



Tufts
UNIVERSITY

School of
Engineering

Annual Report

2009-2010

Linda M. Abriola

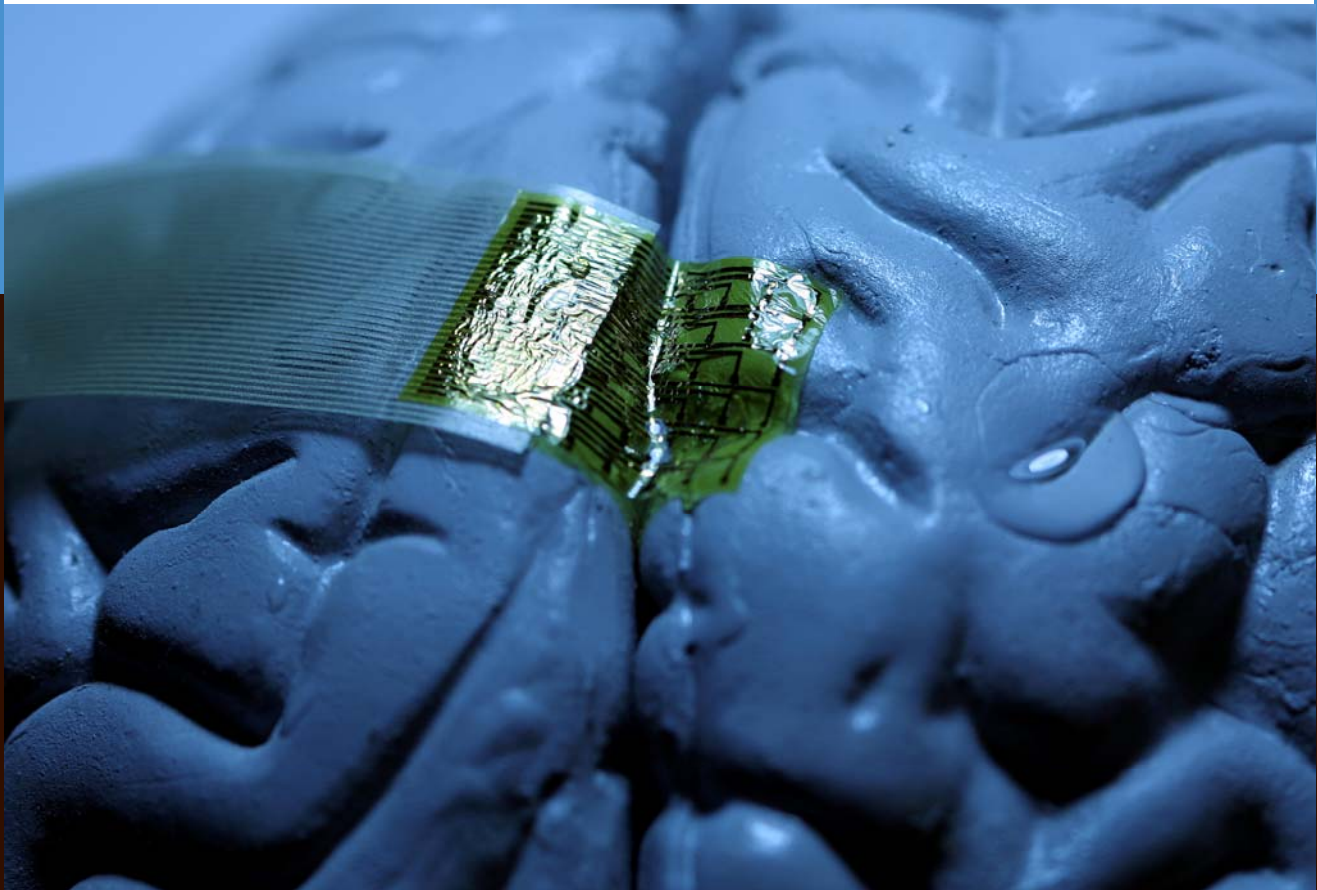


Photo credit: John Rogers, Beckman Institute, University of Illinois at Urbana-Champaign.

A neural electrode array wrapped onto a model of the brain. The wrapping process occurs spontaneously, driven by dissolution of a thin, supporting substrate of silk. Developed by Professors David Kaplan and Fiorenzo Omenetto, this implantable silk-based technology was named one of the top 10 emerging technologies by [MIT Technology Review](#).

DEAN'S OVERVIEW



Dean Linda Abriola

The past year was a landmark year for Tufts School of Engineering. It began with the announcement of an extraordinary pledge of \$40 million by the Bernard M. Gordon foundation in support of the School's engineering leadership education programs. This was followed by a major gift (\$3 million) from members of the

McDonnell family and the James S. McDonnell Family Foundation in support of the activities of the Center for Engineering Education and Outreach (CEEO). The philanthropy of Dr. Bernard Gordon, Tufts Trustee emeritus and member of the Engineering Board of Overseers, will enable the SOE to significantly strengthen efforts to prepare our students both with the technical knowledge and, perhaps more importantly, the skills and attitudes necessary for their development into successful engineering leaders. The Gordon gift agreement spawned a substantial planning effort over the course of the academic year, engaging faculty, students, and alumni in the delineation of key elements of a new Tufts Engineering Leadership Program. This year, our student engineers, in partnership with the Boston Architectural College, led the design and construction of an affordable solar home, as we participated in our first national Solar Decathlon competition. It was another record year for admissions, with undergraduate and Ph.D. graduate applications up substantially, and increasing numbers of applications from women and members of other underrepresented groups. Many of our faculty members were award winners, including two faculty members honored with endowed Professorships, three who were named Fellows of their professional societies, and three junior faculty members who were honored with prestigious early career awards. An extremely successful faculty recruitment season yielded six talented new faculty hires. Research productivity has continued to expand, with research expenditures exceeding \$11 million and 10% increases in both indirect cost recovery and the number of active grants. For the second year in a row, the SOE leads all Tufts Schools in technology transfer activity, accounting for 54% of all intellectual property disclosures in FY10. These encouraging trends reflect the quality of our SOE faculty and the success of our strategically focused interdisciplinary research model.

These and additional highlights are summarized in the following pages.

FACULTY ACHIEVEMENTS AND HONORS

Chemical and Biological Engineering (ChBE) Professor **Maria Flytzani-Stephanopoulos** was named the first holder of the [Robert and Marcy Haber Endowed Professorship in Energy Sustainability](#) in the SOE for her pioneering research in nanocatalysis for clean energy production. This professorship was established by a \$2 million gift from Robert J. Haber, E'79, EG'80, a member of the SOE Board of Overseers and his wife, Marcy, to promote research in alternative energy.



Maria Flytzani-Stephanopoulos (center) was named the first Haber Professor through a gift from Robert J. Haber, E79 (right) and his wife Marcy (left).

The research of biomedical engineering (BME) Professors **Fiorenzo Omenetto** and **David Kaplan**, Stern Family Professor in Engineering and BME Chair, continues to make headlines. MIT's *Technology Review* magazine identified the silk-based implantable electronics research of Omenetto and Kaplan as one of this year's 10 [emerging technologies "likely to change the world."](#)

Professor **Karen Panetta** of the Department of Electrical and Computer Engineering (ECE) was honored with the [Norm Augustine Award](#) from the American Association of Engineering Societies (AAES) for her work "communicating the excitement of engineering through outreach activities that promote careers in science and engineering, and encouraging youth to improve



Karen Panetta

the environment and change the lives of individuals and communities.” Past recipients of this award include astronaut Neil Armstrong and Bernard Amadei, founder of Engineers Without Borders. Professor **Steven Chapra** of the Department of Civil and Environmental Engineering (CEE) received the [Chandler-Misener Award](#) for the "most notable" paper to appear this year in the *Journal of Great Lakes Research*. Associate Professor of Mechanical Engineering (ME) **Caroline Cao** was named to the Regional Chair for Foreign Researchers by the Région Pays de la Loire, France for her research on medical robotics for interventional radiology.

Three of our junior faculty members were honored with [early career awards](#) this year. Assistant Professor **Luisa Chiesa** (ME) is the recipient of a Department of Energy (DOE) Early Career Award for her research in superconducting materials for energy applications. In ECE, Assistant Professors **Sameer Sonkusale** and **Valencia Joyner** each received National Science Foundation (NSF) CAREER awards for research in nano-electrochemical systems and in wireless imaging sensors, respectively.

Three of our faculty attained fellowship in their professional societies: Professor **Maria Flytzani-Stephanopoulos** (ChBE) was named a Fellow of the American Institute of Chemical Engineers; **Dr. Robert Hannemann**, Director of the Tufts Gordon Institute, was named a Fellow of the American Society of Mechanical Engineering; and Professor of the Practice **Brian Brenner** (CEE) was named a Fellow of the American Society of Civil Engineering. The year also marked the awarding of tenure and/or promotion to three of our faculty, Associate Professors **Luis Dorfmann** (CEE), **Donna Slonim** in the Department of Computer Science (CS), and **Sameer Sonkusale** (ECE).



Valencia Joyner (ECE), Luisa Chiesa (ME), and Sameer Sonkusale (ECE) received early career awards for research on wireless imaging sensors, superconducting materials, and nanoelectrochemical systems, respectively.

STUDENT ACHIEVEMENTS AND HONORS

Matt Thoms (E'10) led the Tufts contingent of engineering students working with Boston Architectural College to design and construct an affordable solar home as part of the 2009 [Solar Decathlon](#) held on Washington D.C.'s National Mall. A team of Tufts Gordon Institute master of engineering management (MSEM) students, including biomedical engineer **Michael Brown** (E'10), won the Classic Business Competition top prize in the [Tufts \\$100K Business Plan Competition](#) for a plan to develop a silk-based screening device to identify and isolate patients with hospital-acquired infections. Working with CS lecturer **Ming Chow**, students **Anit Das** (E'11), **Nadia Rodriguez** (E'11), **Gilad Gray** (E'11), and **Cobin Dopkeen** (E'10) created the game "Nanobots," which was selected as one of 10 finalists in the Microsoft 2010 Imagine Cup Game Design Competition Finals.



Anit Das, Gilad Gray, Nadia Rodriguez and Cobin Dopkeen (L to R) were national finalists in the Microsoft 2010 Imagine Cup for their game "Nanobots." Computer Science Lecturer Ming Chow (right) advised the team.

Among our graduate student award winners, **Dante DeMeo** (ECE) and **Lindsay Wray** (BME) were awarded NSF Predoctoral Fellowships; **Michaela Reagan** (BME) received a predoctoral traineeship from the Department of Defense (DoD) Breast Cancer Research Program; and **Mary (Katie) Balaconis** (BME) was named a Draper Fellow. The Computing Community Consortium and the Computing Research Association awarded **Marc Chiarini** (CS) one of 40 national postdoctoral Computing Innovation Fellowships. **Karen Kosinski** (CEE) received a [Dow Sustainability Innovation Student Challenge award](#) for her research on communicable disease in Ghana. **Nan Yi** (ChBE) won the 2010 International Precious Metals Institute Student Award for his work in nanocatalysis for clean energy production. Engineering master's recipient

and current doctoral student **Sampathkumar Veeraraghavan** (ECE) received the Institute of Electrical and Electronics Engineers (IEEE) Achievement Award for his development of a database program used to [track and analyze disabilities](#) in young children in India. **Amy Hopkins** (BME) was awarded both a Fulbright Scholarship and a Whitaker International Fellowship to continue her doctoral research on drug delivery across the blood-brain barrier at the Laboratory of Regenerative Medicine and Pharmacobiology, École Polytechnique Fédérale de Lausanne.

UNDERGRADUATE AND GRADUATE EDUCATION

It was another banner year for the School of Engineering, with freshman applications up by more than 5%. This represents the SOE's fourth consecutive record-breaking applicant pool, with a total increase in applications of 32% since 2006. Consistent with last year's statistics, selectivity and financial aid remained strong this year, with a 28% acceptance rate and 41% of the admitted class receiving Tufts grants. This year, the school also made notable progress in the recruitment and enrollment of underrepresented students. Of the enrolled students, Americans of color make up 26% (up from 24% in 2009) and women make up 29% (substantially surpassing the national average of 21%). Our students' academic qualifications continue to raise the bar, with a new record SAT-Math score of 752 (up 11 points from 2008). The middle 50% of incoming engineers continue to score between 730-780 on the SAT

-M and their mean high school class rank is 6%, with 85% in the top 10% of their class. The Class of 2014 includes 184 students from 24 states. Seven percent are foreign citizens, and more than two-thirds of the class comes to Tufts SOE from public high schools.

The number of graduate applications to the SOE grew substantially, increasing nearly 20% over last year (from 651 in Fall 2009 to 780 in Fall 2010). This increase is mostly associated with a dramatic (29%) increase in Ph.D. applications. Although some of this growth, particularly in applications at the master's level, may be attributable to economic conditions, we are encouraged by this trend and believe it can be attributed to ongoing measures to increase the quality and visibility of our graduate programs. **Julia Keller**, SOE Communications Manager, oversaw the production of a [new graduate viewbook](#), which received the highly competitive First Prize for Design awarded by the American Design Awards organization. Applications from underrepresented students to our doctoral programs also continued to rise, and this fall, the SOE will enroll its first scholar from the National Consortium for Graduate Degrees for Minorities in Engineering and Science. More importantly, the quality of our fellowship applicant pool continues to increase, accompanied by significant gains in yields, as we compete with the country's most prestigious research universities. Seven of our Provost and Dean's Fellowship offers were accepted this year in comparison to four last year. Perhaps most remarkable, the entering Ph.D. class is projected to grow by 40% over the 2009 matriculating class. Additional information on enrollment and degrees granted can be found on page 10.

In the previous academic year, under the leadership of **Dr. Robert Hannemann**, Director of Tufts Gordon Institute, plans for a significant expansion of TGI's flagship MSEM program were developed and implemented. The MSEM, targeted at practicing professionals but also open to full-time students, is now offered in two formats: an evening program and our long-standing weekend program. To achieve TGI's ambitious goal to increase incoming enrollment by 50%, a strategic branding and marketing campaign was designed and carried out by a team led by **Nancy Buczko**, TGI Associate Director. Efforts included effective use of TGI's revised website,



Dr. Robert Hannemann, TGI Director

Undergraduate Admissions, Class of 2014	
Applications up 5% from 2009*	
Applications: 2,348	
Acceptance rate: 28%*	(A&S 24%)
Admitted student profile	
SAT-M: 752*	(A&S 705)
SAT-CR: 690	(A&S 708)
SAT-W: 695	(A&S 717)
Mean class rank: 6%	(A&S 6%)
*record for SOE	

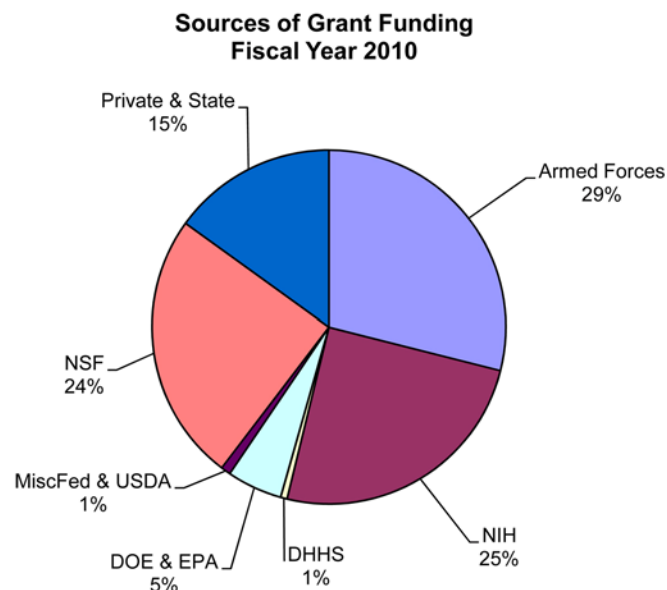
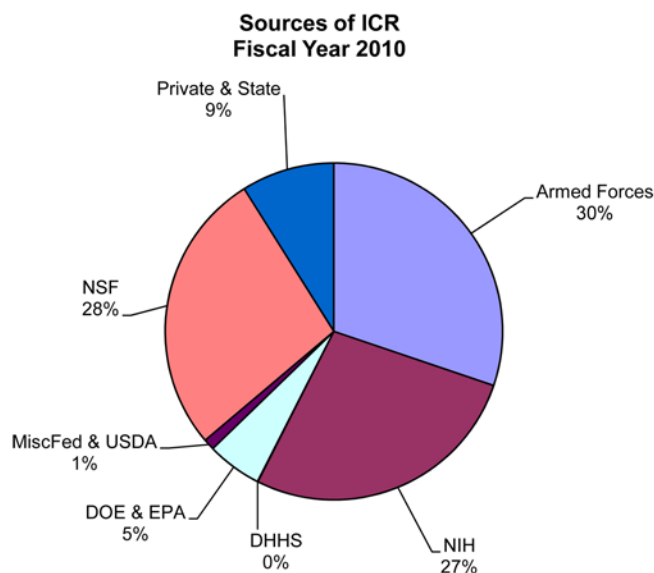
alumni outreach, and an increased number of MSEM information sessions. Despite current economic uncertainties, TGI significantly exceeded its goal, increasing program enrollment by 80% in AY09-10, with another projected increase of 26% in September 2010. Total MSEM enrollment in AY10-11 will be 131, a level we shall seek to sustain in the coming years. This year also witnessed an increase in total MSEM applications (16%) and selectivity (10%) in comparison to 2009.

Eight rising juniors were admitted to our new combined BS/MS or BS/ME program, designed to attract some of our best students to graduate school. This competitive program provides admitted students support for summer research during their junior and senior years.

At this year's Commencement ceremonies, the School of Engineering heard from honorary doctorate recipient [Dr. Kristina Johnson](#), Under Secretary for Energy at the U.S. Department of Energy. Among her many awards, she is the recipient of the AAES John Fritz Medal, widely considered the highest award in the engineering profession. This May also marked the School's first annual doctoral celebration for our more than 20 Ph.D. recipients and their advisors and committee members.

INTERDISCIPLINARY RESEARCH AND EDUCATION

The School of Engineering continues to enjoy significant growth and momentum in research productivity. Total annual research expenditures in FY09 exceeded a record \$11M and FY10 expenditures are projected at similar levels, with a nearly 10% growth in indirect cost recovery (ICR) over FY09. To encourage faculty development and participation in research, the SOE Faculty Development Fund, established by Dean Abriola in 2008, distributed a sum equivalent to 5% of ICR funds to Principal and co-Principal Investigators. This year, a similar 5% allocation was made to department chairs for their discretionary use. In FY10, faculty submitted 275 proposals and had 172 active grants (up 11% from FY09), with 124 new and supplemental awards. Of the grant funding received, more than 75% was roughly equally distributed among the National Science Foundation, National Institutes of Health and the Armed Forces, showing a balanced portfolio for the School. Private and state support for research grew by approximately \$500K (35%) in comparison with FY09.



These encouraging trends reflect active involvement of an increasing number of SOE faculty members in research (68% of faculty are now funded compared to 46% in FY03) and demonstrate the caliber of our new hires and the success of our strategically focused interdisciplinary research model.

The sections on the following pages highlight some significant achievements in interdisciplinary research and education in SOE strategic areas.

Bioengineering:

Activities of the Advanced Technology Laboratory (ATL) group at 200 Boston Avenue continue to thrive.

Research from the silk-based, optical sensor platform research group (Professors **Fio Omenetto** and **David Kaplan**) was covered in a multitude of media outlets,



including [National Public Radio](#) and [The Economist](#), most importantly making [MIT Technology Review's](#) annual list of the top 10 most important emerging technologies. Their biocompatible, implantable optical electronic technology could pave the way for better devices to monitor chronic disease or help control seizures. Research Associate Professor Robert Peattie

received NSF funding for the development of a silk-based cardiac patch that will help grow blood vessels to repair heart tissue damaged after a heart attack.

Sameer Sonkusale (ECE) received an NSF Early CAREER Award for his work in developing promising new techniques to assemble and grow nano-sized wires on silicon chips that could be used as sensing devices to detect disease. **Valencia Joyner's** (ECE) NSF Early CAREER Award will allow her to develop high-performance optical sensors to refine non-invasive imaging tools to identify diseased tissues. Associate Professor **Irene Georgakoudi** (BME) continues to receive funding from the American Cancer Society for her research in optical biomarkers for improving the rate at which early stages of cancer can be detected non-invasively. **Kurt Pennell**, Professor and Chair in Civil and Environmental Engineering, received supplemental funding from NIH to continue research in the influence of neuroactive steroids on seizure

frequency during pregnancy.

In Fall 2010, seven students will enroll in the new cross-school master's program in Bioengineering, which includes common core requirements and incorporates six departmentally based concentration tracks: Bioinformatics (CS), Biomaterials (BME), Biomechanical Systems and Devices (ME), Cell and Bioprocess Engineering (ChBE), Environmental Biotechnology (CEE), and Signals and Systems (ECE).

Engineering for Sustainability:

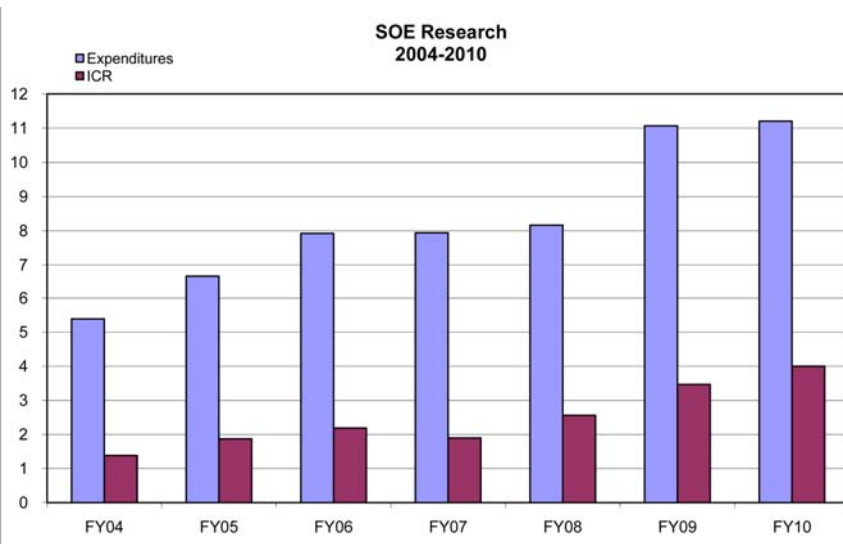
Assistant Professor **Tom Vandervelde** (ECE), the John A. and Dorothy M. Adams Faculty Development Professor, has received a grant from the Advanced Energy Consortium (AEC) to create low-temperature thermophotovoltaics that convert heat—including waste heat from car engines, computer chips and home appliances—into energy. Another AEC-funded project, co-directed by Professors **Linda Abriola** and **Kurt Pennell**



Tom Vandervelde

(CEE) in collaboration with investigators at Rice University, is exploring the use of specially engineered nanoparticles for oil reservoir characterization. Assistant Professor **Luisa Chiesa's** (ME) DOE Early Career Research Award will allow her to continue her investigations into superconducting materials and magnet systems for large fusion energy reactors. As the new Robert and Marcy Haber Endowed Professor in Energy Sustainability, Professor **Maria Flytzani-Stephanopoulos** (ChBE) will continue to advance research into clean energy technologies. Assistant Professor **Andrew Ramsburg** (CEE) received NSF funding to improve the performance of chemical and biological remediation strategies of contaminated subsurface formations.

Shafiqul Islam (CEE), the University of Maryland, and the Institute of Water Modeling in Bangladesh have received an [NIH Challenge Grant](#) for a collaborative proposal that examines how sea-level





Shafiqul Islam

increases and variations in precipitation might affect transmission of cholera. Other new sustainability projects of note include the NSF-sponsored research of Assistant Professor **Hyunmin Yi** (ChBE) and Professor **Diane Souvaine** (CS). Their research looks at applying algorithms to nanoscale manufacturing of viruses for potential green energy applications.

In addition, a new gift provided by **Peter Wittich** (E'83) to the Peter and Denise Wittich Family Fund for Sustainable Energy has been allocated through a competitive proposal process as seed funding to jumpstart new areas of renewable energy research, including nanowire and organic photovoltaic cells and biofuel production through cellular engineering.

Engineering Education Innovation:

This year, the SOE Curriculum Task Force (CTF) devoted considerable time to the discussion and planning of engineering leadership education. Initiated by Dr. Bernard Gordon's \$40 million pledge to support engineering leadership education at Tufts, an external advisory committee was formed to provide input on Gordon gift planning efforts. Three working groups, composed of faculty, students, SOE alumni, and practitioners were formed to develop various aspects of the Tufts Engineering Leadership Program (TELP). The key features of TELP include an intense focus on the development of leadership skills and attitudes in some of our best students, an increased focus on teaching the practice of engineering and innovative design across the school, and the development of the school's faculty to support these initiatives.

The programs and administration of the Center for Engineering Education and Outreach (CEEEO) were significantly bolstered by a \$3 million gift from members of the McDonnell family and the James S. McDonnell Family Foundation. In addition to endowing a junior professorship position, pending Trustee approval, the gift provides organizational support for a restructuring of the CEEEO administration to better serve the Center's three-pronged approach to engineering education in research, outreach, and technological product development.

Morgan Hynes (E'01, G'09), the first student in the Tufts education department to receive a doctorate in Engineering Education, now acts as the CEEEO's Research Program Manager. Research Assistant Professor **Ethan Danahy** (E'00, EG'02, EG'07) (CS) will assume the role of Educational Technology Program Manager and **Merredith Portsmore** (A'98, E'98, G'99, G'10) will act as the Outreach Program Manager, overseeing the Student Teacher Outreach Mentorship Program (STOMP).

The SOE faculty also approved an undergraduate engineering education minor, to be administered through the CEEEO beginning in the 2010-2011 academic year. The five course minor, along with required field experience (e.g., STOMP), will establish a foundation for understanding the relationship between theories of learning in the engineering disciplines and the realities of implementing these ideas in K-12 school settings.

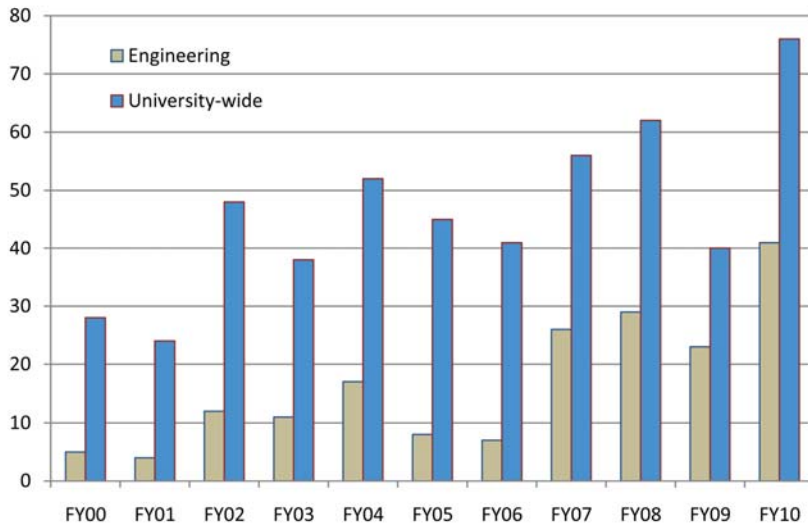


CEEEO staff members (L to R): Morgan Hynes, Research Program Manager, Research Assistant Professor Ethan Danahy, Educational Technology Program Manager, and Merredith Portsmore, Outreach Program Manager.

Technology Transfer:

The Tufts Office of Technology Licensing and Industrial Collaboration reported 76 invention disclosures from across the University in FY10; of these, the SOE leads all Tufts schools, accounting for 54% (41). This year, Tufts announced license and research agreements with a new startup company, Ekteino Laboratories, Inc., to advance a drug delivery platform using novel biopolymers developed by Professor **David Kaplan** (BME). The technology's unique biocompatibility, biodegradability, strength, and versatility may be very promising for delivery of drugs that require repetitive doses or are difficult to administer.

Invention Disclosures



FACULTY RECRUITMENT

Over the past six years, SOE has made substantial strides in increasing faculty critical mass and diversity. In AY03-04, the SOE had 54 tenure-track/tenured faculty members, of whom 8 were women and 9 were ethnic minorities. By AY09-10, the size of the faculty has increased to 70, of whom 14 are women and 12 are ethnic minorities.

This year, we have recruited six new tenure-track faculty members. **Aleksandar Stanković** (Ph.D., MIT)



Aleksandar Stanković

joins the ECE department as the first Alvin H. Howell Professor in Electrical Engineering. Stanković's work uses electronics to efficiently condition energy sources for practical uses. Among his many awards, Professor Stanković was named a Fellow of the IEEE in 2005 and was elevated to Distinguished Professor at Northeastern in 2006.

He is the author of more than 200 refereed journal and conference papers, and is the holder of seven patents. **Shuchin Aeron** (Ph.D., Boston University) will join the ECE department as an Assistant Professor from his postdoctoral research scientist position with Schlumberger-Doll Research in Cambridge, Mass. His main research interests lie in network information theory, sensor networks, compressed

sensing, and statistical signal processing. **Usman Khan** (Ph.D., Carnegie Mellon) will also join the SOE faculty in ECE as an Assistant Professor from his postdoctoral research position at the University of Pennsylvania's School of Engineering and Applied Sciences, where he has conducted research on power systems modeling and estimation using sensor networks.

Matthias Scheutz (Ph.D., University of Vienna) will join the CS department as an Associate Professor from his position of Associate Professor at Indiana University's School of Informatics and Computing and the



Matthias Scheutz

Cognitive Science Program, where he directed the Human-Robot Interaction Laboratory. Professor Scheutz's current research and teaching interests focus on

complex cognitive and affective robots with natural language capabilities for natural human-robot interaction. He will serve as the CS Co-Director of Tufts' new interdisciplinary program in Cognitive and Brain Science. **Remco Chang** (Ph.D., University of North Carolina) will join the CS department as an Assistant Professor from the University of North Carolina at Charlotte, where he held the position of research scientist at the Charlotte Visualization Center. Chang's research interests relate to visual analytics, a burgeoning discipline that combines interactive visualization with automated analytical methods to analyze large and complex data.

Qiaobing Xu (Ph.D., Harvard University) will join the BME department as an Assistant Professor from a postdoctoral fellow position at MIT. His research is focused on strategies to actively deliver nanostructures and therapeutics to tumors utilizing stem cells as carriers. He also is developing methods to use nanoparticulate cellular patches in tissue regeneration applications. Xu's recruitment will contribute to our critical mass in the area of bioengineering.

Michael Zimmerman (ME) was named a Professor of the Practice in Fall 2009. Professor Zimmerman (Ph.D., University of Pennsylvania) is the founder and Chief Technology Officer of Quantum Leap Packaging. He has

been teaching at Tufts for 20 years in the areas of materials science, manufacturing and finite element analysis, and has developed new classes in the areas of polymer science and composite materials.

ADVANCEMENT

Dr. **Bernard Gordon**, member of the Board of Overseers for the School, co-founder and chairman of NeuroLogica Corporation and the founder and former CEO and chairman of Analogic Corporation, has pledged \$40 million to the School of Engineering to [advance its engineering leadership education](#) programs. Gordon's gift to Tufts is the largest he has made to any institution; his philanthropy pushes the university's \$1.2 billion Beyond Boundaries capital campaign past the \$1 billion mark. Gordon's gift to Tufts is the latest example of his deep commitment to engineering education that includes establishing not only the Tufts Gordon Institute but also the Bernard M. Gordon Prize for Innovation in Engineering and Technology Education at the National Academy of Engineering—an award that the academy bestowed on the Gordon Institute in 2007.

Annual and capital giving have grown this year under the interim leadership of Associate Directors **Jackie Natale** and **William Lavin**, who have developed new funding from alumni and friends. The search is underway to fill the Senior Director of Development position to provide structure and support to the engineering Development team.

The **James S. McDonnell Family Foundation** and members of the McDonnell family have pledged \$3 million to support the operating budget of the CEOO and to endow the McDonnell Family Professorship in Engineering Education at the School of Engineering. A new endowed undergraduate scholarship was created by engineering alumnus **Bruce Reed**, E'47, to be awarded in alternate years to a student from the School of Engineering. **Jordan Birger**, E'43, a School of Engineering Overseer, has continued to support the school's Curriculum Task Force. Some of the other significant campaign highlights of the year are outlined on page 11.

Sandy Yulke joined the Advancement team in March 2010 as Tufts' Corporations and Foundations Associate Director for Engineering. She comes to Tufts with extensive experience in establishing university-industry relationships at MIT, and most recently Yale Engineering,

where she held the title of Director of Development. In her short time at Tufts, she has already made great strides in establishing new relationships with industry and foundations.

Under the leadership of **Jonathan Kaplan** (A'96), Alumni Relations Associate Director, our alumni outreach program hosted its fourth annual Boston-area engineering alumni reception, featuring a discussion on brain-computer interfaces led by Professor **Rob Jacob** (CS). In the fall, the Tufts Entrepreneurial Alumni Network held its inaugural event in New York. Following opening remarks from President **Larry S. Bacow**, **Sarah Kugelman** (J'85), founder and President of Skyn Iceland, discussed how Tufts shaped her entrepreneurial endeavors. Later in the year, an additional entrepreneurial alumni event was held on the west coast at the offices of Simpson, Gumpertz & Heger (CEO **Glenn Bell**, E'74, EG'08P). At our fifth annual Engineering Alumni Weekend Reception, Tufts engineering graduates and guests gathered to learn about engineering's role in the 2010 Formula Hybrid Racing competition.

Under the leadership of **Robin Kahan** (J'80), Associate Director of Career Services, the School participated in two new engineering consortia to leverage job and internship resources for Tufts students. Participation in the Engineering Internship Consortium (EngIN), an internship-sharing network of nine northeast engineering schools launched six months ago, has already increased the number of engineering internship listings in our database by 82%. The second consortium hosted a virtual career fair with 20 employers and plans to expand this event next year. The engineering, computer science, and technology industries remained the top recruiters on campus (22.6% of employers); of particular interest, this year GE Aviation designated Tufts as a key recruiting school and hired three Tufts engineering seniors for full-time positions and seven summer interns. Consultation appointments for engineering students also rose by 21% this year, due in part to increased visibility of engineering-specific programming and outreach to student groups and clubs.



Sandra G. Yulke

DIVERSITY

The Center for STEM (Science, Technology, Engineering, and Math) Diversity has had another successful year under the leadership of Program Manager **Dr. Travis Brown**. Last year's successful study group program, run in conjunction with the Academic Resource Center, was expanded from Biology 13 and 14 to include Math 11, Physics 11, and Chemistry 2. Along with the Undergraduate Admissions staff, Brown began outreach initiatives with several local high schools to increase Tufts' visibility and applications from local students from underrepresented groups. In graduate recruitment, Brown was instrumental in recruiting the School's first fellow from the National Consortium for Graduate Degrees for Minorities in Engineering and Science (GEM). For the summer of 2010, the Center for STEM Diversity will also oversee a new summer bridge program for incoming freshmen. The [Bridge to Engineering Success at Tufts](#) (BEST) program was developed in conjunction with Undergraduate Admissions for a cohort of incoming freshmen, and was designed to increase retention of students from underrepresented groups who need additional academic and social support to be prepared to enter the engineering program.



The 2010 Bridge to Engineering Success Scholars (L to R): Tesfa Hailu, Edwin Diaz, Leiny Garcia, Corey Christian, Aliandro Brathwaite, Carel Voltaire, Leticia Lopez-Benitez, and Corey Mason.

ADMINISTRATION AND INFRASTRUCTURE DEVELOPMENT

Over the past seven years, the SOE has moved its research enterprise forward and attracted world-class faculty by improving and expanding research and teaching facilities. Since 2006, we have invested approximately \$3 million dollars in the renovation of facilities at the Science & Technology Center, Anderson Hall, Halligan Hall, Bray Hall, and Curtis Hall. However, it has become apparent that our space needs cannot be met solely by renovation of existing space. To this end, the School of Engineering has continued its expansion of interdisciplinary research space through the successful leasing of quality research space at 200 Boston Avenue (founding the Advanced Technology Laboratory). This space is close to the campus and is extremely flexible in terms of configuration and utilities.

In FY10, the school acquired an additional 7,000 square feet of space at 200 Boston Avenue for the new proof-of-principle silk-platform research lab of Professors **David Kaplan** and **Fiorenzo Omenetto**. It is hoped that the engineering research and technologies developed in this lab will continue to spin off start-up companies, such as Serica Technologies (recently acquired by Allergan, Inc.) and Ekteino Laboratories. Over the past year, state-of-the-art laboratory space has also been created from the office space, formerly occupied by Tufts Gordon Institute in the Science and Technology Center, for three new tenure-track faculty hires. The ECE department has also recently renovated its collaborative, student research space in the redesigned Gomez Senior Design Lab with their endowment from the Gomez Foundation. In the near future, we plan to lease additional space to accommodate the growth of the Tufts Gordon Institute and to create an Interdisciplinary Laboratory for Computational Sciences.

ENROLLMENT AND DEGREES GRANTED

As of September 2010

Engineering Program	Fall 2009 Enrollment				Degrees Granted ¹			
	BS ²	ME	MS	PhD	BS	ME	MS	PhD
Biomedical Engineering	52	8	26	37	9	2	8	5
Biotechnology Engineering	—	4	2	5	—	1	0	2
Chemical Engineering*	125	5	5	29	35	3	0	3
Civil Engineering*	80	11	43	29	11	7	15	4
Computer Engineering*	32	—	— ³	— ³	6	—	— ³	— ³
Computer Science*	42	—	32	28	7	—	16	3
Electrical Engineering*	88	—	18	40	22	—	13	1
Engineering Management	—	—	121	—	—	—	24	—
Engineering Physics	6	—	—	—	3	—	—	—
Engineering Psychology/Human Factors	12	—	9	—	3	—	2	—
Engineering Science	29	—	—	—	8	—	—	—
Environmental Engineering*	51	—	—	—	4	—	—	—
Mechanical Engineering*	194	8	51	14	47	2	8	3
Engineering [#]	11	—	—	—	4	—	—	—
No Major Declared	4	—	—	—	7	—	—	—
TOTAL:	726	36	307	182	180	15	86	21

*Engineering degree programs accredited by the Engineering Accreditation Commission (EAC) or the Computing Accreditation Commission (CAC) of the Accreditation Board for Engineering and Technology (ABET).

[#]Includes Civil Engineering degrees in Architectural Studies and Environmental Health

¹August 09 to May 10

²Enrollment of first majors as of 3/26/10

³Computer Engineering degrees under Electrical Engineering

BEYOND BOUNDARIES

The Campaign for **Tufts**

New Funds Established

- McDonnell Family Professorship
- Reed Family Endowed Scholarship

Significant Planned Gifts

- Monte and Jane Haymon to the Haymon Endowed Scholarship
- James S. McDonnell Family Foundation to the Center for Engineering Education and Outreach
- Jordan Birger E'43 to the Dean's Discretionary Fund
- Bruce Venner E'60 to the Dean's Discretionary Fund
- Peter Wittich E'83 to the Peter and Denise Wittich Family Fund for Alternative Energy Research
- Peter Wittich E'83 to the Wind Turbine Project in Mechanical Engineering

Significant Gifts to Existing Funds

- Jonathan Curtis E'69, EG'72, AG'05P in support of the School of Engineering
- Margaret Casey J'66, AG'74 in support of the Albert Emmet Casey, E'26 Endowed Scholarship Fund
- Susan Smith Hager E'71 in support of the Dean's Discretionary Fund