Innovations

Engineering faculty are bringing their research to practical use

Class Dismissed • Racing Toward a Green Earth
Don’t Miss Out

The College of Engineering offers many exciting alumni events throughout the year. Invitations are sent out by e-mail, so send us your e-mail address today.

Some of the events being planned for the coming year include:

- BU Hockey Games
- Boston Red Sox Games
- Free Ski Night
- After-Work Billiards Parties
- Alumni Panels
- Winterfest
- Alumni Reunion Weekend
- Excellence in Engineering Golf Classic

The best way to find out about alumni events is to get on the College’s e-mail list. Send your e-mail address to engalum@bu.edu. We hope to see you on campus soon!

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Cover: A stack of the fuel cells MFG researchers Uday Pal and Srikanth Gopalan are developing with BTU International.
Greetings

By Kenneth R. Lutchen, Dean

When I arrived at the Boston University College of Engineering as an assistant professor in 1984, we were a small college primarily devoted to undergraduate teaching. Today, we remain committed to our undergraduates and have grown to become a leader in engineering research and graduate studies. As chairman of the Biomedical Engineering Department, I have been privileged to be part of this transformation and proud to have played a leadership role in the College’s growth.

This past summer, President Bob Brown and Provost David Campbell honored me with the University’s trust and confidence when they appointed me dean of the College of Engineering. Both men are themselves former engineering deans—Bob at MIT and David as my predecessor here. They share my view that the evolution of the College of Engineering is not complete; that we are well positioned to enter a new era of excellence in education and research. David, previous deans and Solomon Eisenberg—who served as dean ad interim last year—have built a strong foundation.

We are ready to build on our strengths in several key areas. We offer seven degree programs at the bachelor’s, master’s and doctoral levels. Our undergraduate curriculum is geared to produce not only great engineers but well-rounded individuals suited to success in the national and global societies. Our research efforts are led by more than 100 faculty members who attract $30 million in external funding annually and have driven our graduate programs into the upper echelons nationally. We have recently completed the Life Science and Engineering Building, the Ingalls Engineering Research Center and other high-quality physical facilities needed to support our research and educational programs as we reach for new heights.

Our research expertise spans the most forward and important areas of engineering. Our College has leading faculty in the areas of micro and nanoscale systems (MEMS and NEMS), advanced materials science and engineering, sensors, imaging, acoustics, information and sensor network systems, photonics, biomedical engineering, computational modeling and bioinformatics. These are growing and promising areas where two or more of these disciplines intersect. Our faculty have put together some of the most exciting and original graduate and undergraduate courses and experiences one can imagine. These faculty members bring their research innovations into the classroom and involve students at all levels in their research and educational experiences. As the new dean, I look forward to stimulating new initiatives that leverage the interface of all these areas so that our faculty and students can have a global impact on society.

Although I am new as dean, I have been a member of the College of Engineering faculty for a long time. Over the course of the coming year, I intend to have a great many discussions with alumni and other members of our family as I develop specific plans for the College’s future. I will be asking for advice, suggestions and help, but I come to the job with a philosophy and some initial goals.

First, the faculty is well positioned to work together in the cross-cutting areas mentioned earlier and, in particular, to identify specific high-impact initiatives for the coming decade. Second, we are positioned to remodel several of our existing disciplines to address the emerging challenges of society. Third, we will continue to enhance our educational programs so that students can become “Societal Engineers,” individuals who are trained in the core competencies of their chosen discipline but who also have the experience, skill sets and confidence to appreciate their potential impact and role in society at large. Our graduates will be empowered with quantitative and problem-solving skills and experiences that will enable them to interface and communicate with all relevant sectors of society. In short, we want to ensure that our graduate society’s future leaders—individuals prepared for life-long success and learning—whether or not they remain engineers throughout their careers.

I believe all of this is within our reach, but we will need to meet many challenges along the way and that will take the work and support of our entire College family. For example, we need more fellowships to support our undergraduate and graduate students. In order to recruit and retain the best faculty in the world who are dedicated to excellence in both education and research, we need more physical space and we must endow our professorships in a prestigious manner akin to that of our peer institutions. These and other needs require that we partner with our alumni and corporate friends.

As I begin my stewardship of the College of Engineering, I ask for your support. I have a vision for the College’s future; one that I believe offers promise and pride to our entire College family, but making that vision real will require the participation of us all. Working together, we will make great things happen. I begin this task with great enthusiasm and justifiable optimism, and invite you to join me in bringing the College of Engineering to the next level of excellence.

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Long-time BME Chairman Lutchen Named College of Engineering Dean

By Michael Seele

Boston University President Robert A. Brown appointed Kenneth R. Lutchen dean of the College of Engineering, effective August 1.

The College’s Biomedical Engineering Department chairman for the past eight years, Lutchen has led it into the front rank of such departments nationwide.

“As chair of the Department of Biomedical Engineering, he has demonstrated the vision, creativity and drive needed to lead in a world-class academic research environment,” Brown said. “With Ken’s leadership, engineering at Boston University is well positioned to increase in quality and visibility in the years ahead.”

Lutchen joined the University’s engineering faculty in 1984 and became department chair in 1998. He has developed a significant list of accomplishments during his tenure, most recently helping the Biomedical Engineering Department obtain a $2.9 million Translational Partnership Award from the Coulter Foundation designed to accelerate the delivery of biomedical innovations to the care of hospital patients. He was the principal investigator and chief architect of a $14 million Leadership Award from the Whitaker Foundation, in 2001, which was used in part to construct the Life Science and Engineering Building on Commonwealth Street. Boston University was one of only three institutions to receive a Whitaker award and is the only one that received both Whitaker and Coulter grants.

Under Lutchen’s leadership, the department jumped from 18th to 7th in the U.S. News & World Report national rankings of biomedical engineering departments.

A national search for a new dean was launched last fall after David K. Campbell relinquished the deanship to assume the position of Boston University Provost. Associate Dean for Undergraduate Programs Solomon R. Eisenberg agreed to serve as dean ad interim while a search committee led by Manufacturing Engineering Professor Thomas Befino began the work of screening and interviewing applicants.

Campbell called Lutchen an inspiring leader and a dedicated and creative educator.

“Ken has demonstrated all the characteristics of an outstanding academic leader,” Campbell added, “and President Brown and I are confident that he is the right choice to take the College of Engineering at Boston University to still higher levels of excellence.”

Lutchen earned a doctorate in biomedical engineering at Case Western Reserve University and worked at MIT’s Lincoln Laboratory before coming to BU. An expert in pulmonary physiology, he has written more than 100 peer-reviewed journal articles and has advanced methods for probing the structure-function relations governing lung disease, especially asthma. An innovative educator committed to making the laboratory research experience more accessible to undergraduates, he has won the College of Engineering’s Professor of the Year Award and twice received the Biomedical Engineering Professor of the Year Award.

“The College of Engineering has embraced a culture of a cross-disciplinary, team-oriented approach to research and education,” Lutchen said. “What excites me most is the opportunity to develop this culture, and our faculty, so that Boston University can have an important global impact in engineering education and new research.”

He is most proud, he said, of “the quality of the faculty that we have been able to put together and the community-like approach that exists throughout our faculty.”

Lutchen said he hopes to continue to “integrate engineering throughout so many other units at BU in a variety of applications, including sensors, materials, imaging, photonics, micro and nano technologies, and information and networked systems.”

Lutchen lives in Brookline with his wife, Gayle, who is the assistant director for administration at the McGovern Institute for Brain Research at MIT. They have four children, two of whom are BU undergraduates.
UNIVERSITIES ARE OFTEN CHARACTERIZED as insulated from the real world, their researchers immersed in solitary ivory towers. What is not always obvious is a burgeoning global movement to translate university research into practical application and Boston University is riding the first wave.

In 1976, BU became one of the first universities in the country to form a technology transfer program to help render research into new goods and services that benefit the general population (see accompanying story). “Successfully commercializing innovative technologies often requires a close collaboration between researchers and practitioners. Researchers who think that they can simply throw their ideas over a wall and some practitioner will pick them up and run with them may be in for a surprise,” says Stanford Willie, executive director of the Office of Technology Development. Researchers can now collaborate with industry in several ways. In some cases, companies sponsor and often cooperate on research projects. Boston University researchers, with University participation, can also patent ideas and launch start-up companies to develop their ideas.

At the College of Engineering, Boston University engineers are working with big corporations and the armed forces on projects such as developing thermal technology for electronics manufacturing and energy generation. The current research project is an outgrowth of a development agreement with BTU International, a leading manufacturer of thermal technology for electronics manufacturing and energy generation. The current research project is an outgrowth of several years of collaboration between BTU and the College of Engineering, both sides feel that it is a mutually beneficial arrangement with BTU supplying technical know-how and BTU adding their knowledge of real-world problems.

Now that they have developed their one-step firing process, Pal says they hope to demonstrate manufacturing a 5-cell stack by November. The company is currently scouting locations for the first pilot plant. While fuel cells currently cost $3,000 to $4,000 per kilowatt hour, Pal thinks the cost can be reduced to $400 per kilowatt hour. And since the heat produced by solid oxide fuel cells can be used to power turbines and produce more energy, the final cost of energy could be even lower.

Everyone involved in the project has high hopes for its potential to produce energy cleanly and efficiently. Says Pal, “If you can make it cheap and it will last, it will be everywhere.”

The Real World

INNOVATIONS FIND THEIR WAY FROM ENGINEERING LABS TO PRACTICAL APPLICATION

By Trina Arpin and Chhavi Sachdev

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Chalk on the chalkboard, feedback through a microphone and the squeal of a car’s brakes—all count among the most annoying sounds of everyday life. The engineering team that’s working on quantifying and predicting the capabilities of the College of Engineering are being used to solve at least one of them. Gregg McDaniel, an associate profes- sor of Aerospace and Mechanical Engineer- ing, has spent more than seven years studying how to take the squeal out of brakes. In his most recent project—fund- ed by international brake parts companies TMD, Meneta and Bosch—he is creating brake models with dampened sound.

Although they rarely pose a problem for the function of the car, squealing brakes are one of the most common complaints that mechanics face. Each year, auto manufacturers in North America spend $1 billion to fix squealing on cars under warranty; that staggering sum gives manufacturers a mighty incentive to eliminate the squeal.

In 1998 the Ford Motor Company approached McDaniel—who had previously researched structural acoustics for the Navy—with their problem. A good deal of research already had looked at what happens when car brakes are slammed to the point where they vibrate in a braking system, but vibrations are not always converted to sound. In a series of subsequent research projects funded by TMD, Meneta and Bosch, McDaniel has been working on models that will predict how changes in braking systems alter the pattern of vibrations. Since car manufacturers will not allow a major redesign of the braking system, McDaniel and his sponsors are exploring how small changes in the design of brakes and the materials used can dampen vibrations.

The companies sponsoring McDaniel’s research think it is paying off. “Last year our orders doubled to three million units and this year they are at 6.9 million,” says John Flint, the R&D manager at Meneta, a company that produces the shims that attach to brake pads to increase damping. “Part of this very positive development comes out of improving our technical capabilities, and here our collaboration with Boston University is very important.” While Meneta and the other companies sponsoring this research have provided both the real-world problem and data, Flint says that McDaniel and the University have given them the ability to simulate vibration through mathematical models. Their model has become so sophisticated that they have turned to Kadin Tseng at BU’s Scientific Computing and Visualization Group to develop a program that can analyze all of their data.

While the companies involved have seen their technical knowledge and sales increase, McDaniel says the University also benefits. He notes that many stu- dents—graduate and undergraduate—have had the opportunity to participate in the research. He also notes that he has used brake squeal as an example in every undergraduate class he teaches. “It’s a problem that naturally inspires undergrads.”

BU Helps Move Innovation from the Lab to the Marketplace

By Heather J. Ciras

Creating a useful gadget is one story; getting it out to the public is quite another. To facilitate the transfer of innovation from the lab to the marketplace, Boston University has an infrastructure to help fac- ulty navigate the numerous steps involved in turning research into commercial products: the Office of Technology Development (OTD). While OTD provides a comprehensive approach to the commercial- ization process through the integration of five core programs focused on patenting and licensing, new company creation, business incubation, corporate relationships and funding opportunities, “The Office of Technology Development strives to foster an entrepreneurial environ- ment among faculty and students at the University,” according to Samantha White, executive director of the OTD.

The OTD staff consult with faculty members who have ideas that could be salable, no matter how “wild and crazy” the idea might be,” says Ashley Stevens, director of OTD’s Office of Technology Transfer (OTT) which focuses on patenting and licensing activities. In addition to licensing new innovations to industry, some ideas end up as the seeds for a new start-up venture. Faculty interested in pursuing this commercialization route are assisted in their efforts by OTD’s Innovation and Entrepreneurship (I&E) program. Under the leadership of Stephen Ober, I&E supports faculty in all aspects of early-stage company creation. Once created, a company may be offered state-of-the-art office and laboratory space in one of BU’s business incubation facilities. Also at this formative stage, OTD’s Corporate and Business Development program may assist faculty in forming early relationships with industry. “We broker relationships

The ADF listens for gunshots. It can tell the difference between the report of an M-16 used by U.S. forces and that of a Kalashnikov. Besides identifying the type of gun used, “it can sense azimuth and elevation. Then it communicates that to the robot,” says Hubbard. When a shot is heard, the robot’s head automatically swivels to face the direction the shot came from and its field of vision is transmitted to the robot operator’s screen.

“The electronics of the ADF can cap- ture and process information at rates up to 200 times a second because the dis- crimination window is only five milli- seconds. But the robot itself cannot respond at that rate, so after the first shot, the ADF communicates with the robot and waits for about five seconds while the robot turns its cameras in the direction of the shot,” says Sociates Deligeorges (BME ’97, ’04), who did his doctoral work with Mountain. Deligeorges now heads up BioMimetic Systems, the company they spun off in 2004. Besides its accuracy, what has made the ADF unique—and successful in garnering military attention—is its size. Other “pitch and bearing” sensors in the market average about two square meters with six to eight microphones. The manu- facturers of these devices were skeptical about the ADF which, even in its first incarnation, was only as large as a shoe- box. “Our ultimate goal is to fit every- thing into a one-inch cube,” says Hubbard.

Though their rivals have scoffed at using such a small acoustic aperture, Deligeorges points out, “There are plenty of examples in nature of small animals with very little space between their ears. If they can do it, we can replicate it.” Shrinking the ADF further will also help in its second military application— sniper detection in soldiers’ helmets. Currently, the helmets are rigged with microphones but soldiers have to carry the hardware on their belts or in backpacks. “The next generation will be closer to a pack of cigarettes in size and could be clipped almost anywhere that is conven-
between companies and faculty before there’s a product to market. This helps speed commercialization by rapidly moving knowledge from point A to point B,” says Michael Pratt, O.T.D.’s director of Corporate and Business Development.

Faculty interested in any of these commercialization outlets submit a proposal describing their ideas and inventions. If the proposal appears viable, O.T.T. retains a patent attorney to file a provisional patent application. Now the proposal has become a plan. After eight months, the inventor, patent attorney and O.T.T. staff meet again to reevaluate the plan’s potential. If the product still seems worth creating in light of market research and the most recent lab work, the office files a full (utility) patent application and contacts businesses that might want to fund the product’s development, perhaps the same companies the office has previously introduced to faculty members. According to Stevens, the whole process—from proposal submission to licensing—can take anywhere from six months to six years, depending on the project’s maturity.

This arrangement facilitates innovation “by providing incentives to everyone to put in the extra effort to turn scientific ideas into intellectual property that can be turned into new products,” said Stevens. Financially, BU benefits differently on each project depending on specific terms and conditions. However, approximately “30 percent of license income goes directly to the inventor,” says Stevens. Inventors also have the potential for sponsored research and consulting; he adds. If a new company is launched, inventors may be on the company’s scientific advisory board and receive an ownership stake in the company.

Numerous products from the College of Engineering have been fostered by O.T.T., such as the numerical aperture increasing lens—which improves the light-gathering, resolving and magnifying power of a conventional optical microscope—and the method for manufacturing blue light-emitting diodes (LEDs). At BU, the number of innovations has increased in the last 10 years. This is directly related to the increased resources O.T.T. has received from the University, says Stevens, who was one of only two staff members and now heads a team of eight professionals.

“Technology transfer has had a big impact in the U.S. in the 26 years since the passage of the Bayh-Dole Act,” Stevens says. “More and more innovations are made at not-for-profits. More and more are made at universities.”

“Even if you’re not making a buck,” adds Pratt. “Our purpose is to transfer the knowledge that our faculty and students create to the commercial world where it can benefit the public whose taxes funded most of the research.”

BU Helps Move Innovation continued from page 6
Artistic Engineer

The son of a banker and a music teacher from Pullman, Washington, Ebner attended MIT on an ROTC scholarship for mechanical engineering. He says he stayed to do graduate work in material science, or “metallurgy” as it was called in those days. He also took art classes at the Museum School across the river from MIT. “It’s not a big stretch from designing products to other shapes,” he says with a laugh.

After earning his doctorate, he went to the experimental flight station at Edwards Air Force Base near Mojave, California, where in the early days of the jet engine, large varieties of jet aircraft were being produced.

“Many of them were unraveled and still in the experimental process—and many crash programs,” Ebner recalls. “My job was to piece them back together and figure out why they fell down from the sky. It was quite an experience. Every two weeks there was a crash. We’re much more sophisticated in these things now and we’re also slower at developing an aircraft.”

After that stint, Ebner had a choice: a postdoctoral research associate at MIT; he started a small, part-time consultancy with a colleague. “We did quite a bit of material testing, for welder certification, plastics injection molding for disposable medical parts. I was quite interested in design, he says.” They sold the company after a few profitable years. Today, the company, SRC, Medical, not only exists, it is still in the specimen collections, valves and other parts Ebner designed four decades ago.

Teacher and Mentor

Recruiting students was hard back when they started the College of Engineering, says Ebner. Boston already had a few engineering colleges, and BU’s facilities were spartan. There was no plumbing in the material sciences’ polishing lab, for example, and runoff was collected in a waste bucket. But in the late 1960s and early 1970s, BU’s unique Department of Manufacturing Engineering became a “tremendous coup for admissions and the placement office,” says Ebner, because it managed to attract students from all backgrounds.

Ebner designed the Introduction to Manufacturing class, EK 156, in the 70s. “Nowadays, in engineering, you don’t have much opportunity to actually do things,” says Ebner. “In EK 156, they get to think about things and analyze things and also get to do things. It’s been a very durable course.”

Every undergraduate in Manufacturing has had a class with Merrill Ebner. This fall is the last time Ebner is teaching his senior design course and his graduate class on improving operations and process design. Although he has been teaching for more than 40 years, he has not lost enthusiasm for the subject matter or the ability to connect with students. This past spring, Manufacturing Engineering students voted him the department’s best teacher.

In an anonymous evaluation, one student wrote, “He is just filled with information and passion about manufacturing. After hearing him talk about something, it is hard to not be enthusiastic and truly interested to learn more.”

Another wrote, “He assigned some of the hardest projects I have had at BU, and even when I had no idea how I was going to finish them or where to start, I got them done. These taught me more than I ever expected.”

Roger Dorf (’70), chief executive officer and president of Navinis Networks, got his master’s degree at BU while he worked for IBM. “[Ebner’s] classes were excellent and I enjoyed every minute of them.”

Dorf regards and fondness for his former professor kept him in touch for years. “When it came time to give back to the places that made me, he stood out in my memory. He changed the way I look at things. He suggested, ‘We don’t want the College to name a building after us.’ He instead he and his wife pushed for something that would honor Ebner and his work. They started with a donation of $50,000 to the Merrill L. Ebner Fund, which started formally in the ’70s, has much more emphasis on the development and design of a product, which seemed like an unfilled need.”

The character of the College has changed enormously with time, says Ebner. “When we started, we were struggling to be respectable. We started from a technologically challenged, he says. But he’s perfectly happy tinkering with the videoconferencing software and instant messaging as well as with his digital camera and DVD burner.

This year, he and his wife, June, celebrated 50 years of marriage. Together with several college friends, they are going on a cruise to Alaska next summer and he’s looking forward to that.

“I’m still going to maintain an office at the College,” says Ebner, mischievously. “You won’t be rid of me completely.”

For a while after he moved back to Massachusetts, Ebner had a bronze foundry for small statuary. He rented a foundry building in Cambridge and a studio in the old West End, near what is now the Charles River Park. “It was fun and interesting but financially prohibitive.”

Now he makes smaller pieces, about 12–14 inches tall, with copper-based alloy with a particular interest in portraits—but not as much as he used to. He’s looking forward to returning to his hobby upon retirement.

He’s also tried his hand at business. While a postdoctoral research associate at MIT, he started a small, part-time consultancy with a colleague. “We did quite a bit of material testing, for welder certification, plastics injection molding for disposable medical parts. I was quite interested in design,” he says. They sold the company after a few profitable years. Today, the company, SRC, Medical, not only exists, it is still in the specimen collections, valves and other parts Ebner designed four decades ago.

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KRISTA BOTSFORD (AME ’97) NOT ONLY RACES CARS BUT ALSO WANTS TO KEEP OUR ELECTRONICS ECOLOGICAL

By Chhavi Sachdev

Krista Botsford not only races cars but also wants to keep our electronics ecological. In 2000, she won the North Atlantic Road Racing championship and the New England Region Championship. Two years ago, she won the Hard Charger Award for moving up the most number of spots in a race at Lime Rock.

Balancing school and racing was hard, but she kept her grades up and managed to have a social life as well. “Some people thought [racing] was cool; some people thought I was out of my mind,” she recalls.

“People could—and still can—tell when I’ve been at the race track for the weekend, as my nails are painted if I cannot get the grease out from under them,” she says.

In her junior year, Botsford did a co-op at Connecticut turbine-engine firm Pratt & Whitney and found herself having to decide whether to race full time or become an engineer with an expensive, dangerous hobby. She stayed in engineering and was one of seven Mechanical Engineering students and about 15 women in the AME class of ’97.

Few professors knew about her weekend passion and initially she did not tell potential employers about her racing. “I didn’t have it on my résumé for a while. But, in the professional world, racing has opened more doors for me than it has closed,” she says. Potential employers as well as clients have been impressed with her drive, risk-taking and time-management skills.

Her jobs have varied but her trajectory has remained defined. At IBM, where she worked while getting her master’s at RPI, she essentially did manufacturing engineering, working to assemble customized hard drives and updating them for ergonomically correct tooling. Within nine months of starting, she was in Singapore setting up an assembly line.

In 2000, she moved to IBM’s microelectronics division and became familiar with a new European Union directive prohibiting electronic devices from containing lead, cadmium, mercury, hexavalent chromium, PBE and PBDE. Nearly everything electronic qualifies for the change. “If you can imagine it in a landfill, it needs to be compliant,” says Botsford.

She co-led the corporate procurement team in qualifying IBM electronic packages that were going to the European Union as compliant with the directive. Last year, when layoffs looked imminent, she landed an interview with Gerhart Pawelka, the CEO of Cooper Perkins, a Burlington, Massachusetts design firm. Within two weeks, she was on board as managing partner of the spin-off company they co-founded: 5-Trees.

Since last May, the company has helped American firms meet the European Union’s and the UK’s environmental directives when exporting devices or components across the Atlantic. Botsford works with clients to create, update and document their corporate, social and environmental responsibility policies. “The EU is the tip of the iceberg,” she says. “The most stringent standards generally become universal and a number of countries have already followed suit.”

With more Green directives overseas, the firm is flourishing and Krista feels a measure of satisfaction and excitement. “Our work meets a need now and in the future,” she says. She credits Boston University and the College of Engineering for pushing her hard and making her an effective and efficient engineer.

In 2000, she won the North Atlantic Road Racing championship and the New England Region Championship. Two years ago, she won the Hard Charger Award for moving up the most number of spots in a race at Lime Rock.

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Extra Gears

• Botsford also quilts, a hobby she picked up from her mother. She has taught quilting and her work has been exhibited in shows.

• Her New Hampshire home is smaller than her garage, which houses three race cars, a jeep, an Austin Healey and a ’66 Mustang.

• She is certified as a national scrutineer, inspecting cars for safety. As an EMT, she is also part of the emergency response services for the SCCA.

• Botsford is the only woman in the Formula Ford class.

• Learn more about Botsford’s work at www.5-trees.com

“People could—and still can—tell when I’ve been at the race track for the weekend, as my nails are painted if I cannot get the grease out from under them.”
Summer Research Experience for Undergraduates Program Expands

By Chhavi Sachdev

Very summer for the last 11 years, sophomores and juniors from colleges and universities across the nation have done summer research at the Biomedical Engineering Department under the aegis of the National Science Foundation. This year, the Electrical and Computer Engineering Department and the Photonics Center received the thumbs-up from the NSF to launch their own interdisciplinary Research Experience for Undergraduates program, making Boston University one of few schools to have multiple REU programs.

Open to sophomores and juniors (and some enterprising freshmen) from engineering, natural science or mathematics backgrounds, the program is designed to introduce students to the rigors—and joys—of research. While some applicants hail from Ivy League schools, others are from smaller schools with minimal research facilities.

The Photonics REU program links students with research projects. For both Photonics and BME, the projects are posted on a website and applicants are invited to rank their top three lab choices. The researchers then rank their top applicants and matches are made.

Sixteen students in Photonics and 15 in BME are funded by the NSF. The University sponsors an additional 6 BU students in the BME program annually. For 10 intense weeks of research during the summer, the students receive a small stipend and free on-campus housing.

“The Photonics REU is a great endeavor,” says Professor Herbert Voigt (BME), the principal investigator for the BME program. “Ours is very broad in scope; theirs is more focused.”

The Photonics REU program had 250 applicants, says ECE Professor Michael Ruane, the program’s principal investigator. Forty percent of those accepted were female. Seven students were from BU; others came from as far as Stanford University, RPI, Colorado Institute of Mines and Florida Institute of Technology.

The BME program, one of a handful that has received continued funding for several terms, had over 500 applicants this year, says Professor Voigt. Their site grant has been renewed three times and more than 50 percent of the students are women.

Students not only conducted research with top scholars in state-of-the-art labs, they also gained exposure to the real-world ethics involved in the research.

“Our goal is to get those students who might only have a vague idea of what research entails before they tune out,” says Professor Ruane.

For freshman Eric Cornelius (CAS), a biochemistry and molecular biology and physics double-major, the program provided his first brush with research. “I hope that the REU program will expose me to a more realistic working environment, help prepare me for my career, and be interesting and engaging research in its own right,” he says.

Princeton University’s YunMi Kong read about the REU program on the NSF website and applied to work with Professor Steven Colburn (BME), the principal investigator for the Photonics REU in 2006, he worked with Professor Mal Teich and postdoctoral researcher Magued Bodha Nae on quantum optical coherence tomography. Whitney said he “created a graphical user interface to help automate the experiment.”

Students not only conducted research with top scholars in state-of-the-art labs, they also gained exposure to the real-world ethics involved in the research—both Ruane and Voigt invited weekly speakers on ethics and best practices.

Some alumni of the BME REU program are now enrolled at BU as graduate students, says Voigt.

“In the long run, we’re giving these students an opportunity,” says Ruane. “All the professors involved hope that these kids will become researchers. They might not necessarily land on our doorstep, but they’ll be good researchers.”

By Chhavi Sachdev

David Whitney from the Colorado School of Mines with Professor Mal Teich.

2006 Design Competition

Each year, the College of Engineering hosts a design competition open to high school students. On June 4, 67 teams of 126 students from 32 New England schools competed for prizes, which included scholarships to BU.

Their task: To design and construct a vehicle that will descend a hill from the start line, drop a “hacky sack” bean bag through the hole in the vertical wall at the bottom of the hill, climb back up the hill, knock over a flag located at the centerline (to the right of the vehicle), stop at the “top-of-the-hill,” hold its position against an opposing vehicle, and be closest to the centerline at the end of a 20-second time interval.

First-place winners Andrew McElhany and James Cumins, freshmen at Reading High School in Massachusetts, won the biggest trophies as well as tuition scholarships to Boston University of $5,000 per year for four years. Associate Dean Mark Horenstein presented the trophies.

Assistant Professor Joe Tien and Russell Condie from the University of Utah.
Thank You for Another Record Year

The 2005–06 year was a milestone for the College of Engineering and for Boston University in general. We inaugurated Robert A. Brown as our new president, BU’s first leader to come from an engineering background, and wished Dean David K. Campbell well as he moved on to assume the responsibilities of University Provost. Under the leadership of Dean ad interim Solomon R. Eisenberg, the College continued to move forward on all fronts. During all of this exciting transition, it was clear that our alumni and friends had not forgotten about the College as we set several records in the fund-raising department.

Supporting the College’s twin missions of education and research requires more than just tuition dollars. It requires donations from a number of sources, including you, the College’s alumni and friends. During the 2005–06 year, you showed your support in record numbers both in terms of participation and total dollars donated. Records established just a year ago were surpassed. At the year’s conclusion in June, contributions to the College’s Annual Fund stood at $168,534, a 5 percent increase over the prior year. The number of Annual Fund donors also rose; 792 donors were counted this year, an increase of four over the previous year.

One of the biggest areas of growth was in the Annual Fund Leadership Giving Societies, which saw an impressive 39 percent increase in membership over 2004–05. The College of Engineering Excellence in Engineering Fund was reinvigorated through the annual golf tournament, auctions and raffles, which garnered a 76 percent increase in income.

On behalf of all the students, faculty and staff of the College of Engineering, I would like to thank you for your record level of support. As much as these trends forecast a bright future, they are critical for the College’s present, too. Providing the enrichment experiences that are the hallmark of an exceptional education and the research infrastructure that is the seedbed of tomorrow’s innovation requires more than what tuition dollars alone can sustain. The Annual Fund provides the resources that make all that possible.

As we welcome Ken Lutchen to the Dean’s Office this year and continue on our journey into the ranks of the nation’s very best engineering colleges, your support will be ever more important. Although the Annual Fund is at record levels, it is still far below what is needed to support all of the programs we would like to provide to our students, and far below what our peer institutions raise. If you have supported the College in the past, I thank you and hope that you will continue to do so. If you haven’t made a gift, I hope that you will consider doing so this year in whatever amount you can.

Your support provides the students of today with an outstanding education and sows the seeds for the engineering breakthroughs of tomorrow.

Richard Lally
Assistant Dean of Administration
Director of Development and Alumni Relations
The barbeque inducted graduating seniors as new alumni and also welcomed returning alumni to Reunion Weekend.

Class of ’86—Clockwise: Victor Almeida, with wife Doreen (SAR ’86) and daughter Marissa; Dean ad interim Solomon R. Eisenberg; Elizabeth Coxon; Tracey (Barber) Estabrook; Deborah Miller; Rich Lally, the assistant dean of administration; Soula (Litsikis) Spaziani; Alycia McGoldrick; and Rolanda (Borrelli) Sylvain

Alumni Board member Pete Cirak (’01) and Board President Al Muccini (’62)

James Horton (’06) with Dean ad interim Solomon R. Eisenberg

Cristina Valente (CAS ’00) and Matt Kubis (’92)

Both Partridge from Undergraduate Programs hands seniors ENG memorabilia

John Misasi (’96)

Alumni gathered for the Star Wars exhibit at the Museum of Science in Boston.

Ruth Hunter (’64), Victor Anderson, Roger Williams (’64)

Stephen Faraste (’91, ’94) and his wife, Alyssa Duffy

Susan Stevens (’88), right, with Paul Stevens and their daughter Taylor.
ENG Alumni Awards 2006

Free ENG alumni were recognized for their outstanding contributions to the College and the engineering profession during Commencement Weekend in the spring. Each year, the College presents three awards to distinguished alumni. The Service to Alma Mater Award is presented to alumni who have shown a commitment to the advancement and success of Boston University and the College of Engineering. The Service to Profession Award honors alumni who have made significant contributions to the field of engineering. The Service to Community Award honors alumni who, whether through volunteer service or paid work, have made exceptional contributions to the betterment of their community or the circumstances of a group of people.

SERVICE TO ALMA MATER AWARD

PATRICK FOLEY (’91, ’94) & KERRY FOLEY (’91)


For the past three years she has been raising their children, Jack and Maggie, and working on a part-time basis as counsel to The Shapiro Firm.

SERVICE TO PROFESSION AWARD

CHRIS NOEL (’82)

A well-known entrepreneur in the telecommunications field, Noel was honored for his service to profession posthumously. He cofounded Equipe Corporation in 1999, where he was also vice president of engineering. Remembered for his ability to bring people together, Noel created a culture of camaraderie and respect, he wanted people to love their work as much as he did. Before launching Equipe, Noel was director of engineering at Ascend Communications, which was purchased by Lucent Technologies in 1999. Prior to his work at Ascend, he was employed at Cascade Communications and Baytex Communications. A holder of many patents, Noel was an inventor who enjoyed learning as much as he enjoyed teaching.

He graduated from ENG with a bachelor’s degree in electrical engineering in 1982 and later earned a master’s degree from Worcester Polytechnic Institute.

Noel passed away on January 29, after a lifelong battle with Kearns-Sayre disease. He is remembered as well by friends and family for his passion for life, enthusiasm, optimism and caring attitude towards others.

SERVICE TO COMMUNITY AWARD

KAREN PANETTA (’85)

A professor of electrical and computer engineering at Tufts University, Panetta also heads the Breaking the Stigmas and Stereotypes of Women in Engineering program, more popularly known as “Nerd Girls.”

The program is designed to break stereotypes and build confidence in young women interested in engineering, while highlighting their diverse backgrounds and skills. Together, the first Nerd Girls built a solar-powered automobile and eventually took it on the road, stopping to visit communities along the East Coast to share their experiences as engineers and educate K–12 students on renewable energy.

Currently, the group is creating renewable energy programs on Thacher Island off the coast of Massachusetts.

Panetta received her bachelor’s degree in computer engineering from Boston University in 1985 and her master’s and doctoral degrees in computer systems engineering from Northeastern University. She is the recipient of an NSF CAREER Award and is a NASA Research Scientist Fellow. Panetta is also an active member of the College of Engineering Alumni Board.

SERVICE TO PROFESSION AWARD

RICHARD “MICK” SCULLY (’81)

Scully has been on the forefront of networking technology for over 20 years. He graduated from Boston University with a bachelor’s degree in business administration but abandoned a career in marketing to return to BU and earn his master’s degree in computer engineering.

He was one of the first members of the University’s Academic Computing Center and was integral to the efforts of the Network and Systems Engineering Group, which designed one of the nation’s first academic computing environments. In 1986 Scully joined Proton Incorporated as a senior software engineer. He remained at the company for the next seven years managing research and development efforts for technologies that are now industry standards.

In 1993, he was hired as vice president of project management at Wellfleet Communications and played a significant role in that company’s merger with Synoptics to form Bay Networks, a company that would grow to $2.5 billion in under five years.

Scully left Bay in 1998 to found Appian Communication in Acton, Massachusetts, where he served as president and CEO. The company enjoyed success with major strategic partners and industry partnerships before the downturn in the telecommunications market in 2001.

After 32 years in Boston, in April of 2005 Scully accepted a position as vice president of product management for Cisco Systems in San Jose, California, where he is, once again, responsible for growing an advanced technology business.
Five Faculty Members Earn Promotions

Five College of Engineering faculty members rose from assistant professor to associate professor with tenure this year.

By Mark Morabito

Ari Trachtenberg, of the Department of Electrical and Computer Engineering, has been working at Boston University since 2000 after receiving his master’s and doctoral degrees in computer science at University of Illinois, Urbana-Champaign.

At BU, he cofounded the Laboratory of Networking and Information Systems and is a member of the Reliable Computing Lab and the Center for Information and Systems Engineering. He received a National Science Foundation CAREER Award in 2002 and won the ECE award for excellence in teaching in 2003.

His research involves error-correcting codes, data synchronization (especially for PDAs and mobile networks), sensor-based location detection, and algorithms. Along with 13 publications, he has conducted a number of talks on set reconciliation.

Enrico Belletti earned a doctorate in electrical engineering from the Georgia Institute of Technology and arrived at ECE in 2000.

He has received the Office of Naval Research Young Investigator Award in 2003 and an NSF CAREER Award in 2005.

His research interests include semiconductor materials and device simulations, power electronics and parallel computing.

Xin Zhang joined the Department of Manufacturing Engineering in 2002 and founded the Laboratory of Manufacturing Engineering in 2003. She is a member of the Photonics Center and the Center for Biomedical Engineering at the University of Washington in Seattle.

She won BU’s SPRInG Award in 2002 and Technology Development Award in 2004, along with an NSF CAREER Award in 2003. She is a member of the Photonics Center and the Center for Nanoscience and Nanobiotechnology.

Her research interests include microelectromechanical systems, nanoelectromechanical systems, issues related to materials science, micro and nano mechanics and manufacturing technologies motivated by practical applications, and emerging bionanotechnologies.

David Starobinski, also of ECE, joined Boston University in 2000 after completing his bachelor’s, master’s and doctoral degrees in electrical engineering at Technion-Israel Institute of Technology in Haifa, Israel.

A 2002 NSF CAREER Award and a 2004 Department of Energy Early Career Award are among the honors he has garnered.

His research focuses on wireless and sensor networks, quality of service and traffic engineering, network modeling and networks performance evaluation.

Two ECE Professors Receive Awards for Paper, Thesis

Janusz Konrad, an associate professor in Electrical and Computer Engineering, won the EURASIP Image Communication Journal Best Paper Award for 2004–2005. The paper, “Motion Analysis in 3-D DCT Domain and Its Application to Video Coding,” authored by Konrad and Nikola Bozovic, ECE ’01, ’06 explores the relationship between space-time and 3-D discrete cosine transform, or DCT, characteristics, and “an end-to-end video coding solution developed using the three-dimensional (3-D) DCT.”

Their paper was selected by the Editorial Board and Awards Committee of the European Association for Signal, Speech and Image Processing (EURASIP). The paper appeared in Signal Processing: Image Communication, and was among the top 25 downloaded papers from the journal’s website.

Joyce Wong of the Biomedical Engineering Department received her doctorate in materials science and engineering from the Massachusetts Institute of Technology. In 1998, she came to Boston University with research interests in biomaterials, tailoring cellmaterial interfaces for drug delivery and tissue engineering applications, and direct quantitative measurement of biological interactions.

Some of her awards and honors include the Dupont Young Professor Award in 2004 and the National Academy of Sciences Frontiers in Engineering Award in 2001.

Her most recent research involves cell cultures and biophysics with a conglomeration of sciences.

New Faculty Member

Tyrone Porter, an assistant professor, has joined AME from the University of Cincinnati, where he was a postdoctoral research fellow. Prior to that, he received his Ph.D. from the department of bioengineering at the University of Washington in 2003. His research interests focus on the integration of ultrasound technologies and novel chemical formulations for assessing tissue perfusion, targeted contrast enhancement of diseases in ultrasound images, and improving the uptake and activity of drugs while reducing adverse side effects.

This award is granted every few years only if a noteworthy paper is found. Both of the authors received a prize of $1,000, which was presented at the EURASIP convention in Florence, Italy, in September.

Masoud Sharifi, who joined the Electrical and Computer Engineering Department as an assistant professor in January after completing his doctorate at the California Institute of Technology, saw his doctoral thesis singled out for excellence. He was named winner of Caltech’s Charles Wilts Prize for his thesis, “Broadband Wireless Broadcast Channels: Throughput, Performance, and PAPR Reduction.”

“The Charles Wilts Prize is awarded every year to one EE graduate student for outstanding independent research in electrical engineering leading to a Ph.D.,” said ECE Chairman Professor Bahaa Saleh.
NSF Awards Early Career Grants to Four ENG Faculty Members

By Chhavi Sachdev

E very year, the National Science Foundation recognizes up-and-coming researchers for their promise. This year, four College of Engineering faculty members received NSF Faculty Early Career Development (CAREER) Program awards. Approximately 400 five-year CAREER grants—of which about 100 are in engineering—are given every year to professors early in their careers, said Sharon Middledorf, the engineering representative at the NSF CAREER program. Fourteen of the 23 CAREER awards at Boston University between 2001 and 2005 have been in engineering.

“The number of successful candidates is indicative of the quality of the faculty we attract and also of the problems they want to tackle,” said Solomon R. Eisenberg, dean at interim at the time the awards were announced.

This year’s recipients are:

Calin Belta, assistant professor of Manufacturing, came to Boston University from Drexel University, bringing with him a grant from the NSF to fund five years of research into modeling and controlling robotic swarms. A hundred small autonomous machines, or swarms, could have applications in mapping, military search-and-rescue missions or even a fire rescue, said Belta.

Prakash Ishwar, assistant professor of Biomedical Engineering, is using his CAREER award to develop an algorithm that will help coordinate input data in a distributed manner and compress the information more efficiently. Ishwar is using his CAREER award to develop architectures to control and coordinate a swarm.

Joshua Semeter, assistant professor of Electrical and Computer Engineering, works at the intersection of signal processing and information theory. While wireless sensors, or motes, hold some advantages over their hardwired cousins, they are limited by size and power constraints. Ishwar’s work aims to overcome the performance limitations and manage the dynamics of these motes.

Although the world is increasingly digitized, data—such as the vibrations of an earthquake or the chemical signatures of polluted air—are all analog,” he says. Ishwar is using his CAREER award to develop an algorithm that will help coordinate input data in a distributed manner and compress the information more efficiently.

Chris Passaglia, an assistant professor of Biomedical Engineering, is using his CAREER award to gain a deeper understanding of visual systems by examining the eyes of the horseshoe crab. He is hoping to better understand how it processes images so that edges are visible—a function called lateral inhibition—and how its keen night vision works.

Passaglia has already developed an algorithm to match visual data from a single light receptor in a horseshoe crab’s eye to a whole network. His team is now attempting to extrapolate this model to the crab’s nighttime vision and to develop a web-based model of the animal’s vision system.

“The horseshoe crab is an excellent model to understand the basic principles of all visual systems,” says Passaglia.

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Joshua Semeter, assistant professor of Electrical and Computer Engineering, focuses on space physics. “The vast majority of the universe is in plasma state,” says Semeter. The Earth is surrounded by plasma in the ionosphere, which extends from 50 miles to 500 miles above its surface.

Researchers are still using rockets, satellites, radar, and even the aurora borealis to gather data: “We want to combine these diagnostics to study this region.” With the CAREER award, Semeter proposes to combine instrument design and signal processing. This will aid in developing a systematic way to connect the measured data from ground-based instruments with that gathered from rockets and satellites.

Eng researchers lead the way to nano-scale detection devices

By Michael Seele

Two College of Engineering faculty researchers are combining nanomechanics with photonics to produce tiny devices that may one day detect minute traces of cancer or the tiniest amounts of biological or chemical hazards in the environment. AME assistant professors Kamil Ekinci and Todd Murray are studying the vibrations of nano-scale wires that could be used to detect the presence of particles measured in tens of atoms.

Other researchers have packed such wires and measured the vibrations before, but mostly in a cold vacuum where the vibrations are exaggerated—and using electrical stimulation and measurement techniques. Murray, Ekinci and graduate student Ashwin Sampathkumar have demonstrated how to stimulate and measure such wires at room temperature outside of a vacuum using only light. Their approach dramatically decreases the size of the apparatus required and more closely mimics real-world conditions.

The research is identifying the resonance frequencies of the wires, which, like harp or guitar strings, resonate at frequencies corresponding to their lengths. Establishing this baseline data is crucial to the development of the technology, since the presence of even a single molecule on a wire will alter its resonance frequency and indicate the presence of an unwanted substance.

“These wires are very sensitive to added mass,” says Murray. “They can detect trace amounts.”

“Putting mass on them changes resonance frequency,” Ekinci adds. “Using this method, it would be possible to detect how much mass is present.” The researchers carved the wires out of wafers of chromium-coated silicon 250 nanometers thick. The wires are, in effect, strung between two wafers at different lengths, similar to a harp, only about a million times smaller. The nano-wires range in length from 2.5 microns to 10 microns. Using a new light microscope built specifically for this experiment, the researchers focused a laser to produce the smallest spot of light physically possible—less than one micron, or one-thousandth of a millimeter, across—and used it to “pluck” each wire at various points along its length. The laser produces vibration in the wires not by physical contact like a guitar pick, but by heating specific spots. A second tightly focused laser was used to measure resultant vibrations.

Ekinci and Murray recently won a National Science Foundation grant to fund the next step of the project, which involves multiplying these devices into arrays that would work more efficiently.

“Obviously, the probability of a single molecule finding a single wire is pretty small,” Murray explains. “Adding hundreds or thousands of these wires increases the probability that a molecule is going to land on one of them.”

Ekinci is also exploring the possibility of inverting these arrays in liquid and measuring how the medium affects vibration. This would be critical to developing medical applications for the technology, he says.
SmarTrash

he ECE seniors from the Class of ‘06 who made “smart” trash cans that signal when they need to be emptied (“The Best of the Brightest.” Spring 2006) have garnered a lot of attention. The quartet who imagined and prototyped this concept—Yaniv Ophir, Joseph D’Errico, Andrew Hagedorn and Vyas Venkataraman—were chosen as one of only 10 finalist teams worldwide (and one of only two from the U.S.) in the Computer Society International Design Competition.

Competing against teams from China, Jordan, India, Poland and Romania in Washington, D.C., in July, the ENG team earned an honorable mention. The SmarTrash system uses sensors and motes to tell park managers which trash cans need to be emptied and which don’t, allowing them to deploy workers more efficiently.

“The team was commended for their entrepreneurial approach,” said Professor Michael Ruane, who leads the Senior Design class in ECE. “The senior design faculty is proud of this team, which put together an outstanding project and a very strong presentation. They were excellent representatives of the University.”

The students were also invited to demonstrate their invention at New York City’s annual Fleet Show, where they received queries from vendors and park authorities interested in using their technology.

Yaniv Ophir, Joseph D’Errico, Andrew Hagedorn and Vyas Venkataraman with their “smart” trash prototype.

A Milestone for Biomedical Engineering

Deartment marks five-year expansion

On June 30, the College of Engineering Biomedical Engineering Department officially ended a five-year period of expansion fueled by a $14 million Whitaker Leadership Award received in 2001.

The department opened new core facilities—it’s last task in fulfilling the terms of the award—with a reception on June 21.

“We sit together with great facilities, great faculty, having spent a great grant, in the wonderful position of being one of the top programs in BME,” said University President Robert A. Brown. “The Whitaker Foundation grant has been a boost in propelling us forward.”

In the last five years, the Whitaker Leadership Award has helped Boston University reach “the cusp of having a global impact,” said Kenneth Lutchen, then BME chairman. “With our human—and facilities—firepower, we are poised to really understand and impact human life.”

Brown said the conclusion of the award “marks a pivotal point in the history of BU and biomedical engineering at BU,” adding that the Whitaker Foundation grant has been instrumental in establishing Boston University and its biomedical engineering program as one of the best, nationally and globally.

The Whitaker Foundation, named for the late scientist and inventor Uncas A. Whitaker, established its Leadership Awards in the late 1990s for “institutions that have already demonstrated national leadership in biomedical engineering and have articulated a clear and exciting vision for enhancing their leadership position,” said Lutchen.

Under the deanship first of Charles DeLisi, BU’s Arthur G. B. Metcalf Professor of Science and Engineering and senior associate provost for biosciences, and then David K. Campbell, now BU provost, the University applied for a Whitaker award and was one of only three institutions to win one. The foundation gave BU $14 million in 2001, with an $18 million cost-share investment from the University.

The grant was used in part to build the Life Science and Engineering Building at 24 Cummington Street and to hire 12 new faculty members with secondary appointments in eight other departments, among them ophthalmology, pharmacology, physics, and genetics and genomics. The College of Engineering also built laboratories and created dynamic cross-disciplinary and innovative courses with the money. The catch, Lutchen said, was that they had to get it done “soup-to-nuts, in five years.”

This past summer, BU completed the implementation of the award. The June 21 event officially opened the Biointerface Technologies Units, the Micro/Nano Bioimaging Facility, the Micro/Nano Biosystems Fabrication and Teaching Facility (all at 44 Cummington Street) and the BME Computational Simulation Facility (in the Life Science and Engineering Building).

“With the tremendous effort of BME faculty and staff and the BU administration, we have completed the project on time and on budget,” said Lutchen.

Brown was impressed, he said, with the BME department, which has kept abreast of developments in the field as biomedical engineering has become “more molecular in nature; it has transitioned from bones and circuits to understanding life and life sciences.”

“No we’re just moving forward,” said Matthew E. Barber, BME department director. “We’ll have other initiatives that will come down the road because of this.”

“With all that strength and financial support, we can do fantastic things,” Brown said at the conclusion of the June 21 ceremony. “BME will continue to be a jewel in the crown of Boston University.”

Former Chairman of BME Kenneth R. Lutchen, University President Robert A. Brown and Dean at interim Solomon B. Eisenberg mark the opening of the Whitaker Core Facilities.
John White, Chairman ad interim of Biomedical Engineering

College of Engineering Dean Kenneth R. Lutchen has announced the appointment of Associate Professor John White as chairman ad interim of the Department of Biomedical Engineering, effective September 1.

White, who also holds a joint appointment in the Department of Pharmacology and Experimental Therapeutics at the Medical School, has served as BME’s associate chair for undergraduate and graduate studies. He joined the faculty in 1994 as an assistant professor and was promoted to associate professor in 2000.

His appointment as chair ad interim came a few weeks after Lutchen left the BME chairman’s office to assume deanship of the College of Engineering. Lutchen’s eight-year tenure as BME chairman was marked by a dramatic rise in the department’s national profile, with the department currently ranked 7th in the nation by U.S. News & World Report.

Lutchen said the great majority of BME faculty recommend White to be his immediate successor.

“John has been an extraordinarily productive scientist, educator, administrator and leader for BME,” Lutchen said. “He has the enthusiastic support of the BME faculty and has worked tirelessly for enhancing a cross-disciplinary, student-centric approach to both undergraduate and graduate education in Biomedical Engineering. He is very well known in the BME research and professional communities.

John’s background, approach and leadership style make him a perfect choice to sustain the department’s stature and address future initiatives.”

Lutchen said that continuity necessitated the appointment of an interim chair quickly. He added that he will work with BME faculty in the coming months to determine the best approach for identifying a permanent chair.

“I’m honored that the BME faculty, Dean Kenneth Lutchen and the administration have sufficient confidence in me to grant me the position of chair ad interim,” says White. “Ken, the faculty, the students and the staff have worked tirelessly for decades to produce a world-class department with a wonderful sense of camaraderie. I hope to build upon our momentum as a department that others look to for leadership in both research and education.”

White’s research into the function of mammalian brains has yielded millions of dollars in support from the National Institute of Mental Health, the National Science Foundation, the National Institutes of Health, the Whitaker Foundation and other sources, and has produced dozens of publications. White is the associate director of the Center for Memory and Brain at Boston University.

As a teacher, White has placed equal emphasis on directing graduate students while also teaching undergraduates and making them part of his laboratory research. He annually mentors undergraduates working on senior projects. His contributions to the College were recognized in 2002 with the Faculty Service Award.

White is a fellow of the American Institute of Medical and Biological Engineering and a full-time member of the NIH Study Section on Learning and Memory. He is co-director of the Methods in Computational Neuroscience course at the Marine Biological Laboratory at Woods Hole.

White holds a doctorate in biomedical engineering from Johns Hopkins University and a bachelor’s degree in biomedical engineering from Louisiana Tech University.

New Fellowship Established for Asian Graduate Students

By Chhavi Sachdev

The father of three Boston University alumni has endowed the College of Engineering with a $200,000 fellowship to aid Asian graduate students. At a September 5 ceremony to honor the benefactor, Hing Wah Cheung, the first recipient of the Cheung Graduate Fellowship thanked the Cheung family.

“The fellowship will help me focus on research and study,” said Ting Sun from Dalian, China, who will research robotics in the Department of Aerospace and Mechanical Engineering. The fellowship is an important kind of gift for the College, said Dean Kenneth R. Lutchen. “Over the past decade, we have propelled ourselves to being among the top research engineering colleges in the nation based partly on the quality of our faculty but also equally because we attract the best graduate students,” he said. “Additionally, having many cultures in a laboratory amplifies the creative energy and perspective.”

This kind of fellowship “helps ensure that we can address cross-disciplinary challenges and move to the next level of excellence,” Lutchen added.

Cheung, the director of Beautiful Enterprise Company, Ltd., in Hong Kong, is known for his philanthropy in Hong Kong as well as in rural China. His association with the University started a decade ago, when his son Wayne (ENG ’99) attended BU, followed by his daughter Wendy (SHA ’02) and son William (ENG ’05).

By endowing this fellowship, Cheung hopes to help Asian students from “modest backgrounds get a superior education, so they can return and facilitate industrial and educational experiences for people in their home country,” said Richard Lally, Director of Development and Alumni Relations for the College.

The Cheung Family Graduate Fellowship will help the College recruit the best students in Asia, said Mark N. Horenstein, the associate dean for Graduate Programs and Research at the College of Engineering. “Ting Sun was, by far, the strongest candidate from this year’s applicant pool,” added Horenstein, who headed the selection committee for the fellowship.

Sun, whose undergraduate degree in engineering is from China’s Northeastern University, has four patents on a robot she designed to help train soccer goalies. In addition to showing potential as a top researcher, Horenstein added, Sun also demonstrates civic sensibilities. While an undergraduate, she taught elementary school children in rural China and also tutored high school English.

The Cheung Family Graduate Fellowship will aid a full-time Asian graduate student who is not only academically outstanding but also invested in philanthropy and giving back to society. Candidates from China, Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand are eligible for the fellowship, which includes tuition, fees and a generous stipend for a year.

“I hope someday I will make contributions to this fabulous school and make my country proud,” Sun said.

Benefactor Hing Wah Cheung, fellowship recipient Ting Sun and Dean Kenneth R. Lutchen at the ceremony.

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Inventor Dean Kamen urged members of the College of Engineering’s Class of 2006 to use their careers to help solve the world’s problems with technology as nearly 400 graduating students were awarded degrees at the College’s 55th Commencement Exercises on Sunday, May 14. Kamen later used a bit of his awarded degrees at the College’s 53rd commencement recessals.

During the Commencement ceremony, the College awarded 239 bachelor’s degrees, 106 master’s degrees and 42 doctorates to those who completed degree requirements in the past year.

Kamen, who holds hundreds of patents for medical devices and is perhaps best known as the inventor of the Segway personal transportation vehicle, urged graduates to use their education to improve the lives of people around the world.

He noted that all of the young people on the planet, “very, very few, a virtually insignificant percentage, have the education you have. That gives you an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool.”

With a huge education you have. That gives you an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool — frankly an unbelievable tool.

“Kamen, who started the FIRST Robotics Competition in the 1980s as a way to get high school students interested in science and engineering, also urged the graduates to give back through activities like mentoring and bringing science and engineering to the forefront of public consciousness.

“You’re starting the part of life where you need to be to the given to a world that’s got a lot of people, even the wealthy ones, who have become used to being taken,” he said. If you don’t get yourself ready to start becoming one of the givers, no matter how much you get it won’t be enough,” Kamen added. And it doesn’t end up being a very fulfilling life.

“I can assure you that the giving part turns out to be way more fun that the getting part. So make your living by what you get, make your life by what you give.”

The student address was delivered by Vernon Parrish (BS), where he is responsible for directing the company’s naval marine business in North America. Previously, he was chief operating officer of Walker Magnetics Group, Inc., and executive vice president and general manager for two divisions of AEC Sterling/Commerical Companies, a manufacturer of auxiliary equipment for the plastics processing industry.

STEWARD O’NAN (AME)
Aven, Connecticut
Stewart wrote a piece for the new book My New Orleans: Ballads to the Big Easy by her son, Daughters, and Lovers. He became involved in New Orleans by famous writers and personalities. Stewart’s novel Sweet Angel [Penguin Books, 1994] has been adapted into a film starring Kate Beckinsale, Sam Rockwell, Olivia Thirlby and Amy Sedaris.

VERNON PARRISH (BS)
Arlington, Virginia
In June 2005, Vernon was promoted as a senior systems engineer in the Naval Sea Systems Command in Washington, D.C. He is responsible for determining the scope, cost and timing of all Navy engineering activities that support the joint Engineering for Reduced Maintenance/Top Management Reduction programs and Fleet-sponsored projects. E-mail him at vernon.parrish@navy.mil.

DAVID ELDER (ECE)
Galghersburg, Maryland
David Elder of Galghersburg, Maryland, is the director of enforcement for the U.S. Food and Drug Administration and a captain in the U.S. Public Health Service, completing his 13th year of service. He and his wife, Patricia, along with their children Jacob, 8, and Jamie, 3, recently relocated from the Boston area to Maryland. Email him at david.elder@fda.hhs.gov.
JOSHUA CHEONG (ECE)
Singapore
Joshua recently left Hewlett-Packard's global operations division to pursue a regional customer relationship management role at Mercury Interactive. Contact him at joshuacheong@hotmail.com.

HOCK MIN NG (ECE)
Westfield, New Jersey
Hock is currently a member of technical staff at Bell Labs, Lucent Technologies. He was recently awarded the Charles W. Tobias Young Investigator Award by the Electrochemical Society, which recognizes outstanding scientific and pioneering work in fundamental or applied electrochemistry or solid-state science and technology by a young scientist or engineer. Hock was recognized for contributions to the development of GaN semiconductors and related alloys, the announcement appeared in the fall issue of the Electrochemical Society publication Interface. He would also like to get in touch with old classmates ('94, '97, '00) from BU. E-mail him at hock.ng@gmail.com.

WILLIAM BOWHERS (ECE)
Wayland, Massachusetts
William J. Bowhers recently completed his first year of teaching at Merrimack College in North Andover, Massachusetts. He entered a tenure track position in the college's electrical engineering department in September of 2005 after 25 years of product development for the semiconductor test industry at Teradyne, Inc. William is teaching signals and systems and control theory and uses his industry experience to mentor senior capstone projects. E-mail him at William.Bowhers@Merrimack.edu.

CRAIG HANNON (ME)
Richmond, Virginia
Craig and Heather Hannen are pleased to announce the birth of their son, Linus Joseph, on June 3. He joins big brother Isaac, 4, and big sister Annelise, 2.

DEANN TORRES O’HARE (ECE)
Hopkinton, Massachusetts
DeAnn and her husband, Jeremy, of Hopkinton, Massachusetts, welcomed their second daughter, Nicole, on March 29. Big sister Jacqueline is 2 years old.

JAKE P.E. ORTEGO (ME)
Pittsburgh, Pennsylvania
Jake is married with a 3-year-old son and living back in his hometown of Pittsburgh. After working nearly 9 years as a project engineer in the heavy industry sector, he is now leading Deloitte’s Construction Advisory Service group for the North Central region. You can e-mail him at jacob.ortego.1585@alum.bu.edu.

BILL MCLAY (AME)
Tampa, Florida
Bill and his wife, Shannon, had their first child, William Seanne, on February 12. In addition, Bill will become the chairman of the science department at Berkeley Preparatory School in Tampa, Florida, this year. You can e-mail Bill at wmclay@verizon.net.

JESSICA (LIPPERT) BENVENISTE (AME)
Palmdale, California
Jessica married Steven Benveniste of Los Angeles, California, on October 16, 2005 in Hartland, Wisconsin. Adriane Baylog (ENG ’03) was a member of the wedding party; Katie Politz (ENG ’03) and Kevin O’Brien (CAS ’03) were also in attendance. Steve and Jessi currently reside in Palmdale, California. You can e-mail them at lipps@alum.bu.edu.

Francis Szalay is a principal software engineer for EMC Corp. Friends can reach her at francis@emc.com.

PASSINGS
NILES A. BLACKBURN ('53), on April 20.
ROBERT E. GAMBLE ('55), on February 12.
JOHN F. LADO ('60), on February 9.
PHILLIP MICHAEL ('64), on January 4.
JOHN M. HAZELL ('66), on September 14, 2005.
JOHN HILLOCKS CARRUTHERS ('95), on August 4, 2005.

Without alumni support, the W. Bradford Ingalls Engineering Resource Center would not exist and students would not have a modern, comfortable place to work together, study on their own, do research, or just relax.

Providing this kind of facility requires support above and beyond tuition dollars. Alumni donations make the difference and enable the Boston University College of Engineering to provide students with an exceptional education.

To find out how you can make a difference, contact the College’s Development and Alumni Relations Office at 617-358-2806 or engalum@bu.edu.
“My field, systems engineering, begs for cross-disciplinary interactions,” says Christos Cassandras, who helped cofound the Center for Information and Systems Engineering in 2002. “These interactions help me realign my interests and keep me fresh.”

“I came to BU in 1997 for a number of reasons, chief among them being that I sensed the College of Engineering was more willing and able to provide resources and take risks for non-mainstream research. The University is supportive and we’re fortunate to attract some great graduate students and faculty. We have formed some critical mass in the systems engineering field and it is one of the areas in which we do world-class research.”

To learn more, visit: www.bu.edu/eng