

Letter from the Dean

Greetings!

The 2003-2004 academic year continued the renewal of excellence and impressive growth which have characterized the current decade at the School of Engineering.

At the undergraduate level, engineering continues to be the most popular degree choice at CCNY. The School of Engineering (SOE) is home to over 27% of CCNY juniors and seniors who declared a major and continues to attract the largest number of first-time, regular freshman with total SAT scores of 1000 or above.

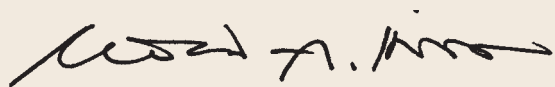
During the 2000-2004 period, SOE faculty members more than doubled their sponsored research, both in terms of awards and research expenditures. We have turned around the declining enrollment of the previous decade. Between 2000 and 2004, our undergraduate enrollment grew by 20%, master's enrollment by 13% and doctoral enrollment by over 45%. This period also saw the addition of the new Department of Biomedical Engineering and the offering of two new undergraduate degree programs – in biomedical and computer engineering. Another new interdisciplinary undergraduate degree program in environmental and earth system engineering has already been designed and is almost ready for approval.

SOE has been seeing an infusion, in all departments, of new faculty members who have earned their doctorates at the most prestigious institutions in this country and abroad. By Fall 2004, over 30% of SOE faculty members will have been at CCNY for five years or less. This and accompanying growth in other domains have necessitated reassignment of office and laboratory space and considerable construction and renovation throughout the School. Currently, the relatively unused Steinman C-level is being redone to make room for additional laboratories, offices and restrooms. In the long run, all this is bound to have great pay-off in terms of increased faculty productivity, student involvement, and funded research.

Intel Chairman Andrew Grove offered SOE a \$1M challenge grant in support of scholarships and other resources for the freshman engineering program. In 2003-2004, we were able to complete this match and, as a result, we shall be opening doors for better prepared, highly sought-after incoming students and offering an engaging freshman-year engineering program.

This year, in the area of faculty accomplishments, we are proud to announce that Dr. Stephen Cowin, of Biomedical and Mechanical Engineering, was elected to the National Academy of Engineering and that Dr. Janos Pach of Computer Science was appointed Distinguished Professor. Newly-named chairs, each for a term of three years, include Dr. Yiannis Andreopoulos, of Mechanical Engineering, as Michael Pope Chair for Energy Research, and Drs. Samir Ahmed of Electrical Engineering, Alex Couzis of Chemical Engineering, Latif Jiji of Mechanical Engineering, Neville Parker of Civil Engineering, and David Rumschitzki of Chemical Engineering as Herbert Kayser Chairs. Dr. Umit Uyar of Electrical Engineering received SOE's outstanding teacher award.

After four years, as I head out to Old Dominion University to be its Vice-President for Research, I feel good about our collective accomplishments at CCNY. I would like to thank all of our stakeholders for their continual support and enthusiasm.



Mohammad A. Karim
Dean



About the School of Engineering at City College

The School of Engineering at City College is home to an exceptional publicly supported engineering program in the heart of New York City. It is situated on a 35-acre campus in northern Manhattan, distinguished by some of the country's earliest University Gothic architecture.

The School benefits from a proud heritage and a high record of achievement. Founded in 1847, City College is America's first public institution of higher learning. It is the flagship campus of the City University of New York, which has an enrollment of nearly 200,000 degree-seeking students and over 150,000 continuing education students. Between 1920 and 1970 City College's graduates earned more Ph.D.s than graduates of any other university in the U.S. Even when City had no graduate programs of its own — and no research facilities — eight of its graduates went on to win the Nobel Prize.

Through its six academic departments, Biomedical, Chemical, Civil, Electrical and Mechanical Engineering, and Computer Science, the School of Engineering offers undergraduates and graduates a broad range of traditional and newly emerging multidisciplinary degree programs. The faculty is known for its outstanding commitment to teaching and learning, and professors are currently involved in more cutting-edge research than at any other time in New York City's history.

School of Engineering graduates demonstrate technical expertise as well as real-world skills appropriate for today's global workforce. And, since the School's demanding social and academic environment reflects today's multi-faceted world, its students are primed for the culturally diverse and technologically challenging world of work.



Mission and Goals

To be an institution of national preeminence among public schools of engineering and computer science, recognized for the excellence of its instructional and research programs.

To provide readily accessible, quality undergraduate and graduate education in a broad range of fields to a highly diverse student body, including traditionally underrepresented minorities and women, working adults, and immigrants.

To maintain and expand a program of fundamental and applied research in areas of national interest, particularly in technologies with relevance to New York City, its metropolitan region, and New York State.

To provide public service and continuing professional education opportunities to New York City and State, the local community in which the institution resides, the engineering and computer science professions, and society at large.

A String of Honors for Dr. Stephen C. Cowin

This has been a banner year for the School of Engineering's Dr. Stephen Cowin. Dr. Cowin, who is Distinguished Professor in the Departments of Biomedical and Mechanical Engineering, has added three of his profession's most prestigious honors to his already impressive roster of awards. He was elected to the National Academy of Engineers. He was selected by the Engineering Mechanics Division of the American Society of Civil Engineers to be the 2004 recipient of the Maurice A. Biot Medal. And, he was listed by the Institute for Scientific Information as one of the most highly cited researchers in the category of engineering.

Dr. Cowin, who is also Adjunct Professor of Orthopedics at the Mt. Sinai School of Medicine, is co-founder, with Dr. Sheldon Weinbaum, of the New York Center for Biomedical Engineering and of City College's new Department of Biomedical Engineering.

Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Dr. Cowin was cited for "contributions to orthopedic biomechanics, the mechanics of granular materials, and the mechanics of anisotropic elasticity." With his election, he joins Dr. Weinbaum in the NAE and makes the Department of Biomedical Engineering at City College one of only four BME programs in the nation to have two or more active (non-emeritus) faculty members in the Academy.

"Becoming a member of the Academy is very nice because it represents the recognition of my peers," says Dr. Cowin. "I am very pleased about the Biot Medal because I started out as a civil engineer, and I am a great admirer of Maurice Biot." The Biot Medal citation reads "For his outstanding research contributions in the areas of mechanics of porous materials, continuum theory for granular material flows, elasticity of materials with voids, biological materials, solid-fluid interaction, structure and mechanics of bones, bone remodeling, and bioengineering."

Dr. Cowin's impact on the School of Engineering has been tremendous. With the New York Center for Biomedical Engineering, he and Dr. Weinbaum have made the SOE the linchpin of a consortium which brings together seven of New York City's most prestigious medical institutions. In the Department they have created a highly regarded and rapidly growing center of teaching and cutting-edge research where they are both known for their remarkable accessibility and superb mentoring of students and junior faculty.

Dr. Cowin holds a BES and an MS in Civil Engineering from Johns Hopkins University and a Ph.D. in Engineering Mechanics from Pennsylvania State University. He is the author of over 200 research papers, the editor or co-editor of five books and serves on the editorial boards of leading journals in his field. Prior to coming to City in 1988, he spent 25 years at Tulane University where he was Alden J. Laborde Professor of Engineering. His other honors include the American Society of Mechanical Engineers' Melville and H.R. Lissner Medals and its Best Paper Award, as well as the European Society of Biomechanics Research Award. He is presently at work on a senior/first graduate year textbook entitled *Tissue Mechanics*.



Over the past year, Dr. Stephen Cowin has been elected to the National Academy of Engineering, awarded the Maurice A. Biot Medal by the American Society of Civil Engineers and listed by the Institute for Scientific Information as one of the most highly cited researchers in the category of engineering.

Dr. M. Ümit Uyar of Electrical Engineering is Named SOE's Outstanding Teacher of the Year



“What I most enjoy is showing students their own potential. Students at City always rise to the challenges I set them. They are motivated to improve themselves. This makes City College a rare and almost unique environment.”

“I start from the assumption that everyone should succeed and that success is theirs to lose,” says Dr. M. Ümit Uyar who has been named SOE's Outstanding Teacher of the Year for 2003-2004. Dr. Uyar first taught at City from 1993 to 1996 and has been back in the Electrical Engineering Department as an associate professor since 1998. He has also served as a visiting associate professor in the Department of Computer and Information Science at the University of Delaware and has vast experience in industry. He was a Distinguished Member of the Technical Staff at AT&T Bell Labs, where he received the company's top awards, and Director, Test Methods and Tools Development at Next Level Communications. Dr. Uyar, who holds a Ph.D. in Electrical Engineering from Cornell University, says that he is happiest in academia where he can combine teaching and research. His current research in the area of computer and communications systems centers on mobile ad-hoc networks and testing and verification of complex systems. Dr. Uyar has been a key player in bringing two multi-million-dollar contracts to City College for research on interoperability and survivability of communications networks. He holds two patents and is very widely published.

“What I most enjoy,” he says, “is showing students their own potential. Often, my students don't realize how much they can accomplish. When they fulfill the difficult assignments in my courses, they see what they can do, and they are very proud. Students at City always rise to the challenges I set them. You can really push them forward, and they will respond to you because they are motivated to improve themselves. This makes City College a rare and almost unique environment.” According to a current student, “Dr. Uyar stresses and exacts a level of professionalism that I found unprecedented.”

Dr. Uyar believes in preparing his students for the realities of the workplace. “I have up-to-date knowledge of what is required in an industrial environment,” he says, “and I try to give my students practical advice. I make sure that they know how to conduct themselves in interviews, and I have my graduate students put together meticulous reports on their academic work in preparation for job hunting. I believe in all-around mentoring, not just imparting specific knowledge.” A former graduate student comments, “Professor Uyar's teaching style emphasized the strength of a simulated working environment...Professor Uyar was very helpful as a mentor in this process with knowledge and guidance, and he was able to teach self-reliance and confidence in a way that I will carry with me forever.”

In addition to being passionate about developing his students' potential, Dr. Uyar is deeply interested in pedagogy and the governance of the University. He chaired the Electrical Engineering committee to establish the program for the B.S. degree in Computer Engineering and is a member of the CUNY Senate, the Task Force on Technology and the Senate Elections Committee. And, according to Dr. Roger Dorsinville, Chair of Electrical Engineering, “The graduate courses which Professor Uyar developed are among the most sought after courses in the department.”

The School of Engineering Meets the Andrew Grove Challenge

In 2003, one of SOE's most distinguished alumni, Dr. Andrew S. Grove '60 ChE, issued a challenge to alumni and friends of the School of Engineering, urging donors to match his pledge of \$1M with gifts of up to \$100,000.

Dr. Grove is founder and Chairman of the Board of Intel Corporation. He credits City College with having made his career possible. He recently said, "I believe those of us who benefited from the College's superb intellectual experience have a responsibility to make sure that it endures for future generations."

Among his many accomplishments, Dr. Grove has written over 40 technical papers and holds several patents on semiconductor devices and technology. For six years, he taught a graduate course in semiconductor device physics at the University of California at Berkeley and currently is a lecturer at the Stanford University Graduate School of Business. The five books he has written include *Physics and Technology of Semiconductor Devices*, which has been used at many leading universities in the United States and *High Output Management*, which has been translated into eleven languages.

Dr. Grove earned his Ph.D. from the University of California at Berkeley in 1963 and is the recipient of many honorary degrees including a Doctor of Science degree from CCNY, a Doctor of Engineering degree from Worcester Polytechnic Institute and a Doctor of Laws degree from Harvard University. City College has also recognized him with the Townsend Harris Medal and the Steinman Medal.

A Fellow of the IEEE and a member of the National Academy of Engineering, his numerous other awards include the IEEE Engineering Leadership Recognition award, AEA Medal of Achievement, the IEEE 2000 Medal of Honor and the Lifetime Achievement Award from the Strategic Management Society. He has been named "Technology Leader of the Year" by *Industry Week*, "CEO of the Year" by *CEO Magazine* and "Man of the Year" by *Time Magazine*.



"I believe those of us who benefited from the College's superb intellectual experience have a responsibility to make sure that it endures for future generations."

The following donors raised over \$1M to meet Dr. Grove's challenge to support engineering education at The City College of New York. Dean Mohammad A. Karim thanks all Grove Challenge donors for this generous demonstration of support.

Anonymous

Joseph Baumuel/Controlotron

Robert Catell

Consolidated Edison

John Dionisio/DMJM+HARRIS

Jacob Feinstein

Jerry Gelbwachs

Larry Gralla

Merck & Company

Joseph Robbins

Ronald Rosenzweig

Harold Shames

The Children of Harold Shames

SOE Honors Advisory Board Chairs

At a luncheon in April, the School of Engineering honored the current Chair of the Advisory Board and his four predecessors. These distinguished alumni were recognized for their service and commitment to their alma mater and to engineering education. They are:



Jeffrey M. Levy, P.E., '74 BME current Chair
President and Chief Operations Officer, EMCOR Group, Inc.



Robert B. Catell, '58 ME
Chairman, Keyspan



Paul V. DeLuca, P.E., '55 BME
Chairman (retired) Telecom Consultants, Inc.



Norman Nadel '49 BCE
Chair, Nadel Associates



Michael Pope, J.D. '44 BEE
President, Robbins, Pope and Griffis

"The Advisory Board is often the radar that gives us in real-time a realistic sense of ourselves and our direction. Our Board members are generous with their time and resources and provide us with a network which is invaluable."

Dean Mohammad Karim

From top: Provost Zeev Dagan and Jeffrey M. Levy, Robert B. Catell and Dean Mohammad Karim, the Provost and Paul V. Deluca, the Provost and Norman A. Nadel, the Provost and Michael Pope, the SOE Advisory Board with SOE faculty members and administrators.



A Pioneer in the Computer Industry

Juan Rodriguez '62 BEE

Chairman of the Board and Chief Technologist of Exabyte Corporation
Returns to City to Address the Annual PRES Dinner



Juan Rodriguez (center) in conversation with Roger Dorsinville (left) and Sheldon Weinbaum



Mr. Rodriguez flanked by Joseph Barba (left) and Dean Mohammad Karim



CCNY President Gregory Williams and Dean A. Ramona Brown

Juan Rodriguez has dedicated over four decades to engineering, manufacturing and marketing state-of-the-art computer data storage products. He has extensive experience in leading successful data storage companies. Mr. Rodriguez, who was born in Cuba and raised in Venezuela, received an MSEE from New York University in 1963. He co-founded his first company, Storage Technology Corporation, in 1969, after several years in tape technology at IBM, and went on to co-found Exabyte Corporation in 1985 and Ecrix Corporation in 1996. Exabyte invented the world's first 8mm helical scan data tape drive.

In addition to being a ground-breaking entrepreneur, Mr. Rodriguez is heavily engaged in grooming the next generation. He is a professor in the College of Engineering and Applied Sciences at the University of Colorado and Co-Executive Director of the Center for Entrepreneurship, a joint venture between the College of Engineering and Applied Science and the the University of Colorado's College of Business Administration.

In 2002, Mr. Rodriguez was honored by the City College of New York Engineering School Alumni Association with its Career Achievement Award. At the time, Francis Redhead, the Association's president said, "Mr. Rodriguez's history is filled with multiple professional accomplishments, as well as demonstrated leadership, initiative and community support." Juan Rodriguez's many other awards include the 2003 Beta Gamma Sigma Medallion for Entrepreneurship, which recognizes individuals who have made a significant contribution to the vitality and strength of their communities and who combine innovative business achievement with service to humanity.

PRES (Program for Retention of Engineering Students), **TRACC** (Transfer, Recruitment, and Achievement at City College in Engineering), and other initiatives of the Office of Student Programs help students succeed at the School of Engineering. They offer academic and professional support services which improve students' performance in coursework, enhancing their opportunity to successfully complete engineering degree requirements. The programs' results are stellar. Students who have participated in PRES and TRACC regularly outperform cohort students in terms of overall grade point average, math, chemistry and physics pass rates, and retention rates.

A Word from the Chairs

Biomedical Engineering Sheldon Weinbaum

"The Department of Biomedical Engineering was born of a unique vision," says Dr. Sheldon Weinbaum, who is one of eight living scientists to belong to all three National Academies: the National Academy of Engineering, the National Academy of the Sciences and the Institute of Medicine. "Starting from scratch, we determined to create a program on a par with the most competitive institutions in the country, but we had only a fraction of their resources, so we thought outside the box. Being in New York City, the health care capital of the country, we set about establishing a network of collaborations with researchers from all of the city's premier medical institutions. Over 100 SOE undergraduate and graduate students have now conducted research in the labs of our hospital partners: Albert Einstein College of Medicine, Columbia College of Physicians and Surgeons, The Hospital for Special Surgery, Mount Sinai School of Medicine, NYU School of Medicine, Sloan-Kettering Cancer Center, and Weill-Cornell Medical College."

The program, which began on a shoe string, has attracted over \$10 million in funding from the Whitaker, Wallace H. Coulter and Sloan Foundations, the NIH and the NSF. The Department is expanding rapidly, and its faculty and student body reflect the program's commitment to bringing women and minorities into engineering. "We have been remarkably successful in recruiting faculty who would normally go to elite institutions," says Dr. Weinbaum. "Our excellence is further reflected in the number of CUNY Honors College graduates who apply to enter our program."



Chemical Engineering Irven H. Rinard

"Chemical Engineering at City College is and has historically been a world-class department," says Dr. Irven H. Rinard. "Our remarkable faculty includes Andreas Acrivos, Albert Einstein Professor of Science and Engineering Emeritus, Morton Denn, his successor in the Einstein Chair and Director of the Levich Institute, and Distinguished Professor Reuel Shinnar."

"We are a very research productive department and are expanding our work in cutting-edge fields," he continues. "Major grants in the areas of softmaterials and biotechnology are allowing us to build up the infrastructure of those research programs. We have, for instance, established a softmaterials clean room and acquired a \$350,000 confocal microscope."

Dr. Rinard, who earned his Sc. D. in Chemical Engineering at the Massachusetts Institute of Technology, explains that Chemical Engineering is undergoing a significant shift from the large scale commodity chemical industries, which have been its traditional bulwark, to fine chemicals with smaller scale production and higher value added. The curriculum is being transformed accordingly. "Courses which applied to large scale commodities are being revamped and expanded to include bioprocessing and batch mode manufacturing," he says. Another area which Dr. Rinard deems of the highest importance is energy systems engineering for global sustainability. "We have to figure out how to maintain our quality of life without destroying the planet," he says



Civil Engineering

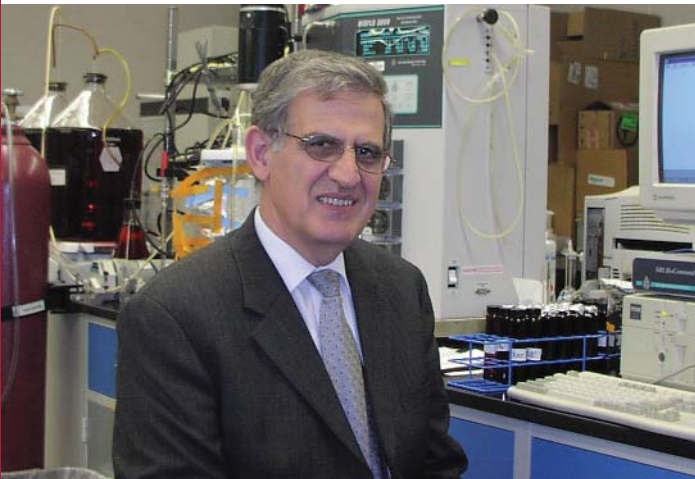
John Fillos

CE

"When fellow alumni talk about the good old days, I tell them that the good old days are now. Our department has never been better," says Department Chair John Fillos.

Dr. Fillos, a 1967 SOE graduate, received his doctorate from New York University. "Over the last five years," he explains "we have enhanced the strong teaching tradition of the Department with a new emphasis on research. This has gone hand-in-hand with an infusion of young, aggressive faculty members (including four women) who are graduates of the most prestigious universities in the country. The Department is full of new ideas, thoughts and excitement. We are upgrading the research capabilities of our laboratories in Structures, Environmental/Water Resources, and Transportation Engineering. Our external funding continues to grow, and the support we receive from local municipalities has made the New York metropolitan area our laboratory. We have organized several Institutes and Centers, housed in the Department, which harness the abilities of researchers in other departments throughout CUNY."

The curriculum, Dr. Fillos points out, has become more innovative and cutting-edge, reflecting the new orientation of the Department. "We have moved," he says, "from a curriculum which was primarily structures-based to one which, while reflecting the total field, allows students to specialize. In many courses, students use the same software as consultants. By linking our instruction to the market, we make sure that our students are productive as soon as they graduate."



Computer Science

Douglas Troeger

CS

"This year marks a turning point in the Department of Computer Science," says Dr. Douglas Troeger. "We have reshaped the curriculum to meet the needs of the students in this information economy, committing ourselves to new capstone courses which will enable them to design their own projects using emerging technologies."

Dr. Troeger, who holds a PH.D. from Stevens Institute of Technology, continues, "We have recruited two new faculty members with interests in computer networking and language processing, adding depth to the department in the areas of wireless communication and natural language processing, and we are recruiting faculty in the areas of computer engineering and bioinformatics. The faculty has received over 1 million dollars in grants from the Department of Defense, the Office of Naval Research, the National Oceanic and Atmospheric Administration, and the National Science Foundation, and we have increased the number of funded research positions for both undergraduate and graduate students."

It is source of great pride for the Department that its own Dr. Janos Pach, one of the most productive and influential geometers in the world, was named University Distinguished Professor by the CUNY Board of Trustees.

An important ongoing focus of the Department continues to be the development of SOE's Computer Engineering program, in concert with the Department of Electrical Engineering.



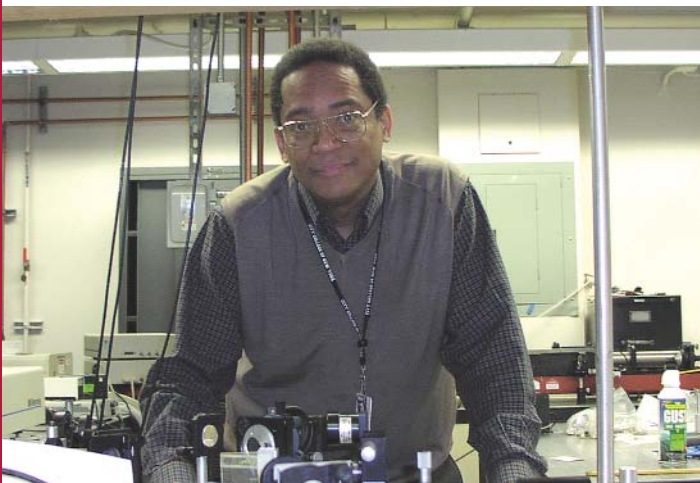
Electrical Engineering Roger Dorsinville

EE

"Over the past two years, there has been a surge of interest in Electrical Engineering at SOE," says Department Chair Roger Dorsinville. Dr. Dorsinville, came to City College in 1984 and has chaired the department since 2003. He holds a doctorate in Applied Physics from Moscow State University and is a prolific researcher whose interests are in optical communications, nonlinear optics and optical computing.

Dr. Dorsinville credits the new program in Computer Engineering, which Electrical Engineering is developing in conjunction with Computer Science, with being a boost to the Department. "We now have three hundred students enrolled in this program," says Dr. Dorsinville, "and interest is growing."

"Recently, we have added new and talented faculty in optical communications, robotics and computer engineering and hope to add two more faculty in computer engineering this fall," Dr. Dorsinville continues. "We have always been a strong department in terms of research. Our largest research group is in communications, and important work is being done in digital signal processing, computer engineering, controls, and photonics." Department members play a key role in research at centers such as NOAA-CREST and are deeply committed to involving undergraduates in their projects. "All our research-active faculty members have undergraduates in their laboratories," says Dr. Dorsinville. "We also have significant summer programs which engage undergraduates and high school students."



Mechanical Engineering Feridun Delale

ME

"The Department of Mechanical Engineering is at a crossroads," says Feridun Delale. "Following a national competition, we have been awarded a \$1.5 million National Science Foundation grant to reform our curriculum. We are introducing emerging technologies into our undergraduate courses; changing our teaching strategies to emphasize learning which is cooperative, interdisciplinary and research- and project-based; and focusing on the recruitment and retention of women and minorities."

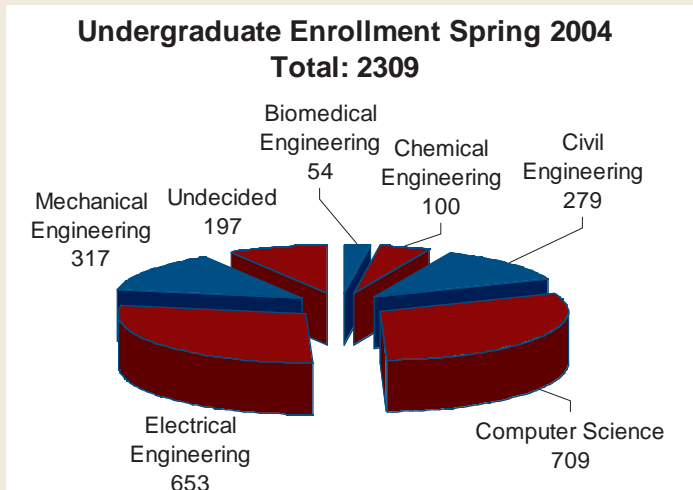
"We are seeking to make research more pre-eminent," says Dr. Delale, who holds a Ph.D. in Applied Mechanics from Lehigh University. "We have been undergoing a strategic planning process in which we are identifying our research strengths, such as thermofluids, solid mechanics and materials. We are seeking to build around them and will be placing particular emphasis on emerging technologies. We look forward to hiring new faculty, and in particular have two distinguished professor lines to fill. We are planning to bring more Ph.D. students into the Department and to increase coordination between our master's and doctoral programs."

Dr. Delale concludes by pointing out that Mechanical Engineering is a very student-friendly department. "Our goal is the students' education, and they know it. We pay attention to their needs and act on their concerns. We have recently invested heavily in laboratories for the undergraduate program, and every year, with the help of our alumni, we provide substantial monetary awards to our students."

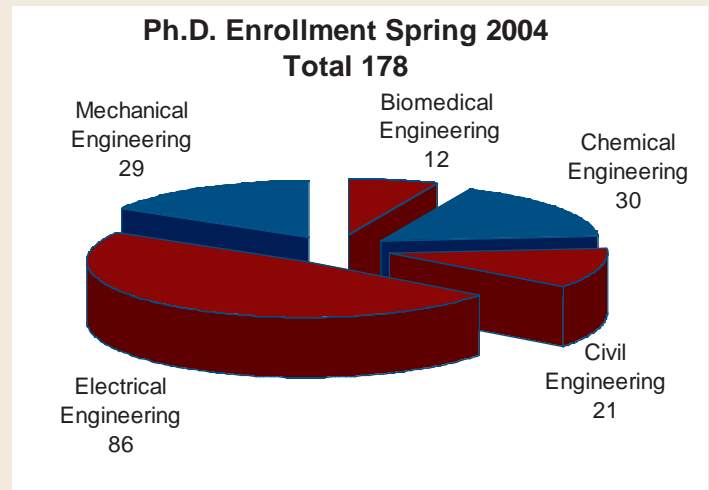


Student Facts

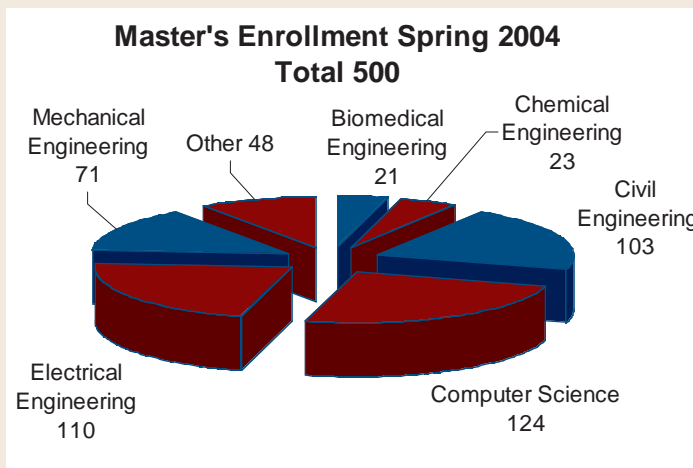
Enrollment



Half of Computer Engineering students are included in Computer Science and half are included in Electrical Engineering.



Computer Science Ph.D. students are CUNY-wide and are not included here.



Degrees Granted 2003-2004	Bachelor's degrees	Master's degrees	Ph.D degrees
	170	142	10

Tuition and Fee Schedule Fall 2003		New York City and State Residents	Out of State Residents*
Undergraduate	Full-time	\$2,000 per semester	\$360 per credit
	Part-time	\$170 per credit	\$360 per credit
Master's in Engineering	Full-time	\$2,970 per semester	\$440 per credit
	Part-time	\$250 per credit	\$440 per credit
Doctorate	Level I full-time	\$2,435 per semester	\$475 per credit
	Level I per credit	\$275 per credit	\$475 per credit
	Level II	\$1,525 per semester	\$3,390 per semester
	Level III	\$605 per semester	\$1,210 per semester

*(including international students who have lived in New York State for less than one year)

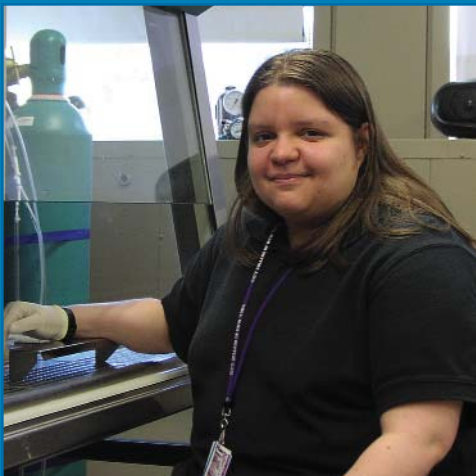
Graduate Students

“City College has given me the opportunity to attain the high level of education I have always wanted.”

Juan Arevalo holds a B.S. in agricultural engineering from the National University of Columbia. In his native country, he spent four years working on issues related to water resources including software development for irrigation design, irrigation districts management, hydraulic pipe network design and watershed management. Now, at NOAA-CREST in the School of Engineering, he is doing research on the estimation of snow cover parameters using a combination of microwave and optical remote sensing data. Upon completing his master’s Mr. Arevalo plans to work in the private sector solving problems in water resources through the application of the remote sensing sciences. “City College,” he says, “has given me the opportunity to attain the high level of education I have always wanted. It has a great engineering school and, being a public institution, it is affordable.”



Juan Arevalo
Civil Engineering



Limary M. Cancel
Biomedical Engineering

“The lab I work in is fantastic, and the professors are very distinguished. I like the diversity of the Department, including the strong presence of women students and faculty.”

Limary M. Cancel followed her mentor, Dr. John Tarbell, to the School of Engineering from Pennsylvania State University where she earned her B.S. and M.S. “The lab I work in is fantastic,” she says, “and the professors are very distinguished. I like the diversity of the Department, including the strong presence of women students and faculty.” Ms. Cancel is currently investigating the effect of cell turnover (including cell mitosis and apoptosis) on the permeability of low density lipoprotein across endothelial cell layers. Once her Ph.D. is finished, Ms. Cancel plans to stay in academia as a researcher and a teacher. “I was a teaching assistant for two semesters at Penn State,” she says. “That was something which I really enjoyed.”

“City College is a great place to be. I continue to strive for excellence in my research, and I hope that I am helping students through my teaching.”

Dmitry Chebanov had already earned a Ph.D. in mathematics in his native Ukraine when he came to City College in 2001. He had published an impressive number of papers, and his research had come to the attention of Dr. Irina Gladkova of SOE’s Computer Science Department. At her suggestion he decided to come to SOE to try a new area of research and work towards a second doctorate, this time in computer science. Dr. Chebanov’s research interests are signal processing, radar waveform design, multibody systems, and stability and control theory of dynamical systems. Since being at SOE, he has continued to publish, and he is teaching two courses in the Computer Science Department. “City College is a great place to be,” he says. “I continue to strive for excellence in my research, and I hope that I am helping students through my teaching.”



Dmitry Chebanov
Computer Science



Adrian Gill
Electrical Engineering

“Being at NOAA-CREST is opening my eyes to many professional possibilities. I am applying my course material and getting great hands-on experience.”

Adrian Gill holds a bachelor’s degree in electrical engineering from City College. He elected to remain at the School of Engineering for his master’s and was awarded a fellowship to continue doing research with his mentor, Dr. Fred Moshary. He is currently at NOAA-CREST where he is involved in developing remote sensing techniques which use the fluorescence of algae as an indicator of water quality. Prior to that he conducted a study of sun intensity data to determine the aerosol content of the atmosphere. Following his master’s, Mr. Gill would like to work in the remote sensing industry. “Being at NOAA-CREST is opening my eyes to many professional possibilities,” he says. “I am applying my course material and getting great hands-on experience. In the lab, I am surrounded by excellent peers of diverse backgrounds, including people from Egypt, Russia and China.”

“We have great teachers here. People are still talking about them thirty years after they graduate. They set the benchmark you try to reach both in teaching and in research.”

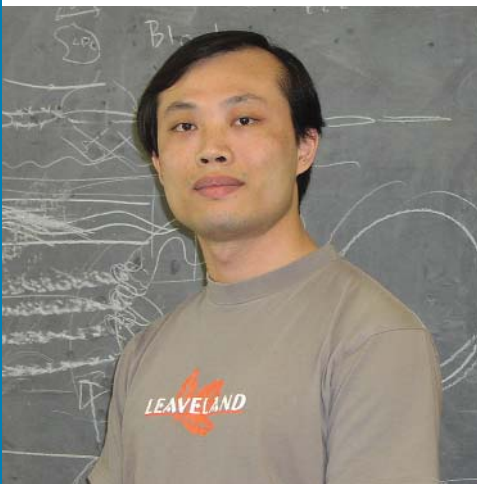
Saavas Xanthos earned his associate’s degree in his native Cyprus prior to transferring to the School of Engineering. His B.S., M.S., and brand new Ph.D. are all from City. Mr. Xanthos’s field is fluid mechanics. His research, under the mentorship of Dr. Yannis Andreopoulos, has entailed utilizing shock waves and expansion waves to control how turbulent flows are attenuated or amplified. “We have great teachers here,” he says. “People are still talking about them thirty years after they graduate. They set the benchmark you try to reach both in teaching and in research. We are lucky to be their protégés. In the time I have been here, I have seen the School of Engineering get better and better with more money allocated for labs, terrific new faculty and courses, and students who are increasingly well prepared.”



Saavas Xanthos
Mechanical Engineering

“I am very fortunate to be doing interdisciplinary research. It is a great opportunity for me to be able to study a biomedical problem from the viewpoint of chemical engineering.”

Zhongqing Zeng, who holds bachelor’s and master’s degrees from Zhejiang University in Hangzhou City, China, is using the basic principles of chemical engineering to study biomedical science. Under the mentorship of Dr. David S. Rumschitzki, he is investigating macromolecular transport in heart valves, associated with cardiovascular diseases such as aortic stenosis. Taking full advantage of links between researchers at SOE and other New York City institutions, he is getting advice on his experiments from heart surgeon Dr. Kung-ming Jan of Columbia University’s College of Physicians and Surgeons and has taken a physiology course at Cornell Medical School. “I am very fortunate to be doing interdisciplinary research,” he says. “It is a great opportunity for me to be able to study a biomedical problem from the viewpoint of chemical engineering.”



Zhongqing Zeng
Chemical Engineering

Undergraduates

“I have been able to take graduate courses and benefit from the excellent library resources. The faculty is accessible at any time. This is a great place to satisfy your intellectual curiosity.”

Robin G. Chelliyil’s field is wireless communications. He is headed for a master’s program in electrical engineering at the University of Illinois at Urbana-Champaign and plans either a doctorate in the subject or an MBA. Last summer, he honed his research skills at City’s Center for Analysis of Structures and Interfaces, where he helped Ph.D. students with a variety of projects. “The experience taught me how to work in a team,” he says. Prior to that he put his knowledge of computer engineering to practical use as an intern with the MTA, training in database systems, computer networking and UNIX administration. “I was well-equipped by what I had learned at City,” he says. “I have been able to take graduate courses and benefit from the excellent library resources. The faculty is accessible anytime. This is an excellent place to satisfy your intellectual curiosity.”



Robin G Chelliyil '04
Computer Engineering



Brent Lee Shue Ling '05
Civil Engineering

“The engineering program is very rigorous, and it prepares you well.”

Brent Lee Shue Ling has been doing research in SOE’s Transportation Institute since he came to the School in 2000, investigating the recycling of crushed concrete and plastic into pavement mixtures. He has tutored in PRES and TRACC, is editor of the Chi Epsilon National Civil Engineering Honor Society, and is the incoming president of the Steel Bridge Club. “The SOE is one big family. We help each other out,” he says. “This year when the Steel Bridge Club was short of funds, a faculty member contacted an alumnus who found a fabricator who helped us come in under budget.” This summer, Brent will be an assistant engineer in the Plant Engineering Department of Brookhaven National Laboratory. Upon graduation he plans a master’s in civil engineering. “The engineering program is very rigorous,” he says, “and it prepares you well.”

“At SOE, we learn theory and get practical know-how which we can apply in the real world. We acquire the skills to analyse any problem.”

Phuc (Tommy) Nguyen is about to fulfill a dream: after his December '04 graduation from SOE he will be working for NASA Goddard Space Flight Center in its Flight Electronics Branch, where he is doing an internship this summer. “I hope to combine work for NASA with a Ph.D. program,” he says. In 2002, Tommy did research in remote sensing at NOAA-CREST in the School of Engineering. Since 2003, he has been applying his growing knowledge of electronics as an intern in the Central Electronics Shop at NYC Transit, tackling such issues as the problems with magnetic heads which affect the reading of Metrocards. “At SOE,” he says, “we learn theory and get practical know-how which we can apply in the real world. We acquire the skills to analyse any problem.”



Phuc (Tommy) Nguyen '04
Electrical Engineering



Rosa Patiño '04
Mechanical Engineering

“When I go into the field, I feel that my education is as good as anyone’s. Nobody can take that away from you.”

Rosa Patiño wears many hats. She is a mechanical engineering student who aspires to a career in aerospace and has already done a manufacturing co-op at the Northrop Grunman Corporation. She is a leader in the Latin American Engineering Student Association (LAESA-SHPE), where she has been public relations chair, secretary and chair of the High School Student Leadership Conference. She has represented the SOE as a senator in Undergraduate Student Government. And, she is the mother of a four-year old son. “The SOE is a wonderful network,” she says. “I made contact with Northrop Grunman through a former PRES student who was recruiting for them at a career fair. As a woman, I appreciate the female role models in the mechanical engineering faculty. And, the program is excellent. When I go into the field, I feel that my education is as good as anyone’s. Nobody can take that away from you.”

“In the classroom, the SOE promotes lifetime learning. My discipline is always changing, and keeping up continually is in the culture of the professors.”

Anika Reynolds already holds a bachelor’s degree in economics from the University of California at Davis. When she receives her B.S. in computer science, she intends to go into industry and simultaneously get her master’s with an eye to the doctorate. At SOE her main interests have been in artificial intelligence, computer architecture and web programming. She has appreciated the opportunity to present her research at high-powered conferences and to do significant work in the field. Through the CUNY Institute of Software Design and Development, she analysed the paperless office system at New York City’s Human Resources Administration. “I learned to implement programming languages by using them. I was definitely challenged,” she says. “In the classroom, the SOE promotes lifetime learning,” she continues. “My discipline is always changing, and keeping up continually is in the culture of the professors.”



Anika Reynolds '04
Computer Science



Aron Szekely '06
Biomedical Engineering

“The problem with education is that there are too many boundaries. Biomedical engineering is interdisciplinary.”

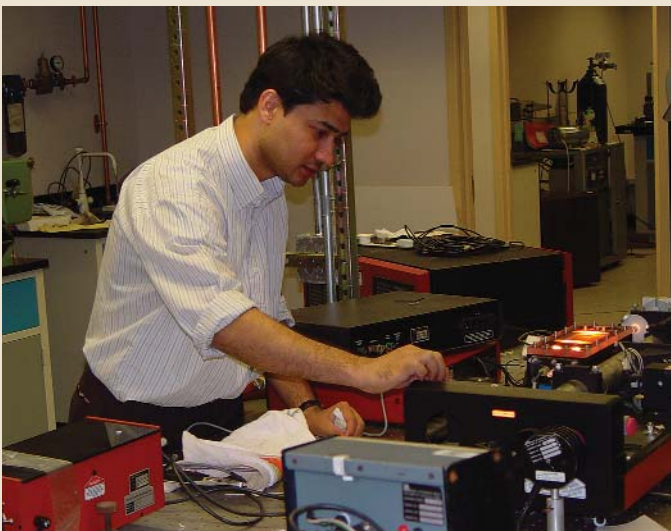
Aron Szekely has found his intellectual home in biomedical engineering. “The problem with education,” says Aron, “is that there are too many boundaries. Biomedical engineering is interdisciplinary. If we understand the human body on the micro scale, we can design things on the macro scale.” Aron is currently participating in a project of Dr. Sheldon Weinbaum’s which aims to apply the principles governing the motion of red blood cells in capillaries and the gliding of skis to the challenge of designing a high speed train. “We are studying the fluid mechanics of the gliding motion,” he says. Aron believes that a person should be well-rounded. He has been a research intern at NYU’s Hospital for Joint Diseases, tutors elementary school students in physics and mathematics, is an accomplished guitarist and Hungarian folk dancer and reads voraciously. “One should not neglect the liberal arts side of education,” he says.

“At SOE I have had professors who are excellent in the way they teach, what they know and how they encourage you.”

Napoleon Tercero's interest in chemical engineering started with a childhood chemistry kit. It has led him to a B.S. in chemical engineering at SOE and to a place in the Ph.D. program at Columbia University. There, he will apply himself to genomics engineering, using knowledge from the human genome to research custom-made medicines for people with the gene for diabetes. Napoleon already has considerable experience in pharmaceuticals. For two years running he interned at Merck. The first year, he calculated emissions for various operations of a drug process which were used to evaluate the size and cost of thermal oxidizing units. The second year, he analyzed a unique semi-batch pharmaceutical process for its potential dual sourcing at an overseas location. “At SOE,” he says, “I have had professors who are excellent in the way they teach, what they know and how they encourage you.”



Napoleon Tercero '04
Chemical Engineering



Faculty Facts

In 2003-2004 SOE faculty members:

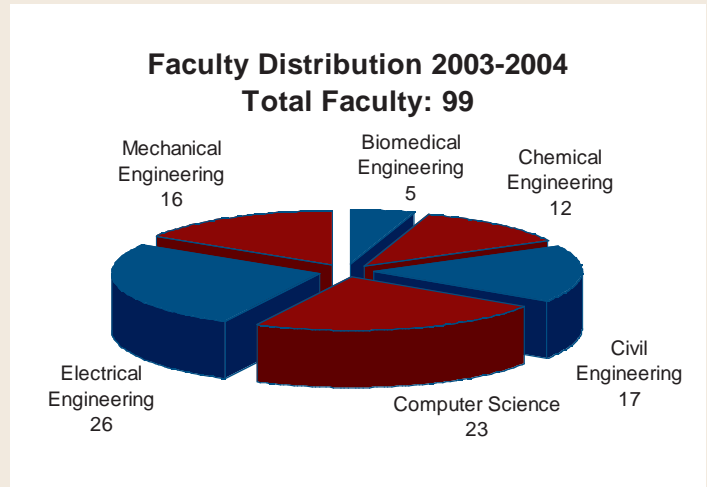
♦served in an editorial capacity on 29 archival journals

♦produced:

- 2 journal special issues
- 2 books
- 17 book chapters
- 157 journal articles,
- 154 conference papers
- 9 patents

♦delivered 54 endowed/keynote/plenary speeches

♦served on 35 national and international technical committees



Faculty Honors

Acrivios, A., Honorary Doctor's Degree, University of Patras, Greece, 2003.

Agrawal, A., Faculty Fellow, NASA Glenn Research Center, Cleveland Ohio, Summer 2003, 2004.

Benenson, G., and J. Neujahr, 2003 Districts' Choice Top 100 Product Award from *District Administration* magazine for their curriculum guides "Stuff that Works!", Heinemann Publishers.

Cowin, S.C., Elected to the National Academy of Engineering, February, 2004

Cowin, S.C., Maurice A. Biot medal, The American Society of Civil Engineers, 2004.

Cowin, S.C., Listed by the Institute for Scientific Information as one of the most highly cited researchers in the category of engineering, 2004

F. Delale, Science Advisory Board of "Condition Monitoring Conference 2005", Cambridge, UK, 2005.

Jiji, L., Fulbright Scholarship, 2004.

Karim, M., Distinguished Fellow, University of Alabama, March 2004.

M. Inaishi and **A. Kawaguchi**, Best paper award for "Ship Group Navigation Assessment," 9th Int. Conference on Information Systems Analysis and Synthesis, Orlando, FL, pp. 410-415, July 2003.

McKnight, C.E., CCNY Alumni Association Faculty Service Award, June 8, 2004

Nguyen, T., "Who's Who Among America's Teachers," 2004.

Pach, J., Distinguished Professor, City University of New York, 2004.

Paaswell, R., Outstanding Civil Engineering Alumnus, Rutgers University, November 2003.

Raj, R.S., Distinguished Fellow of ASEE-US Navy, Summer 2004.

Ravindran, K., NRC Faculty Fellowship Award, Summer 2003.

Tarbell, J., President, National Biomedical Engineering Society, 2003

Xiao, J., Who's Who in America, 2003.

New Faculty

Marom Bikson, Assistant Professor of Biomedical Engineering, Ph.D. Case Western Reserve University

Marom Bikson's field is neural engineering. His current research deals with the effect of environmental electric fields (such as those generated by mobile phones and power lines) on the brain. He is also interested in the use of functional electrical stimulation to treat epilepsy and Parkinson's disease. Dr. Bikson came to SOE following a post-doc in the Department of Neurophysiology at the University of Birmingham in England. "I visited lots of biomedical engineering departments," he says, "and what drew me to City was the warmth and character of the department. Everybody is on your side, and they let you know it. At City they are committed to mentoring and training in a way I have never seen. I enjoy teaching, so it is great to be at a place that takes it this seriously. And, with the New York Center for Biomedical Engineering centered around the department, we have collaborations with some of the best hospitals in the world."



Marom Bikson



Cynthia Chen

Cynthia Chen, Assistant Professor of Civil Engineering, Ph.D. University of California at Davis

Cynthia Chen's primary research interest is how people make travel-related choices over time. This includes long-term choices such as job and residence location, median-term choices such as vehicle transactions and short-term choices such as daily activity and travel. "New York City probably has the most comprehensive transportation network in the U.S. There are many complex scenarios in which people make all kinds of choices, making this an ideal place for me to be," she says. In addition to research, she teaches Transportation Engineering to undergraduates and Urban Transportation Planning to graduate students, and she has submitted a proposal for improving the undergraduate transportation engineering curriculum to the NSF. "Over the past year, I have had heartfelt support from the dean, the department chair and everyone else at SOE," she says. "That makes me feel very good."

James S. Hammonds, Jr. Assistant Professor of Mechanical Engineering, Ph.D. University of Illinois at Urbana-Champaign

"Iwanted to be at a school with a diverse population, an urban location and a commitment to undergraduate education," says James S. Hammonds, Jr. "City College was that place." Dr. Hammonds' current research centers on energy transport via electromagnetic waves in microscale domains. He is setting up his laboratory and looks forward to involving students in his research. "I really like the students," he says. "They are warm and happy that I am accessible to them. It is gratifying to encourage people the way I was encouraged and to give back what I was given as an undergraduate at Howard University. I see myself as being in service to communities that I am part of." This year, Dr. Hammonds has taught Fluid Mechanics in the School of Engineering. Last year, in the CUNY Honors College, he led seminars which addressed connections between science and technology and the functionality of society as that relates to the economic, political and social context of New York City.



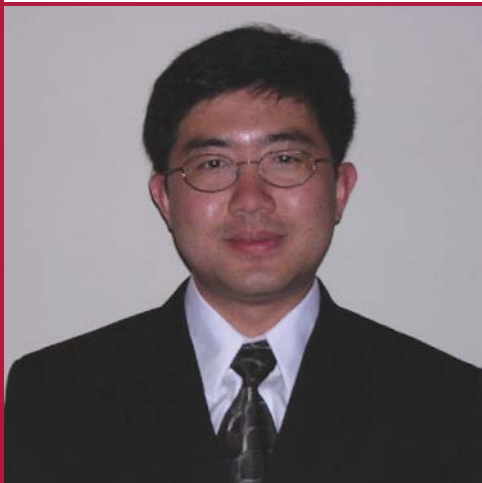
James S. Hammonds, Jr.

Esther Levin, Professor of Computer Science, Ph.D. Technion, Israeli Institute of Technology

Esther Levin comes to SOE following over fifteen years of research in industry, first at AT&T Bell Labs and Shannon Research Labs and then as chief scientist of Telelogue Inc. “What I found most rewarding in my previous career,” she says, “was the difference I could make in a product. What I find rewarding as a professor is the difference I can make with the students. I love teaching. It is very demanding but exhilarating.” Dr. Levin brings a new area of expertise to SOE’s Computer Science Department. Her research interests are spoken-language human-machine interactions, speech recognition, spoken language understanding, spoken dialog systems, indexing and information retrieval and statistical learning theory. This year she has taught Data Structures to undergraduates and Machine Learning Pattern Recognition to graduate students. She is setting up a laboratory dedicated to speech, language and multimodal communication.



Esther Levin



Benyuan Liu

Benyuan Liu, Assistant Professor of Computer Science, Ph.D. University of Massachusetts at Amherst

Benyuan Liu was drawn to SOE because of the Computer Science Department’s reputation for being a dynamic research environment. Dr. Liu’s prime research focus is on mobile and wireless networks. His current work, on wireless and ad hoc sensor networks, which is in the theoretical phase, has potential applications in the military, security, environmental monitoring and agriculture. He is already collaborating on research with his new colleagues in Computer Science and plans to explore collaborations with faculty in other departments at SOE. Dr. Liu, who has been a teaching assistant at UMass and at Yale, is thoroughly enjoying his teaching at City. “The students are really motivated, he says. “They ask all sorts of questions during and after class. I am very affected by their motivation, and I spend a lot of time preparing for my classes so that I can give them the most up-to-date knowledge of computer networks.”

Lucas C. Parra, Associate Professor of Biomedical Engineering, Ph.D. Ludwig-Maximilian University

Prior to coming to the SOE, Lucas C. Parra applied his doctorate in physics to research at Sarnoff Corporation and Siemens Corporate Research. He also served as Adjunct Assistant Professor of Biomedical Engineering at Columbia University. His expertise includes machine learning and pattern recognition, acoustic array processing, emission topography, and encephalography. His current research in biomedical signal processing and medical imaging focuses on functional brain imaging. “I came to City College because I was excited about the Biomedical Engineering Department. The faculty is outstanding,” he says. “I was also positively impressed with the opportunities for funding and the collaborations with other institutions. Though I have spent time in industry, I really wanted to be in academia.” This year, Dr. Parra has taught Biomedical Signal Processing and Medical Imaging at the graduate level.



Lucas C. Parra



Beth Wittig

**Beth Wittig, Assistant Professor of Civil Engineering,
Ph.D. University of Texas at Austin**

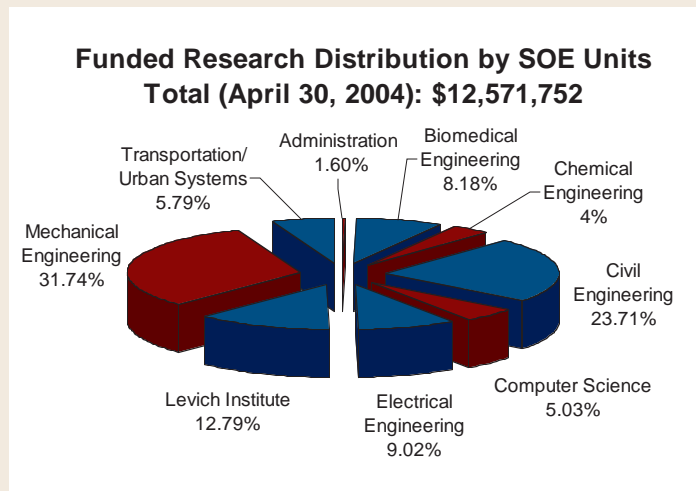
At the University of Texas, Dr. Beth Wittig developed expertise in ambient pollutant measurement and modeling practices. As a consultant, she managed and quality assured the field operations of several statewide air quality measurement campaigns in California. Throughout, she has worked with high school students, engaging them in engineering and science. “One of my professors transformed the way I look at engineering and my possible role in it. My desire to give this back to the next generation of students led me to pursue a graduate degree.” So far, Dr. Wittig has taught a graduate level course on air pollution control and an undergraduate class which addresses air pollutants and complements teaching on water pollutants, drinking water and waste water resources. She has secured funding for two undergraduates to look at air quality in New York State over the last ten years and has collaborated on a proposal to bring high school students into NOAA-CREST.



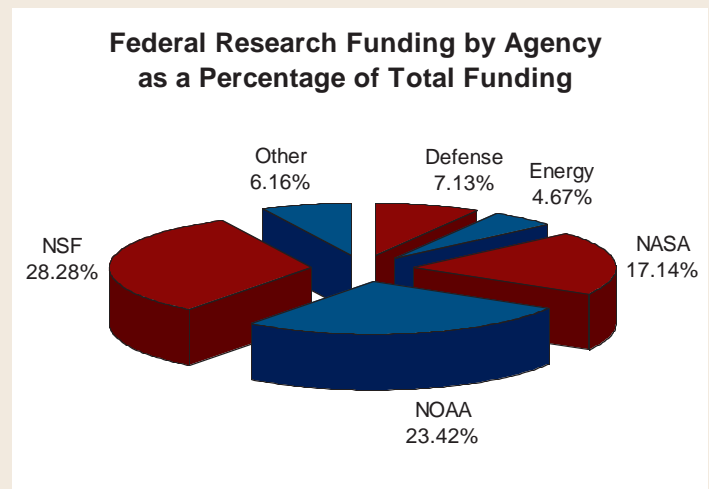
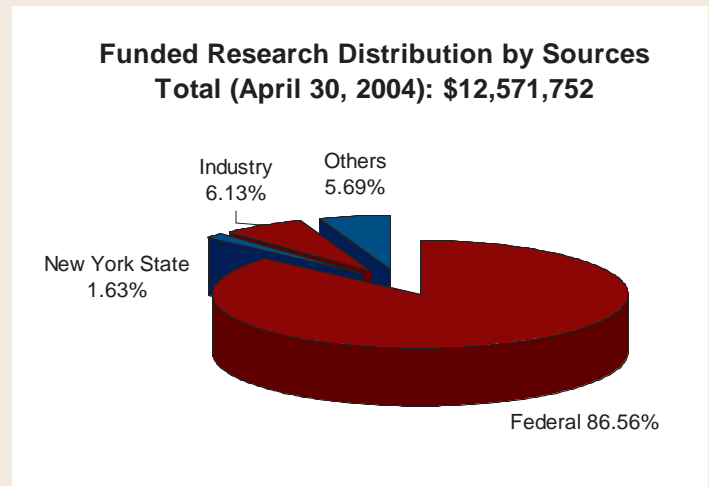
Research

The sponsored research volume for 2002-2004 is projected to exceed \$15M in awards received by June 30, 2004. As of April 30, 2004, the total stood at \$12,571,752.

The School of Engineering hosts a number of organized Centers and Institutes. Each of these serves as a focal point for concerted research efforts and competes for external research funding.



The Research Foundation categorizes funding as belonging to a particular Department based on the Principal Investigator's home department. In the case of larger grants, it is more common to find participation by multiple investigators who may not be from the same department as the PI.



Centers and Institutes

The Benjamin Levich Institute for Physicochemical Hydrodynamics

New York Center for Biomedical Engineering

Center for Information Networking and Telecommunications

CUNY Institute for Urban Systems

Institute for Transportation Systems

Center for Water Resources and Environmental Research

Municipal Waste Center

Center for Advanced Engineering Design and Development

Acrivos, A., and **Khusid, B.**, “Transport and segregation of suspensions in traveling electric fields”, NSF, 07/03-06/06, \$450,715.

Acrivos, A., **Koplik, J.**, and **Khusid, B.**, “A fundamental study of dispersed multiphase flows at small scales,” DOE, 08/03-07/04, \$236,144.

Acrivos, A., “Particle Segregation in a Flowing Concentrated Suspension Subject to High-Gradient Electric Fields,” NASA, 11/03-10/04, \$103K.

Agrawal, A., “Development of an electromagnetic shape memory alloy friction damper for civil infra-structures,” NSF, 08/01-07/04, \$144K.

Agrawal, A., and **Mylonakis, G.**, “Integrated research and education on engineering effects of blasts and other man-made hazards,” NSF, 10/02-03/04, \$71K.

Agrawal, A.K., **R. Baker**, and **K. Subramaniam**, “Handbook of scour countermeasures”, NJDoT, 01/03-12/04, \$320K.

Agrawal, A.K., “Applications of smart protective systems to degrading civil engineering infrastructures subject to near-field ground motions,” PSC-CUNY, 07/03-06/04, \$5K.

Agrawal, A.K. and **K. Subramaniam**, “Development of smart bridge bearings system,” 03/03-06/04, \$60K.

Agrawal, A.K. and **A. Kawaguchi**, “Bridge element deterioration rates,” NYSDOT, 06/03-05/04, \$200K.

Agrawal, A.K. and **K. Subramaniam**, “Corrosion monitoring of Annandale Road bridge in Staten Island,” FHA, 06/04-05/09, \$360K.

Agrawal, A.K. and **A. Kawaguchi**, “Nondestructive evaluation and development of asset management system for New York City’s pump stations force mains,” NYCDEP, 06/04-05/06, \$500K.

Andreopoulos, Y., “Blast overpressure probe engineering study,” ARMY, TACOM/ARDEC, 08/03-12/03, \$38,445.

Andreopoulos, Y., and **C.B. Watkins**, “Molecular simulations of turbulence collisional phenomena,” NSF, 09/03-08/04, \$100K.

Baumslag, G., **John, K.**, **Rouson, D.**, and **Cleary, S.**, “MRI parallel computing environment for computational math,” 08/02-07/05, \$173,673.

Baumslag, G., and **Cleary, S.**, “Grant for the New York group theory seminar,” NSF, 05/02-04/04, \$10K.

Benenson, G., **Neujhar, J.**, **Bennett, D.**, and **Gordon, W.**, “Teaching technology from everyday stuff - sustaining professional development online,” NSF, 2001-2004, \$1,577,323.

Benenson, G., “System-wide change for all learners and educators NSF math science partnership (MSP),” Wisconsin Center for Educational Research, 01/03-12/03, \$83,324.

Benenson, G., **J. Neujahr**, and **W. Gordon**, “Teaching technology from everyday stuff: sustaining professional development online,” NSF, 03/03-05/05, \$145,280.

Chen, C., “Bayesian analysis of duration models,” PSC-CUNY, 2004. \$4,400.

Chen, X., “Statistical analysis of efficient tests for testing VLSI chips,” PSC-CUNY, 2004, \$2,511.

Couzis, A., “Development of hydrocarbon based surfactant wetting agents to enable superspreading of water on hydrophobic surfaces”, NASA, 01/03-12/05, \$300K.

Couzis, A., **L. Gilchrist**, **C. Maldarelli**, **D. Rumschitzki** and **M. Vasquez**, “Development of a micro – and nano- fabrication facility,” DoD, \$180,000.

Calhoun, D., **A. Couzis**, **S. Fritton**, **L. Gilchrist**, **H. Makse**, **C. Maldarelli**, **D. Rumschitzki**, **M. Shattuck**, **J. Tarbell**, **M. Vázquez**, and **S. Weinbaum**, “Acquisition of a multifunctional confocal

microscope,” DOD, 11/03-10/04, \$370K.

Cowin, S., “Communications media for mineralized tissue research,” NSF, 03/01-03/06, \$473,670.

Cowin, S., “GAANN: Mathematical modeling of biological systems,” US Department of Education, 08/01-08/04, \$346,284.

Cowin, S., “A textbook on Tissue Mechanics,” Whitaker Foundation, 01/03-12/04, \$134,889.

Cowin, S., and **Weibaum, S.**, “Cytoskeletal stain amplification due to bone fluid flow,” NIH, 04/02-03/05, \$2,053,368.

Cowin, S., and **Weinbaum, S.**, “A national urban model for minority undergraduate biomedical education,” NIH, 09/01-08/06, \$2.24M.

Delale, F., G. Benenson, L.M. Jiji, B.M. Liaw, and C.B. Watkins, “Curriculum reform of the mechanical engineering program at City College,” NSF, 10/02-09/03, \$100K.

F. Delale, G. Benenson, J. Hammonds, and L. Jiji, “Redefining mechanical engineering: systemic reform of the mechanical engineering program at City College,” NSF, 09/03-08/06, \$1.5M.

Denn, M., Koberstein, J., et. al., “IGERT: multiscale phenomena in soft materials,” NSF, 11/02-11/07, \$2.91M.

Feng, J., “Rheological study of foaming of thermoplastics,” ATOFINA Chem. Inc., 03/03-02/04, \$56.8K.

Fillos, J., “Long term monitoring and process optimization of step-feed BNR facilities at NYC water pollution control plants”, NYCDEP, 10/02-09/05, \$2,850,241.

Fritton, S., “Delineating the pathways of bone interstitial fluid flow,” Whitaker Foundation, 05/02-04/05, \$239,809.

Fritton, S.P., “Determining the contribution of blood flow to interstitial bone fluid flow,” PSC-CUNY, 07/02 - 06/04, \$5,419.

Gilchrist, M.L., “Biologically-based self-assembled monolayers: multifunctional nanostructured surfaces from proteins,” DoD, 04/03-03/06, \$360,565.

Habib, I., “End-to-end high speed optical circuits for e-science applications,” NSF, 01/04-12/07, \$400K.

Habib, I., “Fast file transfer over optical circuits,” NSF, 09/03-08/06, \$120K.

Habib, I., “Optical control plane tradeoffs,” U.S. Sprint and Nortel Networks, 08/02-09/03, \$168K.

Isaacs, L. “Nucleation and crystallization of optically active Cr^{4+} -doped crystallites in glass ceramic matrixes,” PSC-CUNY, 07/03-06/04, \$2.5K.

Kawaguchi, A., and **A. Mowshowitz**, “Aviation mishap data mining tool,” NASA SBIR, 02/04-0/04, \$60K.

Khanbilvardi, R., “Cooperative center for remote sensing in science and technology,” NOAA, 10/03-09/04, \$2.5M.

Khanbilvardi, R., “NASA-University Research Center for Optical Sensing and Imaging (COSI),” NASA, 02/03-01/04, \$1.2M.

Khanbilvardi, R., “Development of real-time satellite precipitation estimation algorithm for mountainous regions of the western U.S.,” NOAA, 10/03-09/04, \$20K.

Koplik, J., “Molecular dynamics of fluid solid systems,” NASA, 02/0-11/03, \$45K.

Lee, J.W., “Feasibility of multiple functions in reactive separation systems, ACS-PRF, 09/02-08/04, \$35K.

Lee, J.W., “Shortcut design method for reactive distillation,” PSC-CUNY, 07/02-06/04, \$10K.

Lee, M., “C3 Systems modeling and simulation,” US Army, 01/01-04/05. \$23,228.

Lee., M., “Wireless sensor networks,” ARL-CTA, 2002-2007, \$1.45M.

Li, J., “CAREER: An integration of research and education on ferroelectric composites,” NSF, 10/02-08/06, \$342,815.

Li, J., “Interphase effect on elastic properties of some extreme heterogeneous materials,” PSC-CUNY, 04/03-06/04, \$5K.

Li, J., and **A. Sadegh**, “Acquisition of a measurement system for ferroelectrics research and education,” CUNY, 01/04-01/05, \$100K.

Liaw, B., and Delale, F., “Hybrid carbon-glass fiber/toughened epoxy thick composite joints subject to drop-weight and ballistic impacts at various temperatures,” U.S. Army, 05/03-05/06, \$400K.

Liaw, B.M., K. Subramaniam, and F. Delale, “Joint advanced nondestructive testing facilities for mechanical and civil engineering programs at CCNY,” CUNY, 2004, \$50K.

Liaw, B., and S. Berri, “Foreign object impact damage of advanced ceramics and ceramic matrix composites,” CUNY Collaborative, 11/03-05/05, \$100K.

Liaw, B., “Analysis and design of composite Sabot subjected to loading imparted by rifling during launching,” PSC-CUNY, 07/02-06/04, \$5,419.

Lucci, S., “Some insights into the learning capability of neural networks,” PSC-CUNY, 07/03-06/04, \$3,297.

Makse, H., “Statistical mechanics of particulate systems far from equilibrium,” NSF, 2003-2008, \$400K.

Makse, H., “Nonequilibrium thermodynamics of densely packed granular matter and compressed emulsions,” DoE, 2003-2006, \$305K.

Makse, H., D.L. Johnson, and O. Sindt, “Stress-dependent acoustics and dissipation in earth materials,” DoE, 2003-2006, \$255K.

Mowshowitz, A., “Anthony-pro aerospace human factors data mining,” Phase I NASA-SBIR grant (subcontract from Optimus Corp.), 01/04-06/04, \$14K.

Paaswell, R., “Regional exchange of scheduling data for New York State transit operators,” NYSDOT, 2003, \$1.3M.

Paaswell, R., “Estuary watershed plan,” NYCDEP, 2003, \$95K.

Parra, L., “EEG real-time analysis,” Honeywell/DARPA, 07/03-12/03, \$105K.

Parra, L., “EEG single trial analysis,” UNM/DARPA, 07/03-12/03, \$60K.

Parra, L., “Signal analysis in MRSI for brain tumor detection,” NCI grant under MSKCC/CCNY collaboration, 2004, 80K.

Ravindran, K., “Secure voting in distributed systems.” ITT Industries, 09/03-12/04, \$73K.

Ravindran, K., “Incorporating QoS of data delivery in distributed voting algorithms”, ITT Industries, 06/03-05/04, \$49.7K.

Ravindran, K., “User-assisted tools for behavioral monitoring of distributed information networks.” AFRL, 09/03-12/04, \$99K.

Rumschitzki, D., “Vessel structure and pressure: transport and atherogenesis ,” NIH, 04/02-03/06, \$1,064,200.

Sadegh, A., “Circuit breaker mobility,” ConEdison, 07/03-06/04, \$8.5K.

Sadegh, A., “Industrial associates program,” Nortrup Grumman, 07/03-06/04, \$10K.

Sadegh, A., “Design of a new aluminum car jack,” Alcoa, Inc., 07/03-06/04, \$14K.

Saadawi, T., Y. Sun, and U. Uyar, “US ARL Program: efficient reliable end-to-end communications,” Collaborative Scientific Alliance in Communications and Networks, 2001-2006, \$3.0M.

Subramaniam, K. and A.K. Agrawal, “Concrete deck materials properties,” NYSDOT, 04/03-03/05, \$125K.

Tarbell, J., “Shear stress effects on endothelial transport,” NIH, 12/00-12/05, \$1,221,882.

Tarbell, J., “Wall shear stress in the cardiovascular system,” NIH, 07/00-06/05. \$1,381,355.

Tarbell, J., “Prosthetic heart valve fluid mechanics and blood damage,” NIH, 07/01-06/06, \$1,228,944.

Tarbell, J., “Microgravity effects on transvascular transport and vascular control, NASA, 03/02-02/06, \$460K.

Tarbell, J., “Axial flow effects in proximal tubule,” NIH (sub-contract Yale), 07/03-07/07, \$445,394.

Tarbell, J., and S. Deutsch, “Prosthetic heart valve fluid mechanics and blood damage,” NIH, 07/01-06/05, \$1,228,944.

Vazquez, M., and E.C. Holland, “Microfluidic systems for analysis of glioma infiltration,” NCI-funded MSKCC-CCNY,

2004, \$75K.

Watkins, C., “Computer science, engineering and mathematics scholarships,” NSF, 03/00-02/04, \$275K.

Watkins, C., G. Gumbs, and **J. Koplik, M.M. Denn**, “CREST center for mesoscopic modeling and simulation,” NSF, 09/02-08/07, \$2.0M.

Watkins, C.B., and **Y. Andreopoulos**, “Molecular simulation of turbulence/collisional phenomena,” NSF, CREST Supplement, 09/03-08/04, \$100K.

Watkins, C., “Molecular simulation of dilute gas flows,” PSC-CUNY, \$2K.

Wei, J., PSC-CUNY, 07/02-06/03, \$4.2K; 07/03-06/04, \$3.5K.

Weinbaum, S., “To increase the number of minority Ph.D.’s in biomedical engineering,” Sloan, 09/01-08/05, \$148,250.

Weinbaum, S., “Creation of a new department and undergraduate degree program in BME using the resources of an urban consortium,” Whitaker, 09/02-08/03, \$445,733.

Weinbaum, S., Whitaker, 09/02-08/05, \$999,853.

Weinbaum, S., The Wallace H. Coulter Foundation, 04/03-03/05, \$2.2M.

Weinbaum, S., “Axial flow effects in proximal tubule,” NIH, 07/03-07/07, \$445,394.

Weinbaum, S., “Cytoskeletal strain amplification due to bone fluid flow,” NIH, 04/02-03/07, \$1,456,000

Wittig, A.E., “Critical evaluation of air pollutants in New York,” PSC-CUNY, 07/04-06/05, \$4.2K.

Wiley, M.B., K.R. Foster, J. Jelen, and **H. Ghedira**, “Environmental entrepreneurship partnership program at the City College of New York,” NOAA, 07/03-06/05, \$250K.

Wiley, M.B., Grasso, F.W., “Olfactory and hydrodynamic contributions to wake perception and wake-tracking behavior in catfish,” CUNY Collaborative, 11/03-10/05, \$100K.

Wolberg, G., “Log-polar transforms for optical image processing and target recognition,” ONR, 03/03-09/06, \$600K.

Wolberg, G., and G. Chaikin, “Novel algorithms for image registration,” CUNY Collaborative, 11/01-11/03, \$15,840/yr.

Xiao, J., “Development of a micro climbing robotic system,” PSC-CUNY, 07/03-06/04, \$5K.

Yu, H-H., and M. Mirkin, “Using scanning electrochemical microscope to study the effect of stress on surface reaction and the surface crack nucleation”, CUNY Collaborative, 09/03-08/05, \$100K.

Zhu, Z., “3D virtual classroom: the next generation learning environment,” CUNY CISDD, 06/03-05/04, \$8K.

Zhu, Z., “Integration of laser vibrometry with infrared video for multimedia surveillance displays,” AFRL/HECB, \$94,076, 08/24/03 - 10/24/04.

Zhu, Z., and **G. Wolberg**, “Integration of laser vibrometry, infrared and video for multimodal human detection,” CUNY, 02/04-02/05, \$50K.



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