerships with other universities and government organizations, including:

- The US Department of Agriculture (USDA): Studying where is soil washed into streams is coming from and invest in better farming practices
- University of Virginia: Studying riverbeds and their effect on erosion and habitat
- Oak Ridge National Laboratory and the National Science Foundation: Studying the topology around boulders in rivers and how they help diffuse water flow and improve fish habitats
- Arizona, New Mexico and Midwestern states: Studying rainfall patterns, improving conservation and waterway health
- Transportation departments: Studying scour issues where water flows around bridges and developing warning systems to alert transportation officials to bridge wear and decay in attempt to avoid repeats of bridge collapses like the one in Minneapolis-St. Paul
- National Science Foundation-Critical Zone Observatories: Studying the effects of human activity on the first few layers of the earth and predicting ways of developing a sustainable future

Highlighted by a pair of tractor-trailer-sized water flumes, the lab also features a rain station, sedimentary tools and gauges, and about seventy-five other pieces of lab equipment.

The group has received numerous grants from NASA, the Tennessee Valley Authority, and the US Departments of Energy, Transportation, Agriculture, and Defense, many of which had representatives on hand for the lab’s opening.

Papanicolaou stressed the importance of such studies and research, noting that the projects weren’t based on the hypothetical but on current real-world needs.

For Dr. Chris Cox, the new head of the CEE department, the lab’s opening served as a reminder of the latest development in a recent surge of progress for the department.

“This gives us unique capabilities that we’ve never been able to offer before,” said Cox. “In the last few years we’ve added two Governor’s Chairs (co-join UT-Oak Ridge National Laboratory program), four senior faculty members and several other faculty members, and we’ve moved our department to the state-of-the-art John D. Tickle Engineering Building. This just adds momentum to our upward trajectory.”

For more information on the lab, visit http://tpapanicolaou.engr.utk.edu.
various shapes. Lab-grown crystal scintillators, excited here by fluorescent light, can take field as a leading research center for scintillator discovery, crystal Chuck Melcher, director of the SMRC.

"The SMRC carries out research that addresses important issues in our society, including healthcare, security, and energy," said Dr. Melcher. "It is notable that this program is the only one of its kind in the world."

The Scintillation Materials Research Center (SMRC) at the University of Tennessee is an internationally recognized facility for the discovery, synthesis, and characterization of new scintillation materials for use in a variety of radiation detectors. Such detectors are a critical need for medical imaging systems, homeland security inspection and monitoring systems, neutron and high-energy particle physics experiments, and remote exploration for new energy resources.

Scintillators absorb energetic radiation—such as gamma rays, X-rays, or neutrons—and convert that energy into short bursts of visible photons. These photons are then converted into electrical pulses by photo-detectors.

"The SMRC carries out research that addresses important issues in our society, including healthcare, security, and energy," said Dr. Chuck Melcher, director of the SMRC.

"In general, I think the SMRC has become quite well-known in our field as a leading research center for scintillator discovery, crystal growth, and materials characterization," said Merry Koschan, SMRC research associate.

The center was founded in 2005 as an industry-university partnership with a grant from Siemens Medical Solutions. Support from Siemens has been continuous since then, totaling $5 million so far. Related research focuses on developing the next generation of radiation detection materials for medical imaging. Melcher is the principal investigator (PI) for this project, and Koschan has worked with him on it since the center was founded. Dr. Mariya Zhuravleva, assistant professor in the Department of Materials Science and Engineering (MSE), also works on this project.

Siemens uses scintillators in three types of medical imaging: positron emission tomography (PET); single-photon emission computed tomography (SPECT); and X-ray computed tomography (X-ray CT). The company’s PET unit is centered in Knoxville.

"Not surprisingly we are most closely aligned with this unit," said Melcher, who invented the scintillator that Siemens currently uses commercially in PET. SMRC research also benefits Siemens’ SECT equipment for processing scintillator material. Dr. Eric Lukosi, of the Department of Nuclear Engineering (NE), collaborates as co-PI, evaluating the effect of the intrinsic radiation associated with the metal halide matrices.

"There tends to be a gap between the millimeter-size laboratory-synthesized crystals in the Scintillation Materials Research Center and the centimeter-size crystals that are needed in real applications," said Melcher. "Mariya teaches a cross-listed graduate level course on scintillators with NE."

adam lindsey, an MSE graduate student, is heavily involved with the scale-up project led by Zhuravleva.

"Performing research at the SMRC has provided vast hands-on experiences with synthesis and characterization methods available in all one lab space," said Lindsey. "The access to nearly all the necessary research tools has accelerated progress towards publication, and having the opportunity to really build and develop something such as a crystal growth furnace and use it for my research has cultivated my ability to operate independently towards results. The diverse experiences available at the SMRC is what attracted me to begin with and that exposure has helped me understand what my research interests truly are and how they could be turned into a career after graduation."

The SMRC has had fifteen graduate students since 2005, with eight students earning MS degrees, five of which continued on toward PhDs. Six students working with the center earned PhDs, with more at varying stages of their doctorates work. Twenty-four undergraduate students have worked in SMRC labs at various points in time, either on a part-time basis during the academic year or during the summer, plus two high-school students.

SMRC principal researchers maintain involvement with related professional societies. Melcher served on the organizing committee for the SCINT 2015 conference in June, and will also be editor of the conference proceedings. Koschan was elevated to the grade of IEEE Senior member in 2015. Zhuravleva was elected secretary of the executive committee of the American Association for Crystal Growth (AACG). Koschan, Zhuravleva, and Stand serve on the executive committee of the local Southeast section of AACG, which Koschan also founded.

The SMRC has enjoyed a number of collaborations with various College of Engineering faculty members due to the interdisciplinary nature of scintillator research. In particular, there are funded projects with Dr. Bin Hu and Dr. Philip Rack in the Department of Materials Science and Engineering; Dr. Larry Miller and Dr. Jason Hayward in the Department of Nuclear Engineering (NE); and Dr. Dayakar Penumadu in the Department of Civil and Environmental Engineering (CEE).

"Looking forward, we have recently joined with Dr. Da-Wen Wang and Dr. Vaideep Kapanp in MSEM on a $23 million NSF proposal to establish a crystal growth user facility in the Joint Institute for Advanced Materials (JIAM)," said Melcher.

The SMRC has collaborators at several national labs, including Oak Ridge National Laboratory, Brookhaven National Laboratory, Lawrence Livermore National Laboratory, Lawrence Berkeley National Laboratory, and SLAC. Another major use of scintillators is in high-energy particle physics experiments, such as at the Large Hadron Collider at the CERN laboratory in Switzerland that recently discovered the long-theorized Higgs boson, as well as ongoing searches for dark matter. The SMRC has collaborated on occasion with scientists at CERN to look at the properties of new scintillators relevant to applications in this area.

"We also have had funded projects with some companies in addition to Siemens, namely Nucalite; Radiation Monitoring Devices, Inc., and Materials Modifications, Inc.," said Melcher. "We have also just joined the University of California, Berkeley, on a $25 million consortium proposal to DOE/NNSA on nuclear nonproliferation research and education."
The College of Engineering’s Distinguished Lecture Series brings nationally renowned engineers, engineering educators, and engineering innovators to speak at the College. Faculty, staff, students, and the engineering community from around the world can take advantage of these lectures in person, via live web-cast, or through archived videos.

“Providing the access to our lecture series is our gift to our alumni and other colleagues across the world,” said Dr. Wayne T. Davis, dean and Wayne T. Davis Endowed Dean’s Chair in the College of Engineering (COE). The lectures encompass the spectrum of engineering disciplines, are eligible for professional development hours (i.e., continuing education credit), and are free to all.

“This provides opportunity for us to feature and host prominent experts in the engineering field on our campus,” said Davis. “It also provides simultaneous access to our lecture series at no cost to other colleges of engineering, to licensed professional engineers and Engineers-in-Training, and others that might seek continuing education or professional development hours, including our alumni who now reside in all fifty states and some seventy-plus countries around the world.”

The unique component of a live webcast makes it possible for individuals to experience the lecture without having to travel to the campus.

“While we have had a Dean’s Distinguished Lecture Series for a number of years, it was always an on-campus ‘attend in person’ type of event,” said Davis. “We are enthusiastic about the opportunity to broaden the college’s Distinguished Lecture Series from being just a campus event to one that is a live webcast with access from wherever a person might reside.”

Viewers of the webcast also have an opportunity to submit questions and/or comments to the speaker via email. During each lecture, the e-mails are monitored and select e-mail questions and/or comments are presented to the speaker. Questions and/or comments can be sent to coe.lecture@utk.edu.

The on-campus location for the lectures is Room 622 of the Min H. Kao Electrical Engineering and Computer Science Building. Lectures are held at 4:00 p.m. on the scheduled days. Most lectures are archived within about forty-eight hours, with permission from the speaker.

For more information on the Distinguished Lecture Series, visit www.engr.utk.edu/distinguished_lecture.

The fall 2015 series of speakers includes Dr. Katherine Kuchenbecker, University of Pennsylvania; Dr. James McLurkin, Rice University; and Dr. William H. Sanders, University of Illinois Urbana-Champaign.

In upcoming lectures, Dr. Francisco Valero-Cuevas will speak on January 27, 2016. Cuevas is a professor of biomedical engineering and biomimetics and physical therapy at the University of Southern California. Les Johnson will speak on April 4, 2016. Johnson is the deputy manager in the Advanced Concepts Office at NASA’s Marshall Space Flight Center.

Dr. Katherine Kuchenbecker, an associate professor in mechanical engineering and applied mechanics and computer and information science at University of Pennsylvania, delivered the first talk for fall 2015 in the Distinguished Lecture Series.

Dr. Francisco Valero-Cuevas will speak on January 27, 2016, as part of the Distinguished Lecture Series. Cuevas is a professor of biomedical engineering and biomimetics and physical therapy at the University of Southern California.

As the Jerry and Kay Henry Professor of Engineering in the University of Tennessee, Knoxville College of Engineering, I have the support to advance my research in creating new materials for post-silicon electronics utilizing a field known as “spintronics.” One of the main advantages of spintronic devices is that very little power is needed to run them. Minimizing the power requirements of electronic devices is becoming increasingly important as more and more items are being connected to the Internet. This professorship has also allowed me to offer unique research collaborative projects to both graduate and undergraduate students in the Department of Materials Science and Engineering. I am very grateful for the generosity that Jerry and Kay Henry have shown in establishing this professorship, and appreciate the opportunities it provides for both faculty and students in our department.

Dr. David Mandrus
Jerry and Kay Henry Professor of Engineering
Department of Materials Science and Engineering

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New Landscaping Projects Enhance Appearance, Function of the Engineering Campus

Students, faculty, staff, and visitors to the UT campus will have the opportunity to enjoy two new significant landscaping projects on the engineering campus that are slated to be completed this fall.

The Perkins-Ferris Courtyard

Beginning in May, the courtyard area between Perkins and Ferris Halls and the steps to the Science and Engineering Research Facility were closed to pedestrian traffic as a construction team began demolition on the area. In addition, Middle Way Drive was also closed to motorized vehicle traffic during the project.

The newly landscaped area will feature increased seating, including round tables with chairs and benches, as well as additional bike loop storage and even a bike repair area. A new staircase with seating will lead down from the courtyard area between Dougherty and Ferris to Estabrook Road, making pedestrian access easier to parking behind the two buildings. The WiFi access in the area will be enhanced and improved during the Fall Semester, allowing students, faculty, and staff the capability to work on laptops and tablets outside.

Dr. William Dunne, the college's associate dean for research and technology, who is representing the college for the project, added that every effort has been made to preserve the mature trees that are already located in the area, and new vegetation that is indigenous to the East Tennessee climate will also be added. Pavers and shade-friendly groundcovers will be used to fill in the areas under the trees.

Estabrook Road Improvements

A second landscaping and upgrade project is going on along the eastern boundary of campus on Estabrook Road, behind the Dougherty Engineering Building and the Min H. Kao Electrical Engineering and Computer Science Building. The old chain link fence is being torn down, and structural engineers from Barge Waggoner Sumner & Cannon, Inc. (BWSC) along with workers from UT Facilities Services are replacing deteriorating above ground infrastructure (such as the sidewalk, fencing, overhead wires, etc.) and are adding streetscape elements including trees, lighting, seating and new paving to improve the appearance and accessibility for this end of campus.

Due to extreme damage from weather, moisture, and vehicles over the years, the infrastructure underlying the area was in very bad shape, so the project has been limited to the area between Cumberland Avenue and the stairs leading to the parking area next to Second Creek. Dunne said that this phase of the project will be completed in time for the football season, with work along the remainder of Estabrook Road up to the John D. Tickle Building continuing after the football season and academic classes have completed.

The current plan is to completely restructure the eastern side of Estabrook Road by early 2016. The university and BWSC are also working with the City of Knoxville to clear out and landscape the banks of Second Creek that is located next to the university’s parking lot in order for both areas to provide a consistently attractive and convenient pedestrian area for UT students, faculty, and staff.
The 2015 Intercollegiate Summer Bridge Program (ISB) was held on June 12-July 1, 2015. This second year of the summer bridge program provided the twenty-six participants with opportunities to prepare for the collegiate environment as they develop academic, study, and personal skills while also engaging in career exploration. This residential summer experience offered introductory courses in pre-calculus and chemistry, as well as college life.

The College of Engineering collaborated with the College of Agriculture and Natural Resources and the College of Arts and Sciences to create and host the ISB program, which began in 2014. The focus is to provide a transitional program of study from high school to the university for underrepresented students majoring in science, technology, engineering, and mathematics (STEM). The program is based on an established model initiated by the Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP). ISB offers students an overview of courses required in their freshman curriculum in the STEM areas.

This preliminary exposure to the academic environment of higher education developed academic success skills in the students. The success of the program is measured by testing the students before and afterward, and by the transformation in the students’ perception and attitude over the three weeks.

Students who participated in the 2014 ISB improved their chemistry skills by 18% and their pre-calculus skills by 12%. Participating students in 2015 improved chemistry skills by 17%, and pre-calculus skills by 47%.

Several field trips incorporated into the program gave students insight into different aspects of STEM careers, along with leadership and teambuilding experiences. The Mountain Challenge Ropes Course at Maryville College assisted students in building connections and friendships at the beginning of the program. This trip allowed them to begin acclimating to the new environment while quickly making friends and helping each other succeed.

Another trip took students to Sweetwater Valley Farm, located between Philadelphia and Loudon, Tennessee. The farm is known for its agricultural vitality and progress. This particular field trip sparked the interest of the College of Agricultural Sciences and Natural Resources (CASNR) students within the program. Students received insight into how cheese is produced along with learning about varieties of cheese flavors and textures. Students also saw where the cows are milked, and the professional equipment used.

During their last field trip, students toured the DENSO Manufacturing facility in Maryville, Tennessee, and got a glimpse of the engineering employer at the auto-parts manufacturing company. A panel discussion at the end of the tour gave students an overview of the engineering careers at the facility, and also imparted valuable professional development tips for success in their college and professional career. Students walked away with the knowledge of successful professionals in their major, some professional development, and a possible contact for their future endeavors.

For information, visit tlsamp.utk.edu/incoming.html
Journey to the Top 25. If you’ve read any UT materials or heard Dean Davis or Chancellor Cheek in the past few years you know we’re on a mission to become a top 25 public research university. It’s more than a theme, it’s a drive to excellence that motivates our thinking and inspires our actions. Top 25: Not just a goal, but a vision that impacts how students and parents think about us, how companies recruit engineering graduates, and how faculty members choose to come here for careers.

Join the Journey is an invitation to our alumni and friends to consider your role in UT’s future. It’s your future, too. You joined the journey the day you set foot on the University of Tennessee. So tell us your journey stories.

Send us updates on your careers for the alumni segment of this magazine. I suspect you have journey stories with friends, too, because every journey is made a lot more fun with the friends we’ve made and kept over the years. Do you gather regularly somewhere? Do you come each year to a football or basketball game? Do your families get together? Or do you just have a great photo with those friends? Share them with us and we’ll print a photo and quote in one of our engineering publications!

Be Proud! Be Involved! Be Invested! Join the Journey. It’s one exciting ride.

To get your photo and quote or a sentence about the friendships you have with other UT engineering graduates, contact Juliette McClure at jmcclu10@utk.edu.

By Dorothy Bankley Bryson

Inspire

I chose the University of Tennessee for its excellent education at a price that would not demand years of my life to pay back. The Tummins Scholarship has helped me accomplish graduating in four years with no student loan debt—enabling me to look at future plans without restriction, and I am very grateful for the support it has provided.

This scholarship also offsets costs in a way that has allowed me time to focus on my degree, research projects, and to serve as a College of Engineering Student Ambassador. In that position, I have been able to tell the UT engineering story to talented high school students from Tennessee and beyond. I want young students to understand that the University of Tennessee is more than athletics—it is a great place to start your academic career!

Gregory Tate ’16
Tummins Scholarship

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"Being part of the Minority Engineering Scholarship program is similar to being in a fraternity. The friendships that I made at Tennessee have followed me throughout both my professional and personal career. Wherever I go throughout the country I know I have friends that share a common experience with me that began at the University of Tennessee."

Greg Richard

"It’s always great to reconnect with college friends who you shared so much with while back on campus. We shared so many special times and memories while at UTK, including countless hours studying together to achieve the same goal of graduating."

Joe Fareed

"It’s always great to reconnect with college friends who you shared so much with while back on campus. We shared so many special times and memories while at UTK, including countless hours studying together to achieve the same goal of graduating."

Joe Fareed

(Taken from left to right) Ken Brown (BS/CE ’82), Greg Richard (BS/AE ’83), Greger Allen (BS/EE ’94) and Elijah Dunbert (BS/ME ’83) with the UT cheerleaders.

(Taken from left to right) Kioumars Dawallu (BS/EE ’85), Mike Zill (BS/IE ’85), Joe Fareed (BS/ME ’95), and Elijah Dunbert (BS/ME ’83) with the UT cheerleaders.
Jim Flood, Vice President, Arctic Project Development for ExxonMobil

It was great having my brothers on campus and we took advantage of all the outdoor activities around Knoxville and the Smoky Mountains,” Flood commented.

Flood also valued his time working in the concrete testing laboratory, where veteran UT professor Dr. Ed Burdette taught all of us that the engineering education is about independent, critical thinking and you need to understand the engineering principles vs. memorizing the popular material.

His understanding has stayed with me for over thirty-five years in the oil and gas business with Shell and ExxonMobil developing a philosophy that “we don’t have problems, we only have solutions” which has helped me work with project teams around the world to develop sound engineering solutions.”

After Flood joined ExxonMobil, his first project was the Lena Gayed Tower offshore platform, a one-thousand foot compliant tower, which was installed in 1983 as an industry record for deepwater platforms. His next major project was the Sakhalin Project, a gas plant and three offshore platforms, in Mobile Bay, Alabama. Flood also worked in production operation assignments, including Operation Superintendent positions in Midland, Texas, and LaBarge, Wyoming. When the Exxon and Mepmar merger occurred in 2000, Flood moved to the ExxonMobil Development Company where he has helped manage major upstream projects in Chad and Angola.

He moved into the Arctic Vice President job in 2010 and I cover three regions: Russia, Newfoundland, and Alaska. In Alaska, I have worked on the Sakhalin Russia Project-three major offshore projects since 2002 and currently lived on Sakhalin Island for four years during the Phase I development, “I moved into the Arctic Vice President job in 2010 and I cover three regions: Russia, Newfoundland, and Alaska and currently have six active projects with a total gross capital cost of over $35 billion.”

Flood sees continued success in the future for ExxonMobil, since the energy industry is a growing industry in the world and the other oil and gas companies continuously seek new supplies of energy to meet the ever increasing world demands for energy sources.

“The price of oil is low at this time but we have seen many peaks during my thirty-five years in the oil and gas business and take a long-term approach and continue to work a robust and diversified portfolio to ensure you have the right tools for success when you realize price growth you are ready to move forward,” Flood commented. “There is still plenty of growth potential for all of the major oil companies specifically in the Arctic Regions where we believe a very high percentage of the undiscovered oil and gas reserves still to be found.”

Flood enjoys working on major projects and plans to continue his work with ExxonMobil for several more years before considering retirement. “I have one project in Alaska in the early development phases where we are looking to monetize gas from the North Slope which could be one of the largest major infrastructure projects in North America with costs over $60 billion. The project started and it is in solid foundation before going into retirement,” Flood added.

Flood lives in Magnolia, Texas, with his wife Kate. He has three daughters, Shelli, Darbi, and Maya and enjoys all of the activities that go along with parenthood; helping the girls with their schoolwork, coaching soccer, and watching UT sports and NFL football with his family.

“I’m a huge UT fan so as you would guess I’m super excited about the program Coach Jones is building and look forward to this new season,” Flood said. “Go Vols!”

Dr. Dewey H. Hodges

Dr. Dewey H. Hodges (BS/BE ’69) has been chosen to receive the 2015 Spirit of St. Louis Medal from the American Society of Mechanical Engineers (ASME). Hodges is currently an aerospace engineering professor at the Georgia Institute of Technology (Georgia Tech), a Longtime Fellow of ASME, AIAA, AHS and AAM. Hodges will formally receive the medal and a $1,000 honorarium during a special event during the ASME Mechanical Engineering Congress and Exposition to be held in Texas this November.

The Spirit of St. Louis Medal was established in 1929 by Philip D. Bell, ASME members, and citizens of St. Louis. It is the highest honor bestowed in the engineering discipline of aeronautics and astronautics.

In announcing Hodges as its 2015 medal recipient, ASME praised Hodges for “developing the theory and methodology for modeling the dynamics and aerodynamics of composite helicopter rotor blades, highly flexible slender aircraft wings and wind turbine blades; and its implementation in the VABS software used extensively in research and engineering.”

Hodges received his bachelor’s degree in mechanical engineering from the University of Kansas in 1963 and his PhD in aeroelasticity from the University of California in 1968. Hodges joined General Electric’s research laboratory in Schenectady, New York in 1968, followed by a position as a research scientist at the US Army Aeroflightdynamics Directorate at Ames. He was also a guest lecturer at his alma mater, Stanford University, during that time. In 1971 he joined the UT faculty where he created and led a university-wide engineering scholarship for nuclear engineering students because they wanted to “produce dynamic, instrumental leaders for the College of Engineering in achieving their goals.”

This year as an integration engineer at NASA’s Kennedy Space Center, Dr. Dewey Hodges has been working in what NASA called Skrobot was employed by General Dynamics as a system engineer for several years in the Active/Passive Shock Mitigation program. During his tenures in General Dynamics, he participated in more than fifty launches while working in the electrical, ground instrumentation, payload integration, telemetry, and project management divisions.

Dr. Rupadhyaya studied at North Carolina State University on January 5, 2015. His thesis was titled “Cytoskeletal and Signaling Dynamics in Cancer: Development and Validation of the Simple PDE Model for Cell Migration.” Johnson is now working as a postdoctoral research assistant at Princeton University.

Dr. Rupadhyaya, PhD, and his wife, Nimrata R. Rupadhyaya, MD, MPH, have strong ties to the University of Tennessee. Belle is a professor of nuclear engineering and has been at the University of Tennessee for forty years. Her husband, a UT alumnus, has been with the University of Tennessee for thirty-five years as well as the tried and true. “It has been a privilege working at the university, and we appreciate very much the support given us by our colleagues, students, and staff who are true assets to UT,” the Upadhyayas stated.

During his time at UT, his research and teaching have focused on nuclear engineering, radiation safety, reactor control, next generation reactors, power plant monitoring and diagnostics, advanced reactor modeling, and computational and computational and validation and maintainability engineering. He has enjoyed his time with the Department of Nuclear Engineering and finds the opportunity for interaction with internships and professionals both internal and external to UT rewarding.

This past spring, Dr. Rupadhyaya created the Upadhyaya Family Endowed Engineering Scholarship. This scholarship is available to junior and seniors in the Department of Nuclear Engineering who have demonstrated successful academic performance. Belle and Nimrata wanted to give back to the institution that has been so good to them. They cite it creates a meaningful scholarship for nuclear engineering students because they want to “produce dynamic, instrumental leaders for the College of Engineering in achieving their goals.”

The students in engineering have to dedicate their efforts and spend long hours to excel in their chosen area of interest,” explains Belle.

The Upadhyayas hope this scholarship will encourage and help promising nuclear engineers to complete their degrees in good standing. As the nuclear engineering graduate program currently ranked #4 among all nuclear engineering programs at public universities in the United States, it is a great time to be involved with the department. Belle plans to continue teaching and research for years to come. He cites it is creating new areas of research for the future, complete a textbook focused on systems dynamics, Instrumentation, and controls, and continue to impact our future engineering leaders.

“It has been a privilege working at the university, and we appreciate very much the support given us by our colleagues, students, and staff who are true assets to UT,” the Upadhyayas stated.
was a resident of Greensboro, North Carolina.

was a resident of Huntsville, Alabama.

Alumni

John V. Barnette (BS/EE ’66) died on April 13, 2015. He was a resident of Chicago, Illinois.

Lewis Thomas Hardin III (BS/ISE ’57) died on April 30, 2015. He was a resident of Houston, Texas.

John Warren Headrick (BS/MetE ’68) died on April 6, 2012. He was a resident of Knoxville, Tennessee.

Helen Henson (MS/MetE ’79) died on May 4, 2015. She was a resident of Clinton, Tennessee.

Charles Steven Lowe (BS/EE ’74) died on June 2, 2015. He was a resident of Springfield, Texas.

Duane May (BS/ECEC ’72) died on November 17, 2012. He was a resident of Pasco, Washington.

Fred Allen Mayes (BS/EE ’57) died on May 18, 2015. He was a resident of Farmington, Missouri.

Jack McAllister (PhD/EE ’68) died on July 19, 2015. He was a resident of Midland, Missouri.

Ray L. McCloud (BS/EE ’46) died on July 24, 2014. He was a resident of Atlanta, Texas.

Herbert Carl Morris (BS/EE ’51) died on March 16, 2015. He was a resident of Knoxville, Tennessee.

John Wallace Mottam (BS/CE ’55, MS/EE ’57, PhD/EE ’63) died on November 6, 2014. He was a resident of Colfax, North Carolina.

Gene Palmer (BS/EE ’55) died on June 16, 2015. He was a resident of Lumberton, Texas.

Jonathan Frederick Quarles (BS/EE ’65) died on June 24, 2015. He was a resident of St. Louis, Missouri.

Thomas Warren Scandlyn (BS/EE ’49) died on July 23, 2014. He was a resident of Plainfield, New Jersey.

Robert Watson Schwartz (BS/ME ’55) died on May 31, 2015. He was a resident of Germantown, Tennessee.

Col. Barnett J. Sledge Sr. (BS/ME ’36) died on November 22, 2012. He was a resident of Palm Beach, Florida.

Robert Lee “Bob” Stunkard (BS/IE ’57) died on September 9, 2012. He was a resident of Covington, Kentucky.

Paul L. Tilley (BS/ME ’38) died on January 9, 2012. He was a resident of Dayville, Maine.

Wayne Scott Estes (BS/EE ’65) died on April 24, 2014. He was a resident of Nashville, Tennessee. Estes worked for NASA in Houston and was a member of the National Society of Professional Engineers. He held at three patents registered in the Library of Congress. As an avid environmentalist, he helped address technical issues with the Alaskan pipeline to aid caribou migration. He also worked on round-trip dynamic studies for Cerebral Palsy patients, including his daughter.

Virgil W. Farno (BS/CE ’48) died on August 4, 2015. He was a resident of Springfield, Oregon.

Events & Awards

College of Engineering Celebrates Opening of New Eastman Unit Operations Laboratory

Eastman in Kingsport, Tennessee, has long been a strategic partner for UT’s College of Engineering.

The new Eastman Unit Operations Laboratory was officially dedicated on Thursday, April 9, 2015, at 10:30 a.m. in a ceremony that took place in a tent just outside the Nathan W. Dougherty Engineering Building.

The event celebrated the latest example of the Eastman-College of Engineering partnership, bringing business and education together to enable students to be successful in the workforce and to allow faculty to conduct valuable innovative research.

Alvin and Sally Beaman Professor and Head Dr. Bamin Khomami welcomed guests. After remarks by COE and Eastman officials and dignitaries, guests enjoyed conducted on tours of the laboratory, followed by a luncheon in the Neyland Stadium East Skybox on the seventh floor.

“Eastman’s support of our college is certainly important to our growth and success,” said Dr. Wayne Davis, dean of the College of Engineering. The opening of this lab is a key moment for us, one that would have been possible without this partnership.”

The lab offers state-of-the-art facilities for engineering students to learn real-world practices.

Unit operations labs are often used to help chemical engineering students take theoretical knowledge from the classroom and put it to use under monitored conditions.

In particular, students can go through the process of converting raw materials into finished products, something that helps them develop experience for employment after college.

“Having a lab such as this will allow us to expose our students to the practices and experience that are so critical to success after college,” said Khomami, professor and head of the Department of Chemical and Biomolecular Engineering.

For a Fortune 300 company like Eastman, being approximately one hundred miles away from UT has provided them with one of their most critical resources: people.

While funding and mentoring provided by Eastman help the college, having such a highly skilled group of graduates in their backyard is one of the significant ways that the COE returns the favor.

Alvin and Sally Beaman Professor and Head Dr. Bamin Khomami speaks and dignitaries at the dedication of the Eastman Unit Operations Laboratory. The ribbon-cutting team for the dedication of the Eastman Unit Operations Laboratory in the Dougherty Engineering Building. COE Board of Directors President and Chief Technology Officer Dr. Bryan Christian and COE donor and supporter John Wood (BS/ME ’56, MS/CE ’60) address the crowd at the Eastman Unit Operations Laboratory dedication.
One of the critical elements for the success of the Institute for Advanced Composites Manufacturing Innovation, or IACMI, announced by President Barack Obama in January, is collaborating with some of the leading institutes, research centers, and companies around the world. Led by UT and Oak Ridge National Laboratory (ORNL), the group has built a number of relationships and recently welcomed one such partner, the American Composites Manufacturers Association (ACMA) to campus.

ACMA leadership got to learn firsthand about advanced manufacturing taking place at UT and ORNL. They also got to meet with some of the leading composites-related research in the country.

The visit also showed the importance of composites research for all of us to recognize John's contributions and celebrate with ACMA, introduce them further to IACMI, and have a chance for research and engagement. “John is a national leader in the industry with his insight and good counsel.”

Tickle’s visit also gave IACMI a chance to thank him for his service.

“It was special to recognize John Tickle and Strongwell Corporation this way,” said Dr. Taylor Eighmy, UT’s vice chancellor for research and engagement. “John is a national leader in the composites industry and has served ACMA. It was great to meet with ACMA, introduce them further to IACMI, and have a chance for all of us to recognize John’s contributions and celebrate Strongwell’s leadership in pultrusion. They will be a key partner for us in IACMI.”

The visit also showed the importance of composites research and the strength of the UT-ORNL partnership. Since UT joined with Battelle Memorial Institute to jointly manage ORNL in 2000, the two institutions have forged ahead for us in IACMI.

“John’s involvement in IACMI shows his ongoing commitment to driving innovation in our industry,” said Merrell. “We look forward to John continuing to help guide ACMA and the composites industry with his insight and good counsel.”

“Tickle’s visit also gave IACMI a chance to thank him for his service.”

According to Cliff Eberle, ORNL expert in carbon fiber and composites, modeling of materials and the recycling and characterization of reinforced plastics, polymers and fibers—all of which are important to IACMI and ACMA—have also taken great leaps forward under the partnership.

The DOE, through Argonne National Laboratory, helps with logistics and testing, while Siemens donated software that the team uses. In addition to altering the environmental impact of the car itself, the team is committed to providing outreach about the program, visiting the Science Café at Ijams Nature Center, STEM training at Holston Middle School, and several other events at UT, as well as the recent FIRST Robotics competition.

For more information about the EcoCAR program, visit http://ecocar.org/tennessee/about-us/.

For more information about Knoxville’s EarthFest, visit http://www.knox-earthfest.org.

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College of Engineering Celebrates Commencement 2015

The University of Tennessee College of Engineering held its spring 2015 Commencement Ceremony at Thompson-Boling Arena on Friday, May 8.

Keynote speaker for the event was Ken Huntsman, one of the founders of American Online, who earned his master’s degree in computer science at UT in 1977. Huntsman related his story to students, encouraging them to excel as they begin the next part of their journeys through life, whether they plan to continue their education or enter the workforce.

Huntsman helped create one of the first e-mail systems before going to work for a company that helped develop video games to the Atari VCS, the grandfather of home video game systems. He and others from that group later founded Quantum Computer Services, which is now known as America Online. For his contributions there, he was named an AOL Fellow before retiring in 2007.

Huntsman serves on the College of Engineering Board of Advisors at both UT and Penn State, where he earned his undergraduate degree.

In his address, Huntsman told graduates to find ways to help society.

“Body of knowledge is useless unless it is applied,” said Huntsman. “And remember that no one admires who are not making a difference. One of the best ways to make a difference is to do something to help others. That’s what I admire about all of you."”

He talked about his responsibilities during a typical day onboard the space shuttle, noting that he and his crew are responsible for the equipment in a particular part of the shuttle—whether they were technical, practical, or even social.

The ceremony concluded with the UT Alma Mater.

International Space Station Commander and Astronaut Butch Wilmore Visits UTSI

NASA astronaut and US Navy Captain Barry “Butch” Wilmore, a 1994 graduate of the University of Tennessee Space Institute, captivated an audience of more than 400 people as he talked about challenges, future space exploration, and the International Space Station (ISS). Attendees also included approximately one hundred and twenty local middle and high school students, Technology, Engineering, and Math (STEM) honor students.

Wilmore graduated from Mt. Juliet High School before receiving an Electronic Engineering degree from Tennessee Tech and then earning a Master’s degree in Aviation Systems in 1994 from the University of Tennessee Space Institute. He went on to become a Navy Pilot before being selected as a NASA astronaut in 2000.

During his recent visit to UTSI, he shared pictures and highlights from his one hundred and sixty-seven day ISS mission. He talked about his responsibilities during a typical day onboard the orbiting laboratory, including his two-hour daily exercise program to maintain muscle mass due to zero gravity.

As part of his Expedition 43 responsibilities, he took more than three space walks that lasted several hours each. He described how physically and mentally challenging they can be.

As part of his presentation at UTSI, Wilmore showed nineteen-minute video footage aboard the space station. Much of it was time-lapse editing of Earth with various images of countries around the world, lightning storms, aurora borealis in the north, and wind swept deserts.

In addition, he displayed a replica of the first functional socket wrench he printed in space using a 3D printer. He explained that 3D printing technology could be vital in the future of space exploration to make what cannot be taken into space with the astronauts. Due to weight limits for cargo, deep-space missions will not be able to carry all the spare parts, and tools crews may need along their journey. This game-changing technology would allow future space explorers to “print” critical tools and parts on an as-needed basis, thus freeing up cargo space for life-sustaining consumables.

Following his presentation, Wilmore answered questions from the audience before visiting the vacuum chamber at the Space Institute and attending a luncheon in his honor. He also presented UTSI with an autographed picture commemorating the 42nd ISS expedition.

COE Dean Wayne Davis and his wife, Sylvia, attended the event and enjoyed talking with the astronaut about his experiences in space. Wilmore had addressed potential engineering students from the ISS during the 2014 COE Engineers Day.

Following the conclusion of the conferral of degrees and the reading of names, Air Force Lt. Col. Brian J. Lancaster swore in graduating engineering students at the conclusion of their time in ROTC. All enter their respective branches as second lieutenants. The ceremony concluded with the UT Alma Mater.

COE Dean Wayne Davis (right) presents a plaque to Lt. Col. Brian J. Lancaster (far left) in honor of his contributions as keynote speaker for the college’s 2015 commencement.

Barry Wilmore wears a UT College of Engineering T-shirt while answering football questions during the International Space Station Commander and Astronaut Butch Wilmore Visits UTSI event. His presentation was aimed at aviation systems from UT’s Space Institute in 1994.

COE Dean Wayne Davis (right) and Sylvia Davis (left) meet Astronaut Butch Wilmore.
Outstanding Engineering Faculty and Staff Recognized at the COE 2015 Faculty and Staff Awards Dinner

A recent night of recognition for outstanding achievement for the College of Engineering culminated with James B. Porter Jr. receiving the Nathan W. Dougherty Award—the college’s highest honor— at the Holiday Inn World’s Fair on Thursday, April 9, 2015, during the college’s annual Faculty and Staff Awards Dinner. College faculty, staff, and current and former Board of Advisors members were on hand to hear Porter, who earned his degree in chemical engineering at UT, accept the award while praising the college’s progress in recent years.

The college established the Dougherty Award in 1953 to pay tribute to the man who served as its dean from 1940-1956, and to honor engineers whose accomplishments have brought UT recognition. After graduating from UT, Porter joined DuPont in 1966 and remained with the company, aside from a stint in the US Army, until retiring in 2008 as the company’s vice president for Engineering and Operations. In addition to his work with DuPont, Porter served on the college’s Board of Advisors—including as its president—as the chairperson for the Construction Industry Institute and the of United Negro College Fund of Delaware, and on the boards of the American Institute of Chemical Engineers, FIATECH, the Mascaro Sustainability Initiatives, and the Fishel’s Foundation, as well as the advisory board of AICHE’s Center for Chemical Process Safety.

He received FIATECH’s inaugural award for technology leadership in 2008, which was named in his honor, as well as the 2007 Society of Women Engineers Rodney D. Chipp Memorial Award, the 2005 Engineering and Construction Contracting Association Achievement Award, and CCI’s 2004 Carroll H. Dunn Award of Excellence. Porter currently serves as founder and president of Sustainable Operations Solutions, which helps promote safer, more efficient, more productive work environments.

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

**Outstanding Support Staff Awards:**

Brad Kiser, Data Analyst, Engineering Research Office

Tonya Brewer, Account Specialist, Department of Materials Science and Engineering

Jeff W. and Janet P. Davis Outstanding Faculty Advisor

Dr. Ben Blalock, Blalock, Kennedy; Pierce Analog Electronics Professor, Department of Electrical Engineering and Computer Science

Moses E. and Mayme Brooks Distinguished Professor:

Dr. Stephanie TerMaath, Department of Mechanical, Aerospace, and Biomedical Engineering

Allen and Hoshall Engineering Faculty Professor:

Dr. Jens Gregor, Department of Electrical Engineering and Computer Science

Leon and Nancy Cole Superior Teaching Award:

Dr. Robert Bond, Department of Mechanical, Aerospace, and Biomedical Engineering

Charles Edward Ferris Faculty Award:

Dr. Christopher Cherry, Department of Civil and Environmental Engineering

Teaching Fellow Awards:

Dr. Lawrence Heilbronn, Department of Nuclear Engineering

Dr. Mingzhou Jin, Associate Head, Department of Industrial and Systems Engineering

Dr. Jeffrey Reinbolt, Mechanical, Aerospace, and Biomedical Engineering

**Professional Promise in Research Awards:**

Dr. Yanfei Gao, Department of Materials Science and Engineering

Dr. Gong Gu, Department of Electrical Engineering and Computer Science

Dr. Lawrence Heilbronn, Department of Nuclear Engineering

Dr. Fangxing Li, Department of Electrical Engineering and Computer Science

**Research Achievement Awards:**

Dr. Ben Blalock, Blalock, Kennedy; Pierce Analog Electronics Professor, Department of Electrical Engineering and Computer Science

Dr. Dayakar Penumadu, Fred N. Peebles Professor, Department of Civil and Environmental Engineering

Dr. George Pharr, Chancellor’s Professor, Director of the Joint Institute for Advanced Materials, Department of Materials Science and Engineering

Dr. John Schwartz, Department of Civil and Environmental Engineering

Dr. Kevin Tomsovic, Director of CURENT, Department of Electrical Engineering and Computer Science

Dr. Lawrence Townsend, Department of Nuclear Engineering Translational Research Award:

Dr. Je (Jane) Wu, Department of Electrical Engineering and Computer Science

Dr. Fangxing Li (center), receives the Outstanding Support Staff Award from Dean Wayne Davis (left) and Associate Dean for Academic and Student Affairs Masood Parang (right).
## Calendar

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<td>Dr. Veerle Keppens, Associate Dean for Faculty Affairs</td>
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## Engineering Professional Practice Cookout Draws More than 1,400

The Office of Engineering Professional Practice recently held its seventeenth annual welcome back cookout, its largest yet with more than 1,400 participants.

Office director Todd Reeves kicked off the event with the help of College of Engineering Dean Wayne Davis and UT quarterback and aerospace engineering student Joshua Dobbs.

According to Reeves, the idea behind the cookout is threefold: to welcome students back to campus in a fun way, to introduce them to his office, and to offer companies and students a chance to visit with one another.

This year’s event was sponsored and attended by nine companies: Altec, DENSO, Duke Energy, Eastman, Garmin, International Paper, MAHLE, Shaw Industries, and Southern Company.

While it was hosted with engineering students in mind, faculty, staff and students from any discipline were welcomed to a Buddy’s BBQ spread of sandwiches, sides, and desserts.

In addition to thanking sponsors, Reeves made a special point to single out the efforts of UT’s Facilities Services, as well as others within the college and the university for setting up the event.

COE Dean Wayne Davis (2nd from left), and EPP Director Todd Reeves (4th from right), along with Josh Dobbs (center, in back), welcome students to the Engineering Professional Practice welcome back cookout.