

World-Renowned Faculty Recognized for Exceptional Achievements

The College of Engineering faculty includes numerous professors who are internationally respected in their fields of research. Several of these exceptional professors have been awarded chairs or professorships as a result of their outstanding accomplishments.

Through the years, alumni and friends of the COE have established professorship and chairs through private gifts to support specific research areas.

Currently, two COE faculty members occupy chairs and four have professorships. "We look to our college's faculty to continue the valuable work of

educating our country's future engineers and to carry on pioneering research activities, methods and products keeping us on the forefront of technology," said Dr. Way Kuo, COE dean. "These faculty members exemplify our college's tradition of excellence."

For more information on establishing a chair or professorship in the UT College of Engineering, contact Patty Shea, Engineering Development Director, at (865) 974-2779/pwshea@utk.edu.

Ivan Racheff Chair of Excellence in Materials Science and Engineering



Dr. Peter Liaw

In 1987, the Ivan Racheff Chair of Excellence in Materials Science and Engineering was established in honor of the late Ivan Racheff, owner of the Knoxville Iron Works (now AmeriSteel) to recognize excellence in teaching and research in materials science and engineering. **Dr. Peter Liaw**, professor of materials science and engineering at the University of Tennessee, now occupies the Chair.

Dr. Liaw's vision for the Chair is simple – create a collaborative research effort in order to produce the best science possible for future generations.

"Hopefully with cutting edge research and other faculty members, we can create a group of people working together towards the common good of materials science and engineering to educate younger generations so they can contribute to society," Liaw said.

Teamwork seems to be the mantra of Dr. Liaw's research, which includes mechanical behaviors and processing of advanced materials, including bulk metallic glasses and nanostructural materials using neutrons and synchrotron X-rays. With National Science Foundation (NSF) grants, Dr. Liaw and his colleagues are working towards creating a community of researchers in materials science and engineering for the benefit of future generations.

As a professor, Dr. Liaw finds fulfillment in his students' achievements. "I like to see younger generations become very well educated, develop great personalities, get good jobs and contribute to society," Liaw said.

Overall, Dr. Liaw appreciates the team spirit surrounding the Chair. "The objective of the chair is good research and integrity," Liaw said. "With younger faculty working together towards a common goal, we as a team can develop strong programs at the University of Tennessee in cooperation with our friends at the Oak Ridge National Laboratory. This will help elevate the reputation of the department and university in order to gain recognition. As a team, we can work together to achieve the best science possible for future generations."

Dr. Thomas Urbanik

The Goodrich Chair of Excellence in Civil and Environmental Engineering was established in 1988 to recognize a professor with national prominence in the field of civil and environmental engineering and honors UT alum Henry Goodrich, a 1943 civil engineering graduate, for his outstanding contributions to business and industry. **Dr. Thomas Urbanik**, a UT civil and environmental engineering professor and national leader of transportation research, now occupies the Chair.

"The Goodrich Chair made it possible for me to move from a full time research position to a position focusing on both research and education," said Urbanik, who relocated from the Texas Transportation Institute to the University of Tennessee in 2001 after he was appointed to the Goodrich Chair.

Urbanik is a global expert in the field of transportation system operation and management, specializing in the advanced traffic control systems, system performance measurement and optimization, highway-railroad grade crossings, transit priority, geometric design and transportation management during natural and technological emergencies.

Because of Urbanik's prominence in the transportation field, his students have the opportunity to participate in nationally significant research. Currently, two national cooperative highway research projects, funded by the Transportation Research Board, allow his students to

work on cutting edge research in the transportation field.

"These programs offer my students the opportunity to participate in a type of research that will benefit the next generation," said Urbanik, who believes the Goodrich Chair has made it possible for him to give back his many years of research experience to his students.

"My understanding of the chair is to improve the quality of the research program," Urbanik said. "I think it's important to realize a good education is fostered by a good research program."



Goodrich Chair of Excellence in Civil and Environmental Engineering

EXCEPTIONAL achievements

Fred M. Roddy Professor in Biomedical Engineering



Dr. Richard Komistek

Dr. Richard Komistek has been named the first Fred M. Roddy Professor of Biomedical Engineering in the Department of Mechanical, Aerospace and Biomedical Engineering.

The professorship, which recognizes excellence in biomedical teaching and research, was recently established in honor of UT alumnus Fred M. Roddy, a 1927 mechanical engineering graduate and founder of the Cumberland Engineering Company.

"I believe that three main goals for this professorship must be attained," Komistek said. "First, I want to secure research funding in the fields of biomechanics and orthopedic devices that will allow us the opportunity to train graduate students and benefit those patients afflicted with arthritis. Secondly, I want to work with and train high-level graduate students to succeed in their future profession. It is not enough to help them get a degree. I want each of them to leave UT with a career. Therefore, each student must graduate with a thorough understanding of their field and be able to secure research funding, write journal articles and be able to communicate with both the technical and medical community. Thirdly, I want to ensure that our research directly benefits people afflicted with arthritis and leads to the development of longer lasting orthopedic devices."

Komistek serves as co-director of the Center for Musculoskeletal Research. His research interests include biomechanics of the human body using Kane's mechanics, developing mathematical models of the human body musculoskeletal system, in vivo kinematic and kinetic analysis of the human body, bio-controls, bio-vibrations and bio-design.

A member of the Knee Society, Komistek and his co-authors won that organization's Coventry Award in 2003, and Komistek was named as a College of Engineering Research Fellow in 2004 and 2006. He is also the Executive Director of the International Society of Technology in Arthroplasty.

He received his B.S.M.E., M.S.E.M. and Ph.D. degrees from the University of Memphis in Memphis, Tenn.

"I am grateful to the Roddy family for giving me this honor and I hope to fulfill their goals for this professorship," Komistek added. "The Roddys have demonstrated their desire to help people with arthritis by endowing this professorship, and I feel it is my obligation to follow through with their wishes that the research conducted directly benefits people. I am confident this professorship will significantly enhance my ability to conduct biomechanics research."

Dr. Kenneth Kihm

The Magnavox Professorship was established in 1981 by the Magnavox Company to recognize faculty for superior teaching and research accomplishments. In 2004, Dr. Kenneth Kihm, Department of Mechanical, Aerospace and Biomedical Engineering, was awarded the professorship.

"Above all, the Magnavox Professorship grants the honor and mettle for my interdisciplinary research activities of integrated and dynamic imaging of micro/nano-scale biosystems," Kihm said. "The main impact of the professorship is to contribute to enhancing the visibility of the University of Tennessee."

Dr. Kihm sees the primary research activities at the Micro/Nano-Scale Fluidics and Energy Transport (MINSFET) Laboratory of the UT-MABE fulfilling the goals and objectives of his Magnavox Professorship.

"Six top-class doctoral students are working on various research projects funded by the National Science Foundation, Department of Energy, NASA, the Air Force Office of Scientific Research, the State of Tennessee and an international agency," Kihm said. "My team has been publishing more than 10 articles per year in leading journals in the field."

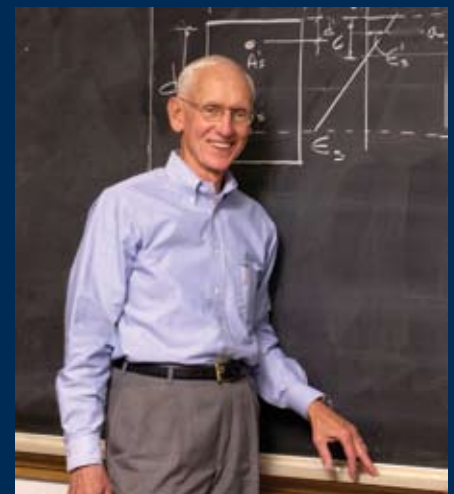
Kihm is a pioneer in the field of micro-nano fluidics and transport, focusing on engineering properties for high throughput cytometry of target cells, such as cancer and stem cells, and examining nanoscale topology for cellular boundaries/surfaces and bionanoparticle tracking inside cells.

Dr. Edwin Burdette

Dr. Edwin Burdette is the Fred N. Peebles Professor in Civil Engineering in the Department of Civil and Environmental Engineering.

Dr. Peebles was a graduate of the UT College of Engineering and served as dean from 1968 until 1980. The professorship, established by friends, family and former students of Peebles, who died in 1981, recognizes outstanding teaching and research by COE faculty.

Peebles, a native of Paris, Tenn., began his career at UT in 1947 as a faculty member in the Department of Engineering Mechanics. In 1957, he became a full-time development engineer in the Reactor Experimental Engineering Division at the Oak Ridge National Laboratory, operated at that time by the Union Carbide Corporation for the U.S. Atomic Energy Commission. Peebles returned to UT in the fall of 1960 as professor in the



Fred N. Peebles Professor in Civil Engineering

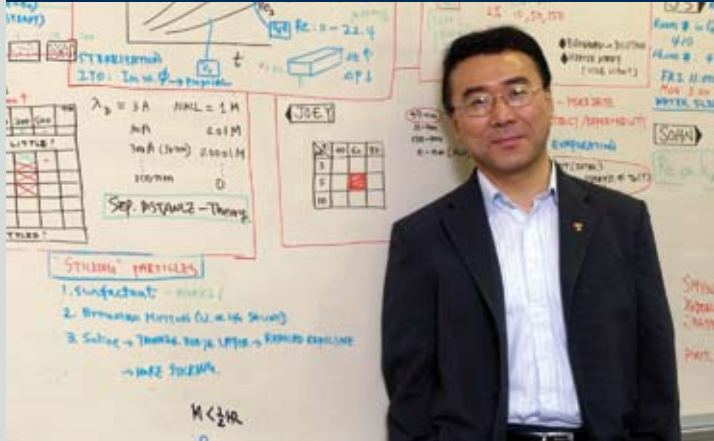
Department of Chemical Engineering. In 1963, he was named the first head of the college's newly created Department of Engineering Science and Mechanics and served in that post until being named dean in 1968.

Under Peebles' assertive leadership, the College of Engineering experienced phenomenal growth in both the size and quality of its academic and research programs. Peebles was also the first dean to initiate a process for faculty performance reviews.

Burdette, a member of the COE faculty since 1969, has been active in research and teaching, and he has consulted extensively in the area of

"My vision for the professorship is to continue the current research activity level and concentrate on making one or two strategic areas grow, such as the study of inter- and intracellular transport of nanoscale transport carriers for both stem and cancer cells," Kihm said. "Another equally weighed vision is to implement the educational scope, particularly for undergraduates, toward the leading edge in research areas of nanoscale and biosystem science."

Magnavox Professor in Mechanical Engineering



structural engineering.

"Dean Peebles was a big influence on me, and he was very supportive; the main thing he stressed was that an effective faculty member should excel in both research and teaching—he really started our college on the road to effective research," Burdette said.

The majority of Burdette's research has involved testing either in the laboratory or in the field. He has been active in field-testing of bridges since 1969, and currently is co-investigator on a project involving field-testing of a highway bridge in Nashville, Tenn., and is principal investigator on research to develop an optimum mix for high performance concrete. Also, he carried out an extensive research effort devoted to the testing of anchors in concrete; research under his direction at UT provided data instrumental in the development of methodology used for prediction of anchor capacity.

"Research has made me a better teacher," Burdette added. "You don't get stale—you stay current with developments in your field. Although I think you can over-emphasize either research or teaching, to the detriment of one or the other, hopefully in my case they have complemented each other."

Burdette earned B.S. and M.S. degrees from the University of Tennessee-Knoxville in 1957 and 1961, and he received a Ph.D. from the University of Illinois in 1969.

Burdette was awarded the COE's Teaching Fellow Award in 2006. He is also the recipient of the UT Alexander Prize in 2001 and the University Macebearer Award in 1990. He received the Peebles professorship in 1981.

"I consider it one of the highest awards I ever received," Burdette commented. "I received it at the college's Honors Banquet, and my wife and I almost did not go that night! At the end of the evening, when the Peebles Professorship was announced and they were describing the recipient, I thought, 'Wow, that sounds like me!' And it was—I was so pleased and honored to receive this award that carries on Dr. Peebles' name and legacy."

Dr. Mongi A. Abidi

Dr. Mongi Abidi is the Weston Fulton Professor in the Department of Electrical and Computer Engineering.

The award, established by the Robertshaw Controls Company, honors UT graduate Weston Miller Fulton, who invented the Sylphon bellows mechanism, and recognizes superior classroom and research skills.

In 1898, Fulton, a meteorologist, accepted an appointment to the Knoxville Weather Bureau. While attending to his duties as weather forecaster, Fulton also began taking an interest in science courses offered at UT and soon became a dedicated student and teacher. During his tenure at UT (1898–1903), he served on the science faculty and continued his studies. In 1902, Fulton was awarded a Master of Science degree from the University of Tennessee.

One of Fulton's most notable inventions was the "Sylphon," a bellows-like device for thermostatic control of temperature, which led to the founding of the Fulton Company in 1904, where many of his inventions were manufactured.

Fulton held patents on more than 200 inventions; at one time the U.S. Patent Office in Washington had an entire room devoted to his devices.

"Weston Fulton had a leadership role in the area of controls, and the work I do fits in nicely with that philosophy, since the robots and sensors we develop, test and prototype have as their essence a controls system," Abidi said.

Abidi directs activities in the Imaging, Robotics, and Intelligent Systems Laboratory (IRIS: web site <http://imaging.utk.edu>), conducting research in the field of three-dimensional imaging. Since 1986, Abidi has acted as either principal investigator or co-principal investigator for research contracts totaling over \$25 million.

Abidi is the recipient of the 2001 Science Alliance Faculty Award, the 2001 Brooks Distinguished Professor Award, the 1997-2000 Magnavox Professorship and the 1995 Chancellor's Award for Research and Creative Achievement.

He received his Principal Engineering degree in electrical engineering from the National Engineering School of Tunis, Tunisia, in 1981, and his M.S. and Ph.D. degrees in electrical engineering in 1985 and 1987, respectively, from the University of Tennessee.

"The Fulton professorship has provided me with an opportunity to give my students a realistic look at research and a chance to help them understand the goals of electrical and computer engineering," Abidi said. "I am grateful to have had the honor of carrying on Weston Fulton's legacy."

—Stories compiled by Kim Cowart and Amanda Womac



Weston Fulton Professor in Electrical and Computer Engineering