School of Engineering
Annual Report 2007-08

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# UNIVERSITY OF CONNECTICUT
## SCHOOL OF ENGINEERING ANNUAL REPORT
### 2007-08

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The 2007-08 fiscal year was characterized by significant growth and progress on several strategic fronts.

**UNDERGRADUATE PROGRAMS & OUTREACH**

During the year, overall undergraduate enrollments rose to 1669 in fall 2007. Freshman enrollments rose 10 percent during the same 12-month period. The average SAT score (cumulative math and verbal scores) of incoming engineering freshmen was 1292. The student-to-faculty ratio remained stable at 19:1. The mechanical engineering program enjoys the largest undergraduate population, at 347, followed by civil engineering, whose undergraduate population totals 218. The biomedical engineering program has an enrollment of 211. The fall 2007 freshman class included seven valedictorians and eight salutatorians.

We continued to enjoy one of the largest percentages of Honors Program students throughout campus; of the roughly 1,660 UConn undergraduates enrolled in the Honors Program, 226 were enrolled in Engineering – roughly 14 percent of the total. In contrast, the School’s undergraduate population is approximately 10 percent of the total UConn undergraduate pool. This provides ample evidence that some of the best students are selecting UConn because of their interests in engineering.

In October, following two years of preparation and extensive reporting, the School hosted evaluators from the Accreditation Board for Engineering & Technology (ABET), who reviewed 11 of our B.S. degree programs. In addition, the Computer Accreditation Commission reviewed the School’s degree programs in computer science, computer engineering and computer science & engineering. The School’s programs were last reviewed for accreditation in 2001-02. At that time, the six bachelor’s degree programs reviewed – Chemical Engineering, Civil Engineering, Computer Science & Engineering, Computer Science, Electrical Engineering, and Mechanical Engineering – received the maximum six-year accreditation. The newer undergraduate degree programs were ineligible for evaluation at that time. The two-day ABET review process proceeded smoothly, and final results will be announced during summer 2008.

The Computer Science & Engineering (CSE) department landed a prestigious grant in January, through the National Science Foundation (NSF), to support a Research Experiences for Undergraduates (REU) special educational program that pairs 10 college students each summer with departmental faculty to participate in ongoing research programs. Beginning in summer 2008, the three-year REU will convene participating students at the UConn campus for eight intensive weeks of research in the area of biogrid initiatives. The REU will be directed by associate professor and principal investigator Chun-Hsi Huang. Student participants will be recruited from colleges and universities throughout the nation who are interested in exploring the use of modern grid computing infrastructure to biomedical and biological challenges.

Commencement activities took place over the May 10-11 weekend. On May 10th, the School feted 84 M.S. and 55 Ph.D. students who completed their degrees during AY07-08. On May 11, the School honored 311 students who completed their B.S.E. and B.S. degrees in AY07-08. The Sunday event included remarks by two guest speakers: UConn School of Business graduate and technology leader Kevin Bouley (B.S. ’80), president and CEO of Nerac, Inc. of Tolland, CT, and Paul Adams, Senior Vice President of Engineering at Pratt & Whitney, East Hartford. Graduating senior (Chemical Engineering ’08) Christine Endicott also spoke.

The School surveyed its graduating seniors for the first time. Interesting findings included: 17% are proceeding immediately into full-time graduate programs; 70% of graduates entering the workforce will
earn starting salaries of between $50,000-$60,000, and 26% will earn starting salaries of greater than $60,001; 93% reported that our program exceeded or met their expectations; and 58% reported that they had gained experience through industry internships during their undergraduate years.

**STRATEGIC PRIORITIES**

*Research*

The School of Engineering enjoys depth and breadth in a number of strategic research areas, including sustainable energy/engineering, secure technologies, imaging, environment and climate, nanotechnology and biomedical imaging and materials. Increasingly, we seek to develop interdisciplinary expertise in transformative areas. During the year, we sought to augment our existing core strengths and to apply them in novel ways.

During a September joint press conference held at the Legislative Office Building in Hartford, UConn formally unveiled an ambitious new research campaign, the Eminent Faculty Initiative in Sustainable Energy, which will reside in the School of Engineering. The press conference was triggered by UConn’s successful efforts in securing matching funds from industry partners and in establishing a program aimed at advanced research, education and training in renewable energies. The initiative is the result of a unique partnership between UConn, the Connecticut General Assembly, and the industrial partners who are committed to propelling Connecticut onto the international stage in the development of sustainable “green” energy. The industrial partners include FuelCell Energy of Danbury, the Northeast Utilities Foundation, and UTC Power of South Windsor. A national search was initiated immediately to recruit a core research team of 10 tenure-track faculty members who will form an interdisciplinary, integrated team working in the strategic areas of fuel cells or other alternative energy technologies and applications. In conjunction with this recruiting effort, the School hosted a seminar series called “Challenges for a New Energy Frontier” that brought 15 internationally-recognized leaders in sustainable energy technologies/research to campus to discuss their research. The search remains ongoing.

In February ’08, the U.S. Department of Homeland Security announced that the School of Engineering had been named the research lead among seven newly-crowned national Centers of Excellence in Transportation Security. UConn received $500,000 in first-year funding; in ensuing years, this funding is expected to grow substantially, and UConn will hold budgetary authority over funds distributed for targeted research by its six academic partners: the Mack-Blackwell National Rural Transportation Study Center at the University of Arkansas (Fayetteville), the National Transit Institute at Rutgers University (New Brunswick, NJ), Texas Southern University (Houston), Tougaloo College (Jackson, MS) and the Homeland Security Management Institute at Long Island University (Brooklyn, NY). In fulfilling its varied research and leadership mission, the School will draw upon expertise residing within the Connecticut Transportation Institute, the Connecticut Global Fuel Cell Center, the Booth Engineering Center for Advanced Technologies and the School’s five engineering departments. In May, the School hosted a site visit by DHS personnel Dr. Mary Ellen Hynes, Milagros Kennett and Michael Tobia.

During the year, the School identified several transdisciplinary areas as of strategic importance to the future. Two half-day forums allowed faculty from the School of Engineering, chemistry, physics and the UConn Health Center to provide brief overviews of their research in the areas of nanotechnology and bioengineering, and to dialogue with potential research partners. Both well-attended forums included 30 or more presentations and opened the door to future collaborative research.

The School of Engineering posted direct research expenditures of $11,268,586 during the year. The total research expenditures, including indirect costs, were $14,989,403.

The School submitted a number of interdisciplinary pre-proposals, proposals and white papers during the year aimed at securing funding for specialized educational and research programs. These included:
- NSF Integrative Graduate Education and Research Traineeship (IGERTs) submitted as lead organization in Sustainable Energy and Multi-Scale Biomechanics and as a co-lead organization for two other proposals
- NSF Emerging Frontiers in Research & Innovation (EFRI) pre-proposals submitted in (i) Brain Models & Their Impact in Algorithm Design; and (ii) Integrated Secure Energy, Transportation, Water & Communication Systems
- White papers submitted: (i) Sustainable Development; and a (ii) Center for Imaging, which would involve interdisciplinary research between the UCHC and the School of Engineering
- NSF Research Experiences for Teachers (RET) pre-proposal for Joule Fellows: Teachers in Sustainable Energies Research Laboratories
- A white paper in nanotechnology submitted to the State of Connecticut

The Dean of Engineering and Associate Dean for Research & Graduate Education testified before the Connecticut General Assembly on several occasions to make legislators aware of the critical need for State support of nanotechnology initiatives.

During the fall, the senior administration met with the members of the External Advisory Board to discuss the School’s strategic activities and gather insights from the members, who comprise industry, government, policy and academic leaders.

Following his formally accepting the duties of Dean, Mun Y. Choi established several Faculty Advisory Committees and charged them to investigate and report on three major challenges: Promotion & Sustainment of Research, the on-site Master of Engineering (MENG) program, and International Development. The committees presented their findings and recommendations during a May 7th faculty meeting.

**HONORS & AWARDS**

During the year, two faculty members garnered NSF CAREER Awards, Bing Wang of Computer Science & Engineering and Ugur Pasaogullari of Mechanical Engineering. Both joined the University of Connecticut in 2005. Dr. Pasaogullari’s CAREER research will build upon his fuel cell activities involving polymer electrolyte fuel cells (PEFCs). Dr. Wang’s CAREER research will focus on fault management of wireless networks with the objective of assuring greater stability and longer service life. The School of Engineering now boasts 18 CAREER Award recipients.

Augmenting her 2007 NSF CAREER Award, Computer Science & Engineering assistant professor Jun-Hong Cui received an Office of Naval Research Young Investigator Program (YIP) Award for her proposed work involving the use of underwater sensor networks (UWSNs) for critical Navy applications, such as anti-submarine warfare, mine countermeasures, and battle space environmental monitoring. Her YIP, which entails a $340,000 grant, was selected in the area of “ocean battlespace sensing” and builds upon her existing body of work in reliable underwater acoustic sensor networks.

Mekonnen Gebremichael, of Civil & Environmental Engineering, won a NASA New Investigator Program (NIP) award of more than $357,000 for research aimed at determining how well NASA’s current global hydrologic models predict actual processes taking place over portions of the North American and African continents.

In addition, several distinguished faculty members were presented laurels at the national/international level. In Electrical & Computer Engineering, Yaakov Bar-Shalom, Bahram Javidi and John Enderle received honors. Dr. Bar-Shalom was selected by IEEE’s Board of Directors to receive the 2008 IEEE Dennis J. Picard Medal for Radar Technologies and Applications. Dr. Javidi received a 2008 Helmholtz-Humboldt Research Award for senior U.S. scientists, Germany's highest research award for senior U.S. scientists and scholars. He also received the 2008 International Society for Optical Engineering (SPIE) Technology Achievement Award; the 2008 Fellow Award from the John Simon Guggenheim Memorial
Foundation in recognition of his work on real-time 3D optical imaging and identification; and the 2008 IEEE Donald G. Fink Prize (with his co-authors) for the best overview or survey paper among all (over 130) IEEE transactions, journals, and magazines. Dr. Enderle was presented the ASEE National Fred Merryfield Design Award.

UTC Professor of Advanced Materials & Processing Robert Weiss was honored with the Society of Plastics Engineers’ International Award in recognition of his lifetime achievements in plastics research. Sanguthevar Rajasekaran, the UTC Chair Professor of Computer Science & Engineering and Director of the Booth Engineering Center for Advanced Technology, was among 295 senior IEEE members worldwide selected by the IEEE Fellow Committee for elevation to the rank of IEEE Fellow.

Department Heads Michael Accorsi (Civil & Environmental Engineering) and Baki Cetegen (Mechanical Engineering), along with ME professor Kazem Kazerounian were among 19 individuals state-wide elected to membership in the Connecticut Academy of Science and Engineering (CASE) in honor of their career accomplishments.

A number of faculty members won large grants to pursue cutting-edge research. These included Yong Wang and Lei Zhu of Chemical, Materials & Biomolecular Engineering (CMBE), who captured a $450,000 NSF grant to develop artificial antibodies capable of locating and destroying tumors. Their CMBE colleague, Yu Lei, secured nearly $800,000 in funding from NSF to develop real-time, ultra-sensitive sensor arrays capable of sniffing out even trace quantities of explosives. He is joined by University of Connecticut (UConn) colleagues Christian Brückner (Chemistry), Ali Gokirmak (Electrical & Computer Engineering), and a University of California - Riverside colleague. A multidisciplinary team headed by PI Eric Jordan of ME won a $1.47 million subcontract from Raytheon Company (DARPA larger contract) to assist in the development of engineered nanocomposites for optical applications. Dr. Jordan is joined by UConn research scientist Maurice Gell (CMBE), with assistance from Dr. Cetegen of ME and Mark Aindow (CMBE) in partnership Inframat Corporation of Farmington, CT and researchers from MIT and the University of Michigan. Dr. Bar-Shalom of ECE also secured a large $630,000 award from DOD to develop practical multi-target tracking and multi-sensor data fusion algorithms that will aid the U.S. military in accurate detection and characterization of targets in the field.

ENGINEERING/INDUSTRY INTERACTIONS

The Eminent Faculty Initiative enjoyed substantial ($2 million) financial support from industrial partners FuelCell Energy, the Northeast Utilities Foundation, and UTC Power, as described earlier. During the year, the School’s leadership and selected faculty members hosted visitors from Alstom Power, Electric Boat, FuelCell Energy, Hamilton Sundstrand, IBM, Tyco, Xerox and Raytheon. In addition, visitors from the Connecticut Clean Energy Fund, the Department of Homeland Security and colleges in Baden-Württemberg Germany, toured the School of Engineering facilities. The Engineering leadership and selected faculty also toured the facilities of a number of Connecticut companies and conducted discussions aimed at increasing the School’s research interactions with industry. These companies included Pratt & Whitney, United Technologies Research Center, IBM, FuelCell Energy, the Connecticut Center for Advanced Technology (CCAT), Phonon Corporation and Fuss & O’Neill. The latter two visits also resulted in company profiles appearing in the School’s news publications, because both companies are home to large numbers of UConn Engineering alumni.

In September 2007, FuelCell Energy celebrated the successful demonstration of a novel distributed generation hydrogen production technology called Electrochemical Hydrogen Separator (EHS) at the Connecticut Global Fuel Cell Center (CGFCC). FuelCell Energy brought its EHS unit to the CGFCC for testing during 2007 as part of a successful industry/university/government collaboration that also involved the Connecticut Clean Energy Fund and the U.S. Department of Defense. The unit was refined and tested in anticipation of propelling it toward commercialization.
The School initiated discussions with counterparts in the School of Business to expand the capstone Senior Design Experience. In particular, the School is interested in integrating business and entrepreneurship facets into the senior design curriculum. Ideas under consideration include (i) inviting School of Business faculty or industry leaders to present lectures on opportunity generation, creativity and innovation, and business plan development for commercialization, (ii) including entrepreneurially-oriented Business students to join senior design team, and (iii) inviting MBA students and/or Business faculty to partner with senior design teams to develop business plans and commercialize their novel products/processes.

PERSONNEL

The School of Engineering was pleased to welcome new Dean Mun Young Choi in January. Erling Smith, who served as Interim Dean from early June 2006 until December 31, 2008, returned to his home department of Civil & Environmental Engineering. Dr. Choi received his M.A. (’89) and Ph.D. (’92) degrees from Princeton University, in the field of mechanical and aerospace engineering. He previously served as Associate Dean for Research and Graduate Studies in the College of Engineering, and as Department Head of Mechanical Engineering and Mechanics, both at Drexel University, Philadelphia. Before joining Drexel in 2000, Dr. Choi held academic and administrative appointments at the University of Illinois in Chicago. He also conducted post-doctoral research as a National Research Council Post-Doctoral Fellow at the National Institute of Standards & Technology (NIST) in Gaithersburg, MD from 1992-93. Dr. Choi’s research interests focus on the effects of sooting and radiation on droplet combustion, and soot diagnostic techniques.

The School conducted faculty searches that culminated in the successful hiring of nine new faculty members, including one new endowed chair faculty member, for the fall ’08 and spring ’09 terms. Dipanjan Basu (Ph.D. Purdue) joins the CEE as an assistant professor; the CMBE Department will welcome George A. Rossetti, Jr. (Ph.D. The Pennsylvania State University), Brian G. Willis (Ph.D. MIT), William Mustain (Ph.D. Illinois Institute of Technology), and Jeffrey McCutcheon (Ph.D. Yale); the ME Department recruited Robert Gao (Ph.D. Technical University of Berlin, Germany) – who joins the department as the Pratt and Whitney Endowed Chair, Tianfeng Lu (Ph.D. Princeton University), George Lykotrafitis (Ph.D. National Technical University of Athens, and Caltech), and Chengyu Cao (Ph.D. MIT).

The Office of the Dean welcomed five new professional staff members. Brian Schwarz joined the School in August 2007 as Director of Advising. He held similar positions in the College of Engineering at the University of Massachusetts, most recently as Director of the Career and Student Development Center. With the departure of our Director of Development, Joe Hanrahan – who accepted a position with the UConn Health Center – the School and UConn Foundation recruited two new development officers: Christopher Joliat and Michael McCarthy. Mr. Joliat, who serves as Director of Development, worked previously as Vice President of Development with the Legion of Christ, an international Catholic not-for-profit organization. Mr. McCarthy will assist Mr. Joliat in the capacity of Assistant Director of Development. He worked previously at the UConn Foundation as program director of Leadership Gifts and, earlier in his career, in the financial services sector. Ed Swindelles joined the Engineering Computing Services unit in March as a Systems Administrator providing assistance in managing the technical infrastructure of systems such as e-mail and supporting the School of Engineering community in the use of technology. Kerrie Alberts joined the School in May as Grants Development Officer. Ms. Alberts will assist faculty in the preparation of interdisciplinary research programs and proposal submissions.

The School of Engineering lost two of its senior faculty members with the retirements of Civil & Environmental Engineering professor John DeWolf (35 years at UConn) and Mechanical Engineering associate professor Robert Jeffers (40 years at UConn). In addition, former Department Head of ECE Robert Magnusson, will leave UConn this summer for an endowed chair at the University of Texas - Arlington.
Alumni

In April, the School celebrated its annual awards banquet and inducted three alumni into the Academy of Distinguished Engineers: Wayne A. Eckerle (Ph.D. Mechanical Engineering, ‘85), Dr. Jorge L. González-Velázquez (Ph.D. Metallurgy, ‘90) and Thomas W. Prete (B.S. Mechanical Engineering, ‘85). Dr. Eckerle is Vice President of Corporate Research and Technology at Cummins Inc., Columbus, IN. Dr. González-Velázquez is a professor of Metallurgy & Materials Engineering at the Instituto Politecnico Nacional (IPN) and founder and Director of the Pipeline Integrity Assessment Group. Mr. Prete is Program Chief Engineer, Military Engines at Pratt & Whitney, East Hartford, where he is responsible for the safety, airworthiness, life management, product improvements and technology insertion of engines powering front-line military aircraft.

In the spring, alumnus Kumares C. Sinha (M.S. Municipal Engineering, ’66; Ph.D. Civil Engineering, ’68) was elected to the National Academy of Engineering, “For contributions to the advancement of highway infrastructure engineering and management and to the education of transportation professionals worldwide.” He is the Edgar B. & Hedwig M. Olson Distinguished Research Professor of Civil Engineering and Director of the Joint Transportation Research Program at Purdue University.

The School held its annual alumni holiday reception December 6th at the Bushnell in Hartford. The event was attended by 73 alumni in addition to Engineering faculty, administrators and selected students.

Other

Enhancing the research reputation of the School of Engineering remained an important goal during the year. The engineering communications team continued to produce its printed magazine, upgraded and expanded its website to incorporate more expansive job/internship/co-op matching for students; more expansive coverage of research opportunities and sponsored programs links; links to fellowship opportunities; and other upgrades intended to make the website more dynamic and useful. In addition, the team transformed the School website into a format that is consistent with the University’s standard template requirements.

The electronic news page was produced throughout the year, on the order of every three weeks, and transmitted to alumni, students, faculty; industry friends; University leadership; and legislators.
The first permanent Department Head of the Chemical, Materials & Biomolecular Engineering Department (CMBE), Dr. C. Barry Carter, commenced his term at the beginning of this academic year. Prior to joining UConn, Dr. Carter was the 3M Harry Heltzer Endowed Chair in the Department of Chemical Engineering and Materials Science (1991–present) and a professor in the Chemical Physics Program at the University of Minnesota. He earned his D. Phil. in Metallurgy & Science of Materials at Oxford University in 1975, and in 2005 he received the Sc.D. degree in Natural Sciences from Cambridge University.

Dr. Carter assumed the reigns from Dr. Montgomery Shaw, who served as Interim Head during the transition year following the merger of the formerly separate Chemical Engineering and Materials Science & Engineering departments. The units were joined officially on July 1, 2006; however, during the first year they continued to function as parallel, independent units, with each overseen operationally by a unit Program Director. The Department Head has worked to foster a cohesive culture that integrates the units, and linkages are becoming apparent. Dr. Mark Aindow, Program Director for the Materials Science & Engineering (MSE) program, will complete his three-year term at the end of 2008; Dr. Richard Parnas, Chemical Engineering (ChE) Program Director, will step down prior to the start of the fall 2008 semester to begin sabbatical leave. A new mode of operation is being developed that defines the roles of the Program Directors and the Undergraduate and Graduate Committee chairs of the two programs so that the tasks of each are better articulated, afford greater scope for creativity, and foster leadership experience.

RESEARCH

Scholarly research remained strong during the year. The department’s total research expenditures for this period amounted to $2,331,319. The table below summarizes performance metrics from 2002 through June 2008 for the CMBE faculty members. A review of these figures reveals that MSE faculty members are progressing well in the time since the department was merged (2005-06), while the performance metrics of ChE faculty members have remained largely stable. With the infusion of new faculty members to the ChE program beginning in fall ’08, in coming years the program is expected to regain its previous level of vigor.

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<th>Year</th>
<th>Undergrad Students</th>
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Drs. Aindow, Lei Zhu and Carter are collaborators on a proposal for a new transmission electron microscope (TEM), which received funding from UConn Provost Peter Nicholls and will be added to the IMS Electron Microscopy Facility. Dr. Aindow was a co-principal investigator on a Defense University
Research Instrumentation Program (DURIP) proposal to bring the first focused ion beam (FIB) microscope to UConn. Drs. Yu Lei and Yong Wang landed a $450,000 grant to develop artificial antibodies capable of locating and destroying tumors. Dr. Ranjan Srivastava received a breakthrough first NIH grant in spring 2008. Dr. Yu Lei serves as PI on a large (nearly $800,000), multidisciplinary National Science Foundation grant aimed at developing real-time, ultra-sensitive sensor arrays capable of sniffing out even trace quantities of explosives. He is joined by UConn colleagues, Drs. Christian Brückner (Chemistry) and Ali Gokirmak (Electrical & Computer Engineering), and several others.

**UNDERGRADUATE PROGRAMS**

The department had a two-in-one critical success in fall '07: the B.S. degree programs for both ChE and MSE were given favorable reviews by ABET accreditation reviewers and appear poised for the maximum six-year accreditation. The ABET final report will be issued in July 2008. This successful outcome arises from the dedicated efforts of Drs. Douglas Cooper and Hal Brody, respectively. Notably, the ABET reviewers have indicated their intention to backdate the MSE program, which was evaluated for the first time, for the maximum two years.

CMBE graduating seniors enjoyed many post-graduation opportunities, including acceptance to superb graduate programs and exciting job offers. Among those ChE graduates who were proceeding to doctoral degree programs, our students were accepted at Cornell, MIT, the University of Delaware and Penn State University, among others. MSE graduated its largest class yet, at 14. Of these, half will pursue graduate studies at UConn, the University of Massachusetts or the University of Virginia. The remainder have accepted positions in local industry with employers that include Hamilton Sundstrand, Ulbrich New England (a unit of Ulbrich Stainless Steels & Special Metals, Inc.), and Atlantic Wire.

The UConn chapter of Materials Advantage hosted the first annual Northeast Regional Material Advantage Conference. Three $250 prizes (sponsored by the *Journal of Materials Science*) were awarded for the best posters. The Undergraduate Category was won by UConn MSE student James Bosse, for his poster concerning “Efficient Large Area AFM Imaging.”

Over 20 MSE majors participated in undergraduate research in one of three modes: (i) for credit as independent study students; (ii) non-credit as research assistants working within the research groups of individual faculty members; or (iii) as part of an NSF-sponsored REU (Research Experience for Undergraduates) program.

CMBE boasts one of the largest shares of UConn Honors Program students across the university. The ChE undergraduate population alone includes 42 Honors Program students; Drs. Ben Wilhite and Ranjan Srivastava served as faculty advisors.

**GRADUATE PROGRAMS**

Dr. I. Burc Misirlioglu, who recently completed his doctoral degree with Dr. Pamir Alpay, was honored with receipt of the School of Engineering’s Outstanding Doctoral Student Award, which was presented at the annual engineering banquet in April 2008.

**STAFF & FACULTY**

Drs. Yehia Khalil and Tom Anderson (now retired) assisted the department as adjunct faculty members the CMBE seeks to fill a number of vacant tenure-track positions. Professor Emeritus G. Michael Howard continued to assist in the ChE Senior Lab. Professor Emeritus Donald Potter again ran the MSE Materials Characterization Lab.

Dr. Robert Weiss was named to a chair position, the UTC Professor of Advanced Materials and Processing. Dr. Bryan Huey was selected as the MSE program’s Outstanding Faculty Member for 2007 in recognition of his exceptional contributions to research, teaching and outreach missions of the program.
Drs. Alpay, Mei Wei and Lei Zhu were all in their first year as tenured Associate Professors. Drs. Luke Achenie and Can Erkey left UConn for positions at Virginia Tech and Koç University, Istanbul. Dr. Erkey was appointed an Adjunct Professor in CMBE.

In the administrative area, Ms. Katrice Duell joined CMBE to assist, in part, with the development of our newsletters and web sites. Mr. Eric Anderson accepted a position as Researcher in Residence with a new three-year appointment, and Mr. Richard Kozel returned part-time to assist with the ChE Senior Lab. Ms. Susan Soucy celebrated her 15-year anniversary at UConn, while Dr. Montgomery Shaw observed his 30-year anniversary.

Dr. Cooper chaired a search committee that successfully recruited two new faculty members, Drs. William Mustain (Ph.D. Illinois Institute of Technology, ‘06) and Brian Willis (Ph.D. MIT, ‘99), who will join the CMBE department as ChE faculty in fall ’08. A second ChE search, led by Dr. Shaw with active participation of Dr. Michael Willig (Director, Center for Environmental Science & Engineering), resulted in the hiring of Dr. Jeff McCutcheon (Ph.D. Yale, ’07). Dr. McCutcheon will join the ChE faculty in August and will also be a member of the Center for Environmental Science & Engineering (CESE). The MSE search culminated in the hiring of Dr. George A. Rossetti, Jr. (Ph.D. The Pennsylvania State University), who will join CMBE in fall ’08. Dr. Rossetti has worked as a research professor in the Institute of Materials Science at UConn since 2006. Our search for two ChE faculty members with expertise in environmental fields is continuing.

**PROGRAM OUTREACH**

Visibility at national meetings continues to grow: the Materials Advantage Student Chapter (Faculty Advisor: Rainer Hebert) won a “Chapter of Excellence” award at the Materials Science & Technology Conference meeting, which was attended by 11 undergraduate members of the UConn chapter. The new Materials Research Society student chapter (Faculty Advisor: Bryan Huey) received its charter in fall 2007. Undergraduate members of the UConn chapter of the American Institute of Chemical Engineers (AIChE) attended the annual AIChE meeting in Salt Lake City (Faculty Advisor: Yu Lei). Four assistant professors, along with professor emeritus Michael Cutlip and Dr. Carter also participated in meeting.

Dr. Carter also participated in the two meetings of the University Materials Council and the AIChE Heads meeting in Salt Lake City. Dr. Huey was a key member of the State’s Nanotechnology Education program, which developed and delivered classes for high school teachers from across Connecticut. With the aim of increasing undergraduate enrollments in ChE, Dr. Srivastava hosted a number of informational/social events at which ChE students enrolled in the Honors Program interacted with attendees. In April, Dr. Rainer Hebert led the department’s efforts in the annual Connecticut Invention Convention and hosted the New England Association of Chemistry Teachers (NEACT).

Two separate one-page fliers were mailed to alumni and colleagues in other schools in June. A departmental newsletter is planned for late July.
Mark Aindow


S. Pamir Alpay


Harold D. Brody


C. Barry Carter


Douglas J. Cooper


Puxian Gao


Maurice Gell


Rainer Hebert


Bryan Huey


Yu Lei


Harris L. Marcus


Arthur J. McEvily


Richard Parnas


Ramamurthy Ramprasad


**Leon L. Shaw**


**Montgomery T. Shaw**


“Structured Polymer Electrolyte Blends Based on Sulfonated Polyetherketoneketone (SPEKK) and a Poly(ether imide) (PEI),” (with J.V. Gasa and R.A. Weiss), *Journal of Membrane Science*, online version published April 26, 2008.

**Alevtina L. Smirnova**


**Ranjan Srivastava**


Mei Wei


Robert A. Weiss


“Structured Polymer Electrolyte Blends Based on Sulfonated Polyetherketoneketone (SPEKK) and a Poly(ether imide) (PEI),” (with J. Gasa and M.T. Shaw), *Journal of Membrane Science*, online version published April 26, 2008.


Benjamin Wilhite


Lei Zhu


S. Pamir Alpay


Douglas J. Cooper


Harris L. Marcus


Richard Parnas

**Chemical, Materials & Biomolecular Engineering Department Conference Proceedings & Other Publications 2007-2008**

**Mark Aindow**


**Douglas J. Cooper**


**Puxian Gao**


**Rainer Hebert**


**Bryan Huey**

Harris Marcus


Richard Parnas


Montgomery T. Shaw


Alevtina L. Smirnova


“Materials Characterization and Electrochemical Performances of Gd_{0.5}Sr_{0.5}CoO_{3} Cathode for IT-SOFCs,” (with J. Pusz, N.M. Sammes and V. Sadykov), *Proceedings of the IMPRES Innovative Materials for Processes in Energy System*, Kyoto, Japan, 2007.


Mei Wei


Robert A. Weiss


Lei Zhu


Mark Aindow


“Engineered Nano-Composite Oxides for High Durability Missile Domes,” (with PI: E. Jordan (75%)), U.S. Department of Defense/DARPA, sub-contract from Raytheon, 4/16/07 - 10/15/10, $2,808,000.

“Support for the Application of Lasers to Materials Processing,” (with PI: H.L. Marcus (50%)), Connecticut Center for Advanced Technology, 6/01/07 - 5/31/08, $200,000.


“TEM Characterization of SAM Al,” Pratt & Whitney, 9/5/07-12/31/08, $40,000.

“Microstructural Characterization in Support of Fuel Cell Catalyst Development,” UTC Power, 10/1/07 - 12/31/08, $201,303.


S. Pamir Alpay

“Theoretical Analysis and MOSD of BST Multilayers, Subcontract from Frequency-Agile, Functionally Graded Ka-band Filters,” SMI Inc., NJ (U.S. Department of Defense, Army STTR), 7/2/07 - 1/1/08, $30,000.

“Self-Healing, High-Reliability Electrical Contacts for Military Applications,” (with co-PI: M. Aindow (50%)), U.S. Army Research Office, 6/01/07 - 6/01/10, $398,375.


“Dislocations in Thin Films of Ferroic Oxides,” American Chemical Society, The Petroleum Research Fund, 7/01/05 - 5/30/08, $80,000.

Harold D. Brody

“Sub-micron Precipitates in Segregated Al-Si-Cu-Mg Cast and Aged Alloys,” Distinguished Professor Discretionary Account, Provost, 7/1/07 - 6/30/08, $36,000.
C. Barry Carter

“Acquisition of a Scanning Transmission Electron Microscope for Research, Education and Outreach in Materials Science,” (with PI: M. Aindow and co-PI: L. Zhu), Provost’s Research Equipment Competition, University of Connecticut, 12/01/07 – 06/30/08, $500,000.

Douglas J. Cooper

Unrestricted Grant, Control Station, Inc., 7/1/07 – 6/30/08, $51,217.


“Continuous Improvement in Co-Gen Plant Operation,” University of Connecticut, 7/1/08 – 6/30/09, $73,000.

Puxian Gao


“Large Scale Synthesis of Heterojunction Semiconductor Nanowires for Electronics and Optoelectronics Applications,” Research Foundation Large Grant, University of Connecticut, 1/1/08 - 12/31/08, $23,884.

Rainer Hebert

“Accumulative Roll Bonding Processing of Bulk Nanolaminate Materials,” National Science Foundation-CMMI, 5/15/07 - 4/30/10, $290,000.

“Synthesis and Microstructure Control of Cu-based Bulk Metallic Glasses,” Research Foundation, University of Connecticut, 6/01/07 - 12/31/08, $26,116.


Bryan Huey


Yu Lei

“Biosensor and Bioaccumulation for Heavy Metals Using Genetically Engineered *Caulobacter crescentus*,” Office of Research and Graduate Education, University of Connecticut, 1/1/07 - 12/31/08, $27,000.

“Exp-La: Realtime, Compact, & Ultra-Sensitive Sensor Arrays for Explosives,” (with C. Brueckner (29.95%) and A. Gokirmak (3.13%)), National Science Foundation, 9/1/07 - 8/31/10, $780,404.


Harris L. Marcus

“Center for Advanced Deployable Nanosensors,” (with PI: F. Papadimitrakopoulos and co-PIs: B. Huey, J. Rusling and K. Noll), U.S. Army Research Office, 9/1/02 - 1/31/08, $2,955,000.

“Tracking the Health of Soldiers with Advanced Implantable Nano-Sensors,” (with PI: F. Papadimitrakopoulos), U.S. Army Research Office, 1/1/08 - 6/30/10, $1,600,000.

“Support for the Application of Lasers to Materials Processing,” (with co-PI: M. Aindow (50%)), Connecticut Center for Advanced Technology, 6/01/07 - 5/31/08, $200,000.


Richard Parnas

“Investigation of Wheat Gluten for Industrial Composites,” (with co-PI: A. Asandei), U.S. Department of Agriculture-CSREES, 9/1/05 – 8/30/08, $354,000.

“Polymers Gels,” U.S. Department of Energy, Sandia Corporation, 2/2/04 - 9/30/07, $178,000.


“Biofuels – Support of the Undergraduate Biodiesel Educational Laboratory,” Pratt & Whitney, 7/1/07 – 6/30/08, $10,000.

Ramamurthy Ramprasad

“Computational Support of the ONR Capacitor Program,” (with co-PI: S. Boggs (50%)), Office of Naval Research, 1/01/08 - 12/31/10, $480,000.

“Electrical Degradation in High-k Dielectrics Based Devices: A Computational Study,” National Science Foundation, 8/01/07 - 7/31/10, $270,000.


“Binary and Ternary Semiconductor Quantum Rods: A Computational Route to Next-generation All-Inorganic Photovoltaic Materials,” National Science Foundation, 1/1/08 - 12/31/10, $199,968.
“Improving Steel Saw Blades Using Ion Implantation and Fundamental First Principles Computational Modeling,” (with PI: H. Marcus (80%)), Lenox Saws, 1/16/07 - 1/16/09, $171,576.

“Computational Study of Conduction and Breakdown Mechanisms in Metal Oxide Dielectric Insulators,” ACS Petroleum Research Fund, 9/1/05 - 8/31/08, $88,000.

“Molecular and Nano Composite Dielectrics for High Energy Density Capacitors for Pulsed Power and Power Conditioning Applications,” (with PI: L. Zhu (40%) and co-PIs: A. Asandei (10%) and S. Boggs (20%)), Office of Naval Research, 2/1/05 - 12/31/07, $800,000.

“Computational Investigation of XLPE with SiO$_2$ Nanofiller,” (with co-PI: S. Boggs (6%)), Electric Power Research Institute (EPRI), 9/1/06 - 12/31007, $85,000.

“Nanocomposite Dielectrics for High Power Capacitors,” (with PI: S. Boggs (94%)), Air Force SBIR – Phase I, 1/1/07 - 12/31/07, $85,000 (UConn share).

**Leon L. Shaw**


**Montgomery T. Shaw**

“Fabrication of Multi-Functional Composites for Load-Bearing Skeletal Applications,” (with PI: M. Wei (60%) and co-PI: J. Olson), National Science Foundation (GOALI), 1/1/05 - 5/31/08, $375,000.


“Match Account for NSF GOALI: Fabrication of Multi-functional Composites for Load-bearing Skeletal,” (with PI: M. Wei (60%)), 9/1/05 - 8/31/08, $75,000.


“Manufacture of Controlled Microstructure Proton Exchange Membranes,” (with PI: R. Weiss (60%)), National Science Foundation-NPM, 9/1/07 - 8/31/10, $453,888.


**Alevtina L. Smirnova**

“Synthesis of Metal Alloy Aerogel Based Catalysts for PEMFCs,” UTC Power, 5/1/08-9/31/08, $40,000.

“Carbon Supported Non-Noble Metal Catalysts Based on Self-Organized Organic Macrocycles; Source,” National Science Foundation, 9/1/07 - 9/31/08, $49,500.


“Development of the Novel Cathode Catalysis for Intermediate Temperature SOFCs,” (with co-PI: N. Sammes (50%)), United Technologies Research Center, 7/1/07 - 6/30/10, $75,750.

Ranjan Srivastava


“Development of a Preliminary Mucositis Model,” University of Connecticut Health Center, 6/4/07 - 12/31/10, $4,496.

“Engineering of *Escherichia coli*’s Metabolism to Increase Electron Output for Microbial Fuel Cell Applications,” University of Connecticut Center for Environmental Sciences & Engineering, 6/1/07 - 9/1/07, $5,000.

Yong Wang


“Multivalent ‘Artificial Antibody’ Based on RNA/Dendrimer-Like Star Polymer Hybrid Nanomaterials,” (with L. Zhu (50%)), National Science Foundation, 7/1/07 - 6/30/08, $450,000.


Mei Wei


“Match Account for NSF GOALI: Fabrication of Multi-functional Composites for Load-bearing Skeletal,” (with co-PI: M. Shaw (40%)), 9/1/05 - 8/31/08, $75,000.

“Collaborative Research: A Novel Approach to Improve the Interfacial Strength of Hydroxyapatite Coated Implants for Orthopedic and Dental Applications,” (with co-PI: S. Seal), National Science Foundation, 9/1/05 - 8/31/09, $180,000.
“GOALI: Multi-Functional Composites for Load-Bearing Skeletal Applications,” National Science Foundation, 9/1/05 - 8/31/09, $3,000.

“IREE: Delivery of Growth Factors Using a Novel Hydroxyapatite/Polymer Fibrous Scaffold Coating on Metallic Implants,” National Science Foundation, 9/1/06 - 8/31/09, $23,850.

“Delivery of Growth Factors using a Novel Composite for Bone Repair,” Yankee Ingenuity Technology Competition, 12/1/05 - 12/31/08, $295,365.


“HA Coated Implants: A Novel Approach to Improve the Interfacial Strength of Hydroxyapatite,” 9/1/05 - 8/31/09, $110,000.


“IREE Supplement for FRS #523989 - HA Coated Implants: A Novel Approach to Improve the Interfacial Strength of Hydroxyapatite,” National Science Foundation, 9/5/05 - 8/31/09, $6,000.

“REU for FRS 523989 - HA Coated Implants: A Novel Approach to Improve the Interfacial Strength of Hydroxyapatite,” National Science Foundation, 6/1/08 - 8/31/09, $6,000.

“REU Supplement to GOALI grant-524987,” National Science Foundation, 9/1/05 - 8/31/09, $3,000.

Robert A. Weiss


“Functional Polymers From Renewable Resources – Itaconic and Lactic Acids (TSE03-B),” (with S.J. Huang), National Science Foundation, 2003-2007, $360,000.


“Structure and Properties of Ionomer Modified Asphalts (IMAs),” Connecticut Transportation Institute, 2008-2010, $102,827.


“REU Supplement,” National Science Foundation, 5/1/08 - 8/31/10, $11,750. .
“Control of the Wetting Behavior of Thin Polymeric Films on Inorganic Substrates,” National Science Foundation, 12/1/06 - 11/30/07, $5,913.

Benjamin Wilhite

“Heat Integrated Hydrogen Production from Liquid Fuels,” Young Investigator Program, Office of Naval Research, 6/1/07 - 5/31/10, $299,010.

DuPont Young Professor Grant Competition, DuPont, 9/1/07 - 8/31/10, $75,000.

“Integrated Ceramic Membrane Networks for Hydrogen Extraction,” Office of Research and Graduate Education Large Grant Competition, University of Connecticut, 1/01/07 - 12/31/07, $16,024.


“Analysis of Hydrogen Purification Membranes for Use in Fuel Cell-Based,” Office of Naval Research, 12/18/07 - 12/19/08, $97,055.

Lei Zhu

“CAREER: Tailoring the Nanostructure and Morphology of Hydrogen-bonded Supramolecular Liquid Crystals using Immiscible Polymer Side Chains,” National Science Foundation, 1/01/04 - 12/31/08, $430,000.

“Functional Soft Materials at Nanoscales,” 3M University Nontenured Faculty Grant, 12/01/04 - 11/30/07, $45,000.

“Molecular and Nano Composite Dielectrics for High Energy Density Capacitors for Pulsed Power and Power Conditioning Applications,” (with co-PIs: A. Asandei (10%), S. Boggs (20%) and R. Ramprasad (30%)), Office of Naval Research, 2/01/05 - 9/30/07, $800,000.

“Supramolecular Lipid/DNA/Carbon Nanotube Self-Assembly for Advanced Organic Electronics,” DuPont Young Professor Grant, DuPont, 5/1/05 - 4/30/08, $75,000.

“AFRL Research Project: Coatings Technology Development for Active Spectral Response (ASR) of Surfaces,” subcontract from South Dakota School of Mines, 5/15/07 - 6/14/08, $25,000.

“Multivalent ‘Artificial Antibody’ Based on RNA/Dendrimer-Like Star Polymer Hybrid Nanomaterials,” (with PI: Y. Wang (50%)), National Science Foundation, 7/15/07 - 6/14/10, $450,000.


“Acquisition of a Scanning Transmission Electron Microscope for Research, Education and Outreach in Materials Science,” (with PI: M. Aindow and co-PI: C.B. Carter), Provost’s Research Equipment Competition, University of Connecticut, 12/01/07 - 6/30/08, $500,000.
Puxian Gao


Junior Faculty Summer Fellow, University of Connecticut, 2008.

Bryan Huey

Outstanding Faculty Member, Materials Science & Engineering Program, University of Connecticut, 2007.

Richard Parnas


Ranjan Srivastava

Summer Faculty Fellowship, Office of Naval Research, 2007.


Robert A. Weiss

International Award, Society of Plastics Engineers, 2008.

Benjamin Wilhite

Office of Naval Research, Young Investigator Award, 2007.

DuPont Young Professor Award, 2007.
CHEMICAL, MATERIALS & BIOMOLECULAR ENGINEERING DEPARTMENT
MAJOR PROFESSIONAL ACTIVITIES
2007-2008

Mark Aindow

Fellow, Institute of Physics, London, 2000 -.

Fellow, Institute of Materials, London, 2002 -.

Deputy Editor-in-Chief (January ’08 – date) and Editor (July ’04 – January ’08), Journal of Materials Science.

Member, Editorial Board, Research Letters in Materials Science, 2007 - date.

Member, Editorial Board, Advances in Materials Science and Engineering, 2008 - date.

Member, Fellowship Panel, Institute of Physics.

Corresponding Member, Publications Committee, Institute of Materials.

Member, Executive Committee, ASM Hartford.

Invited Visiting Professor: National Taiwan University, Taipei, Taiwan; and Honorary Senior Research Fellow, University of Birmingham, England.

Presentations:


“Grain Growth Phenomena in Ni-Based Superalloys,” (with K. Song), invited, 6th Brazilian MRS Meeting, Natal, Brazil, October 31, 2007.


S. Pamir Alpay


Session Chair, XVII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico, October 2007.

International Advisory Board Member, 2nd International Workshop on Smart Materials & Structures, Kiel, Germany, August 2007.


*Presentations:*


“Barium Strontium Titanate Thin Films for Application in Microwave Tunable Devices,” (with C.V. Weiss), 17th Connecticut Symposium on Microelectronics and Optoelectronics, Storrs, CT, April 2008.

Harold D. Brody

Fellow, ASM International, 1993 -.

Fellow, Connecticut Academy for Education, 1999 -.

Granted access to: NSF-Cornell High Energy Synchrotron Source, A-2; and Argonne National Lab, Synchrotron, NIST Consortium.

C. Barry Carter

Fellow, American Ceramic Society


Member, Editorial Board, Materials Characterization.

Member, Editorial Board, Microscopy & Microanalysis.

Member, Editorial Board, Journal of Microscopy.

General Secretary, IFSM (the International Federation of Societies for Microscopy).


Member, Awards Committee, Materials Research Society.

Presentations:


Douglas J. Cooper

Member, Energy Review Committee and Economic Development Committee, Connecticut Academy of Science & Engineering.

Member: Connecticut Academy of Science and Engineering; Automation Division, Instrument Society of America (ISA); Education Section and Computing & System Technology Section, American Institute of Chemical Engineers; Chemical Engineering Division, American Society for Engineering Education; and Connecticut Section, Sigma XI – The Scientific Research Society.

Presentation:

“Controller Performance Monitoring at Constant Set Point Using Autocorrelation,” Tenth IASTED International Conference on Control and Applications, Quebec City, Quebec, Canada, May 26, 2008.

Puxian Gao

Presentations:


“Substrate Tailored Assembly of Nanowire/Nanobelt Architectures,” invited, Chemical Engineering Program, Department of Chemical, Materials and Biomolecular Engineering, University of Connecticut, Storrs, CT, October 2, 2007.


**Rainer Hebert**

Board Member, ASM Hartford Chapter.

Member, TMS Solidification Committee.

Summer 2008 Fellowship, Office of Naval Research.


Organizer, Symposium on Phase Transformations and Microstructural Changes during Sustained Mechanical Forcing, Materials Science & Technology 2008 Conference & Exhibition (MS&T’08), Pittsburgh, PA, October 5-9, 2008 .

Granted access to Naval Research Lab - Synthesis and Characterization Equipment for Metallic Glasses.

**Presentations:**


**Bryan Huey**

Member, Editorial Board, *Journal of Scanning Probe Microscopy*.

Chair, Session on Nanofabrication and Manipulation, Materials Research Society Annual Fall Meeting, 2007.

Chair, Session on Scanning Probe Microscopy, Materials Science and Technology Annual Meeting, 2007.

Instructor, “Advanced Scanning Probe Microscopy,” Lehigh University Microscopy School, 6/8/08-6/12/08.

Presentations:


Yu Lei


Presentations:


Richard Parnas

Member, Editorial Advisory Board, Polymer Composites


Chair, Session in Biofuels Symposium, American Chemical Society August meeting, Boston, MA, 2007.


Biodiesel production workshop, April 1, 2008.

Presentations:

“Biodiesel R&D at the University of Connecticut with an Engineering Perspective,” invited, Northeast Joint Summer Meeting of Northeastern Regional Association of State Agricultural Experiment Station Directors (NERA), the Northeast Extension Directors (NEED), Northeast Academic Heads (AHS), members of the Council for Agricultural Research, Extension and Teaching (CARET), Providence, RI, July 9, 2007.

“The Biofuels Revolution, Does CT have a Role?,” invited, Suffield Town Public Forum, October 10, 2007.


**Ramamurthy Ramprasad**

Organizer and Session Chair, Focused Session on Optical Properties of Nanostructures, American Physical Society, New Orleans, LA, March 2008.

*Presentations:*


**Leon L. Shaw**

Fellow, World Academy of Materials and Manufacturing Engineering, Poland, 2005 - .


Member, Engineering Ceramics Division, American Ceramic Society; TMS Mechanical Metallurgy Committee; TMS Composite Materials Committee; TMS Powder Metallurgy Committee.

Member, Executive Committee, ASM Nanomaterials Task Force.

Chair, ASM-MSCTS Materials Synthesis & Processing Committee.

Member, Connecticut Academy of Science and Engineering, 2006 - .


Presentations:


Montgomery T. Shaw

Fellow, Society of Plastics Engineers.

Associate Editor, *IEEE Transaction on Dielectrics and Electrical Insulation*.

Treasurer, Society of Rheology.

Member, Connecticut Academy of Science and Engineering.

Executive Committee, Society of Rheology.

Society Treasurer Committee, American Institute of Physics.

Presentations:


Alevtina L. Smirnova

Presentations:


Ranjan Srivastava

Chair, “Biomolecular Evolutions and Revolutions: DNA, RNA, and Proteins” session, ECI Biochemical Engineering XV, Quebec, Canada, July 15, 2007.


Organizer, Systems Biology Topical Conference (6 sessions), American Institute of Chemical Engineers National Meeting, Salt Lake City, UT, November 2007.

Program Chair, Biochemical Technology Division (44 sessions), American Chemical Society National Meeting, August 17-22, 2008.

Access granted: (i) Naval Medical Research Center and (ii) Walter Reed Army Institute Research Facilities.

Member, Executive Committee, Biochemical Technology Division, American Chemical Society.

Presentations:

“Genome-scale Metabolic Analysis of Rickettsia prowazekii: An In Silico Approach,” invited, Department of Viral and Rickettsial Diseases, Naval Medical Research Center, Silver Spring, MD July 12, 2007.


Yong Wang

Guest Editor, *IEEE Engineering in Medicine and Biology*.

*Presentations:*

“Feeder Cell Immobilization for Stem Cell Culture,” American Institute of Chemical Engineers Annual Meeting, Salt Lake City, UT, November 2007.


Mei Wei

Member, Editorial Board, *Journal of Biomimetics, Bioinformatics, and Biocomputing*.

Member, Board of Review, *Metallurgical and Materials Transactions A*.

Member, Editorial Board, *ASAIO Journal*.

*Presentations:*

“Multi-Functional Composites for Load-Bearing Skeletal Applications,” (with F. Peng), 2007 NSF Grantee Conference on International Research and Education in Engineering, Purdue University, IN, October 30-November 1, 2007.


Robert A. Weiss


Fellow, American Physical Society.

Fellow, Society of Plastics Engineers.

Fellow, Polymeric Materials: Science and Engineering Division, American Chemical Society.

Editor-in-Chief, *Polymer Engineering and Science*.

Editor-in-Chief, *Polymer Composites*.

Member, International Advisory Board, *Polymer and Polymer Composites*.

Member, Editorial Advisory Board, *Journal of Applied Polymer Science*.

Member, Editorial Advisory Board, *Macromolecules*.
Member, Editorial Advisory Board, *Chemistry Central Journal*.

Member, Publications Committee and Education Award Committee, Society of Plastics Engineers.

Member, Intersociety Committee, Division of Polymer Chemistry, American Chemical Society.

Member, Connecticut Academy of Science and Engineering.

**Presentations:**


“Melt Intercalation of Polymer/Sodium Montmorillonite Nanocomposites Using Ionomer Compatibilizers,” Marquette University, WI, March 2008.

“Ionomers: They are Not Just for Golf Balls Anymore,” Institute Distinguished Lecture, Institute of Materials Science, University of Connecticut, Storrs, CT, April 2008.


**Benjamin Wilhite**


Planning Vice-Chair, Division 20b (Chemical Reaction Engineering) of the American Institute of Chemical Engineers (AIChE), Annual Meeting, Salt Lake City, UT, 2007.


Planning Chair, Division 20b (Chemical Reaction Engineering) of the American Institute of Chemical Engineers (AIChE), Annual Meeting, Philadelphia, PA, 2008.


Presentations:


“Microchemical Systems for Portable Biofuels Reforming,” Department of Chemical Engineering, West Virginia University, WV, February 22, 2008.


Lei Zhu

Access granted to National Synchrotron Light Source, Brookhaven National Laboratory.

Presentations:


“Tailoring Onion-like Morphology in Polylactide-containing Block Copolymers,” invited talk, 50 Years after the Discovery of Polymer Single Crystals Symposium, American Chemical Society Meeting, Boston, MA, August 20, 2007.


“Self-Assembled Biodegradable Block Copolymers as Potential Nanomedicines and Polymer Dielectric Films for High Energy Density Capacitors,” *invited*, Department of Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, OH, April 1, 2008.

“Self-Assembled Biodegradable Block Copolymers and DNA Lipoplexes as Potential Nanomedicines,” *invited*, Department of Chemical Engineering and Materials Science, University of California, Irvine, CA, April 11, 2008.
The collapse of the I-35W bridge in Minneapolis last August focused our country’s attention on the declining state of the nation’s infrastructure. Indeed, many of the headlines from 2007-2008 dealt with national and global challenges where civil and environmental engineers are actively engaged – including global climate change, water crises, transportation planning and land use. The Civil & Environmental Engineering Department continues to address these global challenges through its educational and research missions. We educate and prepare engineers to face major societal challenges, and our faculty perform cutting-edge research to develop new solutions to global problems.

**Faculty & Staff**

The department welcomed four new faculty members in fall 2007. Dr. Joseph Bushey earned his Ph.D. in environmental engineering at Carnegie Mellon University in 2003. His expertise is in water quality engineering and his research interests include the transport of metals and toxins within natural systems. Dr. Maria Chrysochoou earned her Ph.D. in environmental engineering at the Stevens Institute of Technology in 2006. Her research interests include geo-environmental and geo-chemical characterization of soil, waste, industrial by-products and complex media. Dr. Nicholas Lownes earned his Ph.D. in 2007 at the University of Texas-Austin in transportation engineering. Dr. Lownes brings expertise in traffic engineering - including highway safety, human factors and cost-benefit analysis - traffic micro-simulation, network analysis and public transportation systems. Dr. Adam Zofka received his Ph.D. from the University of Minnesota in 2007 in civil engineering. Dr. Zofka's research interests include pavement engineering - particularly the characterization, testing and modeling of bituminous materials; asphalt mixtures, asphalt binders, and reclaimed asphalt pavements; pavement performance and non-destructive testing.

The department also welcomed Ms. Tiffiny Thibodeau who joined the department in spring 2008 as an Administrative Services Specialist II. Ms. Thibodeau was previously employed as the Program Assistant for the Environmental Engineering program. Ms. Althea Lozefski also joined the department in May 2008 as Program Assistant for the Environmental Engineering Program.

The department hired one new faculty member during 2007-2008 who will join the university in fall 2008. Dr. Dipanjan Basu earned his Ph.D. in 2006 from Purdue University. His research expertise is in geo-mechanics and geotechnical engineering, foundations, soil-structure interaction, soil dynamics, earthquakes, ground improvement and geo-environmental engineering.

There were two faculty promotions within the department, both effective fall 2008. Assistant Professor Guiling Wang was promoted to Associate Professor with tenure, and Associate Professor Ross Bagtzoglou was promoted to Full Professor.

After 35 years of outstanding service to the university, Professor John DeWolf retired after the Spring 2008 semester. Professor DeWolf has received numerous awards for his excellence in teaching and was named a University of Connecticut Teaching Fellow in 2006. His pioneering research in bridge monitoring has brought national recognition to the department. He has been a long-term member of the University Senate and has been the Chair of the University Senate Executive Committee for the past two years.

Jack Stephens, Professor Emeritus of Civil & Environmental Engineering, passed away in August 2007. Professor Stephens was a faculty member in the department for 39 years and was instrumental in
establishing many of the programs within the Connecticut Transportation Institute. He was inducted into the School of Engineering’s Academy of Distinguished Engineers in 2007.

UNDERGRADUATE EDUCATION

Undergraduate enrollments in the Civil & Environmental Engineering programs continued to increase during the last year with combined enrollments reaching 260 students in spring 2008. Both programs underwent highly successful ABET accreditation visits in fall 2007. Professor John Ivan, Associate Head of Civil & Environmental Engineering, and Associate Professor Ross Bagtzoglou, Director of the Environmental Engineering Program, served as the ABET coordinators for the Civil Engineering and Environmental Engineering programs, respectively.

The department adopted and began implementation of an Undergraduate Computing Plan in spring 2008 that outlines the integration of computer-aided-engineering tools throughout the curriculum to better prepare our graduates for the workforce. The plan addresses continuous development from the freshman year through Senior Design covering multiple subdisciplines that include advanced programming skills, geomatics, fluid mechanics, decision analysis, geotechnical engineering, site design and structural analysis and design.

Professor John DeWolf was this year’s recipient of the C.R. Klewin Award for Excellence in Teaching. The award recipients are chosen each year by the graduating senior class for their unique contributions to undergraduate teaching.

RESEARCH & SCHOLARSHIP

The department’s research activities and scholarship remained very strong during the last year with $1.8 million in research expenditures generated from 81 active grants from a wide variety of funding sources including the National Science Foundation, NASA, National Oceanic and Atmospheric Administration, Federal Highway Administration, U.S. Department of Transportation (USDOT) and ConnDOT, United States Army and Office of Naval Research. Department faculty published 48 journal articles, 37 full length conference papers and 53 conference proceedings in the past year.

Assistant Professor Mekonnen Gebremichael was selected to receive a NASA New Investigator Program (NIP) grant in Earth Sciences. He was one of just 18 recipients nationwide. This is only the second NASA NIP award in UConn’s history; his colleague, Associate Professor Emmanouil “Manos” Anagnostou received one in 1999. The focus of his research will be to evaluate the accuracy of NASA’s current global hydrologic models in predicting the actual hydrological processes over portions of the North American and African continents.

The department’s international research programs continued to develop last year with major activities in water resources and natural hazards mitigation. Associate Professor Anagnostou continued his work on establishing an excellence team to study the global water cycle under a Marie Curie Excellence grant. The team will consist of 5 to 7 researchers who will be jointly hosted by UConn and the Hellenic Center for Marine Research in Greece. Assistant Professor Gebremichael and several of his students returned to Ethiopia this summer to continue his NSF funded project to monitor water resources in the Nile River basin. Under other NSF funding, Assistant Professor Christenson and his students will return to Japan and Thailand this summer to study the response of structures to natural hazards such as earthquakes.

The Center for Transportation and Urban Planning, directed by Associate Professor Norman Garrick, began its first year of operations after approval of its strategic plan last fall. Funded by the U.S. Department of Transportation, the theme of the center is Transportation for Smart Growth. Within this theme, the center's research and educational activities will focus on evaluating the impact of various transportation and land use systems on economic, environmental and societal sustainability and developing protocols and designs that maximize the efficiency and competitiveness of green modes of
transportation. Nineteen research pre-proposals were submitted this spring from multi-disciplinary teams across the university for funding consideration under the center’s Research Grant Program.

Professor Michael Accorsi, Head of Civil & Environmental Engineering, was elected to membership in the Connecticut Academy of Science and Engineering in May 2008 in recognition of his fundamental work in computational mechanics and its applications to Connecticut industry. Most recently, he has collaborated with Pioneer Aerospace (South Windsor, CT) on design of the parachute decelerator system for the Mars Phoenix Mission.

**STUDENT ACTIVITIES**

The department’s undergraduate student organizations continued to be highly active during the past year. The ASCE Student Chapter hosted its 9th annual Civil Engineering Career Fair which attracted a record 56 companies to the Rome Ballroom in the spring semester. The event highlighted the strong demand for civil and environmental engineers in the regional workforce.

The Steel Bridge Team placed third in the Northeast Regional Steel Bridge Competition in April, securing a position in the national competition at the University of Florida in May. Under the enthusiastic guidance of alumnus Michael Culmo (B.S. Civil Engineering, M.S. Structural Engineering ’83, ’86), Vice President of Transportation and Structures for CME Associates, the team has made the national competition five times during the last eight years and has dominated the northeast regional competitions.

The UConn chapter of Engineers Without Borders gained official recognition from the national organization during the past year. Drs. Bagtzoglou, Gebremichael, Chrysochoou and Garrick serve as advisors to the student chapter. During the last year, the student chapter began a major remediation project to improve the lives of impoverished people in rural Nicaragua.
Michael Accorsi


Emmanouil N. Anagnostou


Amvrossios C. Bagtzoglou


Richard E. Christenson


Maria Chrysochoou


John T. DeWolf


Howard I. Epstein

Mekonnen Gebremichael


John N. Ivan


Jeong-Ho Kim


Baikun Li


**Lanbo Liu**


**Ramesh Malla**


**Guiling Wang**


**Adam Zofka**


Emmanouil N. Anagnostou


Richard E. Christenson


John T. DeWolf

Michael L. Accorsi


Emmanouil N. Anagnostou


Amvrossios C. Bagtzoglou


Richard E. Christenson


Maria Chrysochoou


John T. DeWolf


Norman W. Garrick


John N. Ivan


Jeong-Ho Kim


Baikun Li


Lanbo Liu


Nicholas E. Lownes


Ramesh B. Malla


Adam Zofka


Michael L. Accorsi


“Development and Application of Airdrop Simulation Capabilities,” DOD/Army Natick Soldier Center, April 1, 2008-December 31, 2008, $58,301, ($0).


Emmanouil N. Anagnostou


Amvrossios C. Bagtzoglou


Richard E. Christenson


“Distributed Real-Time Hybrid Simulation,” University of Connecticut Research Foundation Faculty Large Research Grant, June 1, 2008-May 31, 2009, $23,500 ($0).

Maria Chrysochoou

“Investigation of Cr(VI) Speciation via Micro-XANES, Micro-XRF and Micro-XRD Analyses,” University of Connecticut Foundation, October 25, 2007-October 23, 2008, $1,000 ($1,000).


**John T. DeWolf**


**Norman W. Garrick**


“Strategies for Extending the Bicycle Network in Older Cities,” U.S. Department of Transportation-New England University Transportation Center, September 1, 2005-August 31, 2008, $64,000 ($11,561).

“University Transportation Center,” U.S. Department of Transportation (RITA), August 10, 2005-September 30, 2010, $2,000,000 ($118,154).


“Eisenhower Transportation Fellowship,” U.S. Department of Transportation, September 1, 2007-September 1, 2009, $61,000 ($27,092).

“University Transportation Center Graduate Fellowship – Year 19,” MIT, September 1, 2006-August 31, 2007, $17,000 ($2,000).
Mekonnen Gebremichael


John N. Ivan


“Differences in Gap Acceptance of Elderly Drivers and the Impact on Traffic Simulation Modeling,” New England University Transportation Center (USDOT), September 1, 2006-August 31, 2008, $64,244 ($19,579).


Jeong-Ho Kim


Baikun Li

“Integrated Study of the Interactions between Bacteria and Electrodes in Microbial Fuel Cells (MFCs) to Improve Power Generation,” University of Connecticut Research Foundation Large Faculty Grant, January 1, 2008-December 31, 2008, $23,884 ($0).


Lanbo Liu


Nicholas E. Lownes


“Innovative Recruitment Initiatives,” (with co-PIs: N. Garrick (0%), J. Ivan (0%), A. Zofka (0%) and C. Atkinson-Palombo (0%)), University of Connecticut Graduate Student Recruitment Pilot Program, March 5, 2008-February 28, 2010, $5,750 ($44).

Allison A. MacKay


“Seasonal Controls of Arsenic Transport across the Groundwater-Surface Water Interface at a Closed Landfill Site,” (with co-PI: B. Smets (50%)), Environmental Protection Agency/Johns Hopkins University, October 1, 2001-September 30, 2007, $273,966 ($20,881).


Ramesh B. Malla

Guiling Wang


Adam Zofka

Michael L. Accorsi


John N. Ivan

Best Paper Award (with S. Ranade and A. Sadek), Transportation Research Board Committee on Operational Effects of Geometrics, Annual Meeting, 2007.
Emmanouil N. Anagnostou

Associate Editor, *Journal of Hydrology*.


Granted unlimited access, NASA’s Mesoscale Atmospheric Processes Branch’s Special Sensor Microwave Imager archived data.

Member, NASA Precipitation Science Team.

Member, International Committee on Earth Observation Satellites (CEOS).

Member, Precipitation Committee, American Geophysical Union.

Member, Hydrologic Sciences Committee, European Geophysical Union.

Presentations:


Amvrossios C. Bagtzoglou

Environmental Engineering Topical Editor, Encyclopedia of Earth.

Editor, Water, Air, and Soil Pollution: Innovative Remediation Technologies for Pollution Abatement.

Associate Editor, Journal of the American Water Resources Association.

Associate Editor, Inverse Problems in Science and Engineering.

Member, Editorial Board, Journal of Environmental Forensics.

Member, Editorial Board, Stochastic Environmental Research and Risk Assessment.

Member, Editorial Board, The Open Civil Engineering Journal.

Member, Editorial Board, The Open Environmental Engineering Journal.

Member, Advisory Board, Connecticut Institute of Water Resources.

Member, New York State Academy of Sciences.


Presentations:


“Environmental Challenges of Nanoparticles and Research Opportunities,” (with B. Li), Nanotechnology Research Forum, Storrs, CT, March 5, 2008.


Joseph T. Bushey

Presentations:

University of Massachusetts - Lowell, Department of Biological Sciences, invited, April 16, 2008.

University of Connecticut, Department of Marine Sciences, invited, November 14, 2007.


Richard E. Christenson

Member, Program Committee, 2009 American Control Conference.


Member at Large, ASCE Structural Control Committee.

**Maria Chrysochoou**


**John T. DeWolf**

Associate Editor, *Structural Health Monitoring*.

Fellow, American Society of Civil Engineers.

Member, Connecticut Academy of Science and Engineering.

Member, Board of Examiners for Professional Engineers and Land Surveyors (appointed by Governor).

**Howard I. Epstein**

*Presentations:*

“Structural Failures – Part II – Corrosion,” *invited*, Torello Engineers Continuing Education Seminar Series: Manchester (9/11/07), New Haven (9/18), Westport (9/25), Uncasville (10/9) and Torrington (10/16).


Radio Interview: Interviewed on WILI radio’s morning show hosted by Wayne Norman, 7:00-9:00 a.m., January 8, 2008 – Topic: Engineering Ethics.

**Norman W. Garrick**

Member, Board of Directors, Congress for the New Urbanism.

Co-Chair, Transportation Task Force, Congress for the New Urbanism.


Presentations:


“Shared Space and New Urbanism,” Congress for the New Urbanism XV, Austin, TX, April 2008.


Mekonnen Gebremichael


UConn’s Representative, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI).

Presentations:


John N. Ivan

Member, Editorial Advisory Board, Accident Analysis & Prevention.

Member, Editorial Advisory Board, Transportation Safety and Security.

Member, Research Advisory Board, Southeastern Transportation Center, University of Tennessee, Knoxville.


Jeong-Ho Kim

Presentation:


Baikun Li


Poster Section Chair, Water Environmental Federation Annual Conference, October 2007.

Presentations:

University of Massachusetts - Amherst, Department of Civil & Environmental Engineering, invited, November 2007.


Lanbo Liu

Associate Editor, Journal of Environmental and Engineering Geophysics.

Guest Editor, Special Issue on Sustainable Durban Development and Geophysics, Journal of Geophysics and Engineering.

Member, Engineering Geology Committee, Transportation Research Board, National Research Council.

Presentations:

Seismological Society of America 2008 Annual Meeting, invited, Sante Fe, NM.


**Nicholas E. Lownes**

Member, Board of Directors, Intelligent Transportation Society of Connecticut.


**Presentations:**


“Tenure Track: The First 100 Days,” *invited*, The University of Texas Student ITS Chapter, Austin, TX, December 13, 2007.

“Performance of Exact and Heuristic Methods for Public Transit Circulator Design,” INFORMS Southwest Regional Conference, College Station, TX, April 18, 2008.

**Ramesh B. Malla**

Member, Editorial Board, *Journal of Aerospace Engineering*, American Society of Civil Engineers.

Member, Editorial Board, *International Journal of Space Structures*, U.K.


Member, Executive Board, Technical Activities Committee, American Society of Civil Engineers, October 2006-present.

Chair, American Society of Nepalese Engineers, September 2007-present.

Member, Control Group: Technical Committee on Advanced Materials and Structures; and Technical Committee on Dynamics and Controls, Aerospace Division, American Society of Civil Engineers.

Member: Structures, Structural Dynamics and Materials Liaison Committee; and Technical Committee on Space Engineering and Construction, Aerospace Division, American Society of Civil Engineers.

Member, Progressive Collapse Committee, Structural Engineering Institute, American Society of Civil Engineers.

Member, Structural Dynamics Technical Committee, American Institute of Aeronautics and Astronautics (AIAA).


Presentations:


“Lunar Engineering and Construction – A New and Challenging Frontier for Civil Engineers to Lead,” invited seminar, Joint Engineering Societies Meeting/Engineers Week, Connecticut Society of Civil Engineers (CSCE), Berlin, CT, February 19, 2008.


Erling Smith

Founding Member, Editorial Board, International Journal for Space Structures.

Guiling Wang

Associate Editor, Journal of Geophysical Research – Biogeosciences.

Presentations:


Adam Zofka

Presentations:


The Computer Science & Engineering (CSE) Department has had another exemplary year in terms of national recognition, with the receipt of a new NSF Early Career Development Award (CAREER) grant and the first Office Naval Research Young Investigator Program grant, bringing the departmental total to nine CAREER awards (seven active) and one ONR young investigator grant since 2000. Senior faculty also added a good number of new research projects with continued funding in others. As a result, the CSE Department has attained a very good level in research funding for FY2008 that reflects the continued success of all CSE faculty. Graduate enrollment continues to grow in response to our strong funding profile and our comprehensive outreach activities (approximately 100 M.S. and Ph.D. students). During the fall, the Department hosted accreditation personnel from ABET and EAC, who reviewed our three undergraduate programs (Computer Science, Computer Science & Engineering and Computer Engineering). The accreditation decisions will be formally announced in July 2008. Finally, Reda Ammar was reappointed for three more years as the Department Head with overwhelming support from CSE faculty and staff.

**Educational Programs Highlights**

During the summer and the beginning of the fall 2007, our accreditation team of Department Head Reda Ammar, Associate Professor Alexander Russell, and Ruth Simons—along with all faculty and staff—prepared for the accreditation visit. Associate Professor Robert McCartney was in charge of accreditation preparation for the entire School of Engineering and has been assisting in our departmental preparation. The visit went very smoothly for the Computer Engineering program; however, the evaluators requested better assessment processes for the program objectives for both the Computer Science and the Computer Science & Engineering programs. Following the visit, we responded to the evaluators’ comments, and developed and implemented the new assessment process. We reported the new procedures and survey results to both of EAC and CAC. The decision will be made in July of 2008.

We began to observe an increase in freshman enrollments in response to our recruiting efforts. We are currently investigating and developing plans to retain our freshmen and sophomores. These plans include modifications to our curriculum and enhanced access to tutorial and other assistance for our students during their first two years. Robert McCartney and Reda Ammar are serving on a School of Engineering (SoE) Special Task Force to develop a new version of CSE 1100 (Introduction to Computing) that benefits all engineering students during their study.

We have approximately 100 M.S. and Ph.D. students in our graduate programs. Several of our faculty participated in different IGERT programs to recruit domestic graduate students. We continued to recruit high quality funded international graduate students and to establish exchange programs for graduate students and faculty with foreign universities. Dean Mun Choi selected Reda Ammar to chair the SoE task force for international development. The committee work is ongoing and has developed a roadmap plan of internationalization. Graduate education is one of the most important components of this roadmap.

**Faculty**

Our junior faculty received two new prestigious awards. Bing Wang was awarded the NSF CAREER Award and Jun-Hong Cui received the ONR Young Investigator Award. Effective fall 2008, Drs. Cui, Swapna Gokhale, Ion Mandoiu and Laurent Michel will be promoted to Associate Professor with tenure. We were joined by a new faculty member this year, Assistant Professor Yufeng Wu, from the University of California – Davis, who brings expertise in bioinformatics. We are conducting a search for a new position in Biomedical Engineering/Bioinformatics. CSE will be the home department for the new faculty member.
STRAtegic plan

The CSE Department has developed a detailed strategic plan with a focus on the continued growth in research and graduate education, undergraduate education, and outreach, and with the objective of exploring new opportunities in: multi-dimensional collaborations (large-scale research initiatives, synergistic collaborations with other UConn units, and international collaboration); focused strategic growth in Bioinformatics/Biomedical Informatics, Information Security, and Networking and Grid Computing; and increased cooperation and partnership with State government and industry.

Research Highlights

Our research productivity continues to increase with both ongoing and new funding efforts. For 2007-08 our research expenditure was $1,627,230. CSE faculty, working alone or in teams, have submitted numerous proposals to the major funding agencies that are currently under the review process at NSF, NIH, and other national and state funding agencies. Their efforts in the past year have resulted in many new and continuing results. Of particular note are: the receipt of a prestigious new NSF CAREER Award by Dr. Bing Wang in the area of wireless and sensor networks and the receipt of an ONR Young Investigator Award by Dr. Cui in the area of underwater sensor networks. This latter award is in addition to Dr. Cui’s 2007 NSF CAREER Award. Dr. Thomas Peters received Phase I funding of an NSF-SBIR in the area of topologically encoded animation. Dr. Alex Shvartsman, in collaboration with MIT, received a new grant from NSF in the area of the timed I/O automata. Dr. Dong-Guk Shin received a new NIH grant in the area of musculoskeletal microCT images. Dr. Aggelos Kiayias received an NSF-SGER grant in the area of secure and auditable privacy contracts. Dr. Laurent Michel received a grant from ISO New England in the area of short-term load forecasting. In a major, multi-investigator effort, Drs. Cui (PI), Sanguthevar Rajasekaran, Zhijie Shi and Ammar are collaborating – with other faculty from UConn and the University of Massachusetts – Amherst – on a new grant for underwater acoustic sensor networks, awarded by NSF/CRI. Drs. Ian Greenshields, Ammar and Rajasekaran received a grant from NSF to organize the first workshop on High Performance Computing in Remote Sensing and Weather Modeling held on May 13-16, 2008 in Egypt.

Funding from various State of Connecticut agencies and industry continues to grow. Drs. Steven Demurjian and Shin continued to receive substantial funding from the State of Connecticut Insurance Department; Drs. Shvartsman, Kiayias, Michel and Alex Russell secured additional funding from the Connecticut Secretary of State for their voting technology center; Drs. Swapna Gokhale, Ammar and Demurjian received new funding from the Department of Information Technology; and Drs. Yoo-Ah Kim, Shin and Demurjian received new funding from the Department of Children and Families. In industry, Drs. Ammar and Rajasekaran received a grant from AVETeC in the area of High Performance Computing, and Drs. Kiayias, Rajasekaran, Demurjian and Ammar received an SBIR Phase II grant from the Department of Homeland Security (Sonalyists, Inc., lead) on botnet detection and mitigation.

This year, our faculty collectively published more than 100 archival journal and conference papers. Several CSE faculty are writing scholarly books and others are editing books or journal special issues. Of particular note, Dr. Shvartsman co-authored (with Chryssis Georgiou) the book, Do-All Computing in Distributed Systems: Cooperation in the Presence of Adversity, published by Springer Verlag; Dr. Mandoiu co-edited Bioinformatics Algorithms: Techniques and Applications, published by John Wiley & Sons, and Dr. Rajasekaran co-edited the book, Handbook of Parallel Computing: Models, Applications and Algorithms, published by CRC Press.

Our faculty continued their leadership as officers of professional societies, members of editorial boards, and members of steering committees and program chairs for international conferences.

Dr. Ammar was appointed the new president of the International Society on Computers and Their Applications, as well as general chair of PDCS 2007; Dr. Cui was named chair of the Steering Committee.
of WUWNet'08; Dr. Gokhale was appointed a workshop co-chair of ISSRE; Dr. Chun-Hsi Huang was selected General Chair of the BioGrid Workshop at the 6th International Health-Grid Conference; Dr. Kiayias was selected program chair of ACM-DRM; Dr. Mandoiu was named general chair of SLIP and program co-chair of the ISBRA, SAWN and BIBM conferences; Dr. Peters was named organizer of the Mathematics in Industry conference; and Dr. Shvartsman was named program chair of SIROCCO 2008. Faculty members have also been invited to present their research directions and results, including keynote addresses in several major international and national conferences and at top ranked institutes.

Finally, two centers at UConn, BECAT and BIBCI, in which many CSE faculty participate, were successfully reviewed for continuation. BECAT is being considered for an upgrade to the status of a university-wide center. In addition, the CSE Department will play a major role in UConn’s to-be-formed Connecticut Institute of Clinical and Translational Science (CICaTS). This center’s biomedical informatics focus will be overseen by Dr. Demurjian.

**Concluding Remark**

The Computer Science & Engineering Department continues on an impressive growth path. We have a balanced faculty with full professors and associate professors with tenure, and a strong core of junior faculty. Our high quality faculty generated nine NSF CAREER Awards and one ONR Young Investigator Award since 2000. Our undergraduate and graduate educational programs are well developed, but we continue to fine-tune them, to serve the State and the nation. With the new research grants awarded during 2007-08, our research accomplishments are exemplary. We are growing at a very rapid pace in terms of research funding, publications, and national and international service and recognition.
Reda A. Ammar


Jun-Hong Cui


Swapna S. Gokhale


Chun-Hsi Huang


Aggelos Kiayias


Ion I. Mandoiu


Robert D. McCartney


Thomas J. Peters


Sanguthevar Rajasekaran


Alexander C. Russell


“For Distinguishing Conjugate Hidden Subgroups, the Pretty Good Measurement is as Good as it Gets,” (with C. Moore), Quantum Information Processing, Vol. 7, No. 8, pp. 752-765, 2007.


Dong-Guk Shin


Alexander A. Shvartsman


Bing Wang


Yufeng Wu


Reda A. Ammar


Aggelos Kiayias


Yoo-Ah Kim


Ion I. Mandoiu


Robert D. McCartney


Sanguthevar Rajasekaran


**Alexander C. Russell**


**Alexander A. Shvartsman**


Reda A. Ammar


Jun-Hong Cui


Steven A. Demurjian


Swapna S. Gokhale


Ian R. Greenshields


Chun-Hsi Huang


Aggelos Kiayias


**Yoo-Ah Kim**


**Ion I. Mandoiu**


**Robert D. McCartney**


**Laurent D. Michel**


Sanguthevar Rajasekaran


Alexander C. Russell


Zhijie Shi


**Dong-Guk Shin**


**Alexander A. Shvartsman**


**Bing Wang**


**Yufeng Wu**


Reda A. Ammar


“Performance-Based Restructuring of Distributed Object-Oriented Computations for Cluster,” Egyptian Cultural and Educational Bureau, June 2006-May 2008, $15,000.


“Women in Development,” (with co-PIs: B. Bravo-Ureta and E. Mehan), ALO (USAID), September 2005-September 2007, $192,000.

Jun-Hong Cui


“Collaborative Research: SEA-Swarm: A Rapidly Deployable Underwater Sensor Network,” (with PIs: S. Zhou (UConn), M. Gerla (UCLA) and G. Caire (USC)), USC (lead) with UCLA and UConn, National Science Foundation/NOSS, September 2007-August 2010, Total: $600,000, UConn: $200,000.


Steven A. Demurjian


“Strategic Planning for HIT in Community Health Organizations, Planning Grant, Connecticut Health Foundation,” (limited faculty participant, with PIs: J. Fifield, T. Agresta and R. Crowell), July 2007-June 2009, $381,000; Demurjian portion $4,000.


Swapna S. Gokhale


Ian R. Greenshields


Chun-Hsi Huang


“REU for Computing Infrastructure for the UConn HealthGrid Initiatives,” National Science Foundation – Computer & Information Science and Engineering, March 2006-February 2009, $12,000.


“Workshop on Biomedical Computations on the Grid,” (with co-PI: S. Rajasekaran), Public Health Service-National Institutes of Health/National Library of Medicine, January 2005-January 2010, $100,000.

“Building Motif Lexicons,” (with PI: M. Schiller (UCHC) and co-PIs: S. Rajasekaran, M. Gryk (UCHC) and M. Maciejewski (UCHC)), Public Health Service-National Institutes of Health (NIGM/NLM), May 2007-April 2011, $1,100,000.


Aggelos Kiayias


Yoo-Ah Kim


Ion I. Mandoiu


Laurent D. Michel


Thomas J. Peters


“Computational Topology for Surface Approximation (REU Program to Include Undergraduate Research),” (with co-PIs: K. Abe and A.C. Russell), National Science Foundation, September 2004-August 2008, $12,000.

Sanguthevar Rajasekaran


Alexander C. Russell

“ITR: Communication and Data Sharing in Dynamic Distributed Systems,” (with co-PI: A.A. Shvartsman), National Science Foundation (subcontract through MIT), September 2001-August 2007, $463,421.
“Collaborative Research: Distributed Collaborative Computing and Adversity,” (with co-PI: A.A. Shvartsman), National Science Foundation, July 2003-July 2007, $150,000.


Zhijie Shi


Dong-Guk Shin


**Alexander A. Shvartsman**

“ITR: Communication and Data Sharing for Dynamic Distributed Systems,” (with co-PI: A.C. Russell), National Science Foundation (subcontract with MIT), August 2001-August 2007, $463,000.

“Collaborative Research: Distributed Collaborative Computing and Adversity,” (with co-PI: A.C. Russell), National Science Foundation, July 2003-July 2007, $155,000.


**Bing Wang**

“Efficient Application-level Multipath Data Transfer via TCP,” University of Connecticut Research Foundation Large Faculty Grant, January 2007-December 2007, $16,024.

“Prognostics and Health Management (PHM) for Afloat Information Technology (IT) and Network Services,” U.S. Department of Defense/SBIR/Qualtech Systems Inc, June 2007-January 2008, $15,000.


**Yufeng Wu**

“Algorithms and Applications of Inferring the Mosaic Patterns in Populations,” University of Connecticut Research Foundation Large Faculty Grant, January 2008-December 2008, $15,000.
Jun-Hong Cui

Young Investigator Program Award, Office of Naval Research, 2008-2011.

Ion I. Mandoiu


Sanguthevar Rajasekaran

Elected Fellow, IEEE, January 2008.

Zhijie Shi

Early Career Development (CAREER) Award, National Science Foundation, 2007-2012.

Bing Wang

Early Career Development (CAREER) Award, National Science Foundation, 2008-2013.
Reda A. Ammar


Associate Editor, *Computing Letters* (CoLe).

Associate Editor, *International Journal on Software Engineering*.

Member, Editorial Board, *International Journal of Intelligent Computing and Information Sciences*.


Member, Editorial Board, *International Journal of Software Architectures (IJSA)*.

Member, Editorial Board, *Advances in Software Engineering*.

President, International Society of Computers and Their Applications.


General Chair, International Conference on Parallel and Distributed Computing and Systems (PDCS), Las Vegas, NV, September 2007.

Member, Steering Committee, IEEE Symposium on Computers and Communications.

Member, Steering Committee, IEEE Symposium on Signal Processing and Information Technology.

Member, Connecticut Academy of Science and Engineering (CASE).

Registration & Finance Chair, 7th IEEE Symposium on Signal Processing and Information Technology, Vancouver, Canada, August 2007.

Member, Program Committee, IEEE Symposium on Signal Processing and Information Technology, Vancouver, Canada, August 2007.

Member, Program Committee, IEEE International Conference on Computers and Their Applications, Portugal, July 2007.


Session Chair, Parallel Processing and Distributed Computing and Systems (PDCS), Las Vegas, NV, September 2007
Session Chair, IEEE Symposium on Signal Processing and Information Technology, Egypt, December 2007.

Session Chair, ISCA 23rd Conference on Computers and Their Applications, Cancun, Mexico, April 2008.


Evaluator, National Ranking Committee (NRC Ranking).

President, Board of Directors, the Islamic Center of the University of Connecticut (ICUC).

Member, Association of Computing Machinery (ACM); IEEE Computer Society; International Society on Computers and Their Applications (ISCA); Upsilon Pi Epsilon, the National Computer Science Honorary Society, AARC, AUSR Society.

Coordinator between the University of Connecticut and Ain Shames University, Egypt; Egyptian Cultural and Education Bureau in USA; Helwan University, Egypt; and Menoufia University, Egypt.

Presentations:

“UConn-Egyptian Universities Collaboration (Current and Future),” Helwan University, Egypt, July 15, 2007.


“History of UConn Graduates in Egypt,” reception for UConn Alumni living in Egypt, Ain Shames University, Egypt, March 18, 2008.


Jun-Hong Cui

Member, Editorial Board, Elsevier Ad Hoc Networks, December 2007 – present.


Chair, Steering Committee, 2nd ACM International Workshop on UnderWater Networks (WUWNet’07), in conjunction with ACM MobiCom’07, Montreal, Quebec, Canada, September 14, 2007.

Chair, Steering Committee, 3rd ACM International Workshop on UnderWater Networks (WUWNet’08), in conjunction with ACM MobiCom’08, San Francisco, CA, September 15, 2008.
Member, Steering Committee, International Workshop on Underwater Networks (WUWNet), December 2006 – present.

Member, Technology Committee, Marine Communications, IEEE Oceanic Engineering Society, November 2006 – present.

Member, Program Committee, Second ACIS International Workshop on Self-Assembling Wireless Networks (SAWN’07), Qingdao, China, July 30 - August 1, 2007.

Member, Program Committee, International Conference on Wireless Algorithms, Systems, and Applications (WASA’07), Chicago, IL, August 1-3, 2007.


Member, Program Committee, Fourth International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine’07), Vancouver, British Columbia, Canada, August 14-17, 2007.

Member, Program Committee, 2nd ACM International Workshop on UnderWater Networks (WUWNet’07), in conjunction with ACM MobiCom’07, Montreal, Quebec, Canada, September 14, 2007.

Member, Program Committee, IEEE Global Telecommunications Conference (GLOBECOM’07), Washington, DC, November 26-30, 2007.


Member, Program Committee, 27th Conference on Computer Communication (INFOCOM’08), Phoenix, AZ, April 13-18, 2008.

Member, Program Committee, 7th IFIP International Conference on Networking (Networking’08), Singapore, May 5-9, 2008.

Member, IEEE; IEEE Computer Society; IEEE Communications Society; IEEE Women in Engineering; ACM SIGCOMM (Special Interest Group on Data Communications), ACM SIGMOBILE (Special Interest Group on Mobility of Systems, Users, Data and Computing).

Presentations:


Steven A. Demurjian

Member, Program Committee, IFIP WG 11.3 XXI Conference on Data and Applications Security, Redondo Beach, CA, July 8-11, 2007.

Member, Program Committee, 2nd International Conference on Software Engineering Advances, Cap Estereal, French Riviera, France, August 2007.

Member, Program Committee, 6th International Workshop on Web Semantics (WebS 2007), Regensburg, Germany, September 3-7, 2007.

Member, Scientific/Program Committee, IADIS International WWW/Internet 2007 Conference, Real, Portugal, October 5-8, 2007.


Member, Program Committee, International Conference on Software and Data Technologies (ICSOFT 2008), Oporto, Portugal, July 5-8, 2008.


Member, Program Committee, 7th International Workshop on Web Semantics (WebS 2008), Turin, Italy, September 1-5, 2008.

Member, Scientific/Program Committee, IADIS International WWW/Internet 2008 Conference, Freiburg, Germany, October 13-15, 2008.

Member, Program Committee, 3rd International Conference on Software Engineering Advances (ICSEA 2008), Sliema, Malta, October 26-31, 2008.


Member: Association of Computing Machinery (ACM); IEEE Computer Society; IEEE Computer Society Technical Committees on Database Engineering and Software Engineering; Upsilon Pi Epsilon, the National Computer Science Honorary Society.

Member, International Federation of Information Processing (IFIP), Working Group (WG11.3) on Database Security.

Gerald L. Engel

Endowed Chair, Fredrick H. Leonhardt Computer Science Chair.

Fellow, CSAB.
Fellow, IEEE.

Fellow, Association for Computing Machinery.

Member, Editorial Board, *Computer Science Education*.

Vice President, International Federation for Information Processing (IFIP).

Vice President, IEEE Society on the Social Implications of Technology (SSIT).


Chair, IEEE Conferences Committee, CSAB Awards Committee, CSAB International Committee.

Co-chair, CSAB Grants Committee, CSAB History Committee.

**Swapna S. Gokhale**

Member, Editorial Board, *Open Software Engineering Journal*.


Session Chair, International Conference on Software Engineering and Knowledge Engineering (SEKE 07), Boston, MA, July 9-11, 2007.

Member, Program Committee, International Symposium on Software Reliability Engineering (ISSRE 07), Trollhattan, Sweden, November 5-9, 2007.


Senior Member, IEEE Computer Society.

*Presentation:*


**Ian Greenshields**

*Presentations:*


Chun-Hsi Huang


Member, Executive Committee, IEEE Task Force on Scalable Computing (TCSC), 2006- present.

Member, Program Committee, 4th International Workshop on Grid Economics and Business Models (*GECON*) at the 13th European Conference on Parallel and Distributed Computing (Euro-Par), Rennes, France, August 28, 2007.

Member, Program Committee, 4th International Symposium for Life Science Grid (LSGrid), University of Glasgow, Scotland, September 6-7, 2007.

Member, Program Committee, 7th IEEE International Conference on Computer and Information Technology (CIT), Aizu, Japan, October 16-19, 2007.

Member, Program Committee, International Conference on Health Informatics (HealthInf), Funchal, Madeira-Portugal, January 28-31, 2008.

Member, Program Committee, 8th IEEE Symposium on Cluster Computing and the Grid (CCGrid), Lyon, France, May 19-22, 2008.

Member, Program Committee, 6th European Conference on HealthGrid, Chicago, IL, June 2-4, 2008.

General Chair, 6th BioGrid Workshop at the 6th International Health-Grid Conference, Chicago, IL, June 2, 2008.

Member, Program Committee, 2nd International Conference on Bioinformatics Research and Development (BIRD), Vienna, Austria, July 7-9, 2008.

Member, Program Committee, 8th IEEE International Conference on Computer and Information Technology (CIT), Sydney, Australia, July 8-11, 2008.

Member, Program Committee, 2008 European Congress of the International Federation for Medical and Biological Engineering (MBEC), Antwerp, Belgium, November 23-27, 2008.

Member, National Institutes of Health, NIBIB Study Section 2007/01 ZEB1 OSR-A(J2).


Member: International Society of Computational Biology, Institute of Electrical and Electronics Engineers, Association of Computing Machinery.

Granted access: Center for Computational Research (CCR), Buffalo, NY. Accesses to (1) a 128 processor SGI Origin 3800, (2) a 64-processor IBM SP2, and (3) a 64-processor SUN Cluster.

Presentations:


“Towards an e-Learning and Telemedicine Network for Better Quality of Patient Care,” *invited*, International Year of Science and Technology for Africa: The Role of Telemedicine Against Diseases and in Health Promotion, International Institute of Tele-medicine, Rome, Italy, November 30, 2007.

**Aggelos Kiayias**

Member, Steering Committee, ACM Digital Rights Management Workshop, 2006-08.

Member, Program Committee, the 1st International Workshop on Group-Oriented Cryptographic Protocols (GOCP’07), Wroclaw, Poland, July 9, 2007.

Member, Program Committee, the 4th IASTED International Conference on Communication, Network, and Information Security – CNIS, Berkeley, CA, September 24-26, 2007.

Member, Program Committee, the 3rd Workshop on Secure Network Protocols, Beijing, China, October 16, 2007.

Member, Program Committee, the 10th Information Security Conference (ISC’2007), Valparaiso, Chile, October 9-12, 2007.


Session Chair, 6th International Conference Cryptology and Network Security, Singapore, December 8-10, 2007.

Member, Program Committee, the 34th International Conference on Current Trends in Theory and Practice of Computer Science, Novy Smokovec, High Tatras, Slovakia, January 19-25, 2008.

Member, Program Committee, the 12th International Conference on Financial Cryptography and Data Security, Cozumel, Mexico, January 28-31, 2008.

Member, Program Committee, TRUST 2008, Villach, Austria, March 11-13, 2008.

Member, Program Committee, the 3rd ACM Symposium on Information, Computer and Communications Security (ASIACCS), Tokyo, Japan, March 18-20, 2008.


Member, Program Committee, the 28th International Conference on Distributed Computing Systems (ICDCS), Beijing, China, June 17-20, 2008.

Member, Program Committee, the 13th Australasian Conference on Information Security and Privacy (ACISP), Wollongong, Australia, July 7-9, 2008.

Member, Program Committee, European Symposium on Research in Computer Security (ESORICS), Malaga, Spain, October 6-10, 2008.
Member, Program Committee, the 2\textsuperscript{nd} International Conference on Provable Security (ProvSec), Shanghai, China, October 30 – November 1, 2008.

External Reviewer, \textit{invited}, U.S.-Israel Binational Science Foundation (BSF).


\textit{Presentations:}


\textbf{Yoo-Ah Kim}

Member, Program Committee, the 17\textsuperscript{th} International Conference on Computer Communications and Networks (ICCCN 2008), St. Thomas, U.S. Virgin Islands, August 3-7, 2008.

Member, Program Committee, International Conference on Contemporary Computing (IC3 2008), Noida, Japan, August 7-9, 2008.


Member, Program Committee, the 4\textsuperscript{th} International Conference on Mobile Ad-hoc and Sensor Networks (MSN’08), Wuhan, China, December 10-12, 2008.

Member, Association of Computing Machinery, ACM Special Interest Group – Algorithms and Computation Theory (SIGACT).

\textit{Presentations:}


\textbf{Ion I. Mandoiu}

Guest Editor (with Y. Pan and A. Zelikovsky), IEEE/ACM Transactions on Computational Biology and Bioinformatics, special section on 3rd International Workshop on Bioinformatics Research and Applications.

Co-chair, 3rd ACIS International Workshop on Self-Assembling Wireless Networks (SAWN), Qingdao, China, July 30-August 1, 2007.

Program Committee Member, 2nd VLDB Workshop on Data Mining in Bioinformatics (VLDB-DBM 2007), Vienna, Austria, September 23, 2007.

Member, Program Committee, 7th IEEE International Symposium on Bioinformatics & Bioengineering (BIBE 2007), Boston, MA, October 14-17, 2007.

Co-chair, Program Committee, 1st IEEE International Conference on Bioinformatics and Biomedicine (BIBM), San Jose, CA, November 2-4, 2007.

General Chair, 10th ACM Workshop on System-Level Interconnect Prediction (SLIP), Newcastle-upon-Tyne, UK, April 5-6, 2008.

Session Chair, 10th ACM Workshop on System-Level Interconnect Prediction (SLIP), Newcastle-upon-Tyne, UK, April 5-6, 2008.


Session Chair (2 sessions), International Symposium on Bioinformatics Research and Applications (ISBRA), Atlanta, GA, May 6-9, 2008.

Member, Program Committee, 3rd International Conference on Computing in the Global Information Technology (ICCGI 2008), Athens, Greece, July 27-August 1, 2008.

Co-organizer (with A. Allen, D. Nicolae, Y. Pan, and A. Zelikovsky), DIMACS Workshop on Computational Issues in Genetic Epidemiology, Rutgers University, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), August 21-22, 2008.


Presentations:


Robert D. McCartney


Member, ITICSE Working Group on Contributing Student Pedagogies, Madrid, Spain, June 28 - July 3, 2008.

Member, Program Committee, 8th Koli Calling International Conference on Computing Education Research, Koli National Park, Finland, November 2008.

Presentations:


Laurent D. Michel

Area Editor, Constraint Programming Letters (CPL).

Chair, 13th International Conference on Principles and Practice of Constraint Programming (CP’07), Providence, RI, September 10-12, 2007.

Member, Program Committee, 13th International Conference on Principles and Practice of Constraint Programming (CP’07), Providence, RI, September 10-12, 2007.

Member, Program Committee, 5th International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems (CP-AI-OR’08), Paris, France, May 20-23, 2008.

128
Thomas J. Peters


Member, Technical Assessment Board and Technical Advisory Board, National Research Council, Army Research Laboratory.

Research Access: IBM Blue Gene Supercomputer, IBM, Cambridge, MA.

Presentations:


Sanguthevar Rajasekaran

UTC Chair Professor of Computer Science & Engineering.

Associate Editor, Journal of Parallel and Distributed Computing.

Associate Editor, International Journal of Computers and Their Applications.

Associate Editor, Computing Letters.

Fellow, IEEE.

Member, IASTED Technical Committee on Biomedical Engineering.


Member, Program Committee, 10th Workshop on Advances in Parallel and Distributed Computational Models (APDCM), Miami, FL, April 14-18, 2008.
Member, Program Committee, International Symposium on Bioinformatics Research and Applications (ISBRA), Atlanta, GA, May 6-9, 2008.

Member, Program Committee, 11th IEEE Symposium on Computers and Communication (ISCC’08), Marrakech, Morocco, July 6-9, 2008.


Member, Program Committee, 5th International Conference on Parallel and Distributed Computing and Systems (PDCS), Singapore, August 29-31, 2008.

Member, Program Committee, International Symposium on Signal Processing and Information Technology (ISSPIT), Sarajevo, Bosnia & Herzegovina, December 16-19, 2008.

Member, Connecticut Academy of Science and Engineering (CASE), 2005-present.

Member: IEEE Computing Society, Association of Computing Machinery, Association for the Advancement of Science.

Presentations:

International Conference on Advances in Computer Science and Technology (ACST), keynote, Langkawi, Malaysia, April 2-4, 2008.


Alexander C. Russell

Associate Editor-in-Chief, Theory of Computation, 2005-10.

Member, Program Committee, the 6th IEEE International Symposium on Network Computing and Applications (IEEE NCA07), Cambridge, MA, July 2007.

Member, Program Committee, the 7th IEEE International Symposium on Network Computing and Applications (IEEE NCA08), Cambridge, MA, July 2008.

Member, Program Committee, the 12th Annual Workshop on Quantum Information Processing (QIP2009), Santa Fe, NM, January 2009.


Member, Review Committee, Smithsonian Review Committee for Indo-US Science and Technology Forum.

Member, Association of Computing Machinery/Special Interest Group on Algorithms and Computation Theory, American Mathematical Society, Mathematical Association of America.

Presentations:


“An Introduction to Topological Quantum Field Theories and Manifold Invariants,” invited, Department of Mathematics Colloquium, University of Connecticut, Storrs, CT, March 20, 2008.

Zhijie Shi

Program Chair, Emerging Information and Technology Conference (EITC) 2007, SoC track, Princeton, NJ, August 9-10, 2007.

Member, IEEE Computer Society and Association of Computing Machinery.

Presentations:


Dong-Guk Shin

Member, Editorial Board, Bioinformatics and Biology Insights, Libertas Academica.


Member, National Institutes of Health, Neuroinformatics/Imaging and Neurotech/Engineering Special Emphasis Panel Section, MDCN-K(50), Bethesda, MD, November 14-15, 2007.

Member, National Institutes of Health, Molecular, Cellular and Developmental Neurobiological Small Business Applications, ZRG1 MDCN-L (10), Washington, DC, March 5, 2008.

Member, IASTED International Association of Science and Technology for Development, Human-Computer Interaction Conference, Program Committee, Innsbruck, Austria, March 14-19, 2008.

Member, National Institutes of Health, National Library of Medicine, R13 Conference Grant Application Review Committee, April 28, 2008.

Member, National Institutes of Health, Neurotechnology (NT) Study Section, San Francisco, CA, June 3-4, 2008.

Member, National Institutes of Health, Molecular, Cellular and Developmental Neurobiological Small Business Applications, ZRG1 ETTN-D (13) B, June 18, 2008.

Member, IEEE Computer Society and Korean Scientists and Engineers in America.

Alexander A. Shvartsman


Co-Editor, Distributed Computing, Springer Special Issue, 2007-08.

Bing Wang

Session Chair, the 27th Conference on Computer Communications (IEEE Infocom 2008), Phoenix, AZ, April 13-18, 2008.

Member, Program Committee, IEEE Infocom 2008, Phoenix, AZ, April 15-17, 2008.

Member, Program Committee, the 28th International Conference on Distributed Computing Systems (ICDCS 2008), Beijing, China, June 17-20, 2008.

Member, Program Committee, 17th International Conference on Computer Communications and Networks, St. Thomas, U.S. Virgin Islands, August 3-7, 2008.

Member, Program Committee, 2008 Third International Conference on Communications and Networking in China, Hangzhou, China, August 25-27, 2008.

Presentations:


“Automating Fault Management in Wireless Networks,” invited, Department of Electrical and Computer Engineering, University of Rhode Island, February 27, 2008.


“Automating Fault Management in Wireless Networks,” invited, Computer Science Department, Shanghai Jiao Tong University, May 21, 2008.

Yufeng Wu

Member, Program Committee, 1st IEEE International Conference on Bioinformatics and Biomedicine (BIBM), San Jose, CA, November 2-4, 2007.

Member, Program Committee, International Symposium on Bioinformatics Research and Applications (ISBRA), Atlanta, GA, May 6-9, 2008.

Presentations:


“New Methods for Genealogical Network Inference Based on Local Tree Topologies with a Set of SNP Sequences in Populations,” Mathematics and Informatics in Evolution and Phylogeny, Montpellier, France, June 12, 2008.
UNDERGRADUATE EDUCATION

The Electrical & Computer Engineering (ECE) department offers undergraduate degrees in Electrical Engineering (EE), Computer Engineering (CompE, offered jointly with the Computer Science & Engineering Department), and Engineering Physics (jointly with the College of Liberal Arts & Sciences). In fall 2007, 137 students were enrolled in Electrical Engineering, 60 in Computer Engineering, and 29 in Engineering Physics. During the year, we awarded 38 B.S.E. degrees in EE, 11 degrees in CompE, and five in Engineering Physics.

ABET

Both the Electrical Engineering (EE) and Computer Engineering (CompE) programs underwent successful accreditation visits during AY 07-08. The ECE ABET committee led by Dr. Rajeev Bansal produced substantial self-study volumes for the EE program (seeking re-accreditation) as well as for the CompE program (seeking first accreditation), the latter in collaboration with CSE colleagues. These self-study reports were submitted at the start of summer 2007 to the ABET evaluation team.

Two industrial visitors representing ABET visited our programs in early fall 07. The visitors examined curricular materials and the assessment data compiled about the programs, visited the facilities, and talked with students, faculty, alumni, and members of our Industrial Advisory Boards. While the formal vote to accredit the programs will take place in June 2008, the feedback provided by the ABET visitors during the exit interviews was uniformly positive.

RESEARCH AND SCHOLARSHIP

The ECE faculty conducts funded research in fields including systems and energy, communications and signal/image processing, biomedical engineering, microelectronics, optoelectronics, electromagnetics and photonics, nanotechnology, VLSI computer engineering, and homeland security. Scholarly productivity stimulated by research remains strong. The faculty published numerous papers, including 97 refereed journal articles, 5 book chapters, and 146 full conference proceedings papers. They developed five software packages, offered numerous professional short courses, were keynote speakers at 11 international conferences, and delivered 63 invited talks. The faculty worked on 106 sponsored grants with annual expenditures estimated to be $3.5 million. During the year, the ECE faculty advised 134 graduate students; of these, 11 successfully completed their Ph.D. degrees and 26 students garnered their M.S. degrees. Dr. Geoffrey Taylor was awarded five patents; Dr. Anthony DeMaria secured three; Dr. Faquir Jain garnered two; and Drs. Krishna Pattipati, Mohammad Tehranipoor and Shengli Zhou were awarded one patent each.

FACULTY HONORS

As innovators in their fields, ECE faculty members receive many prestigious awards. The major awards obtained during the year are summarized as follows: Dr. Yaakov Bar-Shalom received the 2008 IEEE Dennis J. Picard Medal for radar target tracking in clutter. Dr. Bahram Javidi received the 2008 IEEE Donald G. Fink Prize, 2008 Alexander von Humboldt Prize and the 2008 John Simon Guggenheim Fellow Award for real-time 3D optical imaging and identification. Dr. Shengli Zhou received a 2007 Office of Naval Research Young Investigator award, and Dr. Quing Zhu received a 2007 Connecticut Women of Innovation Award. The faculty members are also leaders in many professional societies/organizations. Drs. Bar-Shalom, DeMaria, Taylor and Javidi – along with Drs. Steven Boggs, John Enderle, Peter Luh, Krishna Pattipati and Peter Willett – are IEEE Fellows. Drs. Enderle and Javidi are American Institute for Medical and Biological Engineering Fellows. Drs. DeMaria, Javidi and...
Magnusson are Optical Society of America Fellows and – along with Dr. Eric Donkor – are also SPIE Fellows. Dr. Enderle is an American Society of Engineering Education Fellow. Dr. Bansal is a Fellow of the Electromagnetic Academy, and Dr. DeMaria is also a Fellow of the American Physical Society.

Many of our faculty are elected members of the Connecticut Academy of Science and Engineering: Drs. Bansal, Bar-Shalom, DeMaria (who is a co-founding member), Donkor, Enderle, Jain, Javidi, Luh, Magnusson, Pattipati, Taylor and Zhu. Dr. DeMaria is a member of the National Academy of Engineering and the National Academy of Sciences. ECE faculty members held 10 major journal editorships, 18 associate editorships or conference chair posts, and 36 other editorial or conference-planning appointments. In particular, Drs. Enderle, Javidi, Luh and Willett were Editors-in-Chief, while Drs. Anwar, Chandy, Bansal, Donkor, Enderle, Javidi, Luh, Magnusson and Tehranipoor served as Editors and/or Associate Editors of professional journals.

Dr. Zhu was promoted to full professor and Dr. Chandy received tenure as well as promotion to associate professor. Dr. Magnusson will be leaving us at the end of the summer. He has accepted the Texas Instruments Distinguished University Chair in Nanophotonics at the University of Texas at Arlington. He has been a prolific contributor to the department (serving as the Head from 2001 to 2006) and plans to continue his research collaboration with the ECE faculty. We wish him great success in his new position.

**INDUSTRIAL CONNECTIONS**

The ECE Industrial Advisory Board (IAB) provides input on ECE curricula, courses, and strategies. Industrial feedback is essential in maintaining high-quality, relevant programs and is a major link in the ABET accreditation process. Additionally, the affiliated companies participate in collaborative research, sponsor senior design projects, provide internship opportunities for our students, and often hire them permanently. The companies represented on the IAB this year are Aptima, BAE Systems, C-COR, Coherent, General Electric Company, Hamilton Sundstrand, The Hartford, ISO New England, JDS Uniphase, Naval Undersea Warfare Center, Pfizer, Phonon Corporation, Pratt & Whitney, Sikorsky Aircraft Corporation, Toyota Technical Center USA, TranSwitch and TRUMPH, Inc. The Department is also active in collaborative research and development projects with many other companies.

**STUDENT ACTIVITIES**

Members of the UConn student branch of the IEEE (faculty advisor: Dr. Yunsi Fei) conducted monthly meetings as well as a number of professional seminars. A well-attended picnic in September served to advertise and promote IEEE and to gather faculty and students together. The branch reached out to the University of New Haven IEEE Chapter for a workshop on signal processing. UConn’s chapter of SPIE (faculty advisor: Dr. Zhu) drew a number of distinguished seminar speakers including Dr. Brian Culshaw, the 2007-2008 President of SPIE. The chapter activities were highlighted in the Hartford Business Journal. The chapter, along with IEEE, co-founded the Connecticut Optics and Photonics Association. UConn’s chapter of Eta Kappa Nu (HKN) inducted 10 new members during 2007-2008 and elected new officers in the spring semester. Dr. Marty Fox is the faculty advisor for the chapter.
John E. Ayers


Rajeev Bansal


Yaakov Bar-Shalom


Steven Boggs


John A. Chandy


Eric Donkor


John D. Enderle


Monty A. Escabi


Yunsi Fei


Ali Gokirmak

Faquir C. Jain


Bahram Javidi


**Peter B. Luh**


Robert Magnusson


Krishna R. Pattipati


Geoffrey W. Taylor


Mohammad Tehranipoor


Lei Wang


Peter K. Willett


Shengli Zhou


Quing Zhu


Anthony J. DeMaria


Eric Donkor


John D. Enderle


Faquir Jain


Bahram Javidi


Krishna R. Pattipati


Mohammad Tehranipoor


Quing Zhu

“Optical Tomography with Ultrasound Localization for Breast Cancer Diagnosis and Treatment Monitoring,” Chapter 17, Emerging Technologies in Breast Imaging, pp. 303-316, 2008.
Rajeev Bansal


Yaakov Bar-Shalom


**Steven Boggs**


**John A. Chandy**


**Eric Donkor**


**Monty A. Escabi**


**Yunsi Fei**


**Faquir C. Jain**


“Improved Methodology to Nucleate Zn_xCd_{1-x}Se Cladded Zn_xCd_{1-x}Se Quantum Dots using PMP-MOCVD for Lasers and Electroluminescent Phosphors,” (with F. Al-Amoody, A. Rodriguez, E. Suarez and W. Huang), *Proceedings of Nanotech 2008*, CD only, M82.204, Boston, MA, June 1-5, 2008.


Bahram Javidi


**Peter B. Luh**


**Robert Magnusson**


**Krishna R. Pattipati**


**Geoffrey W. Taylor**

Mohammad Tehranipoor


Lei Wang


**Peter K. Willett**


“Nonbinary LDPC Coding for Multicarrier Underwater Acoustic Communication,” (with J. Huang and S. Zhou), Proceedings of OCEANS, CD only, Kobe, Japan, April 2008.

Shengli Zhou


Quing Zhu


John E. Ayers

“Nanotechnology Undergraduate Education: Development of Introductory and Advanced Theory and Laboratory Courses in Nanoelectronics and Optoelectronics,” (with PI: F.C. Jain (16%) and co-PIs: F. Papadimitrakopoulos (12%), R. Magnusson (12%), R. Bansal (12%), G. Sotzing (12%), B. Sinkovic (12%) and Q. Kessel (12%)), National Science Foundation, July 1, 2004 - June 30, 2008, $100,000 ($893).

“Bistability in 500+GHz Sub-22nm Quantum Dot Gate InGaAs-InP FETs for Next Generation Analog and Digital Circuits for Advanced Radars and Communication Systems,” (with PI: F.C. Jain (20%) and co-PIs: R. Bansal (20%), J. Chandy (20%) and F. Papadimitrakopoulos (20%)), Office of Naval Research, October 1, 2005 - September 30, 2008, $420,087 ($18,229).

Rajeev Bansal


“Nanotechnology Undergraduate Education: Development of Introductory and Advanced Theory and Laboratory Courses in Nanoelectronics and Optoelectronics,” (with PI: F.C. Jain (16%) and co-PIs: F. Papadimitrakopoulos (12%), R. Magnusson (12%), J. Ayers (12%), G. Sotzing (12%), B. Sinkovic (12%) and Q. Kessel (12%)), National Science Foundation, July 1, 2004 - June 30, 2008, $100,000 ($893).


“Antenna Analysis/Optimization Techniques,” Egyptian Cultural & Educational Bureau, September 1, 2006 - August 31, 2008, $15,000 ($7,261)

“Bistability in 500+GHz Sub-22nm Quantum Dot Gate InGaAs-InP FETs for Next Generation Analog and Digital Circuits for Advanced Radars and Communication Systems,” (with PI: F.C. Jain (20%) and co-PIs: J. Ayers (20%), J. Chandy (20%) and F. Papadimitrakopoulos (20%)), Office of Naval Research, October 1, 2005 - September 30, 2008, $420,087 ($18,229).


Yaakov Bar-Shalom


Steven A. Boggs


John A. Chandy


Eric Donkor


John D. Enderle

“Clinical Engineering Internship Program at Baystate Medical Center,” Baystate Medical Center, August 23, 1997 - August 22, 2007, $390,971 ($0).


“Clinical Engineering Internship Program at Providence VA Medical Center,” Providence VA Medical Center, October 16, 2006 - October 15, 2007, $22,538 ($5,060).

“Clinical Engineering Internship Program at the Middlesex Memorial Hospital, Inc.,” Middlesex Memorial Hospital, Inc., June 16, 2006 - June 15, 2008, $53,927 ($24,179).


“Clinical Engineering Internship Program at Hartford Hospital,” Hartford Hospital, August 23, 1997 - August 22, 2008, $397,148 ($46,064).

“Clinical Engineering Internship Program at the UMass Memorial Medical Center,” University of Massachusetts Memorial Medical Center, August 23, 2003 – August 22, 2008, $132,510 ($46,064).


“Clinical Engineering Internship Program at the Lifespan (Rhode Island Hospital, Miriam Hospital and Newport Hospital),” Lifespan, August 24, 2004 – August 23, 2008, $82,854 ($26,728).

“Clinical Engineering Internship Program at Providence VA Medical Center,” Providence VA Medical Center, October 1, 2007 – September 30, 2008, $28,557 ($9,227).
“Clinical Engineering Internship Program at Providence VA Medical Center,” Providence VA Medical Center, October 1, 2007 - September 30, 2008, $28,557 ($9,247).


“Engineering Senior Design Projects to Aid Persons with Disabilities,” National Science Foundation, May 1, 2005 - April 30, 2009, $100,000 ($43,021).


“Supplement to an Annual Review of Engineering Senior Design Projects to Aid Persons with Disabilities,” National Science Foundation, August 1, 2005 - July 31, 2009, $3,000 ($0).

“Clinical Engineering Internship Program at Baystate Medical Center,” Baystate Medical Center, LLC, August 23, 2006 - August 22, 2009, $110,332 ($59,011).


Monty A. Escabi


Yunsi Fei

“Coordinated Management of Mobile Computer Systems: Balancing Quality-of-Service (QoS) and Energy Efficiency,” University of Connecticut Faculty Large Grant, April 26, 2006 – April 30, 2008, $32,000 ($29,832).


“Collaborative Research: CRI: IAD: Developing a Novel Infrastructure for Underwater Acoustic Sensor Networks,” (with PI: J.-H. Cui (19%) and co-PIs: S. Zhou (9%), P. Willett (9%), S. Rajasekaran (9%), R. Ammar (9%), A. Bagtzoglou (9%), B. Wang (9%), Z. Shi (9%) and T. Torgersen (9%)), National Science Foundation/CISE, August 1, 2007 – July 31, 2010, $319,998 ($3,920).
Ali Gokirmak

“Crystallization of Nanocrystalline Silicon Nanowires through Pulsed Current Self Heating,” University of Connecticut Faculty Large Grant, January 1, 2008 - December 31, 2008, $21,527 ($5,348).


Faquir C. Jain


“Nanotechnology Undergraduate Education: Development of Introductory and Advanced Theory and Laboratory Courses in Nanoelectronics and Optoelectronics,” National Science Foundation, (with co-PIs: J. Ayers (12%), F. Papadimitrakopoulos (12%), R. Bansal (12%), G. Sotzing (12%), B. Sinkovic (12%), Q. Kessel (12%) and R. Magnusson (12%)), July 1, 2004 - June 30, 2008, $100,000 ($1,190).

“High-speed Spatial Light Modulator Based Optical Processor for a Real Time Target Recognition and Tracking System,” Office of Naval Research, March 1, 2005 - August 31, 2008, $192,000 ($26,596).


“Bistability in 500+GHz Sub-22nm Quantum Dot Gate InGaAs-InP FETs for Next Generation Analog and Digital Circuits for Advanced Radars and Communication Systems,” (with co-PIs: J. Ayers (20%), R. Bansal (20%), J. Chandy (20%) and F. Papadimitrakopoulos (20%)), Office of Naval Research, N00014-06-1-0016, October 1, 2005 - September 30, 2008, $420,087 ($18,229).


“Bistable Quantum Dot Gate Field-Effect Transistors Exhibiting a Multi-State Operation: A Novel Approach to Reduce Device Count in ICs,” (with co-PIs: J. Chandy (33%) and F. Papadimitrakopoulos (33%)), National Science Foundation, September 1, 2006 - August 31, 2011, $285,000 ($17,734); School of Engineering match, September 1, 2006 - August 31, 2009, $13,500 ($7,663).
Bahram Javidi


Peter B. Luh


Robert Magnusson


“Nanotechnology Undergraduate Education: Development of Introductory and Advanced Theory and Laboratory Courses in Nanoelectronics and Optoelectronics,” (with PI: F.C. Jain (16%) and co-PIs: F. Papadimitrakopoulos (12%), J. Ayers (12%), R. Bansal (12%), G. Sotzing (12%), B. Sinkovic (12%), and Q. Kessel (12%)), National Science Foundation, July 1, 2004 - June 30, 2008, $100,000 ($893).


Krishna R. Pattipati


Helena Silva

“Side Gated Ultra Narrow Channel Silicon Transistors,” University of Connecticut Research Foundation Faculty Large Grant, January 1, 2008 - December 31, 2008, $23,884 ($6,212).

Geoff W. Taylor


Mohammad Tehranipoor


Lei Wang


Peter K. Willett


“Collaborative Research: CRI: IAD: Developing a Novel Infrastructure for Underwater Acoustic Sensor Networks,” (with PI: J.-H. Cui (19%) and co-PIs: S. Zhou (9%), Y. Fei (9%), S. Rajasekaran (9%), R. Ammar (9%), A. Bagtzoglou (9%), B. Wang (9%), Z. Shi (9%) and T. Torgersen (9%)), National Science Foundation/CISE, August 1, 2007 - July 31, 2010, $319,998 ($3,920).

Shengli Zhou


“Collaborative Research: CRI: IAD: Developing a Novel Infrastructure for Underwater Acoustic Sensor Networks,” (with PI: J.-H. Cui (19%) and co-PIs: P. Willett (9%), Y. Fei (9%), S. Rajasekaran (9%), R. Ammar (9%), A. Bagtzoglou (9%), B. Wang (9%), Z. Shi (9%) and T. Torgersen (9%)), National Science Foundation/CISE, August 1, 2007 - July 31, 2010, $319,998 ($3,920).

Quing Zhu


“Near Infrared Diffusive Wave Imaging with Ultrasound Guidance,” University of Connecticut Research Foundation Faculty Large Grant, April 26, 2006 - April 30, 2009, $24,000 ($10,654).

Yaakov Bar-Shalom


Anthony J. DeMaria


Elected member, Optical Society of America’s Presidential Advisory Committee, 2008-2010.

John D. Enderle

Fellow, American Society of Engineering Educators, 2008.

Faquir C. Jain


Bahram Javidi

Fellow Award, John Simon Guggenheim Memorial Foundation, 2008.


Donald G. Fink Paper Prize, The Institute of Electrical and Electronics Engineers, 2008.

Technology Achievement Award, International Society for Optical Engineering (SPIE), 2008.

Best Paper Award, Information Optics Workshop, 2007.

Krishna R. Pattipati


Geoffrey W. Taylor


Mohammad Tehranipoor


Peter K. Willett


Shengli Zhou

Mehdi Anwar

Editor, *IEEE Transactions on Electron Devices*.

Conference Chair, Terahertz Physics, Devices, and Systems II, Optics East, Boston, MA, September 2007.


Member, State of Connecticut Nanotechnology Committee.

John E. Ayers

*Presentation:*


Rajeev Bansal


Associate Editor, *IEEE Microwave Magazine*, 2000-present.


Member, Editorial Board, *Progress in Electromagnetics Research* (PIER online).

Chair, Technical Coordinating Committee, MTT-10 of the IEEE.

MTT-S Delegate, IEEE-USA Medical Technology Policy Committee, 2002-present.

IEEE AP-S Liaison, COMAR, 2001-present.

Yaakov Bar-Shalom


Member, Board of Directors, The International Society of Information Fusion, 1998-2008.

Session Chair, IEEE Aerospace Conference, March 2008.


Member, Blue Ribbon Panel for Review of the MDA Track Processing, 2006-2008.

IEEE AES Distinguished Lecture “Target Tracking and Fusion: How to Get the Most out of Your Sensors,” joint meeting of the IEEE Atlanta Chapters of IEEE AES, SP, GRS and COM Societies.

Member, Program Committee, FUSION 2008.

Member, Board of Directors Executive Committee, ISIF.

Presentations:


Steven Boggs

Contributing Editor, IEEE Electrical Insulation Magazine.

Adjunct Professor, Electrical and Computer Engineering, University of Toronto, 1991-present.

Advisory Professor, Southwest Jiaotong University, Changdu, China, November 2003-present

Presentations:

“Applications of Nonlinear Analysis in Power Engineering,” invited, Four Hour Short Course, Xi’an Jiaotong University, Xi’an, China, August 16, 2007.


“Applications of Nonlinear Analysis to Dielectrics and ZnO,” invited, Kyushu Institute of Technology, Kyushu, Japan, August 23, 2007.


“Transient Nonlinear Finite Element Analysis for ZnO Arresters,” invited, Southwest Jiaotong University, Chengdu, China, September 10, 2007.


John A. Chandy

Individual Submissions Editor, ACM Operating Systems Review.

Member, Program Committee, IASTED International Conference on Advances in Computer Science and Technology, 2008.

Presentations:


Anthony J. DeMaria

Chair, Terahertz Physics, Devices, and Systems II Conference (SPIE’s Photonics East Conference), Boston, MA, September 11-15, 2007.

Co-Chair, National Research Council’s Study Committee on Nanophotonics, The Defense Intelligence Agency, June 2007-February 2008.


Eric Donkor

Member, Editorial Board, Journal of Nanoscience and Nanotechnology, 2004-present.


Program Chair, SPIE Conference on Quantum Information and Computation VI, Orlando, FL, April 2008.

Session Chair, SPIE Conference on Quantum Information and Computation VI, Conference No. 6976, Sessions 2, 3 and 7, Orlando, FL April 2008.

Session Chair, SPIE Conference on Enabling Photonics, Technologies for Defense, Security, and Aerospace Applications IV, Sessions 2 and 5, April 2008.

Member, Review Panel, NSF SBIR Phase I.

Presentations:


John D. Enderle

Editor-in-Chief, IEEE EMB Magazine.

Editor, Biomedical Engineering Book Series, Morgan & Claypool Publishing.

Member, Editorial Board, Academic Press Biomedical Engineering Book Series.

Member, Editorial Advisory Board, International Journal of Neural Systems.

Editor, The Open Biomedical Engineering Journal, Bentham Science Publishers, Ltd.

Member, ABET Engineering Accreditation Commission.

Chair, ABET Team, External Advisory Committee.

Member, External Advisory Committee, University of Wyoming Neuroscience Center.

Member, ASEE Fred Merryfield Award Committee.


Member, IEEE EMBS Publications Committee.

Member, Communications Committee, AIMBE Academic Council, Society Council.

Moderator on Accreditation, BME Education Summit, Chicago, Illinois, June 16-17, 2008.

Presentation:

Accreditation Workshop (with J. Gassert), BMES Annual Conference, Los Angeles, CA, September 26, 2007.

Yunsi Fei

Member, Program Committee, IEEE International Symposium on Application Specific Processors (SASP), 2008.
Member, Program Committee, IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2008.

Member, Program Committee, IFIP/IEEE International Conference on Very Large Scale Integrated Circuits (VLSI-SOC), 2008.

Member, Program Committee, ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED), 2008.

Member, Program Committee, International Symposium on Circuits & Systems (ISCAS).

**Martin D. Fox**


*Presentations:*


**Ali Gokirmak**

*Presentations:*


Granted access to: Cornell Nanoscale Science and Technology Facility, Ithaca, NY; Harvard University Center for Nanoscale Systems, Cambridge, MA; and IBM T. J. Watson Research Laboratory, Yorktown, NY.

Faquir C. Jain

Member, Nanotechnology Panel, National Science Foundation, August 2, 2007 and August 3, 2007.

Member, Biomark Detection Panel, National Institutes of Health/National Cancer Institute, Topics 242 and 2430, Gaithersburg, MD, April 7, 2008.

Member, Biomark Panel, National Institutes of Health/National Cancer Institute, Topic 249, Gaithersburg, MD, April 8, 2008.

Presentations:

“QD Gate FETs,” Nanotechnology Forum, University of Connecticut, Storrs, CT, March 5, 2008.


Granted access to: Cornell Nanofabrication Facility; Harvard CNS-NNIN Facility; and Center for Microelectronic Material Research, Yale University.

Bahram Javidi


Organizer, Institute of Electrical and Electronics Engineers Annual Meeting of Lasers and Electro-Optics Society, November 2007.


Presentations:


Optical Society of America sponsored Lecture, KOC University, Istanbul, Turkey, May 2008.

Peter B. Luh

SNET Professor of Communications & Information Technologies, 2000-present.

Associate Editor, *IIE Transactions on Design and Manufacturing*, 1997-present.

Associate Editor, *Discrete Event Dynamic Systems*, 1999-present.

Associate Editor, *ACTA Automatic Sinica*, 2005-present.


Member, Senior Editors Panel and Advisory Committee, *IEEE Transactions on Automation Science and Engineering*.

Member, Senior Editors Panel, *IEEE Transactions on Robotics*.


General Chair, Seventh World Congress on Intelligent Control and Automation, Chongqing, China, June 2008.

Chair, Steering Committee, IEEE Conferences on Automation Science and Engineering, 2006-present.

Chair, Management Committee, IEEE Transactions on Haptics, 2007-09.

Member, Steering Committee, IEEE Conference on Automation Science and Engineering, Scottsdale, AZ, September 2007.


Member, Program Committee, Fifth International Conference on Informatics in Control, Automation and Robotics, Madeira, Portugal, May 2008.

Member, Advisory Committee, IEEE Conference on Robotics and Automation, Chengdu, China, June 2008.

Member, Best Paper Committee, IEEE Transactions on Automation Science and Engineering.
Member, Googol Best Application Paper Committee, IEEE Transactions on Automation Science and Engineering.

Member, Long Range Planning Committee and Fellow Evaluation Committee, IEEE Robotics and Automation Society.

Visiting Professor, Tsinghua University, Department of Automation, 2001-present.

Visiting Professor, Dalian University of Technology, 2006-present.

Presentations:

The 2007 IEEE International Conference on Automation and Logistics, plenary, Jinan, Shandong, China, August 2007.

Workshop on Intelligent and Networked Systems, Tsinghua University, June 2008.

Robert Magnusson

Associate Editor and Member, Board of Editors, Optical Engineering.


Member, Technical Program Committee, Terahertz Physics Devices and Systems, SPIE’s Optics East, Boston, MA, September 9-12, 2007.

Member, Technical Program Committee, Seventh Workshop on Information Optics, Annecy, France, June 1-5, 2008.


Member, Organizing Committee, 2008 International Conference on Optics-Photonics Design and Fabrication, Taipei, Taiwan, June 9-11, 2008.

Member, Technical Program Committee, Optics and Photonics for Information Processing II, SPIE International Symposium on Optical Engineering and Applications, San Diego, CA, August 10-14, 2008.


Member, Review Panel, National Science Foundation, Major Research Instrumentation, April 7-8, 2008.

Presentations:


Krishna R. Pattipati

Member, Program Committee, 2008 IEEE SMC Conference, Singapore.

Member, STRATCOM Strategic Multi-layer Analysis on Cyber Deterrence Committee.

Member, STRATCOM Strategic Multi-layer Analysis on Nuclear Smuggling Fingerprinting via Statistical Data Analysis Committee.

External Examiner, Roel Boumen, Eindhoven University, the Netherlands.

Member, Board of Directors, Aptima, Inc., Woburn, MA.

Presentations:


SMA Workshop on Cyber Deterrence, January 2008.


SMA Workshop on Nuclear Smuggling Fingerprinting, March and April 2008.


Granted access to: Naval War College, Innovation Lab; and SPAWAR, San Diego, CA.

Helena Silva


Presentations:


Granted access to: Cornell Nanoscale Science and Technology Facility, Ithaca, NY; Harvard University Center for Nanoscale Systems, Cambridge, MA; and IBM T.J. Watson Research Laboratory.

Eric P. Soulsby

Member, Board of Directors, American Society for Engineering Education, Educational Research and Methods Division.

Session Chair, American Society for Engineering Education Annual Conference.

Presentations:


Geoffrey W. Taylor

Presentations:


Mohammad Tehranipoor


Editor, TTTC Newsletter.

Program Chair, IEEE International Workshop on Defect-Based Testing, 2007.

General and Steering Committee Chair, 1st IEEE International Workshop on Hardware-Oriented Security and Trust, 2008.

Program Chair, IEEE International Workshop on Defect and Data Driven Testing, 2008.

Member, Program Committee, ACM SIGDA Ph.D. DAC Forum, 2008.

Member, Program Committee, International Conference on Communication Theory, Reliability, and Quality of Service, 2008.

Member, Program Committee, IEEE International Workshop on Defect Based Testing, 2005-present.

Member, Program Committee, North Atlantic Test Workshop, 2004-present.


Session Chair, International Symposium on Nanoscale Architectures, June 2008.

**Presentations:**


**Lei Wang**


Member, Technical Program Committee, ACM Great Lakes Symposium on VLSI, 2008.


Member, Technical Program Committee, IEEE International SOC Conference, 2008.
Presentations:


Peter K. Willett


Member, Editorial Board, *IEEE Signal Processing Magazine*.

Member, Program Committee, ISIF FUSION 2007 Conference.

Member, Program Committee, ISIF FUSION 2008 Conference.

Member, Program Committee, IEEE SAM 2008 Conference.

Session Organizer, 2008 IEEE Aerospace Conference.

Chair, Awards Committee, 2008 RADARCON, Rome, Italy.

Member, Board of Governors, IEEE Aerospace and Electronic Systems Society.

Webmaster and Technical Committee Member, IEEE Signal Processing Society’s “Sensor Array and Multichannel.”

UConn Representative, Air Force Research Laboratory, “Information Institute.”


Session Chair, IEEE ICASSP “Sensor Networks 1,” April 2008.

Presentations:

“Sequential and Quickest Detection with Application to Tracking and Multistatics,” Distributed Sensor Networks Workshop, Quebec City, Canada, July 2007.


“GMCPHD Results on MSTWG Data,” 5th MSTWG Workshop, La Spezia, Italy, February 2008.

Shengli Zhou


Member, Technical Program Committee, IEEE International Conference on Communications, Beijing, China, May 13-19, 2008.

Presentations:


Quing Zhu

Associate Editor, IEEE Transactions on Systems, Man and Cybernetics.

Member, SPIE Photons Plus Ultrasound Committee, Photonics West BIOS, San Jose, CA, January 2008.

Member, SPIE Optical Tomography and Spectroscopy Committee, Photonics West BIOS, San Jose, CA, January 2008.

Presentations:


Platform Presentation of San Antonio Breast Cancer Symposium (one of 5% selected from over 6000 abstracts). Presentation highlighted in April 2008 Oncology News Letters.
The 2007–2008 academic year has been an exciting time period for the department with the hiring of four new faculty members, the receipt of major research grants to our faculty, the graduation of a large number of students from our program and significant scholarship output of our faculty. In this period the Mechanical Engineering faculty published 70 refereed journal articles and one book chapter, and contributed 71 conference publications or presentations. Faculty members served on the editorial boards of 10 major research journals, including a chief editorship. The department’s total research expenditures for this period amounted to $3 million. Highlights of the year’s activities and accomplishments follow.

UNDERGRADUATE PROGRAM

In the 2007–2008 academic year the department’s undergraduate program had an enrollment of about 408 students and currently the fall 2008 freshman enrollment stands at 93 students. A total of 72 bachelor’s degrees were conferred in Mechanical Engineering. The department faculty taught 43 undergraduate courses during the academic year, including five courses in the Management & Engineering for Manufacturing (MEM) program with a total enrollment of 61 students. The capstone Major Design Experience featured 34 senior design projects sponsored by 22 companies. The year’s senior design activities may be viewed at http://www.engr.uconn.edu/me/seniordemo. The department underwent the ABET accreditation visit in fall 2007. The department expects to receive the full six years of accreditation based on the post-visit exit report. The ABET final decision will be obtained in July 2008. As part of outreach and student recruitment efforts, the department participated in E2K (a one-week residential program to engage high school students in engineering) as well as the da Vinci Project (designed to help grade 7 to 12 math and science teachers and administrators learn more about the engineering opportunities available to their students).

In addition to continuous improvements in its undergraduate laboratories by the purchase of new experimental stations and new computers, the Mechanical Engineering Department initiated a new program to support undergraduate students engaged in research in faculty research laboratories. This program provides each student with $2,500 for summer, provided that faculty provides at least $1,500 from their research funds. Ten such positions were made available and to date seven students have taken advantage of this program. This program is intended to encourage students to engage in research and give them an opportunity to experience research work with some of them getting interested in graduate work.

GRADUATE PROGRAM

The Mechanical Engineering graduate program ranked #7 among all public universities in the Northeast and Mid-Atlantic States in the 2008 U.S. News & World Report rankings. Nineteen students joined our graduate program out of 113 applicants; a total of 79 students were enrolled in the graduate program. The department’s faculty served as major advisors to 15 graduating master’s students and nine graduating Ph.D. students. Twenty three graduate classes were taught by the department faculty, including six on-site at Pratt & Whitney. The initiatives launched in 2004 to recruit quality students and to increase the diversity of our graduate population were continued during the 2007–2008 year, supported by additional competitive funding obtained during the year. This year’s graduate research competition involved nine doctoral students presenting their research in a short seminar format to an audience of faculty and students and a panel of judges. Four students (Kyle Grew, Swetaprovo Chaudhuri, Mark Majewski and Huseyin Erdim) received graduate pre-doctoral awards ranging from $3,000 to $1,250 for their top performances in the competition. A new department initiative was launched to provide half graduate research assistantships for those faculty who recruit new graduate students into their research programs. Five graduate students will be joining our department under this initiative.
Faculty and Staff

Two faculty members, Dr. Shiva Kotha and Dr. Wei Sun, joined our department in fall 2007. Dr. Nigel Sammes left the university to take up a position at Colorado School of Mines. Dean of Engineering Dr. Mun Y. Choi joined our department faculty in January 2008. Prof. Robert Jeffers decided to retire after 40 years on our department’s faculty. Four faculty searches were conducted during this academic year. The Pratt & Whitney Chair professor search concluded with Dr. Robert Gao joining our faculty in fall 2008. Three junior faculty positions were also filled. One of these was a new position in the fluid mechanics area, and Dr. Tianfeng Lu (Ph.D. Princeton, 2004) was selected to fill this position starting fall 2008. Dr. Georgios Lykotrafitis (Ph.D. Caltech, 2005) will join our faculty in spring 2009. His area of expertise is mechanics with biomedical applications. Dr. Chengyu Gao (Ph.D. MIT, 2004) joins our department in fall 2008. Dr. Cao’s area of expertise is system dynamics and control with applications to many engineering systems and devices. With these new faculty members, the department is home to 24 tenure-track or tenured faculty members. Additionally, two non-tenure-track faculty members and nine post-doctoral fellows participate in our research and educational activities. Two of the department’s faculty members hold endowed chair positions and one holds membership in the National Academy of Engineering (NAE).

Faculty Honors and Scholarship

The year was marked by several significant faculty honors and achievements. Dr. Ugur Pasaogullari received an NSF CAREER award to study water transport in proton exchange membrane fuel cell systems. Drs. Kazem Kazerounian and Baki Cetegen were elected to membership in the Connecticut Academy of Science and Engineering for their accomplishments in their respective research fields of kinematics and combustion. Two newly established departmental awards were presented to Drs. Kevin Murphy and Nejat Olgac for teaching and research excellence, respectively. The department faculty remains very active in research, bringing in major grants from NSF, NIH and DoD and NASA.

External Advisory Board

The external advisory board met in November to discuss the department’s strategic plan and provide input on its current and future educational and outreach activities. The board currently consists of: Dr. Alan Eckbreth, President of the Connecticut Academy of Science and Engineering; Mr. Stephen Heath, alumnus and President Emeritus of Pratt & Whitney UTC Commercial Engines; Prof. Mitchell Smooke, Strathcona Professor and Chair of Mechanical Engineering, Yale University; Mr. Paul Adams, Senior Vice President of Engineering at Pratt & Whitney; Prof. Jack Kerrebrock, Professor Emeritus of Aeronautics and Astronautics, MIT; Dr. Wayne Eckerle, alumnus and Vice President of Corporate Research and Technology at Cummins Corp.; Dr. Charles Kling, Manager of Nuclear Power Research and Development at Westinghouse Electric Corp.; and Mr. Joseph Adiletta, alumnus and President of Pallflex Products Corp. Recently, two new members are joining the board: Mr. Martin Seifert, President and CEO of Nufern Corporation, a specialty fiber optics and fiber optic laser manufacturer and Thomas Prete, Program chief engineer and engineering director for Operational Military Engines for Pratt & Whitney and UConn alumnus.

Alumni

Mechanical Engineering alumni Wayne Eckerle (Ph.D. ME, 1985) and Thomas Prete (B.S. ME, 1985) were inducted as 2008 members of the Academy of Distinguished Engineers for their engineering leadership roles in industry. Both are members of the Mechanical Engineering Advisory Board.
Theodore L. Bergman


Zbigniew Bzymek


Baki M. Cetegen


Wilson K. S. Chiu


Amir Faghri


Tai-Hsi Fan


Horea Ilies


Eric H. Jordan


Kazem Kazerounian


Shiva Kotha


Kevin D. Murphy


Nejat Olgac


Ugur Pasaogullari


Ranga Pitchumani


**Michael W. Renfro**


**Jiong Tang**


**Bi Zhang**


Thomas J. Barber


John C. Bennett


Theodore L. Bergman


Zbigniew Bzymek


Baki M. Cetegen


Wilson K. S. Chiu


Mun Y. Choi


Amir Faghri


Tai-Hsi Fan


Horea Ilies


**Eric H. Jordan**


**Kazem Kazerounian**


**Shiva Kotha**


**Nejat Olgac**


**Ugur Pasaogullari**


**Ranga Pitchumani**

Michel W. Renfro


Wei Sun


Jiong Tang


**Bi Zhang**


MECHANICAL ENGINEERING DEPARTMENT
ACTIVE GRANTS & CONTRACTS
2007-2008

Thomas Barber

“Senior Design Projects,” (with all department faculty), various corporate sponsors, $149,411 ($0).

Theodore L. Bergman


“SGER: Engineered Microclimates for Enhanced Biomass Production,” (with Y. Li (20%)), National Science Foundation, 7/31/07-7/31/08, $80,000 ($24,025).

“Smart Salt Selection,” (with R. Bogner (66%)), GlaxoSmithKline, 12/23/05-10/22/06, $68,052 ($1,851).

Zbigniew M. Bzymek


Baki M. Cetegen

“Solution Spray Plasma Processing of Nano-structured Ceramic Coatings,” (with E.H. Jordan (70%), M. Gell (17%) and N. Padture (0%)), Office of Naval Research, 1/01/05-12/30/07, $1,000,000 ($114,043).

“Optical Diagnostic Tools for Fuel Cell Development and Operational Control,” (with M. Renfro (50%)), Connecticut Innovations Inc. and UTC Power, 8/01/07-8/31/09, $264,000 ($8,318).

“GOALI: Experimental and Computational Study of Bluff-body Flame Stabilization with Non-homogeneous Upstream Mixing,” (with M. Renfro (50%)), National Science Foundation, 6/01/06-5/31/09, $200,000 ($38,626).

“Engineered Nano-Composite Oxides for High Durability Missile Domes,” (with E. Jordan (70%), M. Aindow (20%), and M. Gell (10%) and Inframat Corporation, M.I.T. and U. Michigan), DOD/DARPA, 11/01/06-4/31/10, $2,808,000 ($129,076).

“Nano-composite Oxides for High Durability Missile Domes,” (with M. Gell (20%) and M. Aindow (20%)), Raytheon Inc. subcontract (DARPA Contract), 4/16/07-10/15/10, $2,808,000 ($129,076).

Wilson K. S. Chiu

“Effects of Impurities on PEM Fuel Cell Performance and Durability,” (with T. Molter (79%), S. Suib (8%), M. Aindow (5%) and U. Pasaogullari (3%)), U.S. Department of Energy, 11/01/05-10/30/10, $1,900,000.
“Carbon Nanotube Synthesis by Open-air Laser-induced Chemical Vapor Deposition,” National Science Foundation, 9/01/07-08/31/10, $382,284 ($0).

“Understanding Hole Pattern Formation during Microstructured Optical Fiber Draw,” National Science Foundation, 10/01/03-9/30/07, $296,016 ($99,502).

“Advanced Fuel Cell Research for Weapon Applications,” (with E. Greene (0%)), Office of Naval Research, 8/23/04-9/30/07, $48,000 ($7,552).

“Structural Imaging and Optimization of Microtubular Solid Oxide Fuel Cell Electrodes,” Army Research Office, 4/01/05-9/30/08, $150,000 ($15,217).

“REU for FRS 523455,” National Science Foundation, 10/01/03-9/30/07, $5,000 ($3,288).

“Fuel Cell Performance Using Hydrogen Peroxide Reformate as the Oxidant,” Office of Naval Research, 1/01/07-12/31/09, $210,000 ($49,592).

Mun Y. Choi


Amir Faghri


Tai-Hsi Fan

“Quantitative Analysis of Molecular Transport and Population Kinetics of Stem Cell Cultivation in a Microfluidic System,” (with J.C. Conover (10%) and X. Yao (10%)), Connecticut Department of Public Health, 3/02/07-3/01/09, $200,000 ($58,460).

Xinyu Huang


“Telecom Backup Power,” (with K. Reifsnider (0%)), United Technologies/UTC Power/UTC Fuel Cells, 7/15/06-7/14/08, $150,000 ($66,520).

“Specialty Coatings Development for Fuel Cells,” (with K. Reifsnider: (0%)), Tanury Corporation, $100,000 ($0).
Horea Ilies

“CAREER: Geometric Singularities in Design and Manufacturing,” National Science Foundation, 8/01/07-7/31/12, $400,000 (0).

“SGER: A Mechanics Framework for the Analysis and Design of Protein Based Nano Machines,” (with K. Kazerounian (50%)), National Science Foundation, 8/1/07-7/31/08, $100,000 ($44,128).

“Assessment of UGS Digital Manufacturing Solutions,” Connecticut Center for Advanced Technology, 5/01/08-5/31/09, $103,000 ($0).

“COGEM: Constrained Geometric Morphing,” National Science Foundation, 3/01/06-3/31/09, $320,000 ($37,450).

“IERE Supplement,” National Science Foundation, 3/01/06-3/31/09, $50,000 ($37,622).

Eric H. Jordan

“Solution Spray Plasma Processing of Nano-structured Ceramic Coatings,” (with M. Gell (17%), B.M. Cetegen (13%) and N. Padture (0%)), Office of Naval Research, 1/01/05-12/30/07, $1,000,000 ($114,043).

“Engineered Nano-Composite Oxides for High Durability Missile Domes,” (with M. Aindow (20%), B.M. Cetegen (20%) and M. Gell (10%) and Inframat Corporation, MIT and U. Michigan,), U.S. Department of Defense/DARPA/Raytheon, 11/01/06-4/31/10, $2,808,000 ($322,692).

“Optical NDI of Thermal Barrier Coatings,” National Science Foundation STTR, joint contract with Southwest Sciences, 1/01/08-12/31/08, $50,000, ($20,195).

“GOALI: Development of Temperature Sensing Doped Particles for Plasma Deposition Diagnostics,” (with M. Renfro (50%)), National Science Foundation, 10/1/06-11/30/09, $350,000 ($41,869).

Kazem Kazerounian

“Design and Development of a New Massage Chair System,” Osim International, 7/01/07-6/30/09, $96,678 ($0).

“SGER: A Mechanics Framework for the Analysis and Design of Protein Based Nano Machines,” (with H. Ilies (50%)), National Science Foundation, 8/01/07-7/31/08, $99,958 ($44,128).

“Design and Development of Sensory Computer Controlled Manipulators,” New Dimension Technologies Corporation, 12/15/06-12/14/08, $124,589 ($38,027).

Nejat Olgac

“A New Paradigm for Intelligently Managing the Time Delay,” U.S. Department of Energy, 8/01/04-9/30/07, $126,000 ($6,055).

“A Novel Microinjection Process Using Rotational Oscillations,” (jointly with Harvard Medical School and University of California - Davis), National Institutes of Health, 9/01/04-9/30/08, $204,500 ($66,281).

“Novel Framework for Optimizing Non-Uniform Pitch Milling,” National Science Foundation, 6/15/05-5/31/09, $260,000 (with $6,000 REU Supplement), ($13,699).
“IREE for 523915,” National Science Foundation, 6/15/05-5/31/2009, $14,500 ($9,602).

“Swarm Behavior During Conflicts: From Biological to Engineered Systems,” U.S. Army Research Office, 8/01/07-7/31/10, $271,000 ($16,114).

“Productivity Improvements for Rough Milling of Blade Slots on Titanium Disks,” United Technologies Corporation and Pratt & Whitney, 1/01/06-12/30/07, $52,000 ($8,312).

**Ugur Pasaogullari**

“Effects of Impurities on PEM Fuel Cell Performance and Durability,” (with T. Molter (84%), S. Suib (8%), M. Aindow (5%), W.K.S. Chiu (5%)), U.S. Department of Energy, 11/01/05-10/30/10, $1,900,000.

“CAREER: Role of Interfaces on Transport Phenomena in Polymer Electrolyte Fuel Cells,” National Science Foundation, 2/01/08-1/31/13, $400,000 ($0).

“Ammonia-Borane Pyrolysis: Analysis and Characterization,” (with S. Suib (36%), T. Molter (26%) and B. Wilhite (18%)), Ensign-Bickford, 9/01/06-8/31/07, $194,896 ($0).

“Thermal Fluid Analysis of Ammonia-Borane Pyrolysis,” (with S. Suib (38%) and T. Molter (24%)), Ensign-Bickford, 9/01/07-4/30/08, $90,533.


**Ranga Pitchumani**

“Rapid Replication of Electroforming Micromolds for Fabrication of High Aspect Ratio Microstructures,” National Science Foundation, 9/01/07-8/31/10, $300,001 ($0).

“Investigations on Transport Phenomena Governing Fabrication of Microstructures via Microcasting of Nanoparticulate Slurry,” National Science Foundation, 9/01/05-8/31/09, $324,000 ($151,918).


**Kenneth Reifsnider**

“Enabling Fuel Cells for Distributed Telecom Backup Power Applications: Accelerated Reliability Testing Capability and Methods,” Connecticut Clean Energy Fund Yankee Program, 8/15/06-8/14/07, $600,000 ($0).

“Telecom Backup Power,” (with X. Huang (100%)), United Technologies/UTC Power/UTC Fuel Cells, 7/15/06-7/14/08, $150,000 ($0).

“Cold Temp Fatigue,” Exxon Mobil, 2/15/07-2/14/08, $67,568 ($33,377).
Michael W. Renfro

“GOALI: Experimental and Computational Study of Bluff-body Flame Stabilization with Non-homogeneous Upstream Mixing,” (with B.M. Cetegen (50%)), National Science Foundation, 6/01/06-5/31/09, $200,000 ($38,626).

“CAREER: Characterization of Propagating and Receding Flame Edges in Composition and Velocity Gradients,” National Science Foundation, 2/01/03-1/31/09, $417,999 ($24,985).


“GOALI: Development of Temperature Sensing Doped Particles for Plasma Deposition Diagnostics,” (with E. Jordan (50%)), National Science Foundation, 10/1/06-11/30/09, $349,850 ($41,869).


“Bluff-Body Flame Holding Under Partially-Premixed Conditions,” Pratt & Whitney, 1/01/05-12/31/07, $39,000 ($7,963).

“Optical Diagnostic Tools for Fuel Cell Development and Operational Control,” (with B. Cetegen (50%)), Connecticut Innovations Inc. and UTC Power, 8/01/07-8/31/09, $264,000 ($8,318).

Jiong Tang

“Modeling and Control Improvement for High Precision Optical Manufacturing,” Gerber Scientific, Inc., 11/01/05-6/30/09, $279,198 ($65,500).

“Granular Damping Analysis and Design for Vibration Suppression (CMS – 0324436),” National Science Foundation, 8/15/03-7/31/08, $251,558 ($30,323).

“Sensor Small Team: Robust Wireless Piezoelectric Sensor Network for Structural Health Monitoring (CMS-0428210),” National Science Foundation, 8/01/04-7/31/09, $150,000 ($28,402).

“Multifunctional Adaptive Piezoelectric Sensory System for Structural Damage Detection (CMS – 0528790),” National Science Foundation, 8/15/05-7/31/09, $117,000 ($18,355).


“Highly Sensitive and Robust Damage Detection of Periodic Structures with Piezoelectric Networking (FA9550-07-1-0051, Sub-award 3344-UC-USA-0051),” Air Force Office of Scientific Research through Penn State University, 12/15/06-11/30/09, $135,963 ($51,532).


Bi Zhang

“Software-Supported High Efficiency Grinding,” Connecticut Center for Advanced Technology, 1/1/08-12/31/08, $67,172 ($6,284).

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WEI SUN


UGUR PASAOGLU

Early Career Development (CAREER) Award, National Science Foundation, 2008.
Thomas J. Barber
Member, American Society of Mechanical Engineers (ASME) and ASME Computational Fluid Dynamics Technical Committee.

Member, American Institute of Aeronautics and Astronautics (AIAA) and AIAA Professional Education Technical Committee.

*Presentation:*

John C. Bennett
Member, American Society of Mechanical Engineers (ASME).

Member, American Association of Colleges and Universities (AAC&U).

Member, Tau Beta Pi Society.

*Presentation:*

Theodore L. Bergman
Fellow, American Society of Mechanical Engineers (ASME).

Member, Connecticut Academy of Science and Engineering (CASE).

Zbigniew M. Bzymek
Member, Pi Tau Sigma Honorary Society.

Member, New York Academy of Sciences.

Member, Engineering Committee, Polish Academy of Science.

Baki M. Cetegen
Fellow, American Society of Mechanical Engineers (ASME).

Member, Combustion Institute.

Board Member, Combustion Institute Eastern States Section, 1997 to present.

Vice-Chair, Executive Committee of Combustion Institute, Eastern States Section.
Member, National Science Foundation Combustion and Plasma Systems Proposal Review Panel.

Member, Connecticut Academy of Science and Engineering.

**Wilson K. S. Chiu**


Member, American Society of Mechanical Engineers (ASME).

Vice Chair, American Society of Mechanical Engineers (ASME) Heat Transfer Division K-15 Technical Committee on Transport Phenomena in Manufacturing and Materials Processing, 2007 - present.

Session Chair and co-chair, ASME International Mechanical Engineering Congress and Exposition, 2007.


Secretary, American Society of Mechanical Engineers (ASME) Advanced Energy Systems Division, Systems Analysis and Fuel Cell Technical Committee, 2008 - present.

Member, American Society of Mechanical Engineers (ASME) Heat Transfer Division K-15 Technical Committee on Transport Phenomena in Manufacturing and Materials Processing, 1999 - present.


Member, ECS Energy Technology Division, 2008 - present.

Member, External Advisory Board, Connecticut Global Fuel Cell Center, 2006 - present.


Session Organizer, American Society of Mechanical Engineers (ASME) Summer Heat Transfer Conference, 2008.
Presentations:


“Mass Transfer and Electrochemistry in Solid Oxide Fuel Cells,” Department of Mechanical Engineering, Stevens Institute of Technology, February 27, 2008.


Mun Y. Choi


Scientific Member and Special Lecturer, 4th International Conference on Cooling and Heating Technologies (ICCHT2008), October 2008.

International Session Chair, Topical Simulations, Diagnostics, and Experiments in Fire and Combustion Systems session, American Society of Mechanical Engineers (ASME) Heat Transfer Conference, July 2007.

Organizer, National Conference of the Pi Tau Sigma Mechanical Engineering Honor Society, Georgia Institute of Technology, GA, February 2008.
David (Ed) Crow

Member, National Academy of Engineering.
Member, Connecticut Academy of Science and Engineering (CASE).

Amir Faghri

Fellow, American Society of Mechanical Engineers (ASME).
Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA).
Member, Connecticut Academy of Science and Engineering (CASE).
Member, Editorial Board, *Journal of Heat Transfer Research*.
Member, Editorial Board, *Journal of Applied Thermal Engineering*.
Honorary Member, Editorial Advisory Board, *International Communications in Heat and Mass Transfer*.
Member, International Advisory Board, 9th International Heat Pipe Symposium, Selangor, Malaysia, 2008.
Member, Council of Advisors, College of Engineering, University of California, Riverside.
Member, Board of Directors, RBC Bearings Inc.

Tai-Hsi Fan

*Presentation:*

“Prediction of Scaling Law for Particle Diffusion in Polymer Solutions,” (with R. Tuinier), 60th Annual Meeting of the APS Division of Fluid Dynamics, Salt Lake City, Utah, November 18-20, 2007.

Horea Ilies

Member, American Society of Mechanical Engineers (ASME).
General Program Co-Chair, ASME 2008 IDETC & CIE Conferences.
Program Committee, ASME Design Automation Conference.
Presentation:

Eric H. Jordan
Fellow, American Society of Mechanical Engineers (ASME).
Member, Connecticut Academy of Science and Engineering (CASE).

Kazem Kazerounian
Fellow, American Society of Mechanical Engineers (ASME).
Member, Connecticut Academy of Science and Engineering (CASE).
Associate Editor, Mechanism and Machine Theory, 2002 - present.
Member, Management Committee, ASME Journal of Medical Devices.
Member, Organizing Committee, Conference on Interdisciplinary Applications of Kinematics (IAK 2008).
Vice Chairman and Treasurer, ASME Design Division Executive Committee 2007-2008.
Member, ASME Design Division Executive Committee, 2004-2010.

Shiva Kotha
Session Chair, Biomaterials, Biomedical Engineering Society (BMES), Los Angeles, CA, 2007.
Session Chair, Biomedical Engineering Society (BMES) Conference.

Kevin Murphy
Member, American Society for Engineering Education (ASEE).

Nejat Olgac
Fellow, American Society of Mechanical Engineers (ASME).
Member, Connecticut Academy of Science and Engineering (CASE).
Program Chair, ASME) Dynamic Systems and Control Conference, Los Angeles, CA, 2009.
Presentations:


“Robust Control of Cart-Pendulum Dynamics against Uncertain Multiple Time Delays,” (with E. Cavdaroglu and N. Olgac), ACC 08, Seattle, CD-ROM, June 2008.

Ugur Pasaogullari

Member: American Society of Mechanical Engineers (ASME) and Electrochemical Society (ECS).

Ranga Pitchumani

Fellow, American Society of Mechanical Engineers (ASME).

Member, Connecticut Academy of Science and Engineering (CASE).

Associate Editor, American Society of Mechanical Engineers (ASME) Journal of Heat Transfer.

Member, Editorial Board, Journal of Thermoplastic Composite Materials.

Presentation:


Michael W. Renfro

Member, Combustion Institute.

Presentations:


Wei Sun

Member: Council of Cardiovascular Radiology and Intervention, American Heart Association; Biomedical Engineering Society; American Society of Biomechanics; American Society of Mechanical Engineer (ASME).
Jiong Tang

Member, American Society of Mechanical Engineers (ASME).


Bi Zhang

Member: American Society of Mechanical Engineers (ASME), Society of Manufacturing Engineers (SME). American Society for Precision Engineering (ASPE), Japan Society for Precision Engineering (JSPE).

Associate Member, International Institute for Production Engineering Research (CIRP).
The mission of BECAT includes both research and outreach. BECAT recognizes the rapid rate of technological change and the increasingly interdisciplinary nature of research, and hence promotes and supports collaboration within and beyond the University. BECAT provides opportunities for interdisciplinary research and educational programs among faculty and students, strengthens the capabilities of individuals and groups in the pursuit of government and industrial projects, facilitates and promotes the work of its constituent researchers, and maintains an environment for research, development and continuing education that is responsive to the changing needs of society. BECAT’s focus is on advanced algorithms and technologies and on the science and engineering infrastructure that supports them.

BECAT’s current platform is rooted in supercomputation, and with increasing University-wide interest in high-performance computation, BECAT has aligned some of its activities to enable the growth in critical technical and algorithmic advances in such areas as: nanotechnology; optoelectronics; information technology; bioinformatics; large scale systems simulations; manufacturing; remote sensing; electrical and computer communications; information security; high performance, distributed and supercomputing; signal processing and imaging; database and information extraction; and software engineering.

BECAT faculty affiliation has increased to 55 members, with 36 laboratories located either within various departments or at the main BECAT complex, located on Level A of the Homer Babbidge Library. BECAT members are extremely productive in professional activities. Their activities in 2007-2008 included: chairing or co-chairing international conferences and workshops; chairing professional societies; serving as editors-in-chief or editors of archival journals; organizing international workshops and conferences; delivering keynote speeches in international conferences, workshops; delivering invited speeches in various academic institutions, government agencies, and companies; serving as program committee members in international conferences and workshops; serving as panel members for state and federal funding agencies; chairing sessions in international conferences and workshops; delivering invited tutorials in international conferences and workshops and serving in the steering committees of international conferences and workshops.

**Five-Year Review**

The laws and by-laws of the University require that all centers and institutes be reviewed on a five-year cycle to determine their continued contribution to the University’s mission. BECAT was reviewed by the Academic Center/Institutes Review Committee during the spring semester 2008. The Committee based its review on the March self-study submitted by BECAT Director, Dr. Sanguthevar Rajasekaran. The Committee evaluated the Center with attention to four key components: 1) Mission, 2) Costs/Resources, 3) Scholarly Productivity and Benefits, and 4) Plans for Future Development. After careful review, the Committee recommended to Provost Peter Nicholls that BECAT be approved for a new five-year term. Provost Nicholls accepted the Committee’s recommendation.

As we look forward to the next five years, BECAT plans to continue to strengthen its existing strategic goals, including: providing technical and algorithmic support, funding and facilitating research incentives, investing in new research initiatives, providing administrative and grant management assistance, upgrading existing research infrastructure, enhancing the activities of constituent labs, and providing formal and informal technical exchanges.
UNIVERSITY CENTER APPLICATION

BECAT has submitted an application to become a University Center. Traditionally, BECAT has had the heaviest participation from departments in the School of Engineering. With a focus on enabling technologies in computing and informatics, BECAT is exceptionally positioned to develop interdisciplinary programs across the departments at UConn and UCHC. With the charter and mandate of a University Center, BECAT would actively promote the participation and contribution from numerous departments in UConn and UCHC. The collaborative activities and shared resources would enable BECAT to successfully develop larger, multi-investigator programs in new areas of emerging research in nanotechnology, bio-informatics, imaging, technology-driven pedagogical developments, etc. Currently, common research interests exist between BECAT and many UConn and UCHC departments. Among these are Biomedical Engineering, Chemistry, Ecology and Evolutionary Biology, Economics, Geography, Geology, IMS, Mathematics, Molecular and Cell Biology, Marine Science, Pharmaceutical Science, Physics, Physiology and Neurobiology, Psychology and Statistics.

BECAT will actively collaborate with the Connecticut Institute for Clinical and Translational Science (CICATS). One of the major goals of this institute is to expedite the migration of the biomedical and health-related discoveries into products, treatments, and interventions that have the potential to improve people’s lives. High-performance computing is a critical need of CICATS, and BECAT is ideally suited to satisfy this need. BECAT is also interested in developing joint proposals with CICATS that, thanks to common interests, will enrich collaborative relations with other related UConn centers. For example, large scale modeling and simulations is an area of great interest to the Connecticut Global Fuel Cell Center (CGFCC).

HIGH PERFORMANCE COMPUTING RESEARCH

BECAT is proud of the continued success of the Connecticut Institute for Supercomputing and Visualization (CISV). We are currently reviewing quotes to upgrade the existing systems, as the 8-processor SGI® Altix® 350 mid-range server with 8 gigabytes of memory and a 64-processor SGI® Altix® 3700 Bx2 supercomputer configured with 64 gigabytes of memory, are running at near capacity.

We are also exploring combining computing facilities with the UConn Health Center (UCHC). Dr. Les Loew at the UCHC has a cluster of 388 processors and two SGI Altix machines. Clusters can be found in such (non-engineering) departments as Physics, Chemistry, Mathematics, MCB, etc. BECAT could lead the effort in pooling together all of these resources and efforts to achieve a massively parallel machine and administer its usage. The resulting computing power will be much more than what can be achieved out of individual clusters.

NANOCOMPUTING AND BIOCOMPUTING FORUMS

With BECAT support, the School of Engineering held its first Nanotechnology Research Forum in Konover Auditorium, on March 5, 2008. A second forum, on the subject of Bioengineering Research, was organized and hosted by the School of Engineering, in partnership with the UCHC and BECAT, on April 22, 2008. Both events were quite successful.

STAFFING UPDATE

In addition to its Director, Dr. Sanguthevar Rajasekaran (CSE), the BECAT organizational structure consists of an Associate Director, Dr. Peter Willett (ECE); Administrative Coordinator, Ms. Sandi Lizee; and Technical Support Administrator, Justin Neumann. The BECAT Secretary, Ms. Elizabeth Moore, retired from State service in the fall.
The Connecticut Global Fuel Cell Center (CGFCC) continues to build on a strong existing core of excellence at UConn in research and development of fuel cells and related technologies concerned with renewable energy and a sustainable environment. The scope of the Center includes systems-to-science pure and applied research in fuel cell design and manufacturing, development, materials, fuels and reforming, and integration. Major thrusts in proton exchange membrane (PEM) and solid oxide fuel cell (SOFC) science and technology are complemented by active efforts for molten carbonate, phosphoric acid, and other fuel cell types.

Since the departure of Dr. Kenneth Reifsnider in 2007, the CGFCC has been overseen by Associate Dean for Research & Graduate Education, Dr. Mehdi Anwar, who has served as Interim Director. An active search is underway to recruit a superb candidate with a proven record of success for the permanent position of Director.

**EMINENT FACULTY INITIATIVE IN SUSTAINABLE ENERGY**

Among the strategic priorities of the School of Engineering during the last year is the Eminent Faculty Initiative in Sustainable Energy. The Initiative, which is supported by a permanent $2 million annual sum from the Connecticut General Assembly, garnered matching support from three industrial partners for the first year of funding. The Initiative seeks to establish a program aimed at advanced research, education and training in sustainable “green” energy. The industrial partners include FuelCell Energy of Danbury, the Northeast Utilities Foundation, and UTC Power of South Windsor.

During the last year, a national search was launched and vigorously pursued to recruit a world-class researcher to lead the Sustainable Energy Initiative, along with two Named Professors. In conjunction with this recruiting effort, the School hosted a seminar series called “Challenges for a New Energy Frontier” that brought 15 internationally-recognized leaders in sustainable energy technologies/research to campus to discuss their research. In addition, a search was initiated to recruit a research core of 10 tenure-track faculty members who will form an interdisciplinary, integrated team working in the strategic areas of fuel cells or other alternative energy technologies and applications. These searches remain ongoing.

**INTRODUCING THE CGFCC BOARD**

During the year, Interim Director Mehdi Anwar convened an Advisory Board to assist in plotting the Center’s future course. The members are:

- Mr. Jerome Peters (Chair) – Member, Connecticut Clean Energy Fund Board
- Mr. Mike Ahern – Vice President, Northeast Utilities
- Dr. C. Barry Carter – Head, Chemical, Materials & Biomolecular Engineering, UConn
- Dr. Baki Cetegen – Head, Mechanical Engineering, UConn
- Dr. Keith Frame – Member, Connecticut Innovations staff of Clean Energy Fund
- Ms. Norma Glover – Member, Connecticut Clean Energy Fund Board
- Dr. Pinakin Patel – FuelCell Energy
- Dr. Frank Preli – Pratt & Whitney
- Dr. Steve Suib – Head, Chemistry, UConn

The Board met for the first time on February 6, 2008, and a second time on June 10, 2008. The Board discussed the Clean Energy Fund endowment and the eminent faculty initiative.
FUEL CELL RESEARCH PROGRAM HIGHLIGHTS

The Connecticut Global Fuel Cell Center (CGFCC) serves as one of the major hubs for activities associated with this sustainable energy initiative, pioneering new energy technologies, training the energy workforce, and fostering innovative spinoff opportunities. The Center is committed to its mission to promote fundamental and applied research in sustainable energy in collaboration with Connecticut and national academic and industrial partners, with funding from diverse private and federal entities.

Total direct research expenditures for the CGFCC for FY08 were $363,625; total research expenditures for the same period, including indirect, were $560,568. Total research expenditures for the Center since inception were $11 million dollars. As part of the above mission, research activities during fiscal year 2007-08 involved both the continuation and the start of many federal and industrial programs. Our federal partners included the National Science Foundation (NSF), the U.S. Department of Energy (DOE), Office of Naval Research (ONR), and DARPA. Our industrial partners, predominantly based in Connecticut, included UTC Power, FuelCell Energy, the UTC Research Center, Ensign-Bickford, Salamone & Associates, MysticMD, Tanury Industries, Mott Corporation, and Design by Analysis. Finally, our international partners over the past year have included NATO, NEDO (Japan) and Nissan (Japan). Research highlights from a few of the major programs are as follows:

- **Office of Naval Research Young Investigator Program – PI: Dr. Benjamin Wilhite**
  This ongoing program involves research to develop a new class of compact, thermally efficient and highly integrated fuel reformers for fuel cell-based power systems. This reactor concept centers on the use of precision-distribution schemes in structured ceramic mini- and micro-channel networks.

- **Department of Energy, Fuel Cell Impurities – PI: Dr. Trent Molter**
  CGFCC has been working with its partners FuelCell Energy, Inc. and UTC – Hamilton Sundstrand to determine the effects of various impurities (hydrocarbons, carbon monoxide, hydrogen sulfide, cations and others) on proton exchange fuel cell performance and durability. Recent research has examined the effects of certain commonly-occurring hydrocarbon species on fuel cell performance using standardized tests developed in collaboration with other DOE contractors. This has included the development of analytical chemistry techniques to determine the impurity content in the fuel stream as well as the development of membrane characterization techniques. We have also examined the effects of cationic contaminants on the physiochemical properties of proton exchange membranes using new test protocols developed by CGFCC. Future program activities include developing models to predict the performance impact on PEM fuel cells and developing a means of mitigating deleterious effects of these impurities on fuel cell performance and integrity.

- **National Science Foundation CAREER Award: Role of Interfaces on Transport Phenomena in Polymer Electrolyte Fuel Cells – PI: Dr. Ugur Pasaogullari**
  This new program will involve computational and experimental analysis to gain a better understanding of performance characteristics associated with the fuel cell membrane electrode assembly (MEA). Specifically, Prof. Pasaogullari’s group will attempt to understand the interfacial activity between the carbon layers and the platinum catalyst layer in an attempt to develop more durable, low cost, high performing MEA’s.

- **UTC Power – PI: Research Prof. Alevtina Smirnova**
  This new program involves the synthesis of resorcinol-formaldehyde (R-F) carbon aerogels and carbon aerogel-based metal alloy catalysts using supercritical deposition technique. Aerogels offer cost and performance advantages over other comparable approaches.

Our faculty members and researchers have, collectively, produced more than 100 scholarly archival journal papers based on their fuel cell research, 13 book chapters, and 1 book. In addition, CGFCC researchers have submitted over 65 invention disclosures – 14 of which have patents pending and three of
which have resulted in issued patents, to date. In addition, to further its mission to become a world leader in fuel cell science and commercialization, the CGFCC has established national and international collaborations and partnerships with more than nine universities, over 40 industrial partners, 5 national labs, and 3 international research institutes.

TECHNOLOGY VALIDATION

One important research component of the CGFCC’s plan is to assist in the validation of fuel cell systems for our partnering organizations. This validation process includes running the systems in-house, performing various tests, and finally analyzing the results.

Over the past two years, FuelCell Energy, Inc. of Danbury, CT has worked with the Center to develop an advanced electrochemical hydrogen separator (EHS), a device that will be used with the company’s Direct FuelCell® power plants to co-produce hydrogen and electricity. This program was sponsored by the Connecticut Clean Energy Fund and targets the demonstration of a novel technology that separates hydrogen from other gases. The CGFCC has and is continuing to work with FCE to conduct parametric and life tests on a prototype version of this unit. The unit has successfully undergone extensive testing (over 10,000 hours) in the CGFCC laboratory and continues to demonstrate the long-term effectiveness and performance of this technology. Based on the information gathered from these tests, FCE has successfully developed a full-scale building block of this system and are rapidly moving toward commercialization.

In addition, the Center has partnered with UTC Power for a Yankee Ingenuity grant titled “Enabling Fuel Cells for Distributed Telecom Backup Power Applications: Accelerated Reliability Testing Capability and Methods.” This program consisted of the development, validation, and demonstration of novel methodologies for projecting long-term reliability of a 5 kW proton exchange membrane uninterruptible power supply (UPS) through accelerated degradation testing. The 5 kW unit supplied by UTC Power was subjected to accelerated load-cycling and start-stop operation (~250 cycles) including environmental temperature variation. In conjunction with the tests on the complete unit, small single fuel cells were endurance tested to investigate the proton exchange membrane used in the unit and to evaluate UTC’s novel cell design that involves the use of a water-transport plate. Post-test membranes were subjected to mechanical tests to evaluate changes in mechanical properties. The membranes from the cells using the water-transport plate were found to have more uniform and superior properties compared to those using conventional plates.

FUEL CELL EDUCATION AND OUTREACH HIGHLIGHTS

The Center has been involved in a number of education and outreach activities over the past 12 months. Highlights of a few are as follows:

- Planning activities for the 6th International Conference on Fuel Cell Science, Engineering and Technology, held June 16-18 in Denver, CO. The conference is sponsored by the American Society of Mechanical Engineers, and one of the six conference co-chairs is Dr. Mehdi Anwar, Interim Director of CGFCC. The CGFCC has participated in the planning and organization of the conference program.

- Education and outreach activities continue to grow at the CGFCC. During April, the Center hosted 100 middle school students participating in the Connecticut Kids Fueling the Future program. The program involves students from six different middle schools in the New Haven area. The students had a one hour introductory presentation by Dr. Ben Wilhite and then small group demonstrations that included the biodiesel production facility (Dr. Richard Parnas), solar energy (Dr. Martin Fox) and fuel cells (Peter Menard).
• CGFCC participated in the 2008 Sustainable Energy Symposium by organizing a “Fuel Cells for a Sustainable World” breakout session with presentations by Thomas Jarvi of UTC Power, Frank Wolak of FuelCell Energy, Patrick O’Neill of Connecticut Innovations and the Connecticut Clean Energy Fund, and Dr. Wilhite of UConn. In addition, as part of the symposium program, Drs. Ugur Pasaogullari and Alevtina Smirnova (an Assistant Research Professor associated with the CGFCC) organized two half-day workshops that followed the symposium; one covered Fuel Cell Fundamentals and Applications and the second covered hydrogen/air PEMFC Manufacturing and Testing.

• In recognition of the successful demonstration of FuelCell Energy’s electrochemical hydrogen separation system, a celebratory event was held at the CGFCC that included representatives from the Connecticut Clean Energy Fund, Army Corps of Engineers’ Construction Engineering Research Laboratory (CERL), UConn’s top administration, Air Products, the Connecticut Center for Advanced Technologies (CCAT), Connecticut fuel cell companies, green energy entrepreneurs and other interested Connecticut citizens. The celebratory event culminated in a round-table discussion intended to foster continued industry/academic/government collaborations on energy development.
During the past year, the Connecticut Transportation Institute (CTI) has continued its mission to conduct transportation-related research, outreach and technology transfer. CTI’s role of improving and strengthening Connecticut’s and the nation’s transportation system has continued to grow. CTI personnel and affiliated faculty members have continued to serve on national, regional and state committees that have increased CTI’s prominence at all levels.

CTI continues to serve as a technical resource for the Connecticut General Assembly. Throughout the past year there have been discussions and meetings between CTI/UConn personnel and Connecticut legislators to discuss ways to improve Connecticut’s transportation system as transportation issues continue to threaten Connecticut’s economic vitality. To address these transportation issues, the need for a highly skilled transportation workforce has been identified as one of the biggest challenges facing both Connecticut and the nation. This has become especially urgent as a significant portion of the current transportation workforce nears retirement age. CTI’s continued success and growth are indicative of the important mission CTI plays in meeting the transportation needs of Connecticut and the nation.

The following continuing programs operate within the institute: the Connecticut Advanced Pavement Laboratory (CAP Lab), the Center for Transportation and Urban Planning, the Connecticut Technology Transfer (T2) Center, and the Connecticut Cooperative Highway Research Program (CCHRP).

Current research and educational projects at CTI are funded by a diverse set of agencies: the Connecticut Department of Transportation, U.S. Department of Transportation – including the Federal Highway Administration (FHWA), the New England University Transportation Center (NEUTC), Tilcon Connecticut, Inc., New England Transportation Technician Certification Program and the six New England states through the New England Transportation Consortium. CTI has continued to enjoy strong partnerships with industry, non-profit and government agencies while at the same time developing new strategic partnerships whenever possible. CTI’s main programs include strong advisory committees that ensure the programs are fulfilling each program’s mission.

**Program Highlights**

**Center for Transportation and Urban Planning**
- Sponsored workshops in New Haven and Hartford on Urban Planning and Freeways.
- Developed new transportation teaching lab in ITS for transit.
- Reviewed 19 proposals for research funding in transportation and urban planning.

**Connecticut Technology Transfer (T2) Center**
- Provided 43 training programs to 3,077 participants in the areas of safety, infrastructure management and workforce development.
- Partnered with the Connecticut Department of Transportation to deliver educational awareness sessions on Connecticut’s Safe Routes to School Program.
- Partnered with the Connecticut Department of Transportation to develop a Bicycle/Pedestrian Facilities Design training curriculum for town/city engineers and transportation planners.
- Participated in the Construction Career Day event for 1,200 high school juniors and seniors.
- Held a series of roundtable discussions to encourage networking/sharing among Public Works professionals throughout Connecticut.
- Formalized a strategic partnership with the New England American Public Works Association.
• Honored a graduating class of 77 from the Connecticut Road Master, Road Scholar and Legal Traffic Authority Certificate Programs.
• Presented Connecticut Creative Solution Awards to the towns of Bloomfield, Glastonbury, South Windsor and Southbury.
• Staff provided technical support and library resources to local agencies throughout Connecticut.
• Donna Shea, the Program Director, served as Vice President of the National Local Technical Assistance Program Association (NLTPA).
• Partnered with the Connecticut Highway Street Supervisors Association (CHSSA) to host the Technology Transfer Expo with more than 70 vendors and 600 participants.

Connecticut Advanced Pavement Laboratory (CAP Lab)
• Presented certificate and educational programs to Transportation Technicians and Consultants from throughout the United States and Canada.
• Completed a study with the Connecticut Department of Transportation.
• Completed a study for Tilcon-Connecticut that examined the potential impact of increasing the amount of recycled asphalt pavement currently being used in Connecticut.

Connecticut Cooperative Highway Research Program (CCHRPR)
• Allocated funding and began work on a project to improve surveying accuracy and efficiency in Connecticut.
• Initiated a project to assess the incorporation of wet pavement friction into traffic safety analysis.
• Approved funding for three new projects that will study: 1) the structure and properties of ionomer modified asphalts; 2) the assessment and quantification of public transportation access, and; 3) experimental testing of controllable damping devices toward extending the lifespan of existing highway bridges.

Research Grants & Contracts

Michael Accorsi

James Mahoney
Donna M. Shea


Biomedical engineering activities at UConn have a rich 45-year history of success and accomplishment. The BME Program is located at the main campus in Storrs and the UCHC in Farmington. The School of Engineering offers B.S., M.S. (Plan A and B) and Ph.D. degree programs in biomedical engineering (BME), and participates in the combined BME B.S. and MD/DMD degree program. The undergraduate curriculum offers tracks in the following areas: biochemical engineering, biofluid biomechanics, bioinformatics, bioinstrumentation, biomaterials, and biosolid biomechanics. By combining studies of engineering science and engineering design with core courses offered in other programs, the BME B.S. degree program ensures graduates are prepared for the unpredictable, team-centered workplace or for graduate studies in engineering or a medical professional program. In addition to core science and math coursework, students are immersed in biomedical engineering, biomechanics, biomaterials, and a variety of biomedical design and measurement courses.

The BME Program participates in the sequential B.S.-to-MD/DMD program, one of several programs that provide selected students guaranteed admission to the UConn Health Center, providing that:

- All academic standards and contingencies (including maintaining a 3.2 GPA throughout the undergraduate years) are fulfilled to the satisfaction of either medical or dental schools at the UCHC; and
- The student successfully completes the B.S. degree program in Biomedical Engineering.

Students must apply to this program when they apply for admission to the University and the School of Engineering.

Besides the traditional M.S. program, a two-year 30-credit hour Clinical Engineering Internship M.S. program exists that permits graduate students to gain an in depth exposure to medical technology in the following medical institutions: Hartford Hospital, The University of Connecticut Health Center, UMass General Hospital in Worcester, West Haven VA Medical Center, Providence VA Medical Center, St. Francis Hospital in Hartford, Rhode Island Hospital, Middlesex Hospital and the Baystate Medical Center in Springfield, MA. In addition, a BME Industrial Engineering Internship exists which permits graduate students to gain in-depth exposure to the conception, design and manufacturing of health care products.

Dr. John Enderle is the BME Program Director. Approximately 50 faculty members form the BME program and are from engineering, biomedical sciences, materials sciences, chemistry, physics, medicine, and dental medicine. The BME faculty are leaders in their field, have published greatly in scholarly journals and proceedings, are significantly involved in their professional societies, and receive significant financial support from industry, foundations and government funding agencies like the NIH, NSF and the Whitaker Foundation. Details on publications, service and external research support are listed in the faculty home departments.

**Educational Programs Highlights**

During the academic year 2007-2008, the program graduated 3 Ph.D. and 18 M.S. degree graduate students, and 37 B.S. degree students. Of the 30 B.S. students graduating in May ’08, seven accepted jobs in industry, 15 elected to continue their studies in graduate school, two were admitted to medical school, and six are still reviewing their opportunities. Enrollment for the 2007-08 period stood at approximately 220 undergraduates. The BME graduate program has approximately 50 master’s students and 25 Ph.D. candidates. Seventy-five percent of the graduate students are full-time, and approximately
85% of the full-time students are supported via a graduate assistantship. Approximately 50, roughly 23% of our undergraduate population, are in the University Honors Program.

The IEEE-EMBS Student Branch Chapter hosted a BME Career Fair for the northeast region on February 7, 2008. Sixteen employers participated in the fair, which attracted over 200 students from schools that included the New Jersey Institute of Technology, Florida International University, the University of Michigan, SUNY Stony Brook, MIT and other colleges and universities. Among the employers and academic programs exhibiting were the U.S. Food & Drug Administration, the U.S. Patent & Trademark Office, Philips Research N.A., National Instruments Corp., Medtronic, BrainLAB, Teleflex Medical, Covidien, Texcel LLC, Genzyme Biosurgery, Siemens Healthcare Diagnostics, Respironics, the University of Alabama at Birmingham Dept. of Biomedical Engineering, the Association for Women in Science, the UConn Clinical Engineering Master’s Program and the Government VA Training Program. A complementary round-table discussion was held during the Career Fair, and industry representatives offered the students advice on securing a job, discussed hot career areas and other topics. Three senior design teams competed in a National Senior Design Competition sponsored by the RERC on Accessible Medical Instrumentation in three tracks. Twenty-five teams from 16 universities submitted entries; one UConn team was the overall competition champion, and UConn teams also took first-place (two teams) and third-place (one team) honors in their tracks.

All undergraduate BME labs are located in three large laboratories in the Bronwell Building; Biomechanics and Biomaterials are in room 215, Senior Design is in room 213, and Biomeasurements and Freshman Biomedical Engineering Lab are located in room 212. All of the undergraduate labs are based on virtual instruments using National Instruments hardware and LabView. A new BME undergraduate lab was offered in the spring semester on LabView Intermediate for BME’s (this makes two labs devoted to LabView). With these two courses and the BME laboratories, BME students will be eligible to receive LabView certification from our partners Bloomy Controls and National Instruments. This would be a first in the nation.

The UConn BME program has as one of its Educational Objectives the training of global leaders in BME. Participating in study abroad is the first step toward achieving this goal. The program has 11 study abroad agreements with BME programs around the world, and another seven in process. In partnership with the Department of Modern and Classical languages, the BME program offers a dual-degree in BME and French, German, Spanish or Italian. The dual degree program will support our efforts to prepare global leaders in BME.

The BME program offers students a special degree option to secure a B.S. and M.S. degree in just five years. It is available to UConn BME undergraduate students only, and 14 students currently participate in the program.

The BME program underwent review for accreditation of its undergraduate program in the fall of 2007. The Accreditation Board for Engineering & Technology (ABET) is the accrediting agency for BME programs, and the review process proceeded successfully with a recommendation for accreditation back to 2005. The ABET team will release its formal report in July 2008.

**Faculty Recruiting and Departmental Personnel**

Two new faculty members were hired in 2007 with expertise in biomechanics. Dr. Shiva Kotha joined our program from the University of Missouri-Kansas City as an assistant professor. He earned his Ph.D. from Rutgers University in BME. Dr. Wei Sun joined our program from Edwards Lifesciences, Inc. as an assistant professor. He earned his Ph.D. from the University of Pittsburgh in BME.

Ms. Lisa Ephraim was hired as a freshman-sophomore academic advisor last year. She advises approximately 100 undergraduates.
ENVIRONMENTAL ENGINEERING PROGRAM
ANNUAL REPORT SUMMARY
2007-2008

STUDENTS AND GRADUATES

The Environmental Engineering (ENVE) Program has 13 M.S. and 20 Ph.D. graduate students and 42 undergraduate ENVE majors. Several other undergraduates from the School of Engineering and other colleges pursue a minor in ENVE. The vast majority of graduate students are full-time and financially supported. During the year, the ENVE Program graduated six M.S. and three Ph.D. students and five environmental engineering undergraduates. Forty-five full graduate applications were received: of these, 26 were offered admission into the program and eight have accepted admission, bringing our projected total of graduate students to 32 for fall 2007. In addition, one post-doctoral researcher is associated with the ENVE Program.

FACULTY

Detailed activities of the ENVE faculty can be found in the annual reports of their home departments. However, as an indicator of their high level of collective scholarly activity it can be mentioned that the core of the ENVE faculty (i.e., those with primary appointment in the Department of Civil & Environmental Engineering) published 38 journal articles, authored 25 full-paper conference proceedings, and made almost 50 presentations during this past year.

The ENVE Program welcomed two new faculty members this year. Drs. Maria Chrysochoou and Joe Bushey (CEE) joined UConn from the Stevens Institute of Technology and Syracuse University, respectively. Dr. Chrysochoou has expertise in geo-environmental technology, mineralogical characterization with X-ray powder diffraction, and soil remediation. Dr. Bushey’s expertise is in water quality engineering, watershed hydrology and mercury mobility and bio-availability. The search for the NU Endowed Chair position was conducted this year with five excellent candidates visiting the campus for interviews; the search process is in the final stages. Dr. Nelly Abboud (CEE), who has been on medical leave for the past two years, is currently on long-term disability leave.

Across the program, external funding continues to be strong, with research expenditures of nearly $700,000 and more than 35 active intramural and extramural grants totaling more than $2.5 million, including prestigious national research awards such as NSF Early Career Development (CAREER) and NASA New Investigator Program (NIP) Awards. Our ENVE faculty hold many positions of administrative authority. Dr. Kenneth Noll of Molecular & Cellular Biology (MCB) is Chair of the graduate program in Microbiology. Dr. John Clausen (NRME) is co-Chair of the Environmental Sciences program. Dr. Baki Cetegen, Head of Mechanical Engineering (ME), is a member of the Combustion Institute’s executive board and a Fellow of the American Society of Mechanical Engineers. Dr. Glenn Warner (NRME) is the Director of the Connecticut Institute of Water Resources. Dr. Michael Willig (EEB) is the Director of the Center of Environmental Sciences & Engineering.

Dr. Emmanouil Anagnostou (CEE) serves on NASA’s Tropical Rainfall Measuring Mission peer review committee and the International Precipitation Conference Steering Committee. Dr. Amvrossios Bagtzoglou (CEE) is a member of the AGU Hydrology Section Groundwater Technical Committee, the ASCE Groundwater Hydrology Committee, the IAEG Commission 14 (Underground Disposal of Waste), and the Science and Technical Advisory Committee for the EPA Long Island Sound Study. Dr. Thomas Torgersen (Marine Science) holds the positions of editor-in-chief of Reviews of Geophysics, associate editor of the Geochemical Journal, editor of Water Resources Research, and member of the AGU Board of Journal Editors. Drs. Anagnostou, Guiling Wang, and Bagtzoglou (all of CEE) serve as associate editors for the Journal of Applied Meteorology, Journal of Geophysical Research – Biogeosciences and Journal of American Water Resources Association, and Inverse Problems in Science & Engineering,
respectively. Dr. Bagtzoglou (CEE) served as editor of *Water, Air, and Soil Pollution: Innovative Remediation Technologies for Pollution Abatement*. Dr. Xiusheng Yang (NRME) serves as editor-in-chief for *Advances in Agricultural Science and Technology*. Dr. Mekonnen Gebremichael (CEE) serves as UConn’s representative to the Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI).

At the international level, Dr. Anagnostou (CEE) serves as an advisor to the National Observatory of Athens. As in previous years, the ENVE faculty had significant involvement in international conferences, including the *AGU Fall and Spring Meetings* and participation in numerous other international conferences. In addition to more than 35 multi-disciplinary proposals submitted this year, our faculty continued developing several new international research proposals with colleagues from Denmark, Israel, Greece, France, Italy, Ethiopia, and the United Kingdom.

**STAFF**

The ENVE Program assistant, Ms. Tiffiny Thibodeau, was promoted to an Administrative Services Specialist II in Civil & Environmental Engineering. A search for her replacement was conducted and culminated in the hiring of a very qualified candidate, Ms. Althea Lozefski, who started work on May 9th.

**OUTREACH**

Several ENVE faculty participated in many outreach activities and events for the undergraduate program. These activities included school career fairs, the Engineering 2000 summer program, the ENGR 100 environmental workshop, the Northeast Regional Science Bowl, the Connecticut Invention Convention, and visits to high schools throughout the state. Dr. Allison MacKay (CEE) continues to be involved with the Society of Women Engineers student chapter. The program was well represented at the fall and spring open houses. Drs. Bagtzoglou, Chrysochoou and Gebremichael (CEE) worked closely with a group of students and facilitated the creation of the UConn chapter for Engineers without Borders (EWB) and the eventual approval of said chapter by the national EWB headquarters. Drs. Bagtzoglou and Gebremichael serve as faculty advisors of the UConn EWB chapter and two very worthy projects are currently being studied.

**PROGRAM**

Preparations for national accreditation of the undergraduate ENVE Program were completed with the ENVE ABET Self-Study (more than 200 pages) being submitted for ABET review in the summer of 2007. The ABET review and visit took place in October of 2007 and went extremely well. The ENVE program participated in a variety of important activities at the University and School levels: the National Research Council survey, high-profile fundraising events (e.g., IBM, Hamilton-Sundstrand, Connecticut Department of Environmental Protection, XEROX, U.S. Department of Homeland Security), the Provost’s Academic Plan Committee, and the inaugural INTD Courses & Curriculum Committee. The weekly seminar series continues to be a success, as evidenced by high and steady attendance. It is a forum that fosters interactions and enhances visibility.

Significant participation of ENVE faculty and students in national and international conferences, high-profile publications in archival journals and book chapters, and involvement in seminars and collaborative research continue to offer the ENVE Program national recognition and respect.
This has been another year in the continued development of the Management & Engineering for Manufacturing Program (MEM) program.

**EDUCATIONAL PROGRAM HIGHLIGHTS**

The principal activity was the ABET accreditation visit in fall 2007. This was the first such visit for the MEM program, and we invested one year in preparation. The program had two visitors. One covered the requirements for engineering management and the second reviewed the requirements for manufacturing engineering. Both visitors complimented the program for content and intent. They were also impressed by the enthusiasm of the faculty, students, alumni and industrial sponsors. Results of the visit will be known over the summer.

As in previous years, the senior design activity of the spring was supported by industry-sponsored projects. There were six projects sponsored by four companies.

The MEM Society again provided help at the two open houses and held the annual spring banquet, which featured two speakers from private industry. They were Kevin Bouley, President and CEO of Nerac, and John Irwin, Vice President from Frito-Lay. James Ungvary served as president in 2007-08.

Employment opportunities were strong for MEM students and graduates. Among our top employers is Sikorsky Aircraft, which came to campus to interview students for both permanent positions and internships.
During the 2007-2008 academic year, the School of Engineering Undergraduate Program continued to grow at a rate greater than the national growth rate for engineering programs. The fall 2007 entering class of 422 students represented an increase of 18.5% compared with the fall 2002 entering class. The undergraduate student body has increased to 1669, a 35% increase compared to fall 2002 data. Enrollments in our Biomedical Engineering and Mechanical Engineering programs continue to show the largest growth. The academic quality of the entering engineering students continues to improve, due in part to our continued growth in scholarships supported by alumni and corporate friends. The average SAT score of entering freshman students was 1293, which is approximately 100 points higher than the average SAT score of freshman students entering UConn’s other programs. The School of Engineering’s first-year promotion rate is approximately 80%.

UNDERGRADUATE DEMOGRAPHICS

The School of Engineering’s undergraduate female population continued to grow when compared to fall 2002, rising by 61% compared to the male population growth of 50% for the same period. The ethnic diversity of the School’s undergraduate population has experienced a similar change. The African American student enrollment has increased by 50% and the Hispanic/Puerto Rican student enrollment has gone from 52 students in 2002 to 88 students in 2007. The number of students in the ‘other ethnicity/no indication categories’ has increased from 140 students to 277 for this same period. This increase reflects the multi-ethnicity of our students.

The University of Connecticut has an excellent Honors Program that enriches the undergraduate experience for qualifying students throughout the four-year curriculum. The School of Engineering continues to have the highest percentage of Honors Students among the 10 schools and colleges at the University. The average percentage of honors students in each unit is 7.9%; in contrast, the percentage of undergraduate engineering students enrolled in the Honors Program is 13.6%. The number of enrolled internal and external transfer students continues to grow in number due to outreach efforts at the State’s 12 community and technical colleges and to the Academic Center for Exploratory Students. This is just one indication of our strong academic and outreach programs. The graduation rate from the School of Engineering is approximately 50% compared with the University’s graduation rate of approximately 74% over a six-year span. This year 310 students graduated. In spring 2008, the School of Engineering was able to offer more than $705,000 in scholarship to entering freshman and awarded more than $530,100 in scholarships to 236 continuing students.

OUTREACH

The School of Engineering continued to support various outreach/recruiting initiatives throughout the year. In addition to the highly successful fall Open House and spring Visitation Day involving faculty, students and staff, the School of Engineering continues to conduct outreach to students and teachers in middle and high schools throughout the State. Our largest event this year was the Connecticut Invention Convention, which we hosted for the 10th consecutive year. Over 650 K-8th grade students representing 100 schools brought their inventions to Gampel Pavilion to be judged by more than 150 professionals and to be seen by more than 3,500 spectators.

The link between skillful chess play and proficiency in engineering and math is generally acknowledged within the educational community. This relationship was at the heart of a novel effort by the School of Engineering to attract more students who are keen competitors in the chess world. The School hosted its second chess tournament with scholarships to the UConn School of Engineering for the top three winners.
(contingent upon their acceptance and enrollment at UConn). The 2007 tournament attracted competitors in grades 9-12 from New England.

As an outreach activity, for the third year the School of Engineering organized, sponsored and hosted the 2008 Northeast Science Bowl (NESB) for high school students. The NESB drew 27 teams from across Connecticut as well as New York, Rhode Island and New Hampshire. The top three teams in the academic and fuel cell competitions received award trophies and renewable scholarship certificates to UConn’s School of Engineering. The scholarships ranged from $250/student/year to $2,000/student/year. The 2007 champion team from nearby Glastonbury High School claimed the winner’s laurels and the honor of representing the region at the National Science Bowl tournament, which took place in Washington, DC.

The da Vinci Project, a one-week program for middle and high school mathematics, science and technology teachers, continues to be highly regarded. In July 2007, eight teachers attended this residential program and participated in one of three intensive discipline-specific workshops of their choosing. Our one-week E2K residential program—which introduces participating high school juniors and seniors to engineering disciplines via a variety of hands-on experiments and allows them to focus in a particular engineering discipline—continues to be popular. Attendees are nominated by their high school math and science teachers. This year, in addition to the 90 students attending, we had a waiting list of 50 students. Thirty three percent of our high school participants are female this year, which has helped to increase the number of undergraduate women in engineering to 16%. The Assistant Dean’s involvement as a member of the College of Technology advisory board has resulted in a significant increase of transfer students from this 12-campus state system.

For the first time, our directors of Diversity and Advising activities participated in the Middlesex County Career Expo held at Wesleyan University on April 30, 2008. This expo was attended by 800 high school students from 10 high schools in Middlesex County.

**DIVERSITY**

Recruitment of ethnically, culturally and gender-diverse populations of faculty, staff and students is critical to a successful academic program. The School’s Diversity Director, Kevin McLaughlin, is the primary contact and coordinator of all Engineering Diversity Program (EDP) activities. Our fall and spring semester Pre-Engineering Program (PEP) for under-represented students in grades 7-9 – targeting primarily inner-city (urban) school districts – remains stable at 50–59 students. In 2007-08, PEP relied upon 13 engineering undergraduate student mentors who guided the PEP students with their hands-on projects each week and act as their mentor, role model and confidant. Our 14th annual all-day Multiply Your Options (MYO) Conference for 8th grade girls, which featured 23 different workshops/panel discussions, was attended by over 184 students and their teachers. Each workshop presenter was a female professional in an area of science, math or engineering.

The School of Engineering conducts a residential summer program for our newly admitted freshman underrepresented minorities and women called BRIDGE. During this five-week program BRIDGE “primes” the students for the engineering experience through classes in calculus, chemistry, physics and programming, and includes study sessions, group activities and on-site industry visits. Forty students completed last year’s 20th annual BRIDGE program.

Our student organizations are very involved in recruitment and retention efforts. The National Society of Black Engineers (NSBE) and Society of Women Engineers (SWE) student chapters have continued their recruiting activities in Hartford, East Hartford, Bridgeport and Bloomfield. Members of the NSBE student chapter sponsored weekly study sessions, conducted biweekly technical seminars and current event discussions for all students, raised scholarship funds and hosted an annual NSBE awards banquet. Additionally, our SHPE chapter hosted the Regional Leadership and Development Conference. Eleven Northeastern university students attended this successful conference.
ACADEMIC RESOURCES

The School of Engineering continues to offer 84 hours of peer and graduate student tutoring weekly for lower division courses in mathematics, chemistry, computer programming and physics. Additionally these tutoring resources also tutor in upper division programmatic courses. These resources have improved our freshmen promotion rate. Thanks to a sustaining grant from an anonymous alumnus, we have been able to expand our tutoring to include upper division courses in the junior year of many majors. Additionally, several student professional and honor societies provide tutoring in their majors.

ACADEMIC EXCELLENCE

The University of Connecticut continues to offer full or partial scholarships to qualified entering students. In recent years, the School of Engineering has established 11 named and endowed chair professorships and several new endowed undergraduate scholarships. In addition, the School has procured sufficient funding from industry and alumni donors to offer more than $705,000 to recruit over 300 highly qualified students this fall.

For the academic year 2007-08, we admitted 49 valedictorians and salutatorians to the School of Engineering. At our annual awards banquet in April 2008, 236 continuing students were awarded $530,000 in scholarships. Additionally, seven students continued to receive their Connecticut Innovations Technology Scholarships this academic year. Eighty seven students are members of the Tau Beta Pi Engineering Honor Society, and 91 undergraduates are members of the individual major honor societies. The Dean’s List acknowledged 347 continuing students with a cumulative grade point average (CGPA) of 3.483 in the fall ‘07 and 366 continuing students in the spring ‘08 with a CGPA of 3.535. Over 100 seniors received the National Collegiate Engineering Award and were inducted into Who’s Who Among American Colleges and Universities for maintaining a minimum CGPA of 3.5.
Mun Young Choi
Dean, School of Engineering