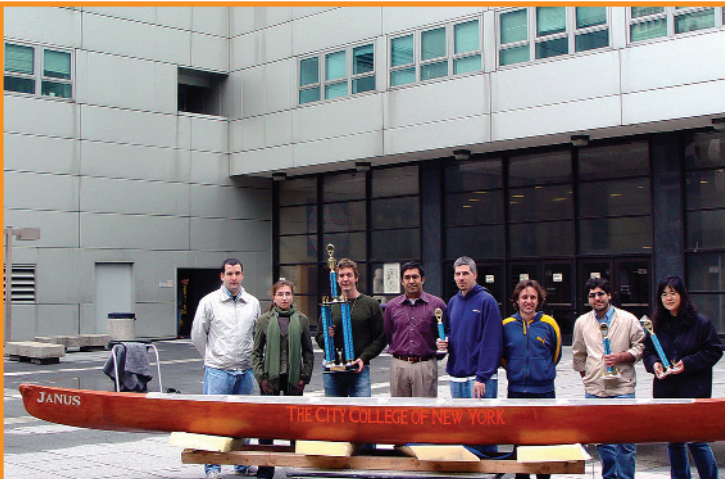


# THE SCHOOL OF ENGINEERING AT THE CITY COLLEGE OF NEW YORK

annual report

2004-2005



the  
City College  
of New York

# mission

# table of contents

To be an institution of national pre-eminence among schools of engineering and computer science schools, recognized for the excellence of its research and instructional programs:

To provide readily accessible graduate and undergraduate education in a broad range of fields to a highly diverse student body, including traditionally underrepresented minorities, 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 area and New York State;

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

Overview of The School of Engineering at City College	2
Daniel D. McCracken Receives Outstanding Teacher Award	4
Reza Khanbilvardi and NOAA CREST: On the Frontier of Urban Remote Sensing	5
Harold Shames '44 ME Endows Professorship in Biomedical Engineering	6
Robert B. Catell '58 ME Makes Gift in Support of Faculty Excellence at SOE	7
Alumni/ae Spotlight	8
Student Facts and Profiles	10
Faculty Honors and Achievements	16
New Faculty Profiles	18
Research at the School of Engineering	20
External Funding	21
New Facilities for Biomedical Engineering	26
Advisory Boards	27
Donors	28
Directory	inside back cover

## letter from the dean



*2004-2005 has been an exciting and rewarding time for me to serve the School of Engineering as Acting Dean. Our students continue to excel, our faculty continue to meet and exceed the highest standards of teaching and research, and we are improving our facilities and expanding our curriculum. Some of the year's highlights include:*

- *Our new E-newsletter brings the excitement of the School of Engineering to the world beyond Convent Avenue.*
- *Among major grants, the \$5 million refunding of NOAA-CREST ensures that this center, now in its fourth year, is rapidly becoming a powerhouse in the field of urban remote sensing.*
- *The Biomedical Engineering Department celebrated the opening of its new offices, laboratories and conference room with an event which drew the presidents of the Whitaker and Wallace H. Coulter Foundations.*
- *A new bachelor's degree in Earth Systems Engineering has been approved for 2006, putting us squarely on the cutting edge of engineering .*
- *After preparing for The ABET review for the past five years, all programs are accredited under ABET 2000 criteria as of September 2005. I am particularly proud of the accreditation of our new program in Computer Engineering and the six-year re-accreditation of our program in Computer Science.*

*We also take great pride in the faith and support of our graduates. In this Report you will read about major gifts to the School of Engineering made by two of our most committed alumni — Harold Shames and Robert Catell. Their generosity will help us to continue to attract faculty and students whose qualifications are outstanding.*

*Of course, all of you have heard the most exciting news of all: shortly after the end of the period that this Annual Report covers, The College announced the largest single gift to not only CCNY but to any City University college: Founder and former Chairman of Intel — and CCNY School of Engineering alumnus — Andrew Grove gave \$26 million to the SOE, which was, in November of 2005, renamed The Grove School of Engineering in his honor. I know that you will agree with me that the Grove gift will bring world-class opportunities for generations of gifted engineering students, and enable The Grove School of Engineering to take its place among the best schools of engineering in the nation. I believe that this enormous opportunity comes to us because of the kinds excellence reflected in this report, and it is my pleasure to present it to you.*

Sincerely,

A handwritten signature in black ink that reads "Joseph Barba". The signature is written in a cursive, slightly slanted style.

Joseph Barba, Acting Dean

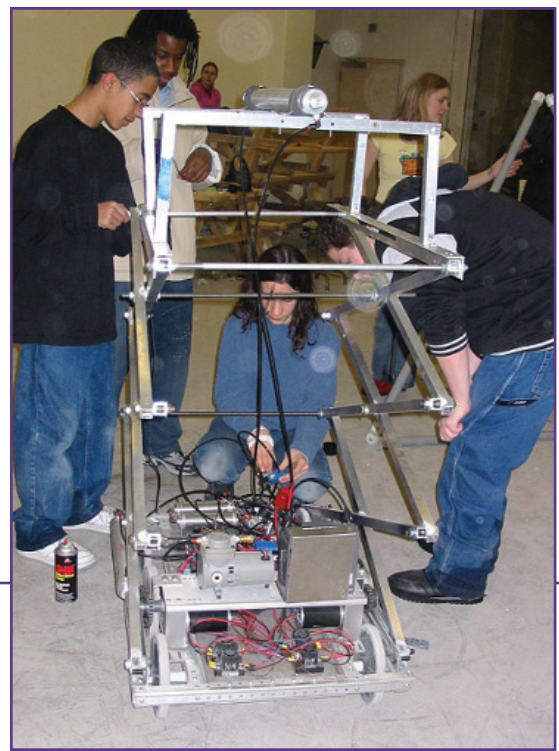


The School of Engineering at The City College of New York is home to an exceptional publicly supported engineering program in the heart of New York City.

Situated on a 36-acre campus in northern Manhattan, distinguished by some of the country's earliest and still most beautiful university gothic architecture, the School benefits from the proud heritage and high record of achievement of The City College - one of the single most powerful avenues of access to the American Dream in our nation.

CCNY's School of Engineering was one of the first public institutions of its kind, and is still the only public school of engineering in New York City. The School's ties to engineering go back to 1853, when City College was known as the Free Academy of New York, and a course in civil engineering was required for all students. In 1919, the College's Board of Trustees approved the creation of a separate School of Technology with its own dean and faculty, and in 1962 it formally became the School of Engineering and moved to its current home in Steinman Hall.

The SOE holds a position of national standing among public schools of engineering, and is recognized for the excellence of its instructional and research programs, particularly in technologies with relevance to New York City and New York State. It also leads in the breadth of its offerings, with bachelor's, master's, and doctoral degree programs in seven engineering fields - biomedical, chemical, civil, computer, electrical and mechanical engineering, and computer science.



Continuing in the tradition of the City College mission, access and excellence, the School of Engineering proudly takes its place as one of the most diverse schools in the nation, consistently graduating high numbers of women and other underrepresented populations, working adults, and immigrants.

Mirroring the renaissance that has spread across City College in recent years, the School of Engineering has experienced a period of dynamic growth. Over 50% of the students who are admitted to the CCNY Honors Programs choose engineering as their major field of study. In addition, large numbers of graduates from the New York City special high schools, including Stuyvesant, Bronx Science, Brooklyn Tech, and City College's own High School for Math, Science, and Engineering, now make City College their first choice.

### Some Statistics

Engineering consistently remains the choice of more freshmen than any other major at City, and it is selected by 24% of all undergraduates.

The School of Engineering is the second most popular area for graduate study at City College.

Women account for 29% of undergraduate and graduate engineering majors, compared with 11% nationwide.

Asians and Hispanics account for the SOE's largest ethnic percentages.

Computer science, electrical and civil engineering continue as the SOE's favorite areas of specialization.

### The Office of Student Programs

Time and time again, when asked what has helped them most to succeed at the School of Engineering, graduating seniors will say "Dean Brown's office." By that they mean the Office for Student Programs headed by Assistant Dean A. Ramona Brown.

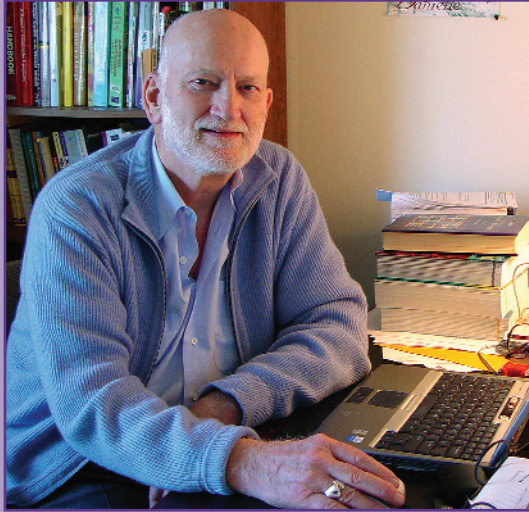
"We interact very closely with students and are in a position to provide on-going encouragement and address problems as they arise," says Dean Brown, "Our goal is to help students excel academically."

Many engineering students have participated in two highly acclaimed programs, the Program for Retention of Engineering Students (PRES) and Transfer, Recruitment, and Achievement at City College in Engineering (TRACC). These and other initiatives offer academic and professional support services that 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. The Office of Student Programs provides the critical link between the classroom and the cooperative and summer internships that are an essential complement to academic studies. Its career counseling services hone interview skills and business etiquette and guide students through the application process for research programs at CUNY and other institutions and for opportunities in industry.



Student Programs -Left-Right: Ashley Thornhill, Yaskira Paulino, Rawlins Beharry  
Dean Ramona Brown, Regina Pierce, Nelcida Rodriguez, Veronica Zhune



“Being in the classroom with students is what keeps me going.”

## Daniel D. McCracken of Computer Sciences Receives SOE’s Outstanding Teacher Award

Professor Daniel McCracken wrote the first computer programming textbook in 1957, and his passion for computer science continues after almost fifty years of writing, consulting, public speaking and teaching. "I came into the workforce as computers were emerging," he says, "and I knew in college that this was what I wanted to do. I hate being bored. This field changes at a blinding rate, so I am continually doing something new."

It might be difficult to find someone with a more eclectic background than Professor McCracken, who holds degrees in mathematics and chemistry from Central Washington University and a Master of Divinity from Union Theological Seminary, and has not only authored many of the standard works on computer programming but also edited *To Love or Perish: The Technological Crisis and the Churches*, with Margaret Mead.

Among his many honors, Professor McCracken is a Fellow of the American Association for the Advancement of Science and the Academy of Computing Machinery, an honorary member of the Golden Key National Honor Society, a recipient of ACM's Award for Outstanding Contributions to Computer Science Education and the Norbert Wiener Award for Social and Professional Responsibility.

In 1981, Mr. McCracken came to the City College Computer Sciences Department as a visiting professor and never left. "I had wanted to be a teacher all my life," he says. "I love the diversity at City and admire the way our students, many of whom hold full time jobs and are raising families, hang in here and get their degrees. Being in the classroom with them is what keeps me going."

The admiration is mutual. A member of the class of 2002 sums up the thoughts of many of her peers when she writes, "Professor McCracken has a natural instinct and almost a compulsion to disseminate his knowledge, his curiosity and his enthusiasm. He has been an inspiration and a guide to his students. He has also touched the lives of many students with his humane outlook."

A source of great pride to Mr. McCracken is the capstone course he taught this year. "The students," he explains, "learned and applied the up-to-the-minute J2EE/WebSphere technology, which has a dominant position in building large Web-based e-commerce applications. The largest employer in New York is the financial services industry, and our students will be ready to compete!"

## Reza Khanbilvardi and NOAA-CREST: On the Frontier of Urban Remote Sensing

Satellites send vast quantities of data back to earth to forecast future environmental conditions, analyze current events and better understand past environmental disasters. Yet only a fraction of what is received is actually being used for scientific or engineering purposes. Reza Khanbilvardi plans to change that.

Professor Khanbilvardi, City College NOAA Chair Professor of Civil Engineering, is developing techniques and algorithms to transform more of that data into information that state and local environmental agencies can work with to best manage our nation's natural resources. As head of the NOAA Cooperative Remote Sensing Science and Technology (CREST) Center, he oversees research to monitor the environment, predict natural disasters, and analyze and estimate anthropogenic and non-anthropogenic impacts on the environment.

The problems CREST confronts are multifaceted; no single satellite has everything; integrated data from different satellites is necessary to develop both short-term "nowcasting" (0-6 hours) and longer term forecasting capability. "The Center's new satellite receiving station, to be created at CCNY this year," says Dr. Khanbilvardi, "will make CUNY one of the few universities in the country capable of downloading, processing and archiving satellite data on a continuous timeline."

Much of the work involves finding ways to compensate for errors in data from older satellites, using sensors from newer satellites to forecast things they weren't originally designed for and improving accuracy. A growing concern is hydro climactic changes stemming from global warming, such as precipitation changes, urban heat island effects, and algae blooms that can choke the air supply to marine animals. To meet these challenges, CREST's multidisciplinary teams use remote sensing equipment and techniques to develop new technologies, new algorithms and computational techniques that measure changes in environmental conditions.

"We have to gear up for new technologies," Professor Khanbilvardi says. "New sensors, new analysis, and new data management techniques are needed to store, archive, compress, retrieve and process data from a new family of satellites that will carry more powerful instruments."

CREST has benefitted from two grants totaling \$12.5 million from the National Oceanic & Atmospheric Administration, and faculty proposals have brought in an additional \$3.5 million from NOAA, NASA and the Department of Defense. The Center is planning to submit a new five-year proposal to NOAA which it hopes will result in a further \$10 to \$12.5 million.

“Remote sensing will help us address urban environmental hazards like asthma in the South Bronx, predict precipitation from severe storms, or trace the effects of climate change...”



**“I consider this a leveraged investment. If thousands are invested in a talented professor, grants can come back in the millions.”**



## **Harold Shames, '44 ME, Endows Professorship in Biomedical Engineering**

For over 10 years, Harold Shames has been a dedicated and visionary supporter of one of the most exciting new areas at The City College of New York. Now, he has stepped forward to establish the Harold Shames Professorship in Biomedical Engineering, the first in this cutting edge discipline at CCNY.

Mr. Shames' interest in the field began in 1994, while co-chairing his 50th class reunion. There he met University Distinguished Professor Sheldon Weinbaum, who had begun offering courses in biomedical engineering through the Department of Mechanical Engineering. Hearing Professor Weinbaum - one of only eight living members of all three of our national academies - predict that biomedical engineering would do for the twenty-first century what computers had done for the twentieth, Mr. Shames was hooked. The result was his initial gift, the Harold Shames Biomedical Engineering Annual Award for outstanding students.

Since then, Mr. Shames has watched those early courses develop into a full-fledged Department of Biomedical Engineering and has seen the creation of the New York Center for Biomedical Engineering, a consortium of the CCNY Biomedical Engineering Department and major hospitals in the New York metropolitan area.

"I consider establishing this chair to be a leveraged investment," he says. "Research in biomedical engineering requires support from both private and public sources. If thousands are invested in a talented professor, grants can come back in the millions."

Mr. Shames began his career as a rocket scientist for NASA's predecessor agency. Then, he and his brother, Sidney, '40, ME, also a generous supporter of City, developed Melard Mfg. Corp. into a major manufacturer of household plumbing products. In 1994, they sold the company to the big-board conglomerate, Masco.

"President Gregory Williams has ushered in a new era of academic excellence at the College and raised its image with prospective students, faculty, alumni, and the community at large," Mr. Shames says proudly. We have professors like Maribel Vazquez, who holds a doctorate from MIT and chose City's Biomedical Engineering Department over Rockefeller University's. And we have students like David Bauer, 2005 Intel Science Prize winner, who chose City over Yale and Harvard. With people like these coming to City, I see a wonderful future for the College."



## Robert Catell, '58 ME, Supports Faculty Excellence at SOE

Robert Catell, Chairman and Chief Executive Officer of KeySpan Corporation and the former chair of CCNY's Engineering Advisory Board, has made a significant gift to the City College of New York School of Engineering to reward exceptional young faculty.

"I hope that my gift will enhance the ability of young faculty to be great teachers, and that this in turn will provide a quality education for City College students," says Mr. Catell. "I also hope that the gift will increase the College's ability to attract and retain the best faculty."

Mr. Catell's gift creates four Catell Fellows who will receive a yearly stipend as they make their way to full professorship. Each year, a fifth young faculty member will be given a one-time award for research excellence.

"Without City, I would not have been able to go to college," says Mr. Catell. "City gave me an excellent engineering education. It was the foundation upon which I built my career. I would like other young people to have that same opportunity."

Mr. Catell joined Brooklyn Union straight out of City College's School of Engineering in 1958. His rise through the managerial ranks culminated in his 1991 election as Brooklyn Union's President and Chief Executive Officer, and he was named Chairman and Chief Executive Officer in 1996. In 1998 Brooklyn Union became KeySpan Corporation when its parent company merged with the Long Island Lighting Company, retaining Mr. Catell at its head.

A leader in his industry and his community, Mr. Catell serves on many prestigious boards. He is the co-author of *The CEO and the Monk: One Company's Journey to Profit and Purpose*. A long-time supporter of the School of Engineering, Mr. Catell is also a current member of the City University of New York Chancellor's Advisory Board.

"I am impressed with the professionalism of the CCNY/CUNY system and with the quality of the students at City," he says. "As we look to the future, it is important to maintain that excellence, to be ever more inclusive and to increase the opportunities we offer young people. I would like to encourage other graduates who have been as fortunate as I have to give something back. They will enjoy the immense satisfaction of helping young people get a good education."



**City gave me an excellent education... the foundation of my career. I want other young people to have that same opportunity."**



The year was 1921 and Albert Einstein, a giant in the scientific world after the validation of his general theory of relativity, had landed at Ellis Island on his maiden visit to the United States.

His first lecture stop? The City College of New York, then, as now, a hub of research. To commemorate the 100th anniversary of the Einstein Papers, and to celebrate its role in Einstein's inaugural visit to the U.S., City College hosted "Einstein's in the City," an international student research conference, April 11-12, 2005, highlighting students' participation in the academic research endeavor.

More than 250 students presented the findings of their research in science and engineering either as panel participants or in poster sessions. Besides CCNY, they represent such institutions as the University of Pittsburgh, Queens College and Vienna University of Technology in Austria.

The event brought together four of CCNY's seven living Nobel Laureates: Dr. Arthur Kornberg (Medicine, 1959), Dr. Herbert Hauptman and Dr. Jerome Karle, who shared the 1985 Prize in Chemistry, and Dr. Leon Lederman (Physics, 1988). They participated in a panel discussion entitled "What We Don't Know Will Hurt Us: Scientific Literacy and Science Policy in the U.S.," moderated by Dr. Myriam Sarachik, Distinguished Professor of Physics at CCNY.

Featured prominently in the conference were three engineering graduates, Dr. Peter Delfyett, Trustee Chair Professor of Optics, ECE & Physics, University of Central Florida, Dr. Kathleen Stebe, Professor of Chemical and Biomolecular Engineering, Johns Hopkins University, and Dr. Paul West, Research Fellow, Hospital for Special Surgery, New York and adjunct professor in CCNY's Mechanical Engineering Department. They and CCNY Physics graduate Dr. Arden Ayube Warner, Staff Scientist, Fermi National Accelerator, spoke of their work in a panel entitled "A New Generation of Researchers."

Top row from left to right: Arden Ayube Warner, Kathleen Stebe, Peter Delfyett, Paul West  
Bottom row from left to right: Arthur Kornberg, Herbert Hauptman, Leon Lederman, Jerome Karl



**Michael  
Bluestein  
'62 ME  
Receives  
SOE Alumni  
Annual  
Career  
Achievement  
Award**

Dr. Maurice Bluestein graduated from SOE with the Engineering Alumni Award. He earned a master's from New York University and, in 1967, a doctorate in bio-medical engineering from Northwestern University. His first career was as a practicing engineer, and in 1988 he became president and chief executive officer of Automatron Engineering in Indianapolis.

Dr. Bluestein began his second career as a part-time lecturer in mathematics at the Purdue School of Science in Indianapolis, and soon moved into full-time teaching in the Department of Mechanical Engineering Technology at what is now the Indiana University-Purdue University. Currently director of the University's Technology Graduate Program, his classroom schedule in a typical year includes heat/power systems, fluid power, applied fluid mechanics, and applied thermodynamics and instrumentation, a course he developed that is now required for a bachelor's degree in mechanical engineering technology.

Dr. Bluestein has been honored with the Indiana University Teaching Excellence Recognition Award, the Dean's Special Recognition Award and the Abraham Max Distinguished Recognition Award. He was a peer reviewer for NSF's Instrumentation and Laboratory Improvement program. He is co-editor of *Thermodynamics and Heat Power* (7th edition), and has served as a consultant for national companies, including Bristol-Myers Squibb, Dynetech and Delphi Electronics (GM).



**Reginald Best  
'82 EE  
Addresses  
Annual PRES  
Dinner**

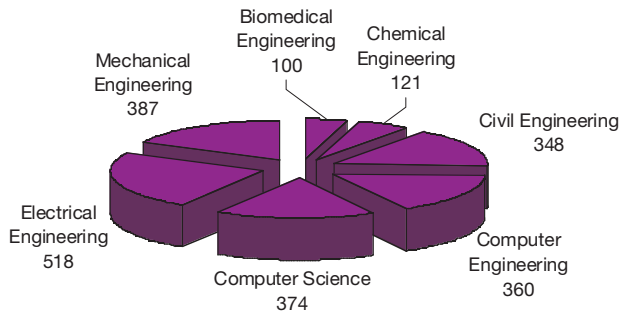
"The School of Engineering plays a vital role in preparing engineers for employment and graduate school by providing a first class education at nominal tuition. It is often the only avenue through which talented people who don't have a lot of money can develop their skills," says Reginald Best. "It was an honor to address the PRES dinner and really good to see so many young engineers being minted who come from such diverse backgrounds."

Mr. Best is Executive Vice President at AEP Networks, a privately held company specializing in network and application access security. He has founded several companies, including Netilla Networks Inc., Access Works Communications, and an Internet remote access company acquired by 3Com Corporation. He was also a co-founder of Teleos Communications, which is now part of Madge Networks.

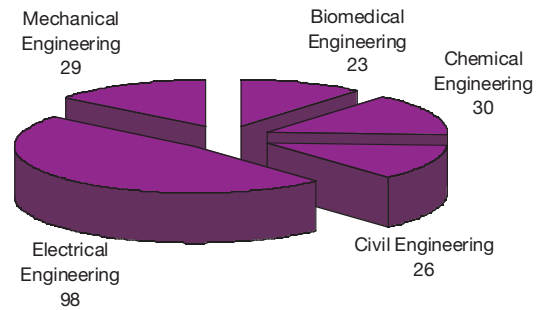
AEP Networks was formed as a result of the merger between AEP Systems Ltd. and Netilla Networks Inc. in 2004. Mr. Best oversees the company's Secure Application Access Business unit and works globally with leading technology partners such as Symantec, Fujitsu Siemens, Hewlett-Packard and Microsoft.

Mr. Best, who earned his MS in Electrical Engineering at Columbia, says of his alma mater, "City College is where I learned the basic and fundamental skills of engineering. It is good to see that the College is continuing to do great things."

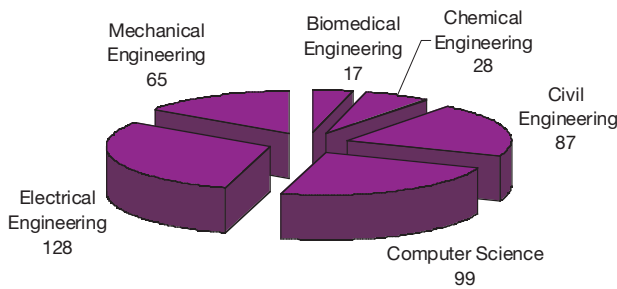
**Undergraduate Enrollment Spring 2005**  
Total: 2208



**Ph.D. Enrollment Spring 2005**  
Total: 206



**Master's Enrollment Spring 2005**  
Total: 453



**Degrees Granted 2004–2005**

Bachelor's degrees	Master's degrees	Ph.D.s degrees
208	186	81

Tuition and Fee Schedule Fall 2004		New York City & 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	\$3,750 per semester	\$555 per credit
	Part-time	\$315 per credit	\$555 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

\*Includes international Students who have lived in New York State for less than one year

## The Greening of Steinman Hall:

### Civil Engineering Student Gary Chan Wins \$24G EPA Fellowship for Engineering Project

Grass not around but on top of Steinman Hall? Ask third-year civil engineering major and honors student Gary Chan not so much *how* but *why* does his garden grow?

Exploring the benefits of "green roofs" in the urban environment as part of an innovative interdisciplinary program in environmental entrepreneurship, Mr. Chan was one of 15 undergraduates nationwide awarded a Greater Research Opportunity grant from the U.S. Environmental Protection Agency. The fellowship provides up to \$17,000 in academic support annually plus up to \$7,500 for a three-month summer internship at an EPA facility.

Mr. Chan's research entails creating a green roof, or vegetated rooftop, on 200 square feet of Steinman Hall, the 45 year-old eight-story building housing CCNY's School of Engineering. The green roof will be monitored for a year before the data is evaluated.

"Green roofs are emerging as a very effective means of addressing many of the environmental concerns that exist in today's urban centers," Mr. Chan explained. "My aim is to demonstrate how they can play a dramatic role in confronting the problems of storm water runoff. In cities such as New York, where the sewage and storm water systems are combined, combined sewage overflows are a real threat to the surrounding marine and coastal environment any time there's heavy rain."

In addition, Mr. Chan's research will attempt to determine the cost/benefit analysis for green roofs versus more traditional measures. The results of his study could yield further proof that green roofs can be one of the most environmentally friendly and economical solutions to combined sewage overflows in large cities.

Born in Manhattan to immigrant parents from Hong Kong, Mr. Chan began the project last year in collaboration with Civil Engineering Professor Megan B. Wiley, one of his mentors and a co-founder of the Environmental Engineering Entrepreneurship Partnership program. A joint initiative of the College's School of Engineering and Economics Department, the Program's mission is to support the development of environmentally conscious engineers and entrepreneurs of the future.

Professor Wiley said she was thrilled by the interest Mr. Chan's study had garnered. "We've been contacted by engineering consultants, the (New York City) Department of Environmental Protection and graduate students interested in our results," she said.



Gary Chan and the beginnings of Steinman's "green" roof

# undergraduates



Seth Cutler . Mechanical Engineering

**“I am fortunate to have had professors who have nurtured my interest in engineering through their teaching styles and ability to motivate students.”**

“I have always had an interest in how things work,” says Mechanical Engineering major Seth Cutler. “Internships provided real world applications for what I learn in class.” At DMJM+HARRIS, Seth shadowed a mechanical engineer and used Auto-Cad to draw engineering diagrams of HVAC systems. As a quality intern at GE Transportation (Rail), he learned about the propulsion sector. At the School of Engineering Seth grasps every opportunity for hands-on engineering. He participated in the Cessna/ONR student design/build/fly competition of the American Institute of Aeronautics and Astronautics, and is involved in the Society of Automotive Engineers’ 2006 Mini-Baja East competition, designing the transmission for the Baja. Last but certainly not least, Seth will serve as president of City College’s student government for the 2005-2006 academic year.



Danilsa Fernández . Electrical Engineering

**“I am a people person. I plan to apply my skills and understanding of engineering to the management field.”**

A new mother who is balancing the responsibilities of family life with a demanding academic schedule, Danilsa Fernández also serves as co-chair of CCNY’s Pre College Engineering Day, treasurer of the Society of Women Engineers, and public relations chair of the Society of Hispanic Professional Engineers. She has honed her engineering skills through three very different internships. At the engineering consulting firm, DMJM+Harris, she worked on a variety of client sites, preparing reports and updating blueprints using AutoCAD; in remote monitoring and diagnostics at General Electric Transportation Systems she got a sense of how corporate America works; as an Electrical Engineering intern at Northrop Grumman Corporation she learned about the military-industrial environment.



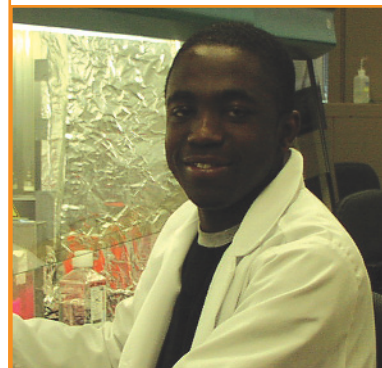
Linelle Fontenelle . Chemical Engineering

**“When I transferred to City, the summer preparation I received in SOE’s TRACC program gave me the boost which helped me succeed in a new environment.”**

Linelle Fontenelle, who transferred to City from Central Florida Community College, has majored in Chemical Engineering with a concentration in Biomedical Engineering. The road from SOE is now leading her to a doctoral program at Cornell. Linelle, who has been studying the biomedical applications of chemical engineering processes, will narrow her focus, possibly to drug delivery in the body. Last summer, she gained industrial experience as an intern at the Dow Chemical Company in Louisiana, where she worked on various aspects of cooling tower efficiency. “The internship gave me an opportunity to apply what I had been learning at City,” she says. In addition to excelling in the classroom, Linelle has served as president of Tau Beta Pi and the Golden Key International Honor Society and as a senator in student government.

**“The engineering program is very challenging, but there is plenty of support to help you succeed if you are determined to do well.”**

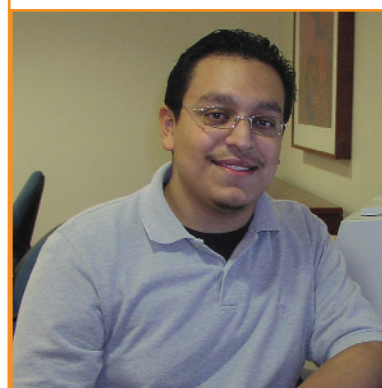
While in high school, Joelson Guillaume participated in a summer program offered by the Department of Biomedical Engineering. From there he was accepted into the bachelor's program and awarded a scholarship through the New York Center for Biomedical Engineering. He is doing research with his mentor, Distinguished Professor John Tarbell, on the glycocalyx, which is the inner surface layer of the endothelial cells, and the role of its component heparan sulfate in the production of nitric oxide. “The department is excellent,” he says. “I have already taken a class with Distinguished Professor Stephen Cowin, and will have one with Dr. Tarbell.” Joelson is a workshop leader in the CCNY Chemistry Department. This, he says, allows him to develop leadership skills while helping other students. He is looking towards medical school or a career in the pharmaceutical industry.



**Joelson Guillaume**  
**Biomedical Engineering**

**“I hope eventually to become a college professor. The professors at SOE have motivated me to take that path.”**

A member of the CUNY Honors College, Edgardo Molina has taken advantage of all the resources the University has to offer. He has studied computer vision and computer graphics, working on a virtual model of Manhattan traffic, and has helped with the development of a graphical user interface for image processing software. During his summers he has taken part in the NASA-RISE program at the University of Michigan and interned at New York Life Insurance, where his work on web technologies dovetailed nicely with what he had done in the classroom. He studied in Hawaii, and, thanks to Honors College funding, in the Galapagos. “Study abroad is a wonderful experience which changes you,” he says. Following graduate school, Edgardo is leaning towards a career in academia where he hopes to emulate his engineering professors.



**Edgardo Molina . Computer Science**

**“My parents’ faith in me and my determination to become a computer engineer have propelled me in pursuit of the American dream of educational advancement.”**

Spencer Moraes’ family came to the United States from India while he was a high school student. His initial academic interest, electrical engineering, evolved into a fascination with the engineering aspects of computer science. Spencer praises his mentors at City for their support. “They take into account that I am working as well as studying and give me enough time to fulfill my academic requirements,” he says. He has been a college aide/computer associate at New York City Transit and is currently an intern in the information services department of Human Rights First. He credits SOE’s Office of Student Programs with helping him get these positions. Spencer holds the Charlotte and Arthur Zitrin and Peter Vallone Scholarships and has been on the CCNY Dean’s List for three years. In due course, he hopes to couple his IT training with an MBA.



**Spencer Moraes**  
**Computer Engineering**

# graduates

**“At SOE, the courses are very advanced, requiring a lot of preparation on the part of instructors, and, with students from many countries, the environment is cosmopolitan.”**



**Mohamad Ali-Ahmad . Civil Engineering**

Mohamad Ali-Ahmad's field is the rehabilitation of bridges using fiber reinforced polymers. His research, supported by the New York State Department of Transportation and Mitsubishi Chemical Corporation, is extremely timely: One-third of the bridges in the United States are structurally deficient, and the processes he is working on, under Drs. Michel Ghosn and Kolluru Subramaniam, could extend their lifespan by a decade. Mohamad, who has held CUNY's prestigious Robert Gilleece Fellowship for four years, came from Lebanese University in Beirut. He represents all engineering majors on CCNY's Ph.D. Executive Committee, and Civil Engineering students on CUNY's Doctoral Student Council. He received his doctorate in June 2005 and plans to teach.



**Georgina Bermudez  
Biomedical Engineering**

**“I am not sure that I would be in graduate school were it not for CCNY. This school has allowed me to continue my education through its personal and financial support.”**

Georgina Bermudez is a 2004 graduate of Stony Brook University in Biomedical Engineering. At City, she is working under Dr. Sheldon Weinbaum, placing bone cells under fluid stress and assessing proteins for changes in expression. “The Biomedical Engineering program at City is pushing me to limits I did not know existed,” she says. “It is an environment in which I feel I can excel.” In the summer, Georgina does research at Albert Einstein College of Medicine with Dr. David Spray, thanks to the New York Center for Biomedical Engineering. Working at Einstein is one of the opportunities which attracted her to City. She has already had industrial experience at the Stony Brook Center for Biotechnology and experience teaching genetics and relevant research techniques in the WISE: Women to Women Mentoring Program.



**Alexis Pierides . Mechanical Engineering**

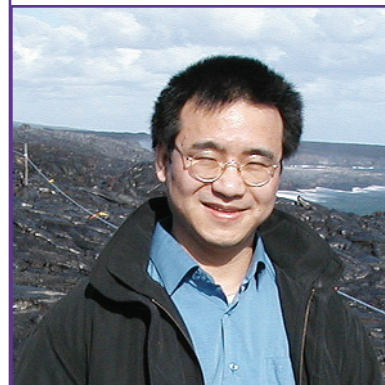
**“In the Mechanical Engineering Department, you can always find help, no matter which door you knock on. This generates a tremendous sense of commitment.”**

CCNY has been Alexis Pierides's academic home since he began his bachelor's degree in Mechanical Engineering. A master's followed with a focus on solid mechanics. He is now engaged in his doctorate with a change of emphasis to fluid mechanics. Alexis is working on the development of innovative technologies for aerodynamic control of future aircraft. The control system under development consists of many small delta-wing shape flaps which will be located on the external surface of the aircraft, will always remain retracted so that their contribution to drag is minimized, and will be deployed when needed. Piezoelectric materials and MEMS technologies are used to activate these control surfaces. Alexis has taught computer aided drafting and design, aerostructure design, and aerodynamics. In addition to teaching, he enjoys project management.



**“I appreciate the cultural diversity at City and the freedom to express ideas. The research environment and the faculty are excellent, and my mentor cares deeply about my work.**

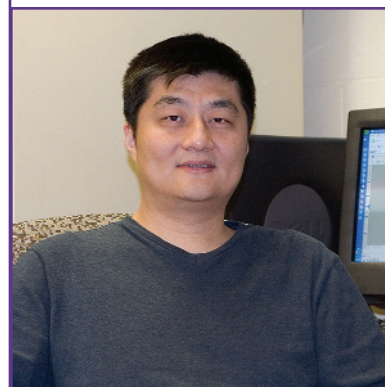
Guoliang Qian holds master’s degrees from CCNY in Biochemistry and Computer Science. His Ph.D. studies, under Dr. Akira Kawaguchi, focus on data-mining theory and techniques and software engineering theory and practice. For New York State’s Department of Transportation, Guoliang has developed a bridge performance analysis system which uses a stochastic model to forecast bridge deteriorating behavior in order to efficiently allocate maintenance resources. For the Bayer Corporation, he served as chief software engineer on the design and implementation of a wireless blood glucose monitoring system. The project explored the impact of wireless technology on the treatment of diabetes and the remote management of medical information.



**Guoliang Qian . Computer Science**

**“I admire City College’s culture of continuous learning. The ability to return as a mature student has allowed me to reorient my career.”**

Qiang Song came to City College following several years of management experience in China. At SOE, he met Dr. Ibrahim Habib, whom he admired for his “elegant teaching style and profound knowledge,” and jumped at the chance to join him in research on GMPLS networks. Together, they have been working on deployment-oriented projects funded by Sprint, Nortel and NSF. For Sprint/Nortel, they identified how new optical networking equipment could be used to simultaneously increase revenues and cut operating costs. In the NSF’s CHEETAH project, they are developing software for an experimental optical network linking supercomputers at Oak Ridge National Laboratory with computers at City College and three other universities. Following his doctorate, Qiang plans a career in IT consulting or project management.



**Qiang Song . Electrical Engineering**

**“My mentor really wants people to learn. He looks out for his students.”**

Jimmy Toussaint grew up in Tobago, where he was a fireman for eight years before he came to New York City specifically to get an education. City College afforded him that opportunity. After earning his BE in Chemical Engineering, he entered the doctoral program, where he is studying transmembrane water movement. He is attempting to determine whether aquaporins, which are channels through which water crosses cell membranes, can be found in the endothelial layers of large arteries. If their presence is established, he will study how their regulation of the water coming through them contributes to overall water flow, part of which carries cholesterol across the endothelium. In addition to his SOE mentor, Dr. David Rumschitzki, Jimmy is working with Columbia University physiologist and cardiologist, Dr. Kung-min Jan and City College biologist, Dr. Mark Pezzano. He hopes to pursue a career in academia.



**Jimmy Toussaint . Chemical Engineering**



**Stephen C. Cowin**

**L. Stephen C. Cowin, Distinguished Professor of Mechanical and Biomedical Engineering**

Fellow, Biomedical Engineering Society

Chairman and Organizer, Seventh International Workshop on Bone Fluid Flow, The Graduate Center of The City University of New York, September 20-21, 2005

**Hosni Ghedira, Assistant Professor of Civil Engineering**

CUNY Honor Certificate for recipients of major institutional grants for "education and service"

**Ibrahim Habib, Professor of Electrical Engineering**

Who's Who in America, 2004, 2005 and 2006

**Myung Jong Lee, Professor of Electrical Engineering**

IEEE Consumer Communication and Networking Conference 2005 Best Paper Award (with Chunhui Zhu and Tarek N. Saadawi)

**Janos Pach, Distinguished Professor of Computer Science**

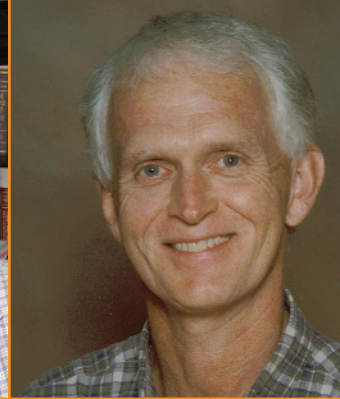
Distinguished Professorship, CUNY

Paul Erdos Lectures, Hebrew University, Jerusalem

Conference on External Combinatorics honoring 200 years of P. Frankl, Z. Furedi, E. Gyori and J. Pach



**Janos Pach**



**John Tarbell**

Japan Conference on Discrete and Computational Geometry in Honor of J. Pach in his 50th Year

**Kaliappa Ravindran, Associate Professor of Computer Science**

ASEE Summer Faculty Fellowship, tenable at the USAir Force Research Lab, Rome, NY

**Umit Uyar, Associate Professor of Electrical Engineering**

CCNY Outstanding Teacher Award, 2004-2005

**John M. Tarbell, Distinguished Professor of Biomedical Engineering**

Lissner Award of the Bioengineering Division of ASME

Fellow, Biomedical Engineering Society

**Charles B. Watkins, Professor of Mechanical Engineering**

Fellow, American Association for the Advancement of Science

Howard University, College of Engineering, Architecture and Computer Sciences Alumni Excellence Award

**Sheldon Weinbaum, Distinguished Professor of Mechanical and Biomedical Engineering**

Fellow, Biomedical Engineering Society



**Sheldon Weinbaum**

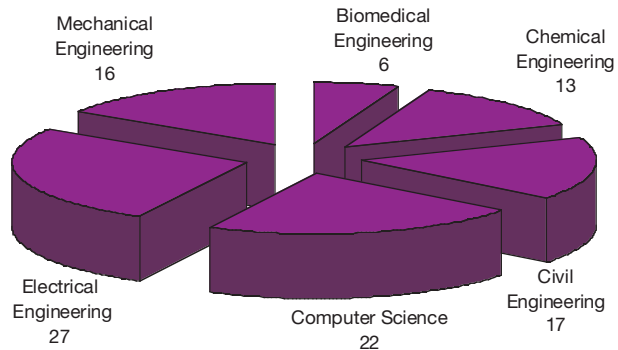
## In 2004-2005 SOE faculty members:

Served in an editorial capacity on 20 archival journals

### and produced:

- 2 books
- 17 book chapters
- 239 journal articles
- 180 conference papers
- 5 patents

**Faculty Distribution 2004-2005**  
Total Faculty: 101



## A Year of Honors for Former SOE Dean Charles B. Watkins

Dr. Charles B. Watkins, who served as Dean of the School of Engineering from 1986 to 2000, has been named a Fellow of the American Association for the Advancement of Science and has been honored by his alma mater, Howard University, with its College of Engineering's Architecture and Computer Sciences Alumni Excellence Award.

Dr. Watkins was named as AAAS Fellow "for distinguished leadership in science and engineering education and research, fostering technological innovation, and increasing participation of underrepresented groups in science and engineering careers." He is also a Fellow of the American Society of Mechanical Engineers and an Associate Fellow of the American Institute of Aeronautics and Astronautics.

For Dr. Watkins, the primary aim of undergraduate engineering education is to develop students into professional engineers who are equipped to enter today's globally competitive industries or to pursue graduate studies at the forefront of technology. As Dean, he engaged the School of Engineering in ECSEL, an NSF Engineering Education Coalition dedicated to incorporating design throughout undergraduate engineering education and to

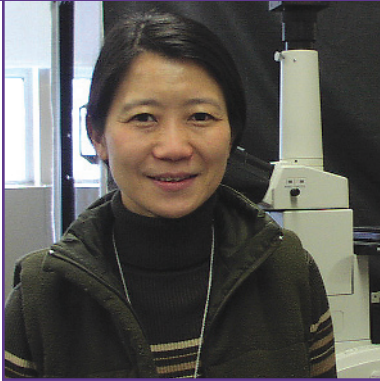
the recruitment and retention of women and underrepresented minorities in engineering. He worked to establish the Program for the Retention of Engineering Students at City College, for which he received the Presidential Award for Science and Engineering Mentoring along with Assistant Dean Ramona Brown.



Dr. Watkins is currently Professor of Mechanical Engineering at City and Director of the CREST Center for Mesoscopic Modeling and Simulation. His research focuses on atomistic simulations of microscale fluid dynamic phenomena. He is coauthor, with Dean Brown, of a recent landmark study examining issues related to African American student success in engineering.

## new faculty

*The heart of a great university is its faculty, and the School of Engineering at The City College of New York is committed to recruiting and retaining outstanding teacher/researchers who will not only contribute importantly to their chosen fields, but also stand as role models to the diverse and talented students at CCNY.*



**Bingmei May Fu**

Associate Professor of Biomedical Engineering  
Ph.D. City College

Bingmei May Fu holds a doctorate in Mechanical Engineering from The City University of New York, where she studied under Dr. Sheldon Weinbaum and focused on mathematical modeling. Next came a post-doc at the University of California, Davis where she received experimental training in the Department of Human Physiology at the School of Medicine. Dr. Fu was at the University of Nevada, Las Vegas, where she had tenure, when she found that she could not resist the opportunity to join Dr. Weinbaum in City's new Department of Biomedical Engineering. "My recent research is in integrins, microvessel permeability and tumor metastasis," she says. "I wanted a place where I could collaborate with people in biology and medicine. That is what I am able to do through the New York Center for Biomedical Engineering and its network of hospitals. The high level of research activity in New York attracts peers from all over the world. The opportunities for collaboration are greater at City than anywhere else I could find."



**Michael D. Grossberg**

Assistant Professor of Computer Science  
Ph.D. Massachusetts Institute of Technology

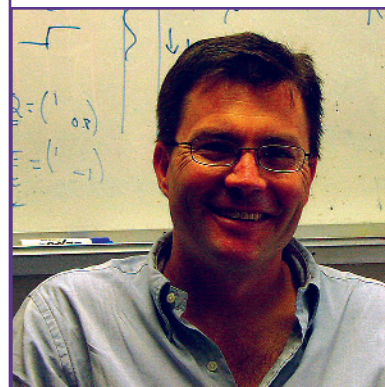
Michael Grossberg came to City College from Columbia University where he began his career in mathematics and moved into computer science. He was a Research Scientist with the Columbia Automated Vision Environment (CAVE) where his work in computer vision included modeling and calibration of imaging and projector systems, high dynamic range imaging, design of novel imaging and projector systems, and indexing using multi-resolution histograms. He has authored and co-authored papers that have appeared in ICCV, ECCV, CVPR and has filed several U.S. and international patents for inventions related to computer vision. "There is a very strong vision group at City," he says, "and many people are working in the scientific neighborhood which interests me." Since coming to City, Dr. Grossberg has taught software engineering and computer vision. He enjoys the wide range of students from diverse backgrounds.

Ilona Kretzschmar came to City College following post-doctoral studies at Yale and a Feodor-Lynen Fellowship at Harvard. She was drawn to City by the welcoming climate of the Chemical Engineering Department and by the international environment. “The Chemical Engineering Department is in a state of change,” she says. “I feel that I can have an impact on what the Department will look like in the future, when I am at the height of my research career.” Dr. Kretzschmar’s expertise covers gas phase chemistry, surface science and molecular electronics. “I am combining all three fields into nanoscience and technology,” she says. Her current research focuses on three-dimensional self-assembly of nanoscale building blocks, which has long range practical applications such as electronic paper. Dr. Kretzschmar finds the teaching at City very rewarding. “Students,” she says, “are very bright and hard-working. They absorb everything like sponges.”



**Ilona Kretzschmar**  
Assistant Professor of Chemical Engineering  
Ph.D. Technical University of Berlin

Jeffrey Morris’s research interests are the properties and dynamics of flowing mixtures, with the goal of developing a dynamic materials science. A major focus has been to carry scientific understanding of nonequilibrium microstructure and rheology in sheared suspensions to engineering applications through flow modeling. “I feel very lucky to be at City,” he says. “This is a wonderful academic home. My research interests are similar to those of Dr. Andreas Acrivos, who was my adviser’s adviser, and in the Levich Institute, I have found a place truly devoted to the study of mechanics and why materials behave the way they do.” Prior to coming to City, Dr. Morris was an assistant professor at Georgia Institute of Technology and a senior scientific adviser to Halliburton, which continues to support his work. At City, he is enjoying the one-on-one mentoring of graduate students. “It is exciting to take someone smart and turn them into a true scientist,” he says.



**Jeffrey F. Morris**  
Associate Professor of Chemical Engineering  
Levich Institute  
Ph.D. California Institute of Technology

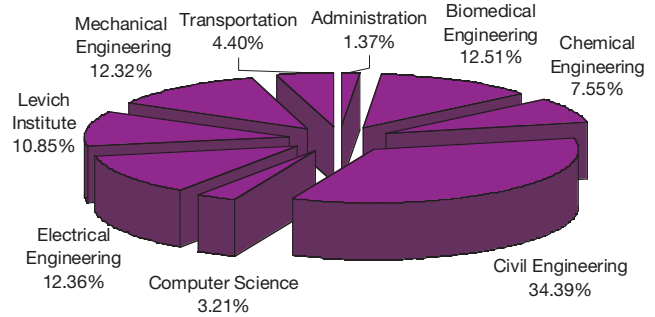
Mohamed Zahran’s research interest spans several aspects of computer architecture, such as microarchitecture, memory system design, and power-aware architecture. After receiving his Ph.D, he spent a year as a research scientist at The George Washington University and then chose to come to City over offers from other universities and from industry. “I liked the Department of Electrical Engineering and felt that I could make a real contribution, since there are not many people here in my field. I thought that I could introduce computer architecture to City College,” he says. Dr. Zahran had already lectured at Cairo University where he received his bachelor’s and master’s degrees, and has found his teaching at City equally rewarding. “I genuinely enjoy standing up and communicating what I know to other people. It is very rewarding to convey information to my students, and the questions they ask enhance my research.”



**Mohamed Zahran**  
Assistant Professor of Electrical Engineering  
Ph.D. University of Maryland, College Park

2004-2005 has been a banner year for sponsored research at City College's School of Engineering, with awards totalling \$16,189,920.

**Funded Research Distribution by SOE Unit**  
Total: \$16,189,920



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 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.

Benjamin Levich Institute for Physicochemical Hydrodynamics

New York Center for Biomedical Engineering

Center for Networking and Telecommunications

CUNY Institute for Urban Systems

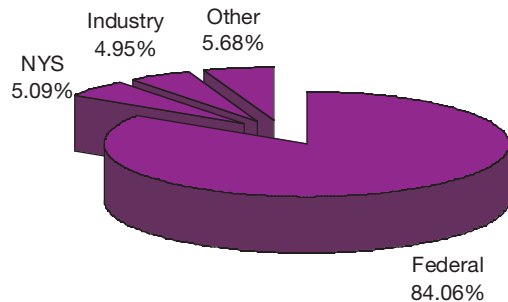
Institute for Transportation Systems

Center for Water Resources and Environmental Research

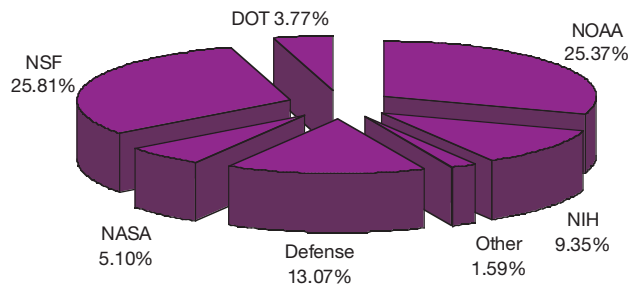
Municipal Waste Center

Center for Advanced Engineering Design and Development

**Funded Research Distribution by Sources**  
Total: \$16,189,920



**Federal Research Funding by Agency as a Percentage of Total Funding**



**Acrivos, A.**, and Khusid, B., "Transport and Segregation of Suspensions in Traveling Electric Fields," NSF, 07/03-6/05, Portion funded in 2005: \$305,099.

**Acrivos, A.**, "Particle Segregation in a Flowing Concentrated Suspension Subject to High-Gradient Strong Electric Fields," NASA, 10/01-10/05. Portion funded in 2005: \$97,000.

**Agarawal, A.**, and Paaswell, R. "Development of Smart Bridge Bearing System," NYSDOT, 3/03-9/04, \$14,852.

**Agarawal, A.**, "03/5.5, Integrated Research and Education on engineering Effects of Earthquakes and Technologies for Science Protection," RF SUNY, 10/02-3/05, Portion funded in 2005: \$34,038.

**Agarawal, A.**, "8.5.4 Integrated Research and Education in Engineering and Effects of Earthquakes, Blasts and Man-made Hazards," RF SUNY, 10/04-9/05, \$19,500.

**Ali, M.**, "Security-Based QoS Mechanism in a Best Effort Network Infrastructure," PSC CUNY, 7/05-6/06, \$2,321.

**Andreopoulos, Y.**, and Li, J., "New Concepts of Micro Actuators for Flight Control Systems," ARO, 8/04-8/07, \$429,701.

**Bapat, C.**, "Theoretical and Experimental Investigation of a Soft-Sided Impact Damper," PSC CUNY, 7/05-6/06, \$2,321.

**Barba, J.**, "Advancing Minorities in Science and Engineering Education," A CAHSSE-NASA Partnership, 9/04-8/05, \$157,608.

**Basu, M.**, "NSF-Intergovernmental Personnel Act (IPA)," NSF, 10/02-9/06, Portion funded in 2005: \$251,400.

**Baumslag, G.**, Troeger, D. (CSc), Cleary S. (Math), Daly, T. (CSc), and Sit, W. (Math), NSF/Mathematical Foundations Grant, 8/04-8/06, \$170,000.

**Bikson, M.**, "Development of Electrical Stimulation Protocols for the Control of Epileptic Seizures," PSC CUNY, 7/05-6/06, \$4,830.

**Bikson, M.**, Parra, L., and Levitt, J., "Quantification of Neuronal Polarization by Non-Uniform Electric Fields," CUNY Research Equipment, 3/05-2/06, \$29,556.

**Brass, P.**, "Polygon Approximation Algorithms and Error Bounds," PSC CUNY, 7/05-6/06, \$3,612.

**Chen, C.**, "Development of a Dynamic Model for Residence and Employment Choices," PSC-CUNY, 7/05-6/06, \$4,000.

**Chen, C.**, and Gong, H., "Public Transit in NYC: Keeping up with the Trend," Univ. Transportation Research Center, 2005, \$107,695.

**Chen, X.**, "CCNY Open API Simulation Platform for Digital Circuits and Systems," PSC CUNY, 2005-2006, \$4,000.

**Chen, X.**, "Statistical Analysis of Effective Tests for Testing VLSI Chips," PSC CUNY, 7/05-6/06, \$4,000.

**Couzis, A.**, Gilchrist, L., and Maldarelli, C., "Sensors and Sensor Network: Biosensor Arrays from Intact Receptor Proteoliposomes Adsorbed onto Nanoislands," NSF, 8/04-7/07, \$246,863.

**Couzis, A.**, "Study of Bleaching Staining Tooth," GlaxoSmithKline, 8/04-8/05, \$38,709.

**Couzis, A.**, "Aqueous Spraying on Hydrophobic Surfaces," NASA, 1/03-1/06, \$ 99,129.

**Cowin, S.**, "Communications Media for Mineralized Tissue Research," NSF, 1/05-1/06, \$98,553.

**Crouse, D.**, "Surface Plasmon Enhanced Silicon Photodetectors," PSC CUNY, 7/05-6/06, \$4,000.

**Crouse, D.**, Arend, M., and Tamargo, M., DoD Hispanic Serving Institution Instrumentation and Research Support Program, "Materials and Devices Research and Educational Infrastructure Enhancement," ARO, 12/04-11/05, \$197,134.

**Crouse, D.**, "Intersubband Photoconduction in CdTe/CdS and CdTe/CdSe Nanowires," ARO, 2/05-10/05, \$50,000.

- Denn, M.**, "IGERT: Multiscale Phenomena in Soft Materials," NSF, 12/02-11/05, \$652,160.
- Diyamandoglu, V.**, "NYC DEP Water Treatment Operator Training Program," NYC DEP, 8/02-8/05, \$16,725.
- Diyamandoglu, V.**, "NYC Reusable Solid Waste Materials Exchange Matchmaking Project," DSNY, 4/97-6/04,\$143,323.
- Dorsinville, R.**, "Characterization of Carbon Composites," Corning Inc., 8/04-7/05, \$20,000.
- Dorsinville, R.**, "Optical amplification and generation in doped polymer fibers and planar waveguide structures," PSC CUNY, 7/04-6/05, \$2,321.
- Dorsinville, R.**, "Nonlinear Optical Characterization for Materials for Broadband Large Dynamic Range Optical Limiters," PSC CUNY, 7/05-6/06, \$2,321.
- Fritton, S.**, "Quantifying Bone Permeability," PSC CUNY, 7/04 -6/05, \$2,321.
- Fritton, S.**, "Further Delineation of the Pathways of Bone Interstitial Fluid Flow," Whitaker Foundation, 5/05-4/06, \$77,446.
- Fu., B.**, "Understanding acute microvessel hyperpermeability," NSF, 7/02-6/07, \$294,835.
- Ghedira, H.**, "Potential of microwave remote sensing data for change detection in coastal wetlands," PSC CUNY, 2004-2005, \$4,000.
- Ghedira, H.**, "Improvement of the Nureal Network Classification of Microwave Remote Sensing Data," PSC CUNY, 7/05-6/06, \$4,000.
- Gladkova, I.**, and Khanbilvardi, R., "Compression of Airs Data Using Empirical Mode Decomposition," NOAA,6/05-1/06, \$75,000.
- Gross, B.**, "Combining Active and Passive Optical Remote-Sensing Techniques to Measure Tropospheric Aerosol Profiles," NASA, 3/02-3/05, Portion funded in 2005: \$99,901.
- Grossberg, M.**, "Learning What to See: How Best to Extend Machine Vision," PSC CUNY, 7/05-6/06, \$3,612.
- Habib, I.**, ""Fast File Transfer Across Optical Circuit Switched Networks," Polytechnic Univ.," 9/03-8/05,\$37,523.
- Habib, I.**, "EIN: Collaborative Research: End to End Provisioned Network Tested for eScience Application,"NSF, 1/04-12/05, \$88,000.
- Habib, I.**, "Improving the Delivery of IP Services in Wired/ Wireless Networks using Adaptive Filtering," PSC CUNY, 7/05-6/06, \$2,321.
- Hammonds, J.**, "Micro Surface Structuring for Spectrally Selective Thermophotovoltaic Emitters," PSC CUNY, 7/05-6/06, \$4,000.
- Ho, P.**, "Feasibility of Magnetic Positioning in a Micro-capsule Device for Biomedical Diagnosis," PSC CUNY,7/05-6/06, \$2,321.
- Jiji, L.**, "Is the Caecum of the Naked Mole- Rat a Thermoregulating Sink?" PSC CUNY, 7/05-6/06, \$2,321.
- Isaacs, L.**, "Nucleation and crystallization of optically active Cr(IV) doped crystallites in glass-ceramic matrixes," RF# 66472-0035, PSC-CUNY.
- Isaacs, L.**, Co- Principal Investigator; "Nonradiative and radiative processes of doped nanocrystallites in porous glasses," NSF.
- Isaacs, L.**, Co- Principal Investigator; "Center for nanoscale photonic emitters and sensors," RF# 47102-0001/2,DoD.
- Kawaguchi, A.**, "Developing Wireless Database Application Meta-Composer," PSC CUNY, 7/05-6/06, \$2,805.
- Khanbilvardi, R.**, "NOAA Educational Partnership Program: Education and Science Forum," NOAA, 9/04-8/05,\$101,681.
- Khanbilvardi, R.**, Ahmed, S., and Moshary, F., "NOAA Cooperative Center for Remote Sensing Science and Technology," NOAA, 10/04-9/05, \$3,452,500.
- Khanbilvardi, R., and Ahmed, S., ""ECSC Chesapeake Summer 2005 Measurements Campaign," Florida A&M,5/05-9/05, \$175,000.



- Khanbilvardi, R.**, "GOES Surface Ultraviolet Radiation Product," NOAA, 3/05-9/05, \$50,000.
- Koplik, J.**, "Molecular Dynamics of Fluid-Solid Systems," NASA, 12/03-11/07, \$87,000.
- Kretzschmar, I.**, "Electrochemical Decoration of Nanoparticles," PSC CUNY, 7/05-6/06, \$4,000.
- Lee, J.**, "Design for Enhancing Reaction Selectivity via Reactive Distillation," Am. Chem. Soc., 9/04-8/06, \$80,000.
- Lee, J.**, "Environmental-Benign Design of CO<sub>2</sub> Sequestration," PSC CUNY, 7/05-6/06, \$4,000.
- Lee, J.**, "Novel Technique for Natural Gas/H<sub>2</sub> Storage and CO<sub>2</sub> Separation Using Hydrate Formation," SUNG, 4/05-3/08, \$248,820.
- Lee, J.**, "SAIT - CUNY Joint Laboratory," Samsung Electronics, 12/02-12/05, \$109,982.
- Li, J.**, "Effective Elastic Properties of Multi-Walled Carbon Nanotubes," PSC CUNY, 7/05-6/06, \$2,321.
- Liaw, B.**, "Impact Damage in Advanced Ceramics and Ceramic Matrix Composites Due to Foreign Objects," PSC CUNY, 7/05-6/06, \$2,321.
- Lin, F.**, "Seismic Assessment and Retrofit of Unreinforced Masonry Bridge Structures in NYC," CUNY Collaborative Incentive, 2005-2007, \$60,000.
- Lin, F.**, "Characterization of Stress Separation Relation for Fracture Process using Photoelastic Technique," PSC CUNY, 7/05-6/06, \$2,321.
- Makse, H.**, "Stress-dependent Acoustic Propagation and Dissipation in Granular Materials," DOE, 9/04-8/05, \$85,000.
- Makse, H.**, "CAREER: Statistical Mechanics of Particulate Systems Far from Equilibrium," NS, 5/03-4/06, \$80,000.
- Makse, H.**, "Nonequilibrium Thermodynamics of Densely Packed Gradular Matter and Compressed Emulsions," DOE, 3/05-2/06, \$64,000.
- Makse, H.**, Tarbell, J., and Gilchrist, L., "Transmitted Light and Epi-Fluorescence Microscopy System with Ultra-Fast Image Acquisition and Processing for studies of Jamming in Emulsion", CUNY Research Equipment, 3/05-2/06, \$40,000
- Malderelli, C.**, "Using Remobilized Sufactants to Enhance the Thermocapillary Migration of Bubbles Retarded by the Adsorption of Surfactant Impurities," NASA, 2/02-9/05, \$82,957.
- Morris, J.**, "Drop Formation Processes in Solids-Laden Liquids," NASA, 1/05-7/06, \$136,879.
- Morris, J.**, "Particle Motions in Closed Streamline Flows of Suspensions: Influence on Mixing and De-Mixing Processes," No. Amer. Mixing Forum, 4/05-3/06, \$10,000.22.
- Morris, J.**, "Particle Surface Effects Upon the Ultimate Conductivity of a Proppant Pack," Halliburton Energy, 3/05-3/06, \$106,533.
- Paaswell, R.**, "Assessment of Border Crossing Needs in NYS," US DOT/NYS DOT, 9/03-2/04, \$26,833.
- Paaswell, R.**, "Impacts Of Capital Budgets," MTA, 5/04-12/04, \$60,223.
- Paaswell, R.**, UTRC - Administration-year 17, US DOT, \$365,264.
- Paaswell, R.**, "Analysis of Capital Cost Elements and Their Effect on Operating Costs," FTA, \$90,000.
- Paaswell, R.**, "UTRC - Technology Transfer - Year 17", US DOT \$128,501.
- Paaswell, R.**, "Evaluation and Testing of Regional Models," NYMTC, 01/01/05-06/30/06, \$250,000.
- Pach, J.**, "Geometric Arrangements and Applications," US-Israel Binational Science Foundation, 9/03-8/05, \$10,600.
- Pach, J.**, "Graph Coloring and Frequency Allocation for Wireless Networks (w/A. Bar-Noy & N. Yanofsky -Brooklyn)," CUNY Collaboration Incentive, 10/04-10/06, \$60,000.

- Pach, J.**, "Graph Drawing in Geometric Arrangements," PSC CUNY, 7/05-6/06, \$2,804.
- Pach, J.**, "Geometric Graph Theory," NSA, 1/04-1/06, \$30,000.
- Parker, N.**, "Summer Transportation Institute - 2005," South Carolina University, 6/05-5/06, \$41,153.
- Parra, L.**, "EEG Real Time Analysis," Honeywell/DARPA, 7/03-12/04, \$60,000.
- Parra, L.**, "Network Model of the Effect of Extracellular Fields on Spike Time Coherence in the Hippocampus," PSC CUNY, 7/05-6/06, \$4,000.
- Potasek, M.**, and Dorsinville, R., "Optical characterization of hybrid semiconductor/organic materials," ARO, 8/04-2/06, \$150,231.
- Raj, R.**, "Design of Variable Voltage Portable Proton Exchange Membrane Fuel Cell Stack," PSC CUNY, 7/05-6/06, \$2,321.
- Ravindran, K.**, "User-Friendly QOS Management Interface for Distributed Network Applications," PSC CUNY, 7/05-6/06, \$2,804.
- Ravindran, K.**, "Research project on Information Assurance and QOS Management for Distributed Applications," Funded from ITT Industries, AES Division, 10/04-12/05, \$115,100.
- Rumschitzki, D.**, "Vessel structure & pressure: Transport & Atherogenesis," NIH, \$1,064,200, 4/02-3/06, Portion for 4/04-3/05: \$257,150.
- Saadawi, T.**, and Lee, M., Army Research Lab's CTA (Collaborative Technology Alliance), Wireless Ad hoc networks, routing, reliable transport, \$2.5 Million (over five years), Tecordia Tech, Portion funded for 6/04-9/06: \$260,000.
- Sadegh, A.**, "Design and Manufacturing of Aluminum Car Jack," Alcoa, 9/03-8/05, \$14,000.
- Sadegh, A.**, "Biomechanics of Head/Brain Due To Angular Head Acceleration," PSC CUNY, 7/05-6/06, \$2,321.
- Sadegh, A.**, "Mechanization of Lift Truck for Circuit Breakers," Con Edison, 9/03-12/05, Portion for 2005: \$10,525.
- Sadegh, A.**, "Propagation of High-Frequency Mechanical Waves through a Viscoelastic Material during the Bonding Process", CUNY collaborative Grant, Co-PI with Rafael Niyazov, 2005, \$30,000.
- Shattuck, M.**, "CAREER: Granular Media: Experimental Kinetic Theory,": NSF, 1/02-12/05, \$92,562.
- Sobel, K.**, "Simple Adaptive Control for Aircraft with Control Surface Failures (w/B.I. Abderrazak - Laguardia)," CUNY Collaborative Incentive, 10/04-10/06, \$60,000.
- Subramaniam, K.**, and Andreopoulos, Y., "Blast Mitigation using Controlled Low-Strength Porous Materials and Fiber Reinforced Polymers: Experimental Investigation and Theoretical Development," ARO, 11/04-10/07, \$350,410.
- Subramaniam, K.**, "CAREER - Model-Based Microstructure Evaluation of Hydrating Cementitious Materials: Development of a Test System and Experimental Investigation," NSF, 7/03-6/08, \$400,000.
- Subramaniam, K.**, and Agrawal, A., "Concrete Bridge Deck Material Properties," NYSDOT, 1/04-12/05, \$125,000.
- Sun, Y.**, "Retransmission diversity in ad hoc networks," PSC-CUNY, 7/05-6/06, \$2,321.
- Tarbell, J.**, Calhoun D., Fritton S., Gilchrist L., Makse, H., Maldarelli, C., Rumschitzki, D., Shattuck, M., Vazquez M, and Weinbaum, S., "Acquisition of a multifunctional confocal microscope," ARO, 2004, \$353,000.
- Tarbell, J.**, Co-Principal Investigator (5% time + 1 graduate student), Principal Investigator T. W. Gardner (Hershey), "Mechanisms of Retinal Vascular Permeability in Diabetes," NIH, 60 months from May 2004, \$1,527,410.
- Tarbell, J.**, "Blood Damage," Penn State Univ., 7/02-6/05, \$50,161.
- Tarbell, J.**, "Microgravity Effects on Transendothelial Transport," NASA, 60 months from June 1996, \$460,000: Portion for 2005: \$65,010.

- Tarbell, J.**, "Mechanism of Retinal Vascular Permeability in Diabetes," Penn State Univ., 4/05-3/06, \$74,174.
- Tardos, G.**, "Development of a course and laboratory sequence on electronic media and a text book in Powder Science and Technology," Merck Foundation, 2004-2007, \$60,000. Portion in 2005, \$40,000
- Tardos, G.**, "Measurement of stresses in bulk flowing powders and application to scale-up of powder processes," NSF GOALI with Dr. James Michaels of Merck and Co. Inc., 2005-2007, \$120,000.
- Uyar, M.**, and Xiao, J., "MRI Instrumentation Development: Smart Reconfigurable Miniature Robot System Based on System-On-Programmable-Chip Technology," NSF, 9/04-9/06, \$202,844.
- Vazquez, M.**, and Gilchrist, L., "NER: Multivalent Nanoprobes to Target Intracellular Proteins, Nanoinitiative", NSF, 9/04-8/05, \$140,000.
- Vazquez, M.**, "SENSORS: A Novel Nano-Microfluidic System for Intracellular Sensing," NSF, \$341,128, Portion for 2005: \$197,370.
- Vazquez, M.**, "A Cell-Based Microfluidic Migration Assay," PSC CUNY, 7/05-6/06, \$4,000.
- Vazquez, M.**, "A Model Microfluidic Chemotaxis System," NIH, 1/05-12/07, \$375,00.
- Vazquez, M.**, "A Microfluidic System to Co-Localize ERK Proteins During Medulloblastoma Dispersal," Pediatric Brain Tumor Society, \$145,000, Portion funded in 2005, \$50,000.
- Vazquez, M.**, "Microsystems to Manipulate Fibroblast Chemotaxis," NIH, 3/05-2/06, \$172,700.
- Vazquez, M.**, and Holland, E., "A Migration Assay for Temporal Protein Localization," NIH, 7/05-6/06, \$425,000.
- Walser, A.**, and Dorsinville, R., "Two photon absorption imaging of glasses and crystals," Lawrence Livermore National lab, 3/03-5/05, \$65,000.
- Watkins, C.**, and Andreopoulos, Y., "CREST Center for Mesoscopic Modeling and Simulation," NSF, \$2,000,000: Portion funded in 2005: \$400,000.
- Watkins, C.**, Koplík, J., and Gumbs, G., "CREST-Molecular Simulation of Turbulence/Collisional Phenomena," NSF, \$115,000.
- Watkins, C., Delale, F., Li, J., and Liaw, B., "Composite Structural Damage Self Sensing via Electrical Resistance Measurement," Global Counters Ltd., 4/05-3/06, \$105,000.
- Wei, J.**, "Visual Retrieval and Representation Schemes in Digital Libraries," PSC CUNY, 7/05-6/06, \$2,805.
- Weinbaum, S.**, "A National Urban Model for Minority Undergraduate Biomedical Education," NIH, 9/04-8/05, \$445,204.
- Weinbaum, S.**, and Andreopoulos, Y., "Movement of planning surfaces on highly compressible soft porous media; Application to a novel train track," NSF grant 0432229, \$240k, 3 yrs. Starting date not yet received.
- Weinbaum, S.**, and Cowin, S., "Cytoskeletal Strain Amplification due to Bone Fluid Flow," NIH, 4/05-3/06, \$316,277.
- Weinbaum, S.**, "Axial Flow Effects in Proximal Tubule," Yale Univ., 3/05-2/05, \$83,567.
- Wiley, M.**, Foster, K., and Ghedira, H., "NOAA EPP/MSI: Environmental Entrepreneurship Program: Green Profing: Growing an Environmental Enterprise," NOAA, 3/2005-2/2010, \$499,314.
- Wittig, A.**, "Critical Evaluation of Ambient Air Pollutants in NY," PSC CUNY, 7/05-6/06, \$4,000.
- Wolberg, G.**, "Log-Polar Transforms for Optical Image Processing and Target Recognition", ONR, 3/03-9/06, \$600,000. Portion funded in 2005: \$146,891.
- Wolberg, G.**, "Interactive Visualization for 3D Photography," PSC CUNY, 7/05-6/06, \$2,805.

**Xiao, J.**, "Development of an Intelligent Robotic Inspection System for Security Applications," PSC CUNY, 7/05-6/06, \$4,000.

**Xiao, J.**, and Zhu, Z., "Cooperative Wall-climbing Robots in 3-D Environments for Surveillance and Target Tracking," ARO, 11/04-11/07, \$375,237.

**Xiao, J.**, and Lee, M., "Acquisition of equipment for multi-robot and mobile sensor networks research," CUNY Research Equipment, 9/05-9/06, \$22,250.

**Xiao, J.**, and Zhu, Z., "MII planning proposal: Center for Perceptual Robotics at the City College of New York," NSF, 10/04-10/05, \$49,938.

**Yu, H.**, "Nano-Pattern Formation with Activated Front," PSC CUNY, 7/05-6/06, \$4,000.

**Zahran, M.**, "Improving Cache Memory Performance in Current and New Microarchitecture Environment," PSC CUNY, 7/05-6/06, \$2,321.

**Zhu, Z.**, Wolberg, G., Haralick, R. T., "Dynamic Pushbroom Stereo Mosaics for 3D and Moving Target Extraction - A New Geometric Approach", AFRL RASER, 2/05-2/09, \$267,437, Portion funded in 2005, \$33,000.

**Zhu, Z.**, "Tracking Moving Objects via a PTZ or Moving Camera," NYSIA, 8/04- 7/05, \$23,333.

## New Facilities for Biomedical Engineering



In November 2004, SOE's three-year old Department of Biomedical Engineering moved into new facilities on the fourth floor of Steinman Hall. The department, which offers one of only two biomedical engineering programs in New York City, enrolls

34 Ph.D. candidates, 18 candidates for the master's degree and 107 undergraduate majors.

The offices, classrooms, laboratories and conference room were inaugurated in a gala event which included a keynote talk by Robert Langer of MIT, student posters, talks by leaders from seven hospital partners in the New York Center for Biomedical Engineering and a reception presided over by CUNY Chancellor Matthew Goldstein

and CCNY President Gregory Williams. The luncheon, which drew over 150 guests, featured President Peter Katona of the Whitaker Foundation and President Sue Van of the Wallace H. Coulter Foundation.

The renovation was carried out as part of a \$2.1 million award from the Wallace Coulter Foundation, which also endowed the Wallace H. Coulter Chair in Biomedical Engineering and provided salary supplements for two junior faculty members. Other funding, totaling \$2.75 million over several years, has come from the Whitaker Foundation.

*Photo: Distinguished Professor Sheldon Weinbaum, CUNY Chancellor Matthew Goldstein, CCNY Provost Zeev Dagan, CCNY President Gregory Williams, Distinguished Professor Stephen Cowin, and Distinguished Professor and BME Chairman John Tarbell.*

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# wall of honor

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