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Annual Report Summary
School of Engineering
2001–2002

During the 2001-2002 fiscal year, the School of Engineering continued the work begun in previous years, bringing us closer to our strategic goals. The School underwent a period of profound, defining growth in enrollments, endowments, research opportunities and new faculty hiring – all of which will strengthen and enrich the School’s activities and reputation in the future.

Significant progress was made during the year in areas of strategic importance to our continuing growth and advancement, as detailed below.

ACCREDITATION

In October, following two years of preparation and extensive reporting, the School hosted evaluators from the Accreditation Board for Engineering & Technology (ABET) and the Computer Science Accreditation Board (CSAB) who reviewed six undergraduate programs which were eligible for re-accreditation. The accreditation visit culminated two years of preparation by the target departments that included two separate, scheduled practice reviews by visiting external experts commissioned to assess the programs. In addition, each program was subjected to a rigorous review by host departmental faculty, alumni, Industrial Advisory Boards and Student Advisory Boards; analysis of responses to student and alumni surveys; and implementation of a program improvement plan. For each program, detailed, expansive self-study reports were prepared for the reviewers, which included survey results and analyses, performance measures, goals and objectives, outcomes and other assessment material. Thanks to our significant advance preparation, the two-day ABET review process proceeded smoothly, and the five ABET-reviewed programs were accorded full six-year re-accreditation in formal communications received in August 2002.

NEW DEGREE PROGRAMS

The School of Engineering launched a new minor program in Information Technology (IT), to be offered beginning in the fall 2002 semester. The new program addresses a growing corporate demand for workers with strong information technology skills. Initially, the IT minor will be offered to non-computer engineering majors, particularly students in traditional engineering programs such as Mechanical Engineering, Civil Engineering, Electrical Engineering and the like. We anticipate that in two or three years the new IT minor will be offered to non-engineering majors.

STRATEGIC PRIORITIES

During 2001-02, the School of Engineering maintained its focus on the key areas of strategic importance to the continued growth and quality of the School: development, outreach, undergraduate enrollment, faculty recognition and facilities.

Research

The lengthy negotiations begun in 2001 between the School of Engineering and Connecticut Innovations yielded a landmark agreement for establishment of the Connecticut Global Fuel Cell Center at the University of Connecticut. This agreement — together with agreements between other private businesses, state and federal agencies — resulted in a $14.5 million initiative. A central feature of the
Fuel Cell Center is establishment of six new endowed chair positions within the School of Engineering and an integrated mix of research, university-industry collaboration, and technology transfer geared to position Connecticut as a world leader in commercial deployment of advanced fuel cell technologies. The Center was also fortunate in securing two different, major fuel cell power plants that will serve the dual purposes of providing working demonstration units and powering engineering buildings at the Storrs and Depot campuses. Finally, in September the School of Engineering completed construction of a new Fuel Cell building, located at the Depot campus, which will serve as the hub for our research activities in collaboration with Connecticut’s rich crop of fuel cell companies.

In a “first” for the School of Engineering, in December, the federal government announced that Congress had earmarked $2.5 million for the University of Connecticut to pursue research in portable fuel cells for the U.S. Army. The earmark resulted from a white paper submitted the previous year by the School of Engineering to UConn lobbyists who – together with Connecticut’s Congressional delegation and university officials – ensured the proposal was accorded proper attention. The monies were specifically set aside in the defense budget approved by Congress under H.R. Bill 1830. The earmark provides money to perform research and development activities on a portable fuel cell power system for an infantry application, and a multidisciplinary team of faculty researchers has commenced work toward fulfillment of the terms and deliverables outlined in the one-year agreement.

In October, the School of Engineering and Pratt & Whitney Corp. signed a comprehensive umbrella agreement covering all legal aspects of collaborative research contracts developed during the next three years, including intellectual property and liability issues. The agreement will facilitate future research interactions between UConn engineering faculty and Pratt & Whitney engineers. Included are details concerning all aspects of the development, ownership and licensing of potential new technologies.

The Computer Science & Engineering Department won $1.1 million in seed money from the National Institutes of Health/HIGMS to support planning for a future Bioinformatics Center of Excellence in Cellular Biology. Collaborating on the proposal were principal investigator Dong-Guk Shin of the Computer Science & Engineering (CSE) department and various researchers from the School of Engineering, the UConn Health Center and related departments. As planned, the center will seek to encourage interactions between computational scientists and biomedical scientists engaged in computation-intensive biomedical research. The CSE department will assume the lead role in carrying out planning activities of the Bioinformatics Center. The award is a first, significant step toward competing for a Center of Excellence in Bioinformatics within three years.

In early 2002, faculty from the School of Engineering led a successful bid, with collaborators from other schools, to net a $1.4 million interdisciplinary educational grant from the National Science Foundation to introduce engineering education into the high school curricula. The program on which the proposal was modeled was the three-year-old da Vinci Project, a week-long, all-expenses-paid summer workshop for high school math and science teachers developed by the School of Engineering as a means to introduce teachers to engineering concepts and principles, and to develop educational modules for integration into the high school curriculum. The grant will permit the School of Engineering and Neag School to introduce engineering education into the secondary schools using a more integrated and multifaceted approach.

Tom Peters, also of Computer Science & Engineering, was PI on a multi-university proposal that was awarded a $700,000 three-year grant from the National Science Foundation to pursue computer and computational research. Collaborating on the proposal were researchers from the University of Montreal, Purdue, and MIT. The team will study “TANGO: Intersections – Topology, Accuracy and Numeric for Geometric Objects (in Computer-Aided Design).”
Outreach

The School of Engineering continued its commitment to enhancing awareness of engineering principles and careers among Connecticut school children and teachers.

- **Engineering 2000** – Once again, the School sponsored this summer engineering camp for promising Connecticut high school students, allowing 50 participants to examine core engineering and technological concepts during a one-week residential program.

- **da Vinci Workshop** – The School of Engineering held this five-day residential, all-expenses-paid workshop the week of August 5-10, 2001. The program, designed for Connecticut math and science teachers, introduces teachers to hands-on engineering concepts and curricular modules that can be integrated into the middle- or high-school curriculum.

- **Connecticut Invention Convention** – for the fourth consecutive year, the School of Engineering hosted and co-sponsored the Connecticut Invention Convention at Gampel Pavilion (April 6, 2002). The event attracted more than 2,000 attendees, including 650 students from Connecticut schools plus teachers, administrators, and representatives from Connecticut industry and government.

Two editions of the twice-yearly School of Engineering newsletter, *Frontiers*, were published and disseminated during the year. With a circulation approximating 20,000 recipients, *Frontiers* strives to straddle the diverse interests of alumni, corporate supporters, prospective and current students, and academics nationwide. The newsletter remained a valuable recruiting vehicle and a powerful means of enhancing the School’s visibility and reputation among its various constituents.

Undergraduate Enrollment

The School of Engineering continued its strong performance in the area of undergraduate recruiting. Freshman enrollment slated for the fall 2002 is about equal to the fall 2001 enrollment figures. Of these, 32 admitted freshmen were the valedictorian or salutatorian of their senior high school classes. The total undergraduate enrollment for fall 2002, including 50 transfer students (up 60 percent over last year’s transfer figures), is 1282. The average SAT scores of incoming freshmen remain very high. The increase came with a parallel improvement in the quality of incoming students as measured by a 40-point rise in average SAT score. The increases can be attributed, at least in part, to a multi-faceted program of promotion, educational outreach and scholarship assistance helped the School.

In late 2001, Dominion Nuclear Inc. and the School of Engineering signed an agreement to provide $50,000 yearly for undergraduate scholarships to engineering students. The generous investment affords us a unique opportunity to attract quality students and provide them with multi-year scholarships. The yearly sum will yield 16 scholarships, each in the amount of $3,000 and renewable on an annual basis for a maximum of four years for students who maintain a 3.0 GPA. Thus, each year a total of 16 students will receive the Dominion Nuclear $3,000 scholarship award. The remaining $2,000 of the total $50,000 each year will be applied toward support of outreach activities for the Engineering 2000 program.

In spring 2002, the School presented nearly 200 merit-based scholarships, valued at nearly $400,000, to current engineering students based on academic excellence. An additional $540,000 in scholarship monies was targeted toward entering freshman students accepted for the fall 2002 term. Generous contributions by alumni, corporate, state, and federal sources fund these academic scholarships and help the School more effectively compete in the increasingly intense challenge to attract top high school students.
Faculty/Staff Recognition & Awards

The faculty recognition awards and incentives were continued during the 2001-2002 fiscal year. The awards were presented during the fall engineering reception 2001 in September, when honorees were formally recognized and thanked for their contributions before a large audience of their peers. Note that because three Distinguished Engineering Professor Awards (each with a three-year term) were presented in 1999-2000, no award was presented in 2001-2002. The remaining awards included the following:

- The Outstanding Junior Faculty Award is presented to an assistant or associate professor for scholarly achievements in research, teaching and service with the promise of sustained future professional growth. The award entails a $2,000 cash award and $5,000 for professional development. The 2001 award winners were Alexander Shvartsman, associate professor of Computer Science & Engineering, and Patrick Mather, assistant professor of Chemical Engineering.
- The Outstanding Teaching Faculty Award for superior achievements in teaching, entails a $2,000 honorarium plus $5,000 for professional development. The 2001 recipient was Reda Ammar, professor and head of Computer Science & Engineering.
- The Outstanding Staff Service Award is presented to either a classified or professional staff member who has made outstanding contributions to the School of Engineering. The award consists of a $2,000 cash gift plus a certificate of appreciation. The 2001 recipient was Diane Chenelle, Administrative Assistant to the Electrical & Computer Engineering Department.

RENOVATIONS & OTHER SUPPORT TO FACULTY

In September 2001, we completed construction of a 16,000 square foot building for Fuel Cell Research, located at UConn’s Depot campus. The building was constructed with support from the U.S. Department of Commerce.

During the year, the School also completed new Computing Services facilities to house state-of-the-art computer networking, research labs and support offices for the School of Engineering.

Construction was begun on the new 100,000 sq. ft. Engineering Information Technology Building, with a December 2002 completion date. UConn 2000 monies in excess of $30 million support construction and, when completed, the building will house the Electrical & Computer Engineering and Computer Science & Engineering departments. The ITE building will include five levels:

- Sub-ground level floor - research labs and specialty teaching facilities;
- Ground level first floor - classrooms and a 2,900 sq. ft learning center;
- Second floor - research labs, administrative and faculty offices for the CSE Department;
- Third floor - executive conference room, research labs, spillover faculty offices and a faculty lounge;
- Top floor - research labs, administrative and faculty offices for the ECE Department.

In addition, an attached 350-seat auditorium is slated for completion in June 2003.

During the year, significant renovations were made to Engineering II to accommodate easier access and to enhance the attractiveness of the west and east-facing entryways, façades and grounds. The improvements included replacing the existing metal siding panels with brick, replacing the metal entrance door with a framed/glass door, relocating the existing sidewalk and upgrading the surrounding landscaping.
The Dean’s Computer Initiative instituted in previous years was continued in 2001-2002. Under this initiative, the School of Engineering covered the purchase cost of a new computer (laptop, PC or workstation) for faculty who did not take advantage of the same offer during 2000-2001, with an upper ceiling of $2,000.

PERSONNEL

During the year, Associate Dean for Research & Outreach Kazem Kazerounian and Associate Dean for Academic Affairs Tom Anderson stepped down to return to their home departments. Ian Greenshields, associate professor of Computer Science & Engineering and Interim Director of the Booth Research Center, was appointed Associate Dean for Academic Affairs. The position of Associate Dean for Research & Outreach was terminated. Eugene Santos, associate professor of Computer Science & Engineering, accepted the interim position effective December 1 through August 22, 2002. Effective August 23, 2002, Dr. Luh will resume his duties as Director of BRC and Dr. Santos will step into the role of Associate Director.

Marni Churchill, Director of Alumni Development, accepted a new position in The Foundation as Director of Development, leaving vacant the Development position. In addition, the Director of Engineering Diversity Program vacancy resulting from Teresa Boyd’s departure in 2000 was filled during the year by former E.O. Smith High School teacher Kevin McLaughlin. Mr. McLaughlin, a UConn engineering alumnus (Chemical/Materials Engineering, ’83), taught advanced chemistry and an integrated chemistry/physics course at the high school. Concurrently, he taught a special chemistry course as part of Northeastern University’s Fundamentals of Engineering program, a prep course for engineers seeking to become certified as Professional Engineers. He has collaborated on several School of Engineering educational outreach initiatives in recent years, including the da Vinci Project and BRIDGE programs.

The School conducted intensive, successful searches for a number of endowed chair and named professorships, as well as numerous tenure-track faculty positions during the year. Our diligence was rewarded with the hiring of 19 new faculty members for 2002: four endowed chair faculty and 13 junior and senior faculty members. The individuals hired to assume endowed positions are all experts of world-class caliber in several key R&D areas of strategic interest to corporate allies and of importance to the School’s continued growth. These include:

- **Dani Or** (Ph.D. Utah State University, 1990)
  Northeast Utilities Foundation Chair Professor of Environmental Engineering, Civil & Environmental Engineering Department and the Environmental Research Institute
- **Sanguthevar Rajasekaran** (Ph.D. Harvard University, 1988)
  UTC Professor of Computer Science & Engineering and Director of the GE E-Engineering Clinic
- **Ken Reifsnider** (Ph.D. Johns Hopkins University, 1968)
  Pratt & Whitney Chair Professor of Design & Reliability, Mechanical Engineering Department and the Connecticut Global Fuel Cell Center
- **Nigel Sammes** (Ph.D. Imperial College, London, 1983)
  UTC Chair Professor of Fuel Cell Technology, Mechanical Engineering Department; and Director of Operations for the Connecticut Global Fuel Cell Center

Brief profiles appear below for each of the non-endowed faculty positions.

- **Amvrossios C. Bagtzoglou** (Ph.D. University of California, Irvine, 1990) – joining the Civil & Environmental Engineering Department. His interests include pollution source identification,
pollutant flow and transport modeling. Dr. Bagtzoglou was assistant professor of water resources and geoenvironmental engineering, and director of the Heffner laboratory for Hydrologic Research at Columbia University before joining UConn.

- **John Chandy** (Ph.D. University of Illinois at Urbana-Champaign, 1996) – joining the Electrical & Computer Engineering Department. His research interests include storage architectures, optimization using parallel algorithms, distributed file systems and reconfigurable architectures. He previously was Vice President of Engineering at Sigma Storage and a teaching assistant of electrical engineering courses at the University of Illinois.

- **David Crow** (Ph.D. University of Missouri-Rolla, 1972) – joining the Mechanical Engineering Department as a Distinguished Professor in Residence. Dr. Crow previously was Senior Vice President of Engineering for Pratt & Whitney, East Hartford, CT, in charge of design, development, validation and certification of all of Pratt & Whitney’s large commercial engines, military engines and rocket products. He also led the research and development of advanced technology systems to meet future aircraft requirements. Dr. Crow is a member of the National Academy of Engineering.

- **Swapna S. Gokhale** (Ph.D. Duke University, 1998) – joining the Computer Science & Engineering Department. Her interests include converged IP/PSTN networks; wireless networks; software architecture, architecture, testing and reliability; and performance and reliability evaluation of computer networks and systems. She was a research scientist with Telcordia Technologies Inc. (formerly Bellcore).

- **Aggelos Kiayias** (Ph.D. City University of New York, 2002) – joining the Computer Science & Engineering Department. His interests include cryptography, computational complexity, digital rights management and e-voting.

- **Hanho Lee** (Ph.D. University of Minnesota, 2000) – joining the Electrical & Computer Engineering Department. His research interests include design of VLSI circuits and architectures for digital signal processing and communications, high-speed digital circuits and systems, and System on a Chip (SoC) design. Since graduating, Dr. Lee has been a member of the technical staff at Lucent Technologies Microelectronics division (now Agere Systems) in Allentown, PA.

- **Laurent Michel** (Ph.D. Brown University, 1999) – joining the Computer Science & Engineering Department. His research interests include programming languages, artificial intelligence, combinatorial optimization and software engineering. Dr. Michel was a visiting assistant professor at Brown University before joining UConn.

- **Michael Renfro** (Ph.D. Purdue University, 2000) – joining the Mechanical Engineering Department. His research interests include laser-induced fluorescence, diagnostics in reacting and non-reacting turbulent flows, fluorescence lifetime measurements, measurements for turbulent combustion modeling, turbulence/chemistry interactions and flow visualization.

- **Ranjan Srivastava** (Ph.D. University of Maryland, 1999) – joining the Chemical Engineering Department. His interests include modeling of viral and bacterial diseases and pathways.

- **Jiong Tang** (Ph.D. Pennsylvania State University 2001) – joining the Mechanical Engineering Department. His research interests include structure and system dynamics, control and mechatronics. Following graduation, he worked as a research engineer of Mechanical and e-Engineering Technologies at the General Electric Corporate Research & Development Center, Niskayuna, NY.

Guiling Wang (Ph.D. MIT, 2000) – joining the Civil & Environmental Engineering Department. Her research interests include hydrological processes and land-atmosphere interactions, vegetation-climate interactions, and global weather patterns. She previously was assistant research scientist and research associate at Goddard Earth Science & Technology Center (NASA) and Princeton University, respectively.

Mei Wei (Ph.D. University of New South Wales, 1998) – joining the Metallurgy & Materials Engineering Department. Her research interests include biomaterials for orthopaedic applications, coatings, cell behavior of biomaterials. She completed two post-doctoral research fellowships, with the Division of Materials Engineering at Kyoto University, Japan and at the Centre for Rehabilitation Science & Engineering at Queensland University of Technology, Australia.

Peng Zhang (Ph.D. University of Illinois, Urbana-Champaign, 2002) – joining the Mechanical Engineering Department. His interests include mechanics of carbon nanotubes, fracture nucleation, and numerical simulation.

Lei Zhu (Ph.D. University of Akron, 2000) – joining the Chemical Engineering Department. His research interests include nanocomposite and device designs for novel applications, copolymer synthesis, and TEM analytical techniques.

Finally, during the year, the School of Engineering implemented a newly-developed process for evaluating its administrative personnel, including Department Heads. The procedure relies heavily on input from faculty and was conducted in a manner that assured confidentiality for all respondents. In 2001, the terms of three of our Heads expired (John Morral, Reda Ammar and Ted Bergman), and since all three expressed a desire to continue in their important administrative roles, the review process was implemented in November 2001. An impressive 90% of faculty in the relevant departments provided their assessments of their Heads to the departmental Head Assessment Committees (comprising two faculty members elected by the department’s faculty peers and one department member selected by the Dean). Drs. Ammar, Bergman and Morral were renewed as Heads by their departments for another term.
During the 2001-2002 academic year, a high rate of growth continued in the Department of Chemical Engineering research program. Standard measures of scholarship such as sponsored external research funding, peer-reviewed publications, contributed conference presentations, invited presentations, Ph.D. program enrollments, and total graduate program enrollments all increased. Several measures such as funding and chemical engineering Ph.D. program enrollments reached all-time high levels. Two members of the faculty, Monty Shaw and Bob Weiss, received major awards from professional societies for career research accomplishments. With funding from local industry, the “Frontiers in Chemical Engineering” Distinguished Lectureship was established to celebrate research in chemical engineering. An associated essay contest on the theme of the lecture brought high school students and their teachers to the department, with the winner and the distinguished lecturer both recognized as part of the two-day event.

Freshman and sophomore level enrollments were both slightly higher this past year. Although total numbers showed only modest growth, student quality, as measured by record university Honors program enrollments in our Department, remained exceptionally strong. Undergraduate research remained an important component of our program, with two-thirds of our seniors conducting independent research with a faculty member during their education. This summer, 12 undergraduate students are being welcomed to our department for an intensive 10-week residential research experience sponsored by the National Science Foundation. This “REU Site in Chemical Engineering at the Nanoscale” is the first-ever REU site grant awarded to any engineering department or program at UConn, and is expected to foster the recruitment of talented domestic graduate students.

**SCHOLARSHIP**

A review of the scholarly activities of the faculty this past year indicates that we continue to make excellent progress toward our goal of becoming a top ranked chemical engineering research department. The number of active grants in the department remained near last year’s record levels, with 66 active grants bringing in nearly $3.4 million in funding. Average funding per non-administrative faculty member remained high at $260,000, a per capita level of funding that is 20% greater than levels 3 years ago. In addition to increased external funding, scholarly activity remained strong with 44 archival journal articles published, 33 papers published in conference proceedings, and 21 invited presentations, 2 keynote lectures, and 61 contributed presentations delivered.

Consistent with this, the number of Ph.D. students supervised by departmental faculty continued to climb. The total number of graduate students increased by 9 to 79, and the number of Ph.D. students supervised by departmental faculty increased to 59. As the data in the table below indicate, this is a continuation of a trend that began when the department, in 1999, established the goal of having 50 – 60 Ph.D. students supervised by departmental faculty by the summer of 2002. With a projected fall 2002 class of 13 entering chemical engineering Ph.D. students and continued strong research funding, we expect that 60 – 65 Ph.D. students will be supervised by departmental faculty at this time next year. Of these, approximately 50 will be full-time chemical engineering Ph.D. students, with the balance from the interdisciplinary polymer science and environmental engineering programs.
Table I. Ph.D. Students Supervised by Chemical Engineering Faculty

<table>
<thead>
<tr>
<th>Year (June of)</th>
<th>Ph.D. students</th>
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<tbody>
<tr>
<td>2002</td>
<td>59</td>
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<td>2001</td>
<td>56</td>
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<td>2000</td>
<td>48</td>
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<td>1999</td>
<td>41</td>
</tr>
<tr>
<td>1998</td>
<td>27</td>
</tr>
</tbody>
</table>

With regard to graduate admissions, our program remained highly selective. Of 199 paid graduate applications for the full time program, only 16% (31) were offered admission.

Several of the faculty received honors for their research and educational achievements this past year. In May 2002, Professors Monty Shaw and Robert Weiss received two of the top three awards presented by the international Society of Plastics Engineers (SPE). Monty received the society’s most prestigious award, the SPE International Award, in recognition of his many years of outstanding fundamental contributions to the field of polymer rheology. Bob Weiss received the SPE Research Award for his outstanding contributions to the field of block co-polymers. Professor Doug Cooper received the 2001-2002 Rogers Teaching Award for excellence in undergraduate teaching.

PERSONNEL

Associate Professor Richard Parnas joined the Department in August 2001 following a distinguished early career in polymer composites at NIST. Dr. Ranjan Srivastava, a post-doctoral fellow in the field of biochemical/biomedical engineering at the University of Wisconsin, and Dr. Lei Zhu, a post-doctoral fellow at the University of Akron and a specialist in nanostructured block co-polymers, will be joining the faculty as Assistant Professors in August 2002.

STUDENTS

Our 2001–2002 graduating class consisted of 15 students, smaller than the 20-25 who have graduated annually over much of the past decade. This will be offset by an expected larger than average graduating class next year.

Overall Honors Program enrollments remained strong. At the end of this academic year, 30% of our undergraduates were participating in the Honors Program. This is the highest level ever for the Department, and places Chemical Engineering first in Honors enrollment among accredited academic majors at UConn. The next highest level of participation for an accredited program is 15%, with a university average of 8.5%.

Several students were recipients of awards this academic year. Graduating senior Kristin Gardiner was selected as the top female scholar-athlete at UConn and was named a Big East Conference Academic All-Star. Kristin is the only engineer among the 14 Big East students to receive this honor. Graduate student Amit Limaye received first place honors for presenting his work at the annual student technical speaking competition held jointly by the local chapters of the American Society of Materials and The Minerals, Metals, & Materials Society. Post-doctoral fellow Jose Fabrega and M.S. candidate Luying Wang received a Best Poster Award from the particle technology division of AIChE for their work presented at the 2001 AIChE Annual Meeting.
ENROLLMENTS, RECRUITING, AND OUTREACH

Increased undergraduate enrollments remain a departmental goal. Although the number of fall 2002 students - 15 at present - declaring chemical engineering as a major is an increase over last year, it remains below our target level. Our yield (fraction of admitted students who enrolled) was up to nearly 50%, a significant increase over the past two years. The challenge remains in increasing the number of applications while maintaining student quality. Aggressive recruitment of undecided engineering students and transfers from other programs within the university has again brought our sophomore enrollment to a level of 18-20 students. A departmental enrollment and outreach committee headed by Prof. Michael Cutlip, former Director of the Honors Program, is leading the recruiting effort.

Undergraduate research remains a core strength of our Department. Approximately 2/3 of the senior class participated in independent research at some time during their education at UConn, consistent with 60-70% participation levels noted in previous years.

A grant awarded by the National Science Foundation in February of 2002 has enabled us to establish the first-ever Research Experience for Undergraduates (REU) Site in Engineering at UConn. Our “REU Site in Chemical Engineering at the Nanoscale,” supported for an initial three-year period and involving 10 departmental faculty, is one of only 7 REU Sites in Chemical Engineering in the United States. The first class of 12 REU scholars arrived in early June 2002 for the beginning of their 10-week intensive research experience. Student scholars hail from 7 different colleges and universities representing the Eastern and Midwestern U.S. and Puerto Rico. In addition to providing an opportunity for students to pursue undergraduate research, it is hoped that this program will encourage some to consider graduate education in Chemical Engineering at UConn.

OTHER ACTIVITIES

The departmental seminar series continued this year under the generous sponsorship of Uniroyal Chemical.

With a grant from Alstom Power Inc., the Department established the Frontiers in Chemical Engineering Distinguished Lectureship in April 2002. This lectureship involves two lectures yearly by a prominent chemical engineering scholar, one of a general nature and one a specialized technical lecture. The inaugural lectures, “Valuable Plastics: Beyond Milk Bottles and Lego® Bricks” and “Reactions at Polymer-Polymer Interfaces,” were presented by Prof. Christopher Macosko of the University of Minnesota. The Frontiers Lectureship is intended to recognize outstanding accomplishments in chemical engineering and to share the excitement of engineering science and technology with a broad audience that includes high school teachers and students. Participating students from 10 Connecticut high schools attended the general lecture by Prof. Macosko and contributed essays on the subject of his general lecture.

The second edition of Principles, the full color annual departmental newsletter, was published in May 2002. Principles was again sent to all departmental alumni, all chemical engineering Department Heads in the U.S., members of the Advisory Board, seminar speakers, and selected members of the university community.

During May 2002, the annual meeting of our Industrial Advisory Board was convened in the South Campus Meeting Facilities. Members of our Student Advisory Board, established in December 2000 and consisting of three representatives from each of the sophomore, junior, senior, and graduate classes, were invited to meet with the Board to discuss the educational program. Board guidance is incorporated in ongoing curriculum review in preparation for our university assessment in spring 2003.
Luke E. K. Achenie


James D. Bryers


Robert W. Coughlin


Michael B. Cutlip


Can Erkey


**James M. Fenton**


**Joseph J. Helble**


**Patrick T. Mather**


**Richard S. Parnas**


**Montgomery T. Shaw**


**Robert A. Weiss**


Thomas K. Wood


Chemical Engineering Department  
Books, Book Chapters, Book Sections and Edited Volumes  
2001–2002

James D. Bryers


Douglas J. Cooper

Practical Process Control Using Control Station version 3.0, 300-page textbook accompanying the Control Station™ software, published by Control Station Tech., Storrs, CT (2002).


Can Erkey


James M. Fenton


Patrick T. Mather

Chemical Engineering Department
Conference Proceedings and Other Publications
2001–2002

Luke E. K. Achenie


Douglas J. Cooper
“Control Station Guru” Fall ‘01 issue – four-page page newsletter of the Process Control Consortium mailed directly to 8,500 industrial practitioners.

“Control Station Guru” Spring ‘02 issue – four-page newsletter of the Process Control Consortium mailed directly to 8,500 industrial practitioners.

Michael B. Cutlip

Can Erkey

Joseph J. Helble


Richard S. Parnas


Robert A. Weiss


Thomas K. Wood


Chemical Engineering Department
Active Research Grants and Contracts
2001–2002

Luke E. K. Achenie


Thomas F. Anderson

James D. Bryers


“Development of Biomaterials that Promote Beneficial Mammalian Cell Response while Preventing Bacterial Infection,” Kirsch Foundation of California, Individual Investigator Fellowship, 2000-2003 (3 years), $375,000 ($125,000/year).


“Substrata Surface Chemistry, Conformation of Contaminant Upon Adsorption, & Availability for Biodegradation,” National Science Foundation, 2001-2003 (2 years), $313,000.

“Multiple Photon Microscopy for Bacterial Biofilm Plasmid Dynamics,” National Science Foundation, 2002-2005 (3 years), $567,000.

Douglas J. Cooper

UConn’s Process Control™ Consortium:


UConn’s Process Control Consortium, Aramco Corporation, 12/01-1/03, $ 9,000, ($4,500).

UConn’s Process Control Consortium, Honeywell Corporation, 8/00 – 7/02, $15,000 ($7,500).


UConn’s Process Control Consortium, Training Workshops, 5/01 – 6/02, $35,600 ($30,123).


“Validation of Novel Adaptive Computer Control Theory,” GE Information Technology Fund, 1/02-6/02, $8,500.

Robert W. Coughlin

“Methodology for Development of Marketable Biotechnologies,” USAID Linkage Program, 9/14/97 – 03/31/02, $100,000 ($16,364).

Michael B. Cutlip


Can Erkey

“Processing of Inorganic Materials using Supercritical Fluids,” Norton/St. Gobain, 6/1/00 – 5/30/03, $115,000 ($38,333).

“Synthesis of Aerogels Using Supercritical Carbon Dioxide,” International Component Advantage, Inc., 6/1/01 – 12/31/02, $172,000 ($124,000).

REU Site in Chemical Engineering at the Nanoscale, (co-PI: J. Helble), National Science Foundation, $199,608 ($33,300), 2/1/02 – 12/31/05.


James M. Fenton


Sanyo Engineer Fuel Cell Training, Sanyo, 7/1/00 – 6/30/02, $42,581 ($21,290).


Joseph J. Helble

“Combustion Aerosol Synthesis of Nanoscale Ceramics,” National Science Foundation CAREER Award, 6/1/98-12/31/02, $225,300 ($55,000).


“Synthesis of Controlled Composition Particulate for Health Effects Study,” U.S. Environmental Protection Agency, 6/98 – 6/03, $21,500 ($5,000).

“Development of a Novel Process for Mercury Emissions Control,” U.S. Environmental Protection Agency, 7/1/00-6/30/03, $224,900 ($74,930).

“Ash Formation Under High Pressure Conditions,” Department of Energy (subcontract to Fluent), 6/1/01-5/31/04, $149,000 ($49,670).

Conference on Nanoparticles and Nanostuctures, National Science Foundation, 5/1/02 – 11/30/02, $15,000 ($12,500).

REU Site in Chemical Engineering at the Nanoscale, (co-PI: C. Erkey), National Science Foundation, 2/1/02 – 12/31/05, $199,608 ($33,300).

EPA Hazardous Substance Research Center (EPA, subcontract to Johns Hopkins University), 10/1/01-9/30/03, $87,000 ($10,000).

“High Capacity Thermally Regenerated Amines for CO2 Capture,” NASA (subcontract to the University of Florida), 6/15/02 – 6/14/04, $139,009 ($2,000).

Patrick T. Mather


Richard S. Parnas

“Acquiring and Using the Reinforcement Micro-Geometry to Predict Composite Properties,” University of Connecticut Research Foundation, 1/1/02 – 12/31/02, $22,000, ($11,000).

Montgomery T. Shaw

“Long-Term Aging of Nuclear Plant Cables,” Electric Power Research Institute, 3/1/99-12/31/03, $161,000 ($33,310).


“Development of Proton Exchange Membranes Based on Poly(ether Ketone Ketone) for Fuel Cell Applications,” (co-PI: R.A. Weiss), Connecticut Innovations, 7/1/01-6/30/03, $299,570 ($74,894).


“Maintaining High Viscosity of Lubricants at High Temperatures,” STP Products Manufacturing Co., 4/1/01-3/31/02, $71,000 ($71,000).

Robert A. Weiss

“Ionomer Containing Binary Polymer Blends,” National Science Foundation (DMR 97-12194), 9/01/97 – 12/31/02, $491,022 ($90,000).

“Neutron Reflectivity and Scattering Studies of Polymer Blends of Rods and Coils,” National Institute of Science & Technology, 9/16/97 - 3/30/02, $365,301 ($70,000).

“Fracture Toughening of Polypropylene with Liquid Crystalline Polymers,” National Science Foundation (International), 2/01/01 – 12/31/03, $16,700 ($5,567).

“Structure of Hydrophobically-Associating Hydrogels,” Petroleum Research Fund, American Chemical Society, 9/01/01 – 8/31/03, $60,000 ($30,000).
“Development of Proton Exchange Membranes Based on Poly(ether ketone ketone) for Fuel Cell Applications,” (co-PI: M.T. Shaw), Connecticut Innovations, 07/01/01–06/30/03, $299,579 ($74,894).

“Advanced Reinforced Thermoplastics for Dental Applications,” (co-PIs: J. Goldberg and P.T. Mather), Connecticut Innovations, 6/01/01 – 5/31/03, $298,925 ($45,179).

Thomas K. Wood

“Control of Biofouling Using Natural Furanones to Eliminate Biofilms,” Electric Power Research Institute, 8/10/01-8/30/02, $65,000 ($32,500).

“Corrosion Control Using Protective Biofilms Which Secrete Antimicrobials and Corrosion Inhibitors,” Electric Power Research Institute, 6/01/01-12/31/04, $444,800 ($148,267).

“Metabolic Engineering of Monoxygenases for 1-Naphthol and Styrene Epoxide Formation,” National Science Foundation/U.S. EPA, 2/01/01-1/31/04, $693,048 ($231,016).

“Redirecting Cellular Metabolism for the Biodegradation of Mixtures of Chlorinated Solvents,” (co-PI: K. Reardon at CSU), National Science Foundation, 9/15/00-9/15/03, $714,932 ($119,155).

“REU: Redirecting Cellular Metabolism for the Biodegradation of Mixtures of Chlorinated Solvents,” National Science Foundation, summer 2001, $10,000.

“Directed Evolution for Trinitrotoluene and Diaminotoluene Degradation,” (PI: B. Smets), National Science Foundation, 8/1/01-8/1/04, $600,000 ($91,667).

“Training Grant, Enhancing Biological Degreasing,” BioClean USA, 2/15/01-1/31/03, $66,273 ($33,137).

“Directed Evolution of Toluene-o-Xylene Monoxygenase for Rhizoremediation of Tetrachloroethylene,” Army Research Office, 9/15/00-9/15/03, $270,000 ($90,000).

“A Graduate Fellowship Program in Environmental Biotechnology at the University of Connecticut,” (PI: B. Smets and K. Noll; co-collaborators: J. Bryers, D. Gage, J. Gogarten, R. Vinopal) U.S. Department of Education, 8/15/00 - 8/14/03, $776,855 ($36,993).
Chemical Engineering Department  
Awards, Honors, Patents  
2001–2002

Douglas J. Cooper  
Rogers Teaching Award, 2002 (selected by Chemical Engineering Seniors).

Robert W. Coughlin  
Fellow, American Institute of Chemical Engineers.

James M. Fenton  

Joseph J. Helble  
CAREER Award, National Science Foundation, 1998-2002.

Best Poster Award, Particle Technology Forum, AIChE Annual Meeting, Nov. 2001.

Patrick T. Mather  

CAREER Award, National Science Foundation, 2001-2005.

Montgomery T. Shaw  

Fellow, Society of Plastics Engineers.

Member, Connecticut Academy of Sciences and Engineering.

Robert A. Weiss  

International Research Award, Society of Plastics Engineers, 2002
Chemical Engineering Department
Major Professional Activities
2001–2002

Luke E. K. Achenie


Member, AIChE Area 10a Coordinating Body, 1999-2002; Chair – 2002.

AIChE Minority Affairs Committee Member, 11/91 – present.

AIChE Minority Affairs Committee Vice-Chair, 11/99 – present.

AIChE Minority Faculty Forum, 11/95 – present.

Presentations


Invited Presentations

CAPEC Meeting, Denmark, June 2002.

Department of Computer Science, University of Veszprem, Hungary, April 2002.

Department of Chemical Engineering, Budapest University of Technology and Economics, Budapest, Hungary, April 2002.

University of California at Los Angeles, CA, December 2001.


Danish Technical University, Denmark, July 2001.

Thomas F. Anderson
Treasurer, University of Connecticut Chapter of Sigma Xi.

James D. Bryers
Associate Editor, Biotechnology & Bioengineering, J. Wiley & Sons.

Member, National Research Council Committee on Biotechnology Education, 1991-present.

Member, U.S. Department of State Committee on Biotechnology, 1992-present.

Presentations


Douglas J. Cooper

Presentations


Robert W. Coughlin

Presentations


Michael B. Cutlip
Trustee, CACHE Corporation (Computer Aids for Chemical Engineering Education).
Member, Executive Committee of the Chemical Engineering Division of the American Society for Engineering Education.

Presentations


Can Erkey

Newsletter Chair, Green Chemistry Division, American Chemical Society.

Presentations


“Chiral Catalysis in Supercritical Carbon Dioxide,” (with X. Dong), 223rd ACS National Meeting, Orlando, FL, April 2002.


“Chiral Catalysis in Supercritical Carbon Dioxide,” (with X. Dong), 10th International Supercritical Fluid Conference, Myrtle Beach, SC, August 2001.

James M. Fenton

Member, The Electrochemical Society Publication Committee, New Technology Subcommittee, Education Committee and Technical Affairs Committee.

Member, Programming Committee for Area 1E, American Institute of Chemical Engineers.

Divisional Representative, The Electrochemical Society’s Council of Local Sections.

Chairman, Symposium Planning Committee and Student Membership Committee of the Industrial Electrolysis and Electrochemical Engineering Division of the Electrochemical Society.

Presentations


Joseph J. Helble
Conference Chair and Session Chair, Engineering Foundation Conference on Nanoparticles and Nanostructures through Vapor Phase Synthesis, Tuscany, Italy, June 2002.


Member, Combustion Aerosols Working Group, American Association for Aerosol Research.

Presentations
Seminar, Northeastern University, Department of Chemical Engineering, March 2002.
Seminar, Tufts University, Department of Chemical Engineering, October 2001.
Seminar, University of North Carolina, School of Medicine, January 2002.


Patrick T. Mather

Member, Editorial Advisory Board, Polymer Engineering and Science.

Editor, MRS Proceedings.

Board of Directors, Polymer Analysis Division of Society of Plastics Engineers. Elected Chairman for 2002-2003 term.

Society of Plastics Engineers, Technical Program Chair (TPC) for ANTEC 2002, Polymer Analysis Division (in charge of 6 sessions/50 papers).

Best Paper Committee, Polymer Analysis Division, Society of Plastics Engineers.

Membership Committee, Society of Rheology.

Session Chair, Society of Rheology, 2001, Polymers with Complex Architectures.


Symposium Organizer, POSS-Based Materials, American Chemical Society 2001 Fall Meeting.

Session Chair, Polymer Solutions and Gels, American Physical Society 2002 March Meeting.

Presentations


“New Polymeric Nanostructures for Modified Deformation Behavior,” (invited), American


“Rheology and Morphology of Rod/Coil Molecular Composites,” (with J. Wu and G.M. Kim), 73rd Annual Meeting of the Society of Rheology, Bethesda, MD, October 2001.


Richard S. Parnas
Editorial Advisory Board, Polymer Composites.
Presentations

“Composites Manufacturing at Many Length Scales,” (invited), Army Research Laboratory, Aberdeen, MD, April 18, 2002.


Montgomery T. Shaw
Associate Editor, *IEEE Transactions on Dielectrics and Electrical Insulation*.
Treasurer, The Society of Rheology.
Member, Connecticut Academy of Sciences.
Executive Committee, The Society of Rheology.
Society Treasurers Committee, American Institute of Physics.

Presentations


Robert A. Weiss
Editor-in-Chief, *Polymer Engineering and Science*.
Editor-in-Chief, *Polymer Composites*.
International Advisory Board, *Polymers and Polymer Composites*.
Editorial Advisory Board, *Journal of Applied Polymer Science*.
Fellow, American Physical Society.
Fellow, Society of Plastics Engineers.
Member, Connecticut Academy of Sciences and Engineering.
Publications Committee, Society of Plastics Engineers.

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

Presentations


Thomas K. Wood

Presentations

“Proteomic Changes In Escherichia coli TG1 After Metabolic Engineering For Enhanced Trichloroethylene Biodegradation,” (with V. Pferdort and K. Reardon), 5th Siena Meeting from Genome to Proteome: Functional Proteomics, Siena, Italy, September 3, 2002.


“Quorum Sensing in Bacteria,” (invited), Second Annual West Point Microbiology Symposium, United States Military Academy, West Point, NY, May 3, 2002.


SUMMARY
Two faculty members joined the Department at the beginning of the year and three searches were led to successful conclusions during the year, filling key positions on the faculty. The Department has sustained vigorous research and scholarship programs. Several faculty have received awards or made special achievements. The undergraduate Civil Engineering program had a very successful visit for re-accreditation. The Department has continued the improvement in the infrastructure with the completion and re-equipping a new CEE computing lab. Enrollment trends in the department appear to be responding to active outreach and recruitment activities.

PERSONNEL CHANGES
This academic year we were joined by two new faculty, Drs. Britt Holmén, and Lisa Aultman-Hall. Dr. Holmén’s area of expertise is in environmental engineering and Dr. Aultman-Hall is expert in transportation engineering.

Associate Professors Ogden and Smets were on full-year sabbatical leaves that included extended visits to Australia and Denmark, respectively. In addition, the academic year began with the unexpected resignation of Professor Nikolaos P. Nikolaidis. Professor Nikolaidis had accepted a position in the Department of Environmental Engineering at the Technical University of Crete, Greece. In their absence, Assistant Professor Holmén was appointed coordinator of the graduate environmental engineering program and Associate Professor Abboud was appointed coordinator of the new undergraduate program in Environmental Engineering, with the charge for recruitment and high school outreach throughout the region. Professor Christian Davis was appointed the Interim Director of the Connecticut Transportation Institute.

Three searches were ongoing during the year culminating in hires for the coming academic year. Professor Dani Or, from Utah State University, will be joining us as the Northeast Utilities Foundation Endowed Professor of Environmental Engineering. His expertise is in soil physics and Professor Or will provide senior leadership to environmental and water resources faculty in the department. In addition, Associate Professor Amvrossios “Ross” Bagtzoglou will be joining us from Columbia University. His area of expertise is in groundwater remediation. Assistant Professor Guiling Wang will be joining us in January 2003 from NASA Goddard. Her expertise is in water resources. With her hire, the department will be ranked second nationally in percent of female faculty in CEE departments ranked by NSF.

Professor Jack Leonard announced his retirement effective the end of the academic year and a search has been initiated for a faculty member in Structural Engineering and Applied Mechanics.

RESEARCH AND SCHOLARSHIP
Faculty in the department are sustaining a robust research program with approximately $3 million in expenditures — one of the leading departments in the university — supporting approximately 50 graduate assistants and post-doctoral fellows. In addition, the faculty has approximately $7 million in
awards. Scholarly productivity is steady, averaging one publication per graduate student per year or 3 publications per faculty per year.

AWARDS AND SPECIAL ACHIEVEMENTS
Faculty made several notable achievements, including NSF CAREER awards to Assistant Professors Anagnostou and Holmén. Two faculty received medals — Assistant Professor Anagnostou received the “Plinius” medal 2002 from the European Geophysical Society, and Associate Professor Abboud received the National Order of the Cedar Medal from the President of Lebanon. Professor DeWolf achieved prominence as co-author with Emeritus Professor Johnston and his colleague Ferdinand Beer, for the text *Mechanics of Materials, 3rd edition*. This text is recognized as the leading text and is in use in approximately 40% of engineering schools nationwide.

ACCREDITATION
The ABET accreditation evaluation of the Civil Engineering undergraduate program was completed during this year. The visit was conducted in late October 2001 and went extremely well. Final decisions will be made by the Engineering Accreditation Commission during the summer of 2002. Accreditation now includes considerable assessment and constituency involvement. Assessment data confirmed the very high satisfaction of graduating students with the education they received and the very high satisfaction of their employers.

FACILITIES AND INFRASTRUCTURE
We continue to make steady progress with respect to our 5-year facilities plan. Following renovation of Castleman room 117 as the Civil and Environmental Engineering Computer Lab, we replaced all the existing computers. Many of the old machines were several years old and were of several different types. Each machine was individually configured and maintenance became extremely difficult and labor-intensive. The new machines are identical and identically configured and allow remote reconfiguration, vastly improving reliability and reducing maintenance needs. These 20 PCs are complemented with a high performance plotter, networked laser printer, and a new server. In addition, Castleman room 136 has been renovated and reassigned as an additional general-purpose computer lab equipped with 16 identical recent PCs, remotely reconfigurable.

Planning has been completed for reassignment of Castleman room 208 and 209 to provide office space for water resources Graduate Assistants and Post-doctoral visitors. In addition, room 123 will soon be renovated and combined with room 117 to provide a larger computer lab. Detailed planning is underway for new space earmarked for environmental engineering faculty in the Bronwell building. That space will become available once the Department of Electrical & Computer Engineering moves into their new building early in 2003. This additional space in Bronwell will relieve the current office space shortage.

ENROLLMENT TRENDS
Total undergraduate enrollment has been gradually declining in recent years with the fall ‘01 enrollment of freshmen being particularly disappointing. We have undertaken several recruiting activities to combat this decline. For example, the department is developing recruiting materials and high school outreach activities. Associate Professor Abboud was specifically charged to recruit for the new undergraduate environmental engineering program. She has sent out mailings and made several high school visits. In addition, Associate Head Malla has coordinated many outreach activities including several high school groups visiting our facilities. We have made follow-up phone calls to all students admitted to our programs, answering their questions and letting them know of our particular strengths. As a result, the anticipated fall ‘02 freshman enrollment looks significantly greater than in the past several years. We will be continuing our recruitment efforts in the coming year.
Meanwhile our graduating class has been steady with influx from within the School and external transfer students. In addition, our graduating classes are becoming more representative, with 40% of our graduates being female.

**PLAN FOR 2002-2003**

There are some curriculum development activities underway that will be completed during the coming academic year. We will continue with our infrastructure plan with renovations in Castleman and the assignment of some space in the adjoining Bronwell building. We anticipate developing Master of Engineering “on-site” programs similar to those in some departments in the School. We look forward to another successful year in the development of the Department.
Civil & Environmental Engineering Department
Archival Technical Journal Publications
2001–2002

Michael L. Accorsi

Emmanouil N. Anagnostou


Christian F. Davis

John T. DeWolf


Wael ElDessouki

Howard I. Epstein

Norman W. Garrick


**George E. Hoag**


**Britt Holmén**


**John N. Ivan**


John W. Leonard


Allison A. MacKay


Ramesh B. Malla


Nikolaos P. Nikolaidis


Fred L. Ogden


Barth F. Smets


Civil & Environmental Engineering Department
Books, Book Chapters, Book Sections & Edited Volumes
2001–2002

John T. DeWolf


Ramesh B. Malla


Fred L. Ogden


Civil & Environmental Engineering Department
Conference Proceedings & Other Publications
2001–2002

Nelly M. Abboud

Michael Accorsi

Lisa Aultman-Hall

Kenneth R. Demars

John T. DeWolf

Howard I. Epstein

Norman W. Garrick

George E. Hoag


Britt. A. Holmén


“ARB’s Study of Emissions from ‘Late-model’ Diesel and CNG Heavy-duty Transit Buses: Preliminary Nanoparticle Measurement Results,” (with A. Ayala, N. Kado, and R. Okamoto), Proceedings of the 5th International ETC-Conference on Nanoparticle Measurement, Zurich, Switzerland, August 6-8, 2001.

John N. Ivan


Ramesh B. Malla


Nikolaos P. Nikolaidis


Fred L. Ogden


Barth F. Smets


Civil & Environmental Engineering Department
Active Research Grants and Contracts
2001–2002

Michael L. Accorsi


“Analytical Determination and Optimization of the Mechanical Properties of Lattice Block Materials,” Office of Naval Research, 6/1/00-5/31/03, $109,905 ($34,000).

“IPA 2001 on Advanced Parachute Simulations,” U.S. Army Natick RD&E Center, 7/1/01-8/22/01, $14,982.

“Transition of Lattice Block Material Research to Electric Boat Corporation,” Electric Boat Corporation, 9/1/00-8/31/03, $33,000 ($12,000).

“IPA 2002 on Advanced Parachute Simulations,” U.S. Army Natick RD&E Center, 8/1/02-8/31/02, $26,851.

Emmanouil N. Anagnostou

“Understanding the Error Characteristics of Precipitation Estimates from Space-Based Observing Systems,” NASA, 10/1/99-9/30/02, $327,000 ($92,000).

“Investigating the Adequacy of TRMM Precipitation Radar Observations for Calibrating Ground-Based Weather Radar Reflectivity Measurements,” NASA, 1/1/00-11/30/02, $334,362 ($114,000).

“Experimental Investigation of X-band Polarimetric-Radar Rainfall Estimation,” (co-PI: W.F. Krajewski, 50%), National Science Foundation-Geosciences, 9/1/00-9/1/02, $146,337 ($24,000).

“Deployment of a Mobile Polarimetric X-band Radar and in situ Instrumentation to Support QPE and Microphysical Studies of Tropical Systems in CAMEX-4,” NASA, 6/1/01-5/31/04, $360,231 ($90,000).


“Investigation of Thunderstorm Monitoring from an Experimental Sferics Receiver Network,” NASA, 9/1/01-8/31/04, $70,000 ($22,000).

“Multi-Sensor Precipitation Estimation and Investigating Improvements on Weather and Climate Analysis,” NASA, 1/1/02-12/31/04, $242,000 ($95,000).
“Improved Knowledge on Precipitation Microphysics for Advancing Radar Rainfall Estimation and Quantitative Precipitation Forecasting,” National Science Foundation-Geosciences Early CAREER Award, 3/1/02-2/1/06, $420,000 ($82,971).

Lisa Aultman-Hall

“Incorporating Truck Flows into the State-wide Planning Traffic Model,” Connecticut Cooperative Highway Research Program, 6/1/02-5/31/04, $100,000 ($8,000).

“Developing a Methodology to Evaluate the Safety of Shared-use Paths,” Connecticut Cooperative Highway Research Program, 6/1/02-5/31/03, $25,000 ($2,000).

“Route Choice Behavior in Transportation Networks,” University of Connecticut Research Foundation, 1/1/02-12/31/02, $20,234 ($10,000).

“Lateral Variation in Pavement Smoothness,” (co-PI: C. Dougan 88%) Connecticut Department of Transportation, 9/01-12/02, $80,125 ($60,000).

“Development of Freight Commodity Generation Models,” (co-PI: T. Grossardt 15%), U.S. Bureau of Transportation Statistics, 7/1/01-8/31/02, $64,389 ($45,000).

“Developing a Model to Map Global Positioning System (GPS) Data onto Transportation Networks,” National Science Foundation, 9/00-8/01, $64,389 ($17,000).

Christian F. Davis

“Technology Transfer Center,” (co-PI: D. Shea 90%), Connecticut Department of Transportation, 7/1/01-6/30/02, $307,000.


“Application of Infrared Thermographic Imaging to Bituminous Concrete Pavements,” (co-PIs: J.E. Stephens 20%, J. Mahoney 60%), Connecticut Department of Transportation, 9/1/01-4/15/03, $109,991 ($12,460).

John T. DeWolf


“Monitoring of Washington Bridge, Providence, Rhode Island,” Vanasse Hangen Brustlin/Rhode Island Department of Transportation, 5/1/97-12/31/05, $10,350.

Wael Eldessouki


“An Automated Detection for Highway Geometry using Image Recognition Model,” (co-PIs: C. Dougan 40% and N. Garrick 20%), Joint Highway Cooperative Research Program (JHRAC), 6/01-8/03, $90,000 ($40,000).

Howard I. Epstein

“Block Shear Investigation of Structural Tees and Other Tension Connections,” National Science Foundation, 9/1/97-5/31/01, $180,292 ($12,663).


Norman W. Garrick


“Complex Systems: Cities in Their Environment (Bio-Complexity Incubation Activity),” (co-PIs: R. Rockwell 20% and R. Gilmore 20%), National Science Foundation, 9/1/01-5/31/03, $100,000 ($80,000).

“An Automated Detection for Highway Geometry using Image Recognition Model,” (co-PIs: C. Dougan 40% and W. Eldessouki 20%), Joint Highway Cooperative Research Program (JHRAC), 6/01-8/03, $90,000 ($40,000).

“Effective Visualization Techniques for the Public Presentation of Transportation Projects,” (co-PIs: P. Miniutti and M. Westa), New England Transportation Consortium, 6/1/01-12/31/02, $74,929 ($54,308).

George Hoag

“Studies of Nutrient Loading to the Mansfield Hollow Reservoir, Connecticut,” (co-PIs: F.L. Ogden 34% and G. Warner 33%), Willimantic Water Commission, 4/1/01-10/31/02, ($80,000).

Britt A. Holmén

“Vehicle-derived Ultrafine Particles and Their Adsorbates: Formation and Aging Effects on Organic Composition and Size Distribution,” National Science Foundation Early CAREER Award, 2/1/02-1/31/07, $375,000.
John N. Ivan

“Using Multiple Response Hierarchical Bayesian Modeling to Select Exposure Measures for More Accurate Highway Crash Prediction,” (co-PIs: N. Ravishanker 20% and D. Tepas 20%), Bureau of Transportation Statistics (USDOT), 8/1/00-1/31/02, $99,900 ($50,610).

“University of Connecticut Graduate Fellowships,” New England University Transportation Center, 9/1/01-8/31/02, $30,000 ($30,000).


John W. Leonard


Allison A. MacKay

“Transport of Hydrophobic Organic Contaminants Across the Groundwater/Surface Water Interface,” University of Connecticut Faculty Large Grant Competition, 01/01-01/12/31/01, $21,122 ($12,321).

“Propargite Removal by Coagulation and Flocculation,” Uniroyal Corporation, 12/01/01-04/01/02, $11,152.

“Geochemistry, Biochemistry, and Surface/Groundwater Interactions for As, Cr, Ni, Zn, and Cd with Applications to Contaminated Waterfronts,” (co-PIs: B.F. Smets 50%, A.T. Stone 0% (Johns Hopkins)), U.S. EPA Hazardous Substances Research Centers, 2000-STAR-A1, (Johns Hopkins University, lead institution; total $6 M for 01/01-12/05), 10/01/00-09/30/02, $110,898.

“Identifying New Strategies for the Biochemical Treatment of Pharmaceutical Wastewater Effluent,” (co-PI: B.F. Smets 50%), Pfizer, 08/15/01-08/14/03, $171,620 (FY02 $0).

Ramesh B. Malla

“On-Orbit Dynamics Response and Integrity of Space Station and Its Solar Arrays,” Connecticut EPSCoR Core Funding Program, Connecticut Space Grant Consortium, 6/1/02-5/31/03, $10,000.


“A NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (UConn PI, with state-wide participants) NASA, Washington, D.C., 6/1/00-8/31/01, $225,000, ($24,000).

“An Innovative Fiber Optic Weigh-in-Motion System,” University of Connecticut Research Foundation, 6/1/99-8/31/02, $10,800.
Rusk Y. Masih


Nikolaos P. Nikolaidis


Fred L. Ogden

“Addition of Lakes, Wetlands, and Detention Basins to CASD2D,” U.S. Army Engineers, Waterways Experiment Station, 8/18/99-9/30/02, $221,000 ($98,103).


“Systems Dynamics of Stormwater Detention/Retention Ponds,” U.S. National Science Foundation, (co-PI: T. Torgersen), 2/1/01-1/31/04, $65,000 (FY02 $0).


“Studies of Nutrient Loading to the Mansfield Hollow Reservoir, Connecticut,” (co-PIs: G. Hoag 33%, G. Warner 33%), Willimantic Water Commission, 4/1/01-10/31/02, ($80,000).

“Research in Physically-Based Hydrologic Model Development and Testing,” U.S. Army Corps of Engineers, Engineering Research and Development Center, 9/1/01-1/31/02, $56,036.

Barth F. Smets

“Quantification of Horizontal Gene Transfer as Adaptive Response to Contaminant Stress in Microbial Communities – Development of an Experiential Environmental Engineering Course,” National Science Foundation Early CAREER Award, 07/01/97-06/30/02, $320,419.

“Inhibition of Biological Nitrogen Removal: Microbiology, Physical Chemistry & Process Engineering,” (co-PIs: D. Grasso 45%, J. Semon-Brown 10% (City of Stamford, CT)), Long Island Sound Research Fund, Environmental Protection Agency Region 1, 03/15/99-11/30/02, $187,079.


“A Graduate Fellowship Program in Environmental Biotechnology at the University of Connecticut,” (co-PI: K.M. Noll 50%), U.S. Department of Education, 08/15/00-08/14/03, $688,500.

“Inhibition of Biological Nitrogen Removal at POTWs - A Critical Investigation of Microbiology, Physical Chemistry and Process Engineering at a NY BNR Facility,” (co-PIs: K. Chandran and R.R.
Sharp 90% (at Manhattan College), Long Island Sound Study, U.S. EPA Region 1, 08/15/00-11/30/02, $69,945.

“Development of Predictive Tools to Infer Inhibition of Biological Nitrogen Removal at POTWs via Long Term Bench-scale and Full-scale Monitoring,” (co-PI: K. Chandran 0%), Connecticut Institute for Water Resources, United States Geological Survey, 03/01/01-02/28/02, $16,054.

“Geochemistry, Biochemistry, and Surface/Groundwater Interactions for As, Cr, Ni, Zn, and Cd with Applications to Contaminated Waterfronts,” (co-PIs: A.A. MacKay 50%, A.T. Stone 0% (Johns Hopkins)), U.S. EPA Hazardous Substances Research Centers, 2000-STAR-A1 (Johns Hopkins University, lead institution; total $6 M for 01/01-12/05), 10/01/00-09/30/02, $110,898.

“Mechanistic Role of Plant Root Exudates in the Phytoremediation of Persistent Organic Chemicals,” (co-PI’s: D. Gage 25%, J.C White 40%, M.P.N. Gent 5%, M. Incorvia Mattina 5%), Connecticut Agricultural Experiment Station, EPA Joint Program on Phytoremediation 2001-STAR-C1, 12/15/01-08/14/04, $191,214.

“Directed Evolution of Aromatic Dioxygenases for Trinitrotoluene and Aminodinitrotoluene Degradation,” (co-PI: T.K. Wood 50%), National Science Foundation - Division of Bioengineering & Environmental Systems, 08/01/01-07/31/02, $197,919.

“Role of Horizontal Gene Transfer in the Evolution of Catabolic Pathways in Microbial Communities,” (Support to initiate collaborative research with labs at NERI and DTU, Denmark), National Science Foundation - Office of International Programs & Division of Bioengineering & Environmental Systems, 08/15/01-06/30/02, $12,000.

“Identifying New Strategies for the Biochemical Treatment of Pharmaceutical Wastewater Effluents,” (co-PI: A.A. MacKay 50%), Pfizer, Inc. Central Research Division, Groton, CT, 08/31/01-08/30/03, $171,620.
Civil & Environmental Engineering Department
Awards, Honors, Patents
2001–2002

Nelly. M. Abboud
National Order of the Cedar Medal, Commander and Officer Order (Lebanon’s highest honor), presented by Lebanon President General Emile Lahoud, August 2, 2001.

Emmanouil N. Anagnostou

CAREER Award, National Science Foundation, 2002.

Christian F. Davis

Britt A. Holmén
CAREER Award, National Science Foundation, 2002.

Fred. L. Ogden
Visiting Research Scholars Award, The University of Melbourne, Australia, Collaborative Research Program 2001-2002.

Barth F. Smets
Visiting Postdoctoral Fellowship, Fund for Scientific Research, Belgium-Flanders, 8/01-01/02.

Visiting Scientist Fellowship, National Research Council, DK, 02/02 – 08/02.

Visiting Scientist Fellowship, The Plasmid Foundation, DK, 02/02 – 08/02.
Civil & Environmental Engineering Department
Major Professional Activities
2001–2002

Nelly M. Abboud
Editorial Board Reviewer, *Fluid/Particle Separation Journal*.


Member, Engineering Recommendation and Council Committee, Order of Engineers and Architects, Beirut, Lebanon; Committee report published in all Lebanese newspapers and broadcasted on Lebanese TV August 3, 2001, Beirut, Lebanon.


Invited participant in the Environmental Council Committee Meeting, Order of Engineers and Architects, August 22, 2001, Beirut, Lebanon.

Michael L. Accorsi


Emmanouil N. Anagnostou
Associate Editor, *Journal of Applied Meteorology*.

International advisor, National Observatory of Athens, Greece.

Member, NASA’s Science Team on Tropical Rainfall Measuring Mission.

Member, 5th International Precipitation Conference Committee.

Invited lecturer, the Aphrodite seminar series of CIMA - Centro di Ricerca Interuniversitario in Monitoraggio Ambientale, Università di Genova, Universita della Basilicata, Italy.

Reviewer for:
Lisa Aultman-Hall

Chair, Committee on Bicycling, Transportation Research Board, National Academy of Science.

Member, NSF Panel, Division of Operations Research and Service Enterprise Engineering, May 2002.

Content Specialist, Geographic Information Science, NSF IGERT Program Review, SUNY Buffalo, March 2002.


Reviewer for:

Journal of Transportation Engineering.

National Academy of Science Transportation Research Board Journal.

Kenneth R. Demars

Technical Co-Editor-in-Chief, ASTM Geotechnical Testing Journal, (8/95 to present).


Reviewer for:

ASCE Journal of Geotechnical and Geoenvironmental Engineering.

ASTM Geotechnical Testing Journal.

Journal Marine Georesources and Geotechnology.
Connecticut Water Resources Program.

John T. DeWolf
Associate Editor, *Structural Health Monitoring*.
Member, National Science Foundation proposal review panel.

Reviewer for:

*AISC Engineering Journal.*


*Structural Engineering and Mechanics.*

*Advances in Structural Engineering.*

Transportation Research Board.

Wael ElDessouki
Member, Board of Directors for Intelligent Transportation Society – Connecticut Chapter (ITS-CT).

Head, Technical Committee for ITS-CT.

Howard I. Epstein
Associate Editor, *ASCE Journal of Professional Issues in Engineering, Education and Practice.*


Presentations


“Collapse of the Hartford Civic Center Roof,” (invited presentation), Materials Week in Connecticut Meeting of the American Society for Metals, April 18, 2002, Windsor, CT.


Gregory C. Frantz
Reviewer, *ACI Journal.*

Norman W. Garrick
Proposal Reviewer, National Highway Cooperative Research Program (NCHRP), NCHRP 33-06.
Proposal Reviewer, National Highway Cooperative Research Program (NCHRP), NCHRP 09-15.
External Examiner for Ph. D. Dissertation at the National University of Singapore.

George E. Hoag
Editorial Advisory Board Member, *Soil and Sediment Contamination Journal.*


Reviewer for:

*Journal of Environmental Engineering Science.*

*Journal of the Environmental Engineering Division,* American Society of Civil Engineers.

*Soil and Sediment Contamination Journal.*

Britt A. Holmén
Manuscript Reviewer, *Geochimica et Cosmochimica Acta.*


Proposal Reviewer, National Science Foundation Research.

John N. Ivan
Manuscript Reviewer, International Conference on the Applications of Advanced Technology, American Society of Civil Engineers.

Reviewer for:

*Journal of Transportation Engineering,* American Society of Civil Engineers.

*Transportation Research Record,* Transportation Research Board.

*Computer Aided Civil and Infrastructure Engineering.*
ITS Journal.
Transportation Research Part C.

John W. Leonard
Associate Editor, Ocean Engineering.

Allison A. MacKay
Manuscript Reviewer, Environmental Science and Technology.

Ramesh B. Malla
Associate Editor, Journal of Spacecraft and Rockets, American Institute of Aeronautics and Astronautics, Reston, VA.

Chair, Executive Committee, American Society of Civil Engineers Aerospace Division, Oct. 2001-Sept. 2002.


International Organizing Committee, 5th International Conference on Space Structures, Guildford, Surrey, UK; August 19-21, 2002.

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


Reviewer for:
AIAA Journal of Spacecraft and Rockets.
Journal of Structural Engineering and Mechanics, an international journal.
Journal of Aerospace Engineering.
International Journal of Space Structures, U.K.

Rusk Y. Masih
Editor, The Point Research & Innovation Observer.

Fred L. Ogden
Proposal Reviewer, United Kingdom Natural Environment Research Council (NERC).

Proposal Reviewer, National Science Foundation Research.

Reviewer, *Journal of Hydrology*.

**Barth F. Smets**


Proposal Reviewer, National Science Foundation, (for several multi-investigator proposals submitted to “Biocomplexity in the Environment” program solicitation (NSF 02-010) submitted to Division of Biological & Environmental Systems & Division of Environmental Biology).

Reviewer for:  

*Biotechnology and Bioengineering.*

*Environmental Science & Technology.*

*Water Environment Research Biodegradation.*

*Applied & Environmental Microbiology.*
This has been an extremely productive and successful year for the Computer Science & Engineering Department. Our accomplishments include:

- Completing the accreditation process for two of our degrees; the Computer Science & Engineering degree and the Computer Science degree.
- Revising all our undergraduate programs, including the Computer Engineering degree (this latter degree is offered jointly with the Electrical & Computer Engineering department).
- Recruited the first Named Professor in the history of the department, two new tenure-track junior faculty members, and two visiting assistant professors.
- Increasing substantially our research funding.
- Actively participating in planning the new Information Technologies Engineering (ITE) new building.

**ACCREDITATION PROCESS**

During last summer, we continued preparing for the accreditation team site visit on October 22nd and 23rd. Two teams from ABET and CSAB visited our department to consider both of the Computer Science & Engineering program and the Computer Science program for accreditation. The visit to the department and to the School went very well, with minor concerns being corrected right away after the visit. Primary reports reflect a positive conclusion of the accreditation process. We are expecting to hear the final decision in the fall of 2002.

**EDUCATIONAL PROGRAMS HIGHLIGHTS**

During this year, we revised our undergraduate programs to make them more distinguishable from each other. We also corrected their pre-requisite structures. Two new minors were developed. The first one is in Information Technology. Its objective is to advance the incorporation of computers in the curriculum of other engineering disciplines. The second one is in Bioinformatics and is offered in collaboration with the Department of Molecular Cell Biology. Its objective is to integrate computational education into the curriculum of biological sciences. Our graduate program continues to receive international recognition as indicated by the number of applicants from the top schools worldwide and the number of students joining the department who are funded by their governments (including the USA).

**FACULTY RECRUITING**

The department recognizes that faculty are the heart of any academic department in a Research I institute such as UConn. Therefore, we continue to search for the best faculty candidates from the top ranked universities. We succeeded in hiring the first Named Professor in the history of the department, Dr. R. Sanguthevar, who graduated from Harvard and worked at the University of Florida. We also hired two new tenure track junior faculty, Dr. Swapna Gokhale, who graduated from Duke University and worked for Telcordia Technologies, Inc., of New Jersey, and Dr. Laurent Michel, who graduated from Brown University and continued as a post-doc there for two years. We hired two visiting assistant
RESEARCH HIGHLIGHTS

Our research productivity is increasing at a very high rate. Dong-Guk Shin (in collaboration with researchers from the UConn Health Center) was awarded a $1,103,813 planning grant (seed money) by the National Institutes of Health for his proposal entitled “Integrated Bioinformatics Center of Cellular Biology.” The objective of this grant is to develop and plan a Bioinformatic Center of Excellence in Cellular Biology. Reda Ammar is an investigator in this project. Alex Shvartsman (PI) and Alex Russell (co-PI) received a major NSF-ITR grant in collaboration with MIT (total grant $1,030,000; $463,000 for UConn). Eugene Santos is also one of the PIs of another NSF-ITR ($409,000). Tom Peters received a major NSF funding ($715,000, one third of which is for UConn) for his project “I-TANGO: Intersections---Topolgy, Accuracy and Numerics for Geometric Objects (in Computer-Aided Design).” This project is in collaboration with researchers from MIT, Purdue and the University of Montreal. Steve Demurjian and Dong-Guk Shin continued to receive funding (more than $150,000/year) from the State of Connecticut Insurance Department. In addition, a number of other CSE faculty received new grants from federal agencies, such as NSF, and industry. A complete list is given in the enclosed faculty reports.

Our faculty have increased their participation in professional societies as officers and on editorial boards and on international conferences’ steering committees and as program chairs. Alex Russell received the best paper award in ICALP, Europe’s premier theory conference. Faculty members have also been invited to present their research directions and results, including keynote addresses in several major international and national conferences, Air Force centers and prestigious institutes such as MIT and SUNY.

THE INFORMATION TECHNOLOGY ENGINEERING (ITE) BUILDING

Last year, together with the ECE department and the Associate Dean, we continued to plan the new ITE building. The new building has high quality research and educational facilities and we are very excited about moving there next year. The department will also maintain research activities in the Booth Research Center.

MISSION STATEMENT

The department's mission statement will continue to be “Expanding both education and research programs in a complementary approach to respond to the pressing needs of society and the rapidly changing technology in the information era.” Both increasing research productivity and delivering high quality education will be pursued equally as strategic guidelines for the department. The department will continue its emphasis on an integrated computer science and engineering approach and will try to balance the engineering paradigm with the scientific exploration in its educational and research programs.

CONCLUDING REMARK

The department is in an exciting era. Our educational programs at the undergraduate and graduate levels are well developed to serve the state and the nation. Research is growing at a very high pace and high quality new faculty members have been hired. We are continuing to excel in both teaching and research.
Computer Science & Engineering Department  
Archival Technical Journal Publications  
2001–2002

Reda A. Ammar  

Chun-Hsi Huang  


Lester Lipsky  

Alexander Russell  


Eugene Santos, Jr.  

Alexander Shvartsman  

Gerald L. Engel


Robert McCartney

Reda A. Ammar


Steven A. Demurjian


“Towards the Formalization of a Reusability Framework for Refactoring,” (with R. Caballero), Proceedings of the 7th International Conference on Software Reuse, Austin, TX, April 2002.


**Gerald L. Engel**


**Dina Goldin**


**Ian Greenshields**


**Chun-Hsi Huang**


**Lester Lipsky**


Robert McCartney


Alexander Russell


Eugene Santos, Jr.


Dong-Guk Shin


Alexander Shvartsman


T.C. Ting


Computer Science & Engineering Department
Active Research Grants and Contracts
2001–2002

Reda A. Ammar


“Academic Scholarship Program in Computer Engineering,” (co-PI: M. Anwar), National Science Foundation, July 1, 2001-June 30, 2003, $197,988 (28,725).


Steven Demurjian


**Dina Goldin**


**Ian Greenshields**


**Chun-Hsi Huang**


**Robert McCartney**


**Thomas Peters**

“I-TANGO: Intersections — Topology, Accuracy and Numerics for Geometric Objects (in Computer-Aided Design),” (co-PIs: N.F. Stewart; C.M. Hoffmann, Purdue University; and N.M. Patrikalakis, T. Mackawa and T. Sakkalis (MIT)), National Science Foundation, May 1, 2002 - April 30, 2005, $715,000 ($1,608).


**Alexander Russell**


“Communication and Data Sharing in Dynamic Distributed Systems,” (PI: A. Shvartsman), National Science Foundation, (subcontract through MIT), September 1, 2001-August 31, 2006, $463,421 ($1,439).

**Eugene Santos, Jr.**


Dong-Guk Shin


“Data Mining Technique Analysis,” Egyptian Government, January 1, 2001 – March 31, 2003, $10,000 ($1,628).

Alexander Shvartsman


“Communication and Data Sharing for Dynamic Distributed Systems,” (UConn co-PI: A. Russell), National Science Foundation ITR, MIT-UConn Group Grant, August 23, 2001 – August 22, 2004, $463,000 (total NSF grant $1,030,000).
Computer Science & Engineering Department
Awards, Honors, Patents
2001–2002

Reda A. Ammar
Outstanding Teaching Faculty Award, School of Engineering, University of Connecticut, 2001.

Gerald Engel
IEEE Computer Society Certificate of Appreciation for contributions to conference activities.

IEEE Educational Activities Board for valued contributions.

Dina Goldin
CAREER Award, National Science Foundation, 1998-2003.

Alexander Russell
CAREER Award, National Science Foundation, 2001-2006.


Mathematical Sciences Research Center Fellowship.

Alexander Shvartsman
CAREER Award, National Science Foundation, 2000-2004.

Outstanding Junior Faculty Award, School of Engineering, University of Connecticut, 2001.
Computer Science & Engineering Department
Major Professional Activities
2001–2002

Neal Alderman
Reviewer, Data Structures In Java.

Presentations

Reda A. Ammar
Associate Editor, Journal of Simulation.
Organizer, 1st IEEE International Symposium on Signal Processing and Information Technology, December 28-30, 2001, Cairo, Egypt
Chair, Registration and Finance Committee, the IEEE Symposium on Computers and Communications, Tunisia, July 2001.
Member, Steering Committee, the IEEE Symposium on Computers and Communications, Tunisia, July 2001.
Member, Program Committee, the International Conference on Computers and its Applications, TX, August 2001.
Member, Association of Computing Machinery (ACM).
Member, IEEE Computer Society.
Member, IEEE System, Man and Cybernetics Society.
Member, International Society on Computers and Their Applications (ISCA).
Member, Upsilon Pi Epsilon, the National Computer Science Honorary Society.
Member, IEEE Technical Committee on Simulation.

Member, IEEE Technical Committee on Parallel Processing.

*Ad hoc* reviewer, ISCA conferences and journals.

*Ad hoc* reviewer, ISCC 2002.

UConn Coordinator, agreement and cooperation between the University of Connecticut and Ain Shames University, Egypt.

**Presentations**


Invited presentation concerning UConn undergraduate and graduate programs, ERI, Cairo, Egypt, December 2001.

**Steven A. Demurjian**


Member, Program Committee, Special Track on Semantic Web, in conjunction with FLAIRS 2002.

Member, Program Committee, IADIS International Conference WWW/Internet 2002.

Member, Academic/Industrial Advisory Board, Department of Computer Science, Central Connecticut State University.

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

Member, Association of Computing Machinery (ACM).

Member, IEEE Computer Society.

Member, IEEE Computer Society Technical Committees on Database Engineering and Software Engineering.

**Presentations**


Gerald Engel

President, CSAB, Inc.
Fellow, Association for Computing Machinery.
Vice President, IEEE Computer Society.
Editorial Board, Computer Science Education.
Chair, Bylaws Committee, IEEE Region 1.
Co-Chair, IEEE Computer Society, ACM Curriculum 2001 Project.
Steering Committee, 2001 Frontiers in Education Conference, Reno, NV.
Past President, IEEE Society on the Social Implications of Technology.
Member, Board of Governors, IEEE Computer Society and IEEE Society on Social Implications of Technology.
Member, Executive Committee, IEEE Computer Society.
Member, Board of Directors, Accreditation Board for Engineering & Technology (ABET).
Member, IEEE Facilities Committee and IEEE Ethics Committee.
Member, Advisory Committee, NASA Project at the University of Puerto Rico, Mayaguez.
Member, Advisory Board, Center for Ethics in the Professions, Illinois Institute of Technology.
Parliamentarian, IEEE Region 1.

Ad hoc reviewer for:

National Science Foundation.
Computer Science Education.
IEEE Technology and Society.
2002 SIGCSE Symposium.
Frontiers in Education (FIE).

Presentation

Dina Goldin

Editor, CoRR Version of the Proceedings for the PCL ’02 Workshop.

Publicity Director, International Conference on Data Engineering 2004 (ICDE’04).

Member, ACM.

Member, IEEE Computer Society.

Member, Organizing Committee, Paris Kanellakis 50th Anniversary Workshop, ACM FCRC Conference.

Member, Information Management Panel of CC-2001 (ACM/IEEE-CS Joint Curriculum Task Force)

Member and Webmaster, New England Database Society.


Member, Visiting Team, CSAB/ABET National Program Evaluator, October 2001.

Panel Member, College Colloquium for Talented high school students, Wesleyan University, November 17, 2001.

Ad hoc reviewer for:

Al Communications.

Information & Computation.


IEEE Transactions on Knowledge and Data Engineering.

VLDB Journal.

DAMI (Data Mining and Knowledge Discovery) Journal.

Founder and editor, Acoustic Neuroma Patient Archive, an informational Internet resource for Acoustic Neuroma patients world-wide.

Ian Greenshields

Member, Steering Committee, 15th IEEE Conference on Computer-Based Medical Systems.

Ad hoc reviewer for:

U.S. Army peer-reviewed Health Awards.


Promotion, Tenure & Reappointment review, North Carolina State University.
Promotion, Tenure & Reappointment review, Binghampton University (SUNY).

Invited speaker, National Institutes of Health Biomedical Computing Group.

**Chun-Hsi Huang**

Committee member, 2002 International Conference on Parallel and Distributed Processing Techniques and Applications, June 24-27, 2002.


**Lester Lipsky**


Member, Association for Computing Machinery (ACM).

Member, American Physical Society (APS).

Member, International Society on Computers and Their Applications (ISCA).

Member, Upsilon Pi Epsilon, the National Computer Honorary Society.

Member, Sigma Xi, The National Honorary Science Society.

Member, Sigma Pi Sigma, the National Honorary Physics Society.

External Reviewer for Computer Science Program at the University of Ireland, Galway, March 2002

*Ad hoc reviewer for:*

  - International Teletraffic Congress.
  - *IEEE Symposium on Network Computing.*
  - *IEEE Transactions on Computers.*

**Robert McCartney**

Member, Editorial Board, *Computer Science Education Journal*.

Member, Editorial Board, *Diagrams* (Journal).

**Thomas Peters**

Member, SIAM, Special Interest Group on CAGD.

Member, peer review committees for National Science Foundation, February 2002.

Ad hoc reviewer for:

- Computer Aided Geometric Design.
- Journal of Mathematical Imaging and Vision.
- Journal of Computing and Information Science in Engineering.

Presentations


Workshop on Digital Topology, City College and the Graduate Center, City University of New York, NY, March 22-23, 2002.

Alexander Russell

Conference Organizer, 2002 AMS/IMS/SIAM Summer Research Conference on Graph Coloring and Symmetry.

Quantum Information Seminar Series Organizer, University of Connecticut.

Program Committee Member, Latin American Informatics (LATIN 2002).


Ad hoc reviewer for:

- Symposium on Theoretical Aspects of Computing (STACS).
- Information Processing Letters.

Eugene Santos, Jr.

Associate Editor, IEEE Transactions on Systems, Man, and Cybernetics: Part B.
Program Co-Chair, 2003 IEEE International Conference on Systems, Man and Cybernetics, Washington, DC.

Executive Council, ConnCHI -- Connecticut ACM SIGCHI Chapter.

Co-Chair, AAAI Fall 2002 Symposium on Intent Inference for Users, Teams, and Adversaries, Boston, MA.

Organizing Committee, AAAI 2002 Workshop on Real-Time Decision Support and Diagnosis Systems, Edmonton, Canada.

Program Committee, The 15th International FLAIRS Conference, Pensacola, FL.

Program Committee, Genetic and Evolutionary Computation Conference (GECCO-2002).

Program Committee, Mexican International Conference on Artificial Intelligence (MICAI 2002), Yucatan, Mexico.

Program Committee, The 15th International FLAIRS Conference Special Track on Uncertainty, Pensacola, FL.

Program Committee, International Workshop on Agents for Business Automation, Las Vegas, NV.

**Dong-Guk Shin**

Treasurer, IEEE Computer Society Computational Medicine TC.


Member, National Institutes of Health Pre-NPEBC BISTI Study Section Committee, March 17, 2002, Silver Spring, MD.

Member, National Institutes of Health CSR Scientific Review Committee, April 12, 2002, Bethesda, MD.

Member, Department of Energy Office of Basic Energy Sciences, Research Application Reviewer, June 10, 2002.

Member, IEEE Computer Society.

Member, Korean Scientists and Engineers in America.

*Ad hoc* reviewer, *Bioinformatics Journal*.

*Ad hoc* reviewer, Research Grant Application Review for University of Rhode Island Transportation Center (URITCH), Kingston, RI, April 15, 2002.
Presentations

“Genomic Database Federation,” Korean Advanced Institute of Science and Technology, Dae-Duck, Korea, July 2001.

“Virtual Cell Project and Other Bioinformatics, Projects,” Korea Research Institute of Biology and Biotechnology, Dae-Duck, Korea, July 2001.


Alexander Shvartsman

Member, Editorial Board, Studia Informatica Universalis, International Journal of Information Technology, 2000 to date.


Program Committee Member, 21st ACM Symposium on Principles of Distributed Computing, PODC’2002.

Program Committee Member, 6th International Conference on Principles of Distributed Systems, OPODIS’2002.

Program Committee Member, the IEEE International Symposium on Network Computing and Applications, NCA’2001.


Steering Committee Member, International Conference on Distributed Computing (DISC), 2002-2003.

Member, IEEE TC on Enterprise Computing.

Panel Member, National Science Foundation, Distributed Systems, August 2001.

Doctoral Dissertation Reader, Nicole Leslie, University of Sydney, 2002.

Ad hoc reviewer for:


IEEE Transactions on Software Engineering.

Information and Computation.

Theoretical Computer Science.

Distributed Computing.

T.C. Ting

Member, Editorial Board, Data and Knowledge Engineering.

Member, Association of Computing Machinery (ACM).

Member, Upsilon Pi Epsilon, the National Computer Science Honorary Society.

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

Member, National Science Foundation, December 2001 and March 2002.

Ad hoc reviewer, IFIP WG11.3 Database Security Conference, May 2002.


Presentation

HIGHLIGHTS

Despite the heavy load of breaking in a new Department Head, ECE faculty, students, and staff maintained a strong momentum in AY 2001-2002. Following extensive preparations, including two formal external reviews, compilation of substantial self-study documents, and significant instructional laboratory upgrades, the ECE department underwent ABET evaluation in fall 2001. ECE faculty efforts to maintain high-quality instructional programs were rewarded with a full six-year accreditation of the Electrical Engineering program and with very positive comments by the evaluator. This excellent result was achieved by the enthusiastic participation of our constituents. Faculty, students, and staff provided knowledgeable input during the visit. Alumni, employers, and friends in industry played key roles in the data collection and assessment processes by timely responses to surveys. Other major pursuits during the year included faculty recruitment, definition and implementation of the Computer Engineering program (with Computer Science & Engineering), a faculty retreat to formulate a strategic plan, and preparations for the move to the new Information Technology Engineering (ITE) building.

RESEARCH AND SCHOLARSHIP

Strategic research areas pursued by ECE faculty include systems and manufacturing, microelectronics, biomedical engineering, optoelectronics, electromagnetics and photonics, and VLSI computer engineering. Assisted by outstanding graduate students and visiting scholars, the faculty maintains high funding levels on a continuous basis. Associated scholarly productivity continues to be strong. During the year, the faculty published 243 scholarly papers, including 75 full-length journal articles, 13 book chapters, 119 full conference proceedings papers and 36 other publications. They also published 2 books and 8 course manuals, and developed 8 software packages. They offered numerous professional short courses, were keynote speakers at 7 international conferences and delivered 23 invited talks. The faculty worked on 100 sponsored grants with annual expenditures of $3.6 million and were awarded 2 patents. This effort involved 107 graduate students, resulting in 13 Ph.D. degrees and 16 M.S. degrees. This level of scholarly productivity has been recognized through appointment of the faculty to 5 major journal editorships, 22 associate editorships or conference chairs, 20 other editorial appointments and a multitude of other officerships, honors and awards.

FACULTY RECRUITMENT

Three new ECE faculty members will join us in fall 2002. Two are in the area of Computer Engineering; they will play leading roles in establishing instructional and research activities in this new joint program. John Chandy, with degrees from MIT and the University of Illinois, is an expert in computer architecture, parallel systems, and distributed data storage. Hanho Lee, educated at the University of Minnesota, conducts research in VLSI circuits and systems design for applications such as digital signal processing, communications, and networks. In addition, we recruited a new faculty member in Optical Communications, Bing Wang, who earned his Ph.D. at Princeton University in 2002. His research interests span optical communications, optical computing and optical switching. The recruitment of these three outstanding new professors was accomplished following an arduous search process involving a large number of highly qualified applicants. The successful filling of these positions
meets strategic departmental needs and greatly improves our capabilities in research and teaching in these and related fields.

**UNDERGRADUATE EDUCATION**

High-quality undergraduate programs are emphasized in the department. Currently, we offer undergraduate degrees in Electrical Engineering, Computer Engineering (jointly with the Computer Science & Engineering Department), and Engineering Physics (jointly with the College of Liberal Arts and Sciences). Four ECE faculty members are major players in the interdisciplinary Biomedical Engineering program. Recent improvements were made in the core undergraduate laboratories and in the senior design laboratory. Computer control in laboratory work and relevant software tools are increasingly applied throughout the curricula. In fall 2001, 135 students were enrolled in Electrical Engineering and 64 in Computer Engineering. During the year, 55 undergraduate courses were taught, 16 independent studies conducted, and 31 B.S. degrees awarded.

**FACULTY HONORS**

As recognized contributors in their fields, ECE professors win many awards; the major ones received during the year are summarized as follows: Yaakov Bar-Shalom was awarded the University of Connecticut Board of Trustees Distinguished Professorship 2002. Rajeev Bansal won the ECE Excellence in Teaching Award in fall 2001. Bahram Javidi received the University of Connecticut Alumni Association 2002 Faculty Excellence Award in Research, the Chancellor’s Research Excellence Award for 2002, and the School of Engineering Distinguished Professor 2002 Award. Peter Willett won the ECE Outstanding Research Achievement Award in fall 2001. Robert Magnusson was named Fellow of SPIE-The International Society for Optical Engineering. Additionally, the faculty continues to receive professional service appointments reflective of their contributions. John Enderle was appointed Editor-In-Chief of *IEEE EMB Magazine*. Peter Luh holds the Editor-In-Chief position for *IEEE Transactions on Robotics and Automation*. Krishna Pattipati is Editor-In-Chief for *IEEE Transactions on Systems, Man, and Cybernetics-Part B: Cybernetics*. Mehdi Anwar serves as an Editor of *IEEE Transactions on Electron Devices*, and Eric Donkor is Editor of the *Journal of Nanoscience and Nanotechnology*.

**STUDENT ACTIVITIES**

Aside from providing the reason for being, ECE students contribute significantly to the department. The IEEE student branch and the Eta Kappa Nu (HKN) student honor society were active during the year hosting two well-attended ECE parties. The IEEE president was Walter Doll with faculty advisor John Ayers; HKN president was Paul Scott and advisor Martin Fox. HKN initiated a departmental newsletter “Current Events,” addressing numerous subjects of importance to ECE students. They initiated the HKN Kleinman Scholarship, named for former ECE faculty member David Kleinman. The ECE Student Advisory Board met and delivered a list of recommendations for improvements to the Department Head. These suggestions have been communicated to the ECE faculty and to the Industrial Advisory Board. Finally, our multidisciplinary team senior design projects were sponsored by a record number of industrial partners including Electric Boat, Ford Motor Company, Gerber Technology, Pfizer, Rogers Corporation, and Solar Dynamics.
Mehdi Anwar


John E. Ayers

“Patterned Heteroepitaxial Processing Applied to ZnSe and ZnS_{0.02}Se_{0.98} on GaAs (001),” (with X.G. Zhang, A. Rodriguez, P. Li and F.C. Jain), Journal of Applied Physics, Vol. 91, pp. 3912-3917, 2002.

Rajeev Bansal

Yaakov Bar-Shalom


Steven Boggs


John D. Enderle

Monty Escabi


Faquir C. Jain

“Patterned Heteroepitaxial Processing Applied to ZnSe and ZnS_{0.02}Se_{0.98} on GaAs (001),” (with X.G. Zhang, A. Rodriguez, P. Li and J.E. Ayers), *Journal of Applied Physics*, Vol. 91, pp. 3912-3917, March 15, 2002.


Bahram Javidi


Peter B. Luh


Robert Magnusson


Mahmoud A. Melehy


Krishna R. Pattipati


Geoffrey Taylor


Peter K. Willett


**Quing Zhu**


John E. Ayers


Eric Donkor


John D. Enderle


Bahram Javidi


Peter B. Luh


Robert Magnusson


Eric P. Soulsby

*Numerical Methods;* Stop, Copy, Run, publisher, 2002.
Mehdi Anwar


John E. Ayers


Rajeev Bansal


Yaakov Bar-Shalom


Steven Boggs


Eric Donkor


John D. Enderle


Monty A. Escabi


Faquir C. Jain


Bahram Javidi


Peter B. Luh


Robert Magnusson


Mahmoud A. Melehy


Krishna R. Pattipati


**Eric P. Soulsby**


**Peter Willett**


**Quing Zhu**


Mehdi Anwar


John E. Ayers


“Novel Site-specific Processing of Nanopatterns (10-30nm) to Fabricate Ultrahigh Performance SiGe Quantum Well/wire/dot Devices,” (PI: F. Jain (34%) and co-PI: F. Papadimitrakopoulos (33%)), UCRF, June 1, 2000-May 31, 2002, $18,609 ($2,185).


“Advanced SiGe Field-Effect Transistor Design and Processing Technology to Fabricate 10 Gb/s+Line Interface Circuits for Fiber Optic Communication,” (PI: F. Jain (25%) and co-PIs: R. Bansal (25 %) and F. Papadimitrakopoulos (25%)), TranSwitch, July 1, 2000-August 31, 2003, $100,000 ($7,895).
Rajeev Bansal


“Graduate Research Program in Applied Electromagnetics,” United Technologies Research Center, November 1, 1988-December 31, 2002, $18,000 ($1,169).


“Advanced SiGe Field-Effect Transistor Design and Processing Technology to Fabricate 10 Gb/s+Line Interface Circuits for Fiber Optic Communication,” (PI: F. Jain (25%) and co-PIs: J. Ayers (25%) and F. Papadimitrakopoulos (25%)), TranSwitch, July 1, 2000-August 31, 2003, $100,000 ($7,895).

Yaakov Bar-Shalom


“Feature-Aided Tracking for Robust BMD,” (co-PIs: P.K. Willett (10%) and K.R. Pattipati (10%)), Office of Naval Research N00014-00-1-0740, June 1, 2000-November 30, 2002, $474,000 ($183,000).


Steven A. Boggs


“Optimization of Capacitor Materials and Structures,” USA TASCOM, July 29, 2001-July 30, 2002, $80,000 ($73,333).

“Promotion of EPR Cable Technology,” DuPont Dow, Exxon, Kerite, Okonite and Uniroyal, January 1, 1999-December 31, 2002, $150,000 ($50,000).


Eric Donkor


John D. Enderle


“UConn Biomedical Engineering Industrial Internship Program at Hartford Healthcare Corporation,” Hartford Healthcare Corp., August, 2001-August, 2002, $8,000 ($6,667).


“Industrial Internship Program in Biomedical Engineering at the University of Connecticut,” Whitaker Foundation, May 1, 1999-December 31, 2002, $110,733 ($30,200).


“Clinical Engineering Internship Program at Baystate Medical Center,” Baystate Medical Center, August 23, 1997-August 22, 2007, $398,000 ($39,800).

“Clinical Engineering Internship Program at Hartford Hospital,” Hartford Hospital, August 23, 1997-August 22, 2007, $290,000 ($29,000).

“Clinical Engineering Internship Program at the VA Hospital in West Haven, CT,” VA Hospital in West Haven, CT, August 24, 2001-August 23, 2011, $14,000 ($1,400).

**Monty Escabi**


**Martin D. Fox**


**Faquir C. Jain**


“Advanced SiGe Field Effect Transistors for 10 Gb/s Line Interface Circuits for Fiber Optic Communication,” (co-PIs: F. Papadimitrakopoulos (25%), J. Ayers (25%) and R. Bansal (25%)), TranSwitch Corporation, July 1, 2000-August 31, 2003, $100,000 ($7,895).

“DNA-Assisted Photonic Crystal Fabrication,” (PI: F. Papadimitrakopoulos (55%) and co-PIs: C. V. Kumar (15%) and B. Zhang (15%)), Air Force Office of Scientific Research (AFOSR), September 1, 2001-August 31, 2004, $375,000 ($15,625).

Bahram Javidi

“Massively Parallel Secure Fault Tolerant Systems for Optical Storage and Transmission of Data,” National Science Foundation, August 1, 1999-July 31, 2001, $30,000 ($1,250).

“3D Display and Analysis of Biomedical Images,” Toshiba Medical Corporation through University of Nebraska College of Medicine, April 1, 2000-September 1, 2001, $33,864 ($3,984).


“Automated Detection and Analysis of Road Signs,” Department of Transportation (ConnDoT), June 1, 2000-May 31, 2002, $9,829 ($4,505), Project# 00-2CTI.

“Robust, Intelligent and Practical Face Recognition Based on Optical Joint Transform Correlator and Neural Networks,” Physical Optics Corp./OSP, March 1, 2001-May 31, 2002, $55,000 ($44,000).


“Automated Detection and Analysis of Road Surface Degradations,” Department of Transportation (ConnDoT), June 1, 2002-May 31, 2003, $30,000 ($2,500).


Thiagalingam Kirubarajan

Peter B. Luh

“An Optimization-Based Due Date Assignment Method,” Toshiba Corporation, November 1, 2000-October 31, 2001, $15,000 ($5,000).


“University of Connecticut’s High Performance Connections to the Internet,” (PI: R. Vietzke and co-PIs: M.F. Young, I. Greenshields, K.R. Pattipati and D.G. Shin), National Science Foundation, April 1, 1999-December 31, 2001, $350,000 ($10,283).


“A Price-based Coordination Approach for Distributed Project Design,” Global Project Design, July 1, 2001-March 31, 2002, $30,000 ($30,000).


Krishna R. Pattipati


“Feature-Aided Tracking for Robust BMD,” (PI: Y. Bar-Shalom (80%) and co-PI: P.K. Willett (10%)), Office of Naval Research N00014-00-1-0740, June 1, 2000-November 30, 2002, $474,000 ($22,900).


Geoffrey W. Taylor


“Monolithic Uncoded Ultraviolet Detector Array Capability,” Space Photonics, November 15, 2001-June 12, 2002, $59,000 ($59,000).


Peter Willett


“Optimization Experience Applied to Digital Communications,” University of Connecticut Research Foundation, June 1, 2001-May 31, 2002, $10,227 ($9,375).


Quing Zhu


Yaakov Bar-Shalom
Board of Trustees Distinguished Professor, University of Connecticut, 2002.

Steven A. Boggs
“Room Temperature Dielectric HTSC Cable,” U.S. Patent # 6,262,375.

John D. Enderle

Bahram Javidi
Faculty Excellence in Research Award, University of Connecticut Alumni Association, 2002.

Chancellor’s Research Excellence Award, University of Connecticut, 2002.

Distinguished Professor Award, School of Engineering, University of Connecticut, 2002.

Robert Magnusson
Fellow, SPIE – the International Society for Optical Engineering.

Krishna R. Pattipati

“2002 NASA Space Act Award” for A Comprehensive Toolset for Model-based Health Monitoring and Diagnostics, $11,000 cash award.

Quing Zhu
Awarded Senior Membership in IEEE BME.
Electrical & Computer Engineering Department
Major Professional Activities
2001–2002

Mehdi Anwar

Editor, *IEEE Transactions on Electron Devices*.

Member, International Advisory Board, ICECE (International Conference on Electrical and Computer Engineering), Dhaka, Bangladesh, December 26-28, 2002.


NSF Panel Reviewer.

*Reviewer for:*

IEEE TED.

IEEE EDL.


*Journal of Optical Materials.*

Promotion, Tenure & Reappointment, University of Pittsburgh.

Ph.D. Review Committee, University of Calcutta.

*Presentations*


John E. Ayers

Member, National Science Foundation SBIR Phase II Review Panel, March 2002.

*Reviewer for:*

National Science Foundation.

U.S. Civilian Research and Development Foundation (US CRDF).
Rajeev Bansal


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


Co-Chairman, Technical Program Committee, the 2001 IEEE International Microwave Symposium.

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

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

Honorary Member, The Electromagnetics Academy (1990-present).

Reviewer for:

*IEEE Transactions on Microwave Theory and Technology.*

*ACES Journal.*

Yaakov Bar-Shalom

Program Committee Member, FUSION 2003.

Session Organizer and Chair, IEEE Aerospace Conference.

Member, Board of Directors, the International Society of Information Fusion (through 2004).


Member, USAF SBIRS Low Technical Review Team.

Member, Missile Defense Agency Hercules Team.

Member, DARPA Information Fusion Panel.

Fellow, IEEE.

Member, Connecticut Academy of Science and Engineering.
Reviewer for:

IEEE Transactions on AES.

IEEE Transactions on AC.

IEEE Conference on Decision and Control.

FUSION 2002 Conference.

Presentations


Steven Boggs

Associate Editor, IEEE Electrical Insulation Magazine.

CHPS Committee Member, National Research Council.

Program Committee Member, CEIDP.

Fellow, IEEE.

Invited Visiting Professor, Technical University of Denmark, September 17-October 12, 2001.

Eric Donkor

Editor, Journal of Nanoscience and Nanotechnology.


Vice Chair, IEEE LEOS Connecticut Chapter.

Conference Chair, SPIE Quantum Computing, April 2002.
Program Committee Member, SPIE Conference on Enabling Photonic Technology for Aerospace Applications III, Conference 4732, Orlando, FL, April 2002.

Reviewer for:

*Nanotechnology*, Institute of Physics.

*Journal of Optical Engineering.*

**John D. Enderle**

Editor-in-Chief, *IEEE EMB Magazine*.

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

Session Chair, 2002 Rocky Mountain Bioengineering Symposium.

Member, Board of Directors, Rocky Mountain Bioengineering Symposium.

Session Chair, ASEE 2001 Biomedical Engineering.

ABET/EAC Engineering Accreditation Commission Program for Evaluator for Bioengineering Programs

Member, CURE (Connecticut United for Research Excellence).

Peer Site Reviewer, Department of Education GAANN Program.

Member, Peer Review Committee, National Science Foundation.


**Presentations**


Reviewer for:

*IEEE Transactions on Biomedical Engineering,*

*BMES Annals.*

Department of Education.

Whitaker Foundation Editorial Board.

National Space Biomedical Research Institute.

**Monty A. Escabi**

Presentation
“Nonlinear Spectrotemporal Integration and Response Selectivity in the Cat Inferior Colliculus,” (invited), Human Frontiers International Meeting on Auditory Neuroscience, Johns Hopkins University, Baltimore, MD, March 2002.

**Martin D. Fox**

Member, Steering Committee, New England Doppler Conference.


**Faquir C. Jain**

Member, National Science Foundation Panels: Nanotechnology NIRT initiative, March 4-5, 2002 and LEDs and Lasers, SBIR review panel, March 25-26, 2002.

Member, IEEE Nanotechnology Advisory Board, representing SMC Society of IEEE.


Fellow, Connecticut Academy of Science and Engineering.

**Presentations**

“5-7eV Lattice Matched Cubic ZnMgSe Te-BeSSe Epitaxial Heterostructures,” (invited), Army Research Laboratory, Adelphi, MD, April 15, 2002.


“100+GHz SiGe and InGaAs Field-effect Transistors, Circuits and Processing Technology,” (invited), Raytheon, January 10, 2002.

**Bahram Javidi**

Topical Editor, *Optical Signal and Image Processing*, Marcel Dekker.


Program Committee and Chair, Electro-optics Sensors and Systems Committee, Institute of Electrical and Electronics Engineers (IEEE) Annual Meeting of Lasers and Electro-optics Society (LEOS), San Diego, November 2001.


Chair, Technical Committee, Electro-optics Sensors and Systems, Institute of Electrical and Electronics Engineers (IEEE) Lasers and Electro-Optics Society (LEOS).

Member, Program Committee, Optics in Computing 2002, (sponsored by Optical Society of America and International Commission for Optics (ICO)), Taiwan, March 17-22, 2002.


Institute of Electrical and Electronics Engineers (IEEE) Annual Meeting of Lasers and Electro-Optics Society (LEOS), November 2001.


Session Chair, conferences sponsored by IEEE, OSA and SPIE.

Reviewer for:

- Journal of Applied Optics.
- Journal of Optical Society of America A.
- Journal of Optics Communications.
- Journal of IEEE, UK.

Presentations

“Securing Information with Optics and Photonics: A Tutorial,” Conference on Optoelectronics and Optical Communication (COOC), sponsored by Optical Society of Korea, Gyeongju, Korea, May 2002.


Peter B. Luh


Associate Editor, International Journal of Intelligent Control and Systems, 1995-present.

Associate Editor, IIE Transactions on Design and Manufacturing, 1997-present.
Associate Editor, *Discrete Event Dynamic Systems*, 1999-present.

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

Visiting Professor, Tsinghua University, Department of Automation, 2001-2003.


Examiner, Department of Automation and Computer Aided Engineering, Chinese University of Hong Kong, 2001-2004.

Examiner, Department of Automation, Tsinghua University, Beijing, China.

Member, Program Committee, Best Automation Paper Committee and Best Video Committee 2002; IEEE International Conference on Robotics and Automation.

Chair, King-Sun Fu Memorial Best Transactions Paper Committee, IEEE Transactions on Robotics and Automation, 2002.

Member, Program Committee, 10th International Conference on Advanced Robotics, August 2001.


Member, International Program Committee, Best Paper Prize Selection Committee; and Plenary Speaker, Fourth World Congress on Intelligent Control and Automation, June 2002.

Member, International Program Committee, 2002 Fourth Asian Control Conference.

Member, Program Committee, The 6th Workshop on Discrete Event Systems, Zaragoza, Spain, October 2002.


Session Chair, 2002 IEEE International Conference on Robotics and Automation.

Session Chair, Fourth World Congress on Intelligent Control and Automation.


Member, Best Paper Prize Selection Committee, Fourth World Congress on Intelligent Control and Automation, June 2002.


Reviewer for:

The 10th International Conference on Advanced Robotics, August 2001.
The Fourth World Congress on Intelligent Control and Automation, June 2002.
2002 Fourth Asian Control Conference.
*IEEE Transactions on Automatic Control.*
Promotion, Tenure & Reappointment Review, INRIA, France.
Promotion, Tenure & Reappointment Review, Technion – Israel Institute of Technology.
Promotion, Tenure & Reappointment Review, University of New Orleans.
Fellow, University of Connecticut Academy of Global Economic Advancement.

*Listed in:*

*Who’s Who in Engineering.*
*Who’s Who in America Science and Engineering.*
*Who’s Who in Science and Engineering.*
*Who’s Who in the East.*
*Who’s Who in American Education.*
*Who’s Who in the World.*

*Presentations*

The Fourth World Congress on Intelligent Control and Automation, (plenary speaker), June 2002.

“A Price-Based Approach for Activity Coordination in a Supply Network,” Hong Kong University of Science and Technology, August 29, 2001.


“A Price-Based Approach for Activity Coordination in a Supply Network,” Beijing University of Chemical Technology, October 17, 2001.


**Robert Magnusson**

Topical Editor, *Applied Optics-Optical Technology & Biomedical Optics,* August 1, 2001-present.

General Chair, Diffractive Optics and Micro-Optics Topical Meeting, Tucson, AZ, June 3-6, 2002.


Proposal Reviewer, South Carolina Space Grant/South Carolina NASA EPSCoR Program, January 2002.

Proposal Reviewer, National Science Foundation, February 2002.

Reviewer for:

*Journal of the Optical Society of America A* (2 papers).

*Optics Letters.*


*Applied Optics.*

**Professional Short Courses:**


“Subwavelength Diffractive Optics: Principles and Applications,” ½ day, October 28, 2001; SPIE’s Photonics Boston, Boston, Massachusetts, October 28-November 2, 2001

**Krishna R. Pattipati**


Program Committee Member, 2002 IEEE SMC Conference, Tunisia.

Program Committee Member, 2002 SPIE Conference on Diagnostics and Prognostics, Orlando, FL.

2002 NASA Space Act Award for “A Comprehensive Toolset for Model-based Health Monitoring and Diagnostics.”


Reviewer for:
- *Systems Engineering.*
- *IEEE Transactions on Communications.*
- *Control Technology and Applications.*
- *Computational Organizational Theory.*
- *Signal Processing.*

**Eric P. Soulsby**

Secretary/Treasurer, American Society for Engineering Education, Educational Research & Methods Division.

Board of Directors, ASEE Educational Research & Methods (ERM) Division.

Session Chair, ASEE Annual Conference.

Session Chair, ASEE/IEEE Frontiers in Education Conference.

Advisory Group, PeopleSoft product.

Session Moderator, PeopleSoft Higher Education Users Group Conference.

Reviewer for:
- ASEE ERM/IEEE Frontiers in Education Conference
- ASEE Annual Conference

**Geoffrey W. Taylor**

Reviewer for:
Peter K. Willett


Associate Editor, *IEEE Transactions on Aerospace and Electronic Systems Magazine*.

Member, Program Committee, FUSION 2002 Conference.

2002 Aerospace Conference Track Co-Chairman in Remote Sensing.

Conference Organizer, SPIE Aerosense 2002 in Diagnostics, Prognostics and System Health.


Reviewer for:

*IEEE Transactions on AES.*

*IEEE Transactions on SMC.*

*IEEE Transactions on SP.*

*IEEE Transactions on IT.*

Optical Society of America.

ICASSP 2002.

SAM Conference.

SMC Conference.

American Control Conference.

Conference on Decision and Control.

FUSION 2002 Conference.

Presentations

“Signal Processing for Tracking with Monopulse Measurements,” presented May 2002 at the 5th ONR/GTRI Workshop on Target Tracking and Sensor Fusion, Newport, RI.

Short Course Lecturer: “Advanced Tracking Techniques” at the Naval Undersea Warfare Center, Newport, RI, April/May, 2002.

Quing Zhu

Committee Member and Session Chair, Optical Society of American Biomedical Topical Meetings.

Senior Member, IEEE Biomedical Engineering

Reviewer for:

Optical Letters.

IEEE Ultrasonic, Ferroelectrics and Frequency Control.

Medical Physics.

Biomedical Optics.

Proceedings of the National Academy of Sciences.

Presentations


Biochemistry and Biophysics Department, (invited colloquium speaker) University of Pennsylvania, August 24, 2001.
During the 2001-2002 academic year, the Department of Mechanical Engineering had an undergraduate enrollment of 174 students, and a graduate enrollment of 78 students. Thirty-nine bachelor’s degrees were conferred. In total, the department faculty served as advisors to 10 graduating master’s and 4 graduating Ph.D. students.

**FACULTY AND STAFF**

There were 14 full-time tenured or tenure-track faculty members in the department during the 2001-2002 academic year. The department employs two non tenure-track faculty members and is home to three clerical staff as well as two professional staff members. Mr. Tom Mealy (mechanical technician) and Mr. Jim Clougherty (computer technician) joined as the two new professional staff members. Ms. Jean Winters retired in May 2002 after many years of excellent service to the department.

The department was remarkably successful in bringing new faculty on board. Dr. Nigel Sammes joined the department as the United Technologies Chair Professor of Fuel Cell Technology in May 2002. Previously, he held the positions of Director of Fuel Cell Development at Acumentrics Corporation, and the Fletcher Challenge Chair Professor of Fuel Cell Development at the University of Waikato (New Zealand). Dr. Kenneth Reifsnider, currently the Alexander Giacco Chair Professor of Engineering Science and Mechanics at Virginia Tech, will join the department as the Pratt & Whitney Chair Professor of Design and Reliability in the autumn of 2002. Dr. David (Ed) Crow, most recently Senior Vice President of Engineering at Pratt & Whitney, will join the department in August 2002 as a Distinguished Professor-In-Residence. Dr. Crow is a member of the National Academy of Engineering.

In addition to the senior faculty members listed above, the department added three new Assistant Professors who are scheduled to arrive in autumn. They are Dr. Peng Zhang (computational and applied nanomechanics; Ph.D. University of Illinois, Urbana-Champaign), Dr. Michael Renfro (combustion and reacting flows, optical diagnostics; Ph.D. Purdue University) and Dr. Jiong Tang (dynamic systems, controls and mechatronics; Ph.D. Pennsylvania State University).

Searches continue for the United Technologies Endowed Chair in Heat Transfer and the United Technologies Endowed Professor in Manufacturing.

**UNDERGRADUATE TEACHING AND CURRICULUM**

Thirty-two undergraduate courses were taught during the academic year. The faculty also taught courses in the Management & Engineering for Manufacturing program. Twelve industrially-sponsored senior design projects were included in the Major Design Experience. The department's computational lab was completely renovated and expanded to handle anticipated increases in undergraduate and graduate enrollments. The ABET accreditation visit occurred in October and was successful.
GRADUATE PROGRAM

Our graduate students were offered 13 courses. There were 116 applications, 84 admissions and 20 acceptances. Five courses were offered in the on-site Master of Engineering Program at Pratt & Whitney.

SCHOLARLY ACTIVITY AND RESEARCH

Department faculty members were associated with 47 grants, of which 12 were externally-sponsored senior design projects. Annual expenditures (direct costs of external grants) were approximately $1.42 million. The faculty published 33 full-length journal articles as well as 31 conference papers. One patent was secured.

STUDENT RECRUITING AND STUDENT ORGANIZATION ACTIVITIES

Freshman enrollment in Mechanical Engineering for the fall of 2002 is approximately 40, down from 50 at the same time last year. This value does not include any estimate for undecided students, most of whom decide upon a major within the School during their freshman year. The department participated in the Engineering 2000 program for high school sophomores and juniors, as well as the da Vinci program for high school math and science teachers.

The student section of the American Society of Mechanical Engineers (ASME) had a membership of 126. This continues to be, by far, the largest student section of any university (public or private) in New England.
Thomas J. Barber


John C. Bennett, Jr.


Theodore L. Bergman


Baki Cetegen


Wilson K.S. Chiu

Jim S. Cowart


Amir Faghri


Eric H. Jordan


Kazem Kazerounian

Kevin D. Murphy


Nejat Olgac


Ranga Pitchumani


Nigel M. Sammes


Bi Zhang


Amir Faghri


Nejat Olgac


Ranga Pitchumani

Thomas J. Barber


Zbigniew Bzymek


Baki Cetegen


Wilson K.S. Chiu


Jim S. Cowart


Amir Faghri


**Eric H. Jordan**


**Kazem Kazerounian**


**Lee S. Langston**


Nejat Olgac


Ranga Pitchumani


Nigel M. Sammes


Bi Zhang

Thomas J. Barber

“Combustor Dilutions Jets,” (with B. Cetegen (50%)), Pratt & Whitney, 8/23/01-5/31/02, $5,000 ($5,000).

John C. Bennett, Jr.


“Connecticut TALENT Program Administration Project,” State of Connecticut Legislative TALENT Program, 9/1/00–8/31/03; $123,840 ($41,280).

“Mailpiece Compliance Tester,” Pitney-Bowes, 8/23/01-5/31/02, $5,000 ($5,000).

Theodore L. Bergman

“Novel Thermal Control and Improved Power and Energy Density of Portable PEM Fuel Cells,” U.S. Army, 6/1/02 - 5/22/03, $72,515 ($6,042).


Zbigniew M. Bzymek

“Mobile Solar Powered Generator,” (with M. Fox (50%)), Solar Dynamics, 8/23/01-5/31/02, $5,000 ($5,000).

Baki Cetegen

“Combustor Dilutions Jets,” (with T. Barber (50%)), Pratt & Whitney, 8/23/01-5/31/02, $5,000 ($5,000).


“Superior Thermal Barrier Coatings Using a Novel Solution Spray Process,” (with M. Gell (20%), N. Padture (20%), E. Jordan (20%) and Inframat Corp. (20%)), Office of Naval Research, 1/1/02 - 12/31/05, $900,000 ($60,000).
Wilson K.S. Chiu

“Transport Phenomena in the Chemical Vapor Deposition of Hermetic Optical Fiber Coatings: An Integrated Research and Education Program,” National Science Foundation, 1/01–12/05, $385,000 ($76,992).


Jim S. Cowart


Amir Faghri


Robert G. Jeffers

“Plugmold Wire Connector,” The Wiremold Company, 8/23/01-5/31/02, $5,000 ($5,000).

Eric H. Jordan

“Advanced Thermal Barrier Coatings for Combustors,” (with M. Gell (33%) and N. Padture (33%)), Solar Turbines Incorporated, 6/1/00-5/31/02, $150,000 ($45,833).

“Thermal Barrier Coatings and Metallic Coatings with Improved Durability,” (with M. Gell (33%), U. Pittsburgh and U. Central Florida (33%)), Department of Energy, 02/01-01/03, $320,000 ($53,332).

“Measurement of Three Critical Parameters as a Basis for a Simple Life Prediction Method,” (with M. Gell (50%)), Department of Energy, 5/1/02-4/31/05, $478,495 ($13,291).

“Superior Thermal Barrier Coatings Using a Novel Solution Spray Process,” (with M. Gell (20%), N. Padture (20%), B. Cetegen (20%) and Inframat Corp. (20%)), Office of Naval Research, 1/1/02-12/31/05, $900,000 ($60,000).

“Submarine Pipe Hangar Design,” Electric Boat Corporation, 8/23/01-5/31/02, $5,000 ($5,000).

Kazem Kazerounian

“Control Strategies for Robotic Grinding,” ABB-Robotics Division, 9/1/00-8/30/01, $25,000 ($4,166).

“NSF Graduate Ambassadors in K-12 Classrooms,” (with B. Vieth (33%)) and T. Reagan (33%), National Science Foundation, 6/1/02–5/30/05, $1,410,000 ($13,055).

Herbert A. Koenig

“Tape Rule Hub Design,” (with M. Wood (50%)), Stanley Tool Works, 8/23/01-5/31/02, $5,000 ($5,000).

Lee S. Langston

“Joint Strike Fighter Jet Engine Deicing,” (with K. Murphy (50%)), Pratt & Whitney, 8/29/01-5/31/02, $5,000 ($5,000).

“Endwall Loss Reduction Program,” Pratt & Whitney, 1/1/02-12/31/02, $150,000 ($75,000).

Kevin D. Murphy

“Development of a Test Facility and Modeling Capability for MEMS Research and Education,” (with M.R. Begley (0%)), National Science Foundation, 1/1/01-12/31/03, $212,963 ($106,476).

“Predictions of Fatigue Life and Delamination in Lightweight Aerospace Components,” NASA Langley, 7/1/01-6/30/03, $17,000 ($8,496).

“An Examination of the Vibration Characteristics of Solar Sails,” (with T.M. Morrison), NASA Langley, 9/1/01-8/30/02, $22,000 ($18,330).

“Joint Strike Fighter Jet Engine Deicing,” (with L. Langston (50%)), Pratt & Whitney, 8/29/01-5/31/02, $5,000 ($5,000).

Nejat Olgac

“A New Vibration Cancellation Mechanism Using Smart Materials,” Sikorsky Aircraft, 6/00-12/02, $156,000.


“Modeling and Dynamic Analysis of Micromanipulators Used in Transgenics and Biomedical Applications,” University of Connecticut Research Foundation, 1/01-12/02, $12,000 ($6,000).


Ranga Pitchumani


“Investigations on Transport Phenomena Governing Interface Development in Thermoplastic Composites Processing,” National Science Foundation, 9/1/00-8/31/03, $219,903 ($73,296).


“Exploratory Investigations on a Novel Process for the Fabrication of Multiscale Reinforced Polymer Composites,” National Science Foundation, 9/1/99-8/31/01, $70,000 ($5,832).


“Pilot Investigations on a Novel Technique for Synthesis of Biomimetic Multiscale Reinforced Fibrous Composites,” University of Connecticut Research Foundation, 6/1/00-5/31/03, $13,674 ($4,548).

“Effect of Manifold Shape on Airflow Through a Heat Exchanger,” Hamilton Sundstrand, 8/23/01-5/31/02, $5,000 ($5,000).

Marcelle E. Wood

“Tape Rule Hub Design,” (with H.A. Koenig (50%)), Stanley Tool Works, 8/23/01-5/31/02, $5,000 ($5,000).

Bi Zhang

“Development of the Dual Coil Variable Torque Frictionless Clutch,” Carlyle Johnson Company, 8/23/01-5/30/02, $5,000 ($5,000).


“Single-Pass Growth of Full Color OLED Displays Using a Scanning Localized Evaporation Methodology (SLEM)” (subcontract to NSF SBIR (Phase I) of Optoelectronics Systems Consulting, Inc.), 7/01 - 6/02, $21,553 ($21,553).

“Cutting Performance Evaluation of Nanostructured Cutter Materials,” (subcontract to NSF SBIR (Phase I) of NanoPac Technologies, Inc.), 7/01 - 6/02 ($1,834).
Mechanical Engineering Department
Awards, Honors, Patents
2001–2002

Theodore L. Bergman

Wilson K.S. Chiu

Lee S. Langston

Bi Zhang
Mechanical Engineering Department
Major Professional Activities
2001–2002

John C. Bennett, Jr.
Member, Connecticut Department of Higher Education Advisory Committee of Accreditation.
Member, Board of Directors of the Connecticut Academy for Education in Mathematics, Science, and Technology.

Theodore L. Bergman

Amir Faghri
Honorary Member, Editorial Advisory Board, *Communications in Heat and Mass Transfer*, 1997-present.

Robert G. Jeffers
Member, Board of Governors, American Society of Mechanical Engineers, International.
Kazem Kazerounian


Lee S. Langston


Member, Advisory Committee, International Gas Turbine Institute, American Society of Mechanical Engineers.

Member, International Gas Turbine Institute, Turbomachinery Committee.

Nejat Olgac


Member, Executive Committee, ASME Dynamic Systems and Control Division, 2002-2007.

Chairman, Noise and Vibration Control Panel, ASME/DSC Division, 2001-03.

Symposium Chair and Organizer, Symposium on Active Control of Noise and Vibration, ASME IMECE, New York, 2001.

Ranga Pitchumani


Guest Editor, *Polymer Composites*, 2002.

Department of Metallurgy & Materials Engineering
Annual Report Summary
2001–2002

The Department has continued its efforts to increase enrollment and maintain a high level of research funding. In addition, a special effort was made to evaluate and improve our new undergraduate program by holding a day long, Strategic Planning meeting on the curriculum’s “content, continuity and quality.” Our external advisory board made suggestions concerning this topic at their annual meeting as well.

Changes in Personnel

Dr. Mei Wei joined the Department in January as an Assistant Professor. Dr Wei received her Ph.D. from the School of Materials Science at the University of New South Wales in Australia in 1998. Then she held postdoctoral positions at Kyoto University in Japan and at Queensland University of Technology in Australia. Her research interests are the synthesis of biomaterials and their reactions with cells. Also, Dr. T. T. Cheng joined the Department as a Research Associate Professor. She received her Ph.D. from Case Western Reserve and is an accomplished electron microscopist. She is working with other faculty to develop research programs on aerospace alloys and thin film devices. Associate Professor Leon Shaw spent the academic year on sabbatical at the Air Force Research Laboratory located on the Wright-Patterson AFB. Professor James Galligan retired, effective June 1st. Jim has been with the Department since 1972 and has an international reputation for his work on dislocation motion in metals and semiconductors. A search has begun to fill his position. In addition, a second search is in progress to hire a person in the fuel cell area. In addition to joining our Department, that person will be associated with the new Connecticut Global Fuel Cell Center at UConn. The Director of Operations for the center, Dr. Nigel Sammes, was given a joint appointment in our department to recognize and encourage his participation in our research programs.

Undergraduate Program

The department began its B.S. program in Metallurgy & Materials Engineering in fall 1999. Increasing our undergraduate enrollment and improving our undergraduate program received special attention this year. Next fall our expected enrollment will be 4 incoming freshman, 11 sophomores and 5 juniors. In order to increase the number of incoming freshman, which has been 3 or 4 students each year, we developed a marketing plan to focus on New England students and on undecided freshman. As part of this effort, Professor Nitin Padture led our program designed to interest primary and secondary school students in materials engineering via University Open Houses, the Connecticut Invention Convention, the Connecticut Science Fair, and the CPTV Family Science Expo. In another initiative, Jim Koch gave his popular presentation on Materials to high school teachers as part of the School of Engineering’s da Vinci program.

Both our annual Strategic Planning and our Materials Advisory Board meetings this year focused on how to evaluate and improve our undergraduate curriculum. Recommendations for the curriculum were that we needed a one-year survey course in the sophomore year, a better balance between time spent on processing, structure and properties, as well as fewer required courses in order to give students more flexibility in developing a materials concentration. Our double major program on Materials Engineering had 33 students registered this year, with 18 of these graduating.
GRADUATE PROGRAM

Recruiting full time graduate students was another high priority this year. Professors Mark Aindow and Nitin Padture collaborated to attract top students from distinguished overseas universities. As a result of their efforts, 10 new full-time students joined our Department, which meets the goal established in our Strategic Plan. Total graduate students in the MMAT program this year was 54. Of these, 34 were full time and 20 were part time students. During the year, 4 students graduated with M.S. and 3 with Ph.D. degrees. With regard to recruiting statistics, the percentage of applicants admitted was 35% and the percentage of offers accepted was 60%.

RESEARCH

During the past year, Direct Cost spending of external funds was $2.1 million. There were 25 new proposals submitted this year requesting $36 million while grants and contracts awarded were $1.6 million. Currently more than two-thirds of the faculty have at least one major grant from an external agency and there are 18 grants overall. Also, the faculty continue to be active scholars, having published 3 book chapters, 56 refereed journal articles, 38 conference proceedings, and 12 technical reports, while contributing 70 reviews of publications and proposals. In addition, they made 33 contributed presentations at conferences, gave 18 invited talks, and one keynote lecture. With regard to our materials characterization facilities, equipment became operational in a new suite of rooms dedicated to scanning and transmission electron microscopy thanks to the efforts of Associate Professor Mark Aindow. We now have state-of-the-art equipment for detailed structural studies down to nanoscale dimensions.

HONORS, AWARDS AND PATENTS

Assistant Professor Pamir Alpay won an NSF Early Career Development (CAREER) Award for his proposal on ferroelectric thin films and Associate Professor Mark Aindow was elected to fellowship of the Institute of Materials in London, UK. Research Professor Martin J. Blackburn won the 2002 ASM International William Hunt Eisenman Award, a major international award that “recognizes unusual achievements in industry in the practical application of materials science and engineering through production and engineering use.” The Department honored Thomas Strangman, Ph.D. ’78 with its 2002 Outstanding Alumnus Award to recognize his “contributions to the development of thermal barrier coatings and aerospace alloys.” Patent No: 6,355,117 was awarded on March 12, 2002 to Professor-in-Residence Maury Gell and 6 co-inventors for a “Nickel base superalloy single crystal with improved performance in air and hydrogen.”

ASM/TMS JOINT STUDENT CHAPTER

The Student Chapter received the ASM International/TMS 2001 Chapter of Excellence Award for technical programming at the February TMS Annual Meeting in Seattle. To continue in this tradition, Chair Michael Pasquariello led the Chapter in an active program that featured 23 events. In addition to helping with nearly all the undergraduate recruiting meetings and providing laboratory tours for visitors, they held pizza lunch meetings, and visited the Forensics Laboratory of the Hartford Travelers Insurance Company.

MATERIALS ACADEMIC ADVISORY BOARD

The Advisory Board, led by Dr. Robert Klug from Allegheny Ludlum, held a full day meeting in spring of 2002. They provided suggestions on how to improve our undergraduate curriculum and find summer jobs for our undergraduate students. In addition, they interviewed our undergraduate and graduate students to obtain their recommendations for changes that would improve our programs.
Mark Aindow


Pamir Alpay


Maurice Gell


Harris Marcus


Arthur McEvily


John E. Morral


Nitin P. Padture


Leon S. Shaw


**Mei Wei**


Mark Aindow


Pamir Alpay


Martin Blackburn


Harris Marcus


Arthur McEvily


Nitin P. Padture

Mark Aindow


Pamir Alpay


Martin Blackburn


Maurice Gell


Harris Marcus


Arthur J. McEvily


Nitin P. Padture


Leon L. Shaw


**Mei Wei**


Department of Metallurgy & Materials Engineering
Active Research Grants and Contracts
2001–2002

Mark Aindow

“Interfacial Structure and Processes in Lamellar TiAl-Based Alloys,” National Science Foundation, 7/1/00 – 6/30/04, $431,815.

“Acquisition of an Automated Digital Transmission Electron Microscope,” (co-PIs: R. Joesten, N.P. Padture, D.M. Pease, S. Suib), National Science Foundation, 8/1/00 – 6/30/03, $620,000.

“NER: Nanochannel FETs and Quantum Dot Based Nonvolatile Memory Cells using Site-Specific and Layer-by-Layer Self-Assembly Techniques,” (co-PIs: F.C. Jain, J. Ayers and F. Papadimitrakopoulos), National Science Foundation, 6/1/02 – 5/31/03, $100,000.


Pamir Alpay

“Ferroelectric Multilayers, Superlattices, and Compositionally Graded Films,” National Science Foundation CAREER Award, 12/15/01-11/30/06, $517,164 ($103,430).

“Reversible Current Limiter,” (co-PI: H. Marcus), General Electric, 02/25/02-03/01/03, $65,000 ($65,000).

“Modeling of Dielectric and Piezoelectric Behavior of Constrained Multilayer Ferroelectrics” University of Connecticut Research Foundation, 01/01/02-12/31/02, $22,476 ($22,476).

“Acquisition of a Ferroelectric/Dielectric Testing Station with a Hot/Cold Stage,” University of Connecticut Research Foundation, 01/01/02-12/31/02, $35,488 ($35,488).

Martin Blackburn

“Accelerated Insertion of Materials: Rotor Components,” (co-PI: M. Aindow), DARPA, (sub-contract from Pratt & Whitney), 3/1/01 - 5/30/02, $155,000.


Harold Brody

“Solution Treatment of Aluminum Alloys: Microstructure and Properties,” (co-PI: J.E. Morral), CHTE, 1/1/00-12/31/02, $225,107 ($112,000).

Maurice Gell

“Advanced Thermal Barrier Coatings For Combustors,” (co-PIs: E. Jordan and N. Padture), Solar Turbines, 2000-2002, $150,000($75,000).


Harris Marcus

“Reversible Current Limiter,” (co-PI: P. Alpay), General Electric, 02/25/02-03/01/03, $65,000.

“Laser Assisted SFF Manufacture of Micro/Macro ‘Photonic’ Crystals,” (PI: F. Papadimitrakopoulos), Office of Naval Research, 03/01/00-03/01/03, $75,000.

“Solid Freeform Fabrication from Gas precursors Using Laser Processing,” Office of Naval Research, 07/01/95-9/30/01, $654,425 ($30,000).

John E. Morral

“Solution Heat Treatment of Aluminum Alloys,” (PI: H. Brody), CHTE, 01/01/00-12/31/02, $225,107 (112,555).

“Computational Modeling of Interdiffusion Microstructures,” (co-PI: Y. Wang (OSU)), National Science Foundation, 05/15/02-4/30/03, $90,001 ($30,000).

Nitin Padture

“Fundamental Studies of Novel Contact-Damage Resistant Ceramics,” (co-PI: S. Suresh (MIT)), Air Force Office of Scientific Research, 12/15/99 – 12/14/02, $600,000.

“Advanced Thermal Barrier Coatings for Industrial Gas Turbine Engines,” (co-PI: M. Gell), Department of Energy, Advanced Gas Turbine Systems Research, 02/01/00 – 01/31/03, $335,000.

“Superior Thermal Barrier Coatings Using A Novel Solution Spray Process,” (co-PIs: M. Gell and E. Jordan), Office of Naval Research, 10/01/01 – 09/30/04, $900,000.


Leon Shaw


“Rapid Prototyping of Dental Restoration through Multi-Materials Laser Densification,” National Science Foundation, 09/01/99 - 08/31/02, $360,000.

“Supplemental Support for Rapid Prototyping of Dental Restoration through Multi-Materials Laser Densification,” National Science Foundation, 09/01/00 – 08/31/01, $5,700.

“Research Experience for Undergraduates in Rapid Prototyping,” National Science Foundation, 09/01/00 – 08/31/02, $10,000.

“In-Situ Mechanical Testing Devices and Digital Image Correlation Software Package,” (PI: L. Shaw, et al.), UConn Research Foundation, 01/01/02 – 12/31/02, $30,945.
Department of Metallurgy & Materials Engineering
Awards, Honors, Patents
2001–2002

Mark Aindow

Pamir Alpay
CAREER Award, National Science Foundation, 2001.

Martin Blackburn
William Hunt Eisenman Award, 2002 ASM International.

Maurice Gell

Mei Wei
Department of Metallurgy & Materials Engineering
Major Professional Activities
2001–2002

Mark Aindow

Fellow, Institute of Physics, London.


Corresponding member, Electron Microscopy and Analysis Group Committee, Institute of Physics.

Corresponding member, Publications Committee, Institute of Materials.

Member, The Materials Research Society.


Member, ASM International.

Member, The Microscopy Society of America.

Member, European Microscopy Society.

Member, Connecticut Microscopy Society.

Member, The Royal Microscopical Society (UK).

Presentations


Pamir Alpay

Member, The Materials Research Society (MRS).


Member, The American Ceramic Society (ACerS).
Presentations


Harold Brody


Member, AFS.

Member, Sigma XI.

Member, Science and Engineering Education Council.

Presentations


Maurice Gell

Organizer, Department of Energy Workshop on Gas Turbine Materials, Greenville, SC, October 8-10, 2001.

Member, ASM International.


Member, Materials Research Society.

Presentations

Office of Naval Research Materials Workshop, Woods Hole, MA.

National Materials Advisory Board Workshop on Nanostructured Materials, Washington, DC.

International Conference on Nanostructured Coatings, Davos, Switzerland.
Office of Naval Research Workshop on Thermal Barrier Coatings, Absecon, NJ.
Department of Energy Materials Workshop, Greenville, SC.
Nanostructured Coatings, Rutgers University, New Brunswick, NJ.
International Conference on Materials Optimization for Fossil Fuel Engines, Department of Energy/EPRI, Orlando, FL.

**Theo Z. Kattamis**
Member, ASM International.

**Harris Marcus**
Fellow, ASM International.
Co-Editor, Proceedings of the 2001 International Symposium on SFF.
Co-organizer, International SFF Symposium, Austin, TX, August 2001.
Member, TMS Mechanical Behavior Committee.
Member, ASTM, E-8 Fracture Committee.
Member, The Materials Research Society (MRS).

**John E. Morral**
Deputy Editor, *Journal of Phase Equilibria*.
Workshop Organizer, Databases for Computational Thermodynamics and Diffusion, National Institutes of Standards & Technology, Gaithersburg, MD, March 21-22, 2002.
Member, Hartford Chapter ASM/University Relations, 2000-2002.
Member, ASM/MSCAT Atomic Transport.
Member, ASM-HTS R&D Committee.
Member, ASM International.
Member, American Ceramic Society.
Member, the American Vacuum Society.
Member, ASM-Heat Treating Society.
Member, ASM-International Metallographic Society.

Presentations

“A Local Equilibrium Model For Internal Oxidation,” McMaster’s University, Hamilton, Canada, May 14, 2002.


Nitin P. Padture

Principal Editor, Journal of Materials Research.

Associate Editor, the Journal of the American Ceramic Society.


Member, American Ceramic Society.

Member, Executive Committee of the Basic Science Division of the American Ceramic Society.

Member, Materials Research Society.

Member, American Association for Advancement of Science.

Presentations


“Contact-Damage-Resistant Si-Based Ceramics,” 104th Annual Meeting of the American Ceramic Society, St. Louis, MO, May 2002.

Leon S. Shaw

Member, Engineering Ceramics Division of Acers.


Member, ASM International.

Member, Chinese Materials Research Society (CMRS).


Session Chair, 12th Annual SFF Symposium, The University of Texas, August 2001.

Foreign technical collaborator, the National Scientific Center of Ukraine, on the project of “Obtaining New Composite Materials Using Hot Vacuum Rolling and Cryogenic Quasi-Hydroextrusion” (2001, 2002).


Mei Wei


Session Chair, First International Conference on Biomaterials, Beijing, China, 2001.

Member, American Ceramic Society.

Member, American Biomaterial Society.
Advanced Technology Institute (ATI)
Annual Report Summary
2001–2002

The Advanced Technology Institute (ATI) is housed in the School of Engineering at the University of Connecticut. ATI originated out of a major restructuring and a shift in focus from the former Precision Manufacturing Institute (PMI) in the School of Engineering, and its metamorphosis has completed with the merger between ATI and the Booth Research Center to jointly form the T. L. Booth Engineering Center for Advanced Technology, effective June 2002. The primary mission of ATI is to help revitalize the Connecticut technology-based economy through its core research activities, applying its resources to support existing industries, attract new industries to the area, and to encourage entrepreneurial ventures.

ATI promotes and facilitates applied interdisciplinary research and development in diverse engineering fields. The core research strengths within ATI are:

- Thermo-mechanical processing of materials
- Precision design and machining
- Engineering simulation
- Opto-electronics
- Energy systems

In addition, ATI is a key outreach arm of the School of Engineering to industry, and facilitates University/industry collaboration. Our vision for the future is to build on our unique focus and strength in proactive industrial involvement in our research programs to position ATI as a key contributor to technological advancement in Connecticut.

As part of its central mission, ATI supports various educational and professional training programs targeting practicing engineers in Connecticut industries.

As an integral part of its philosophy to aid existing industries, and to attract new industries to the State of Connecticut, ATI will encourage, insofar as it is able, the development of new technologies and products that can generate new business for existing companies and lead to the development of spin-off ventures.

PERSONNEL

By appointment of the Dean of Engineering, Dr. Kazem Kazerounian served Director of ATI until December 2001. From December 2001 until June 2002, Dr. Ian Greenshields, Associate Dean for Academic Affairs, served as Interim Director.

Ms. Laurie Macfarlane served as Business Manager and Program Manager for the Master of Engineering degree program. Laurie brings significant administrative and managerial skills gained over a period of six years in various public and private institutions. Laurie received her M.S. degree in Management from Rensselaer Polytechnic Institute, Hartford in August 2001.
Ms. B.J. McLaughlin joined ATI in August 2001 as an Administrative Services Specialist. B.J. brings to her job a wide range of accounting skills developed in academia prior to joining the University of Connecticut.

**PHYSICAL INFRASTRUCTURE**

ATI administers laboratory space primarily on the Depot Campus. Its Longley Facility contains the bulk of ATI laboratories, including the Grinding Center, the nanoparticle facility, the scanning electron microscopy facility, as well as other facilities and administrative and research office suites. Its Merritt Facility includes the Clean Room in addition to research office space. ATI also administers research activities in the main Storrs campus.

**OUTREACH**

As part of the educational outreach of the Institute, ATI has initiated and is managing the on-site Master of Engineering degree program at United Technologies Corporation. The program started in fall 1999 with students concentrating in Mechanical Engineering and Metallurgy and Materials Engineering. In the fall 2001 and spring 2002, 87 students registered for a total of eight courses in those concentrations. In spring 2002, the on-site Master of Engineering degree program, with concentration in Chemical Engineering, continued its activities at UTC Fuel Cells with a total of 14 students enrolled in *Transfer Operations*.

**RESEARCH ACTIVITIES**

ATI currently supports research efforts in the following areas:

- Image sensing with optical outputs;
- Optical security systems;
- Opto-electronics;
- Development of advanced coating techniques;
- Grinding and precision design and machining;
- Materials testing;
- Manufacturing scheduling; and
- Power management.

The total research expenditure at ATI during the year exceeded $750,000.

ATI continues a three-year research and development contract worth $1.5 million to provide R&D work to General Electric-Industrial Systems. Currently, there are eight faculty researchers from the School of Engineering at UConn who are involved in this exciting initiative.

**MERGER**

At the recommendation of Dean Amir Faghri, who recognized their complementary activities and the strength that could be gained by stronger ties between the centers, ATI and BRC commenced merger discussions in October 2001. As a result of these discussions, a new Center of Excellence in Engineering was born, effective June 2002. This resultant new center (the T.L. Booth Engineering Center for Advanced Technology) represents the logical extension of the changes that have transpired at ATI and BRC, and it is expected that the new Center will be even more successful than its predecessors.
Connecticut Transportation Institute
Annual Report Summary
2001–2002

The Connecticut Transportation Institute is the focal point for the University of Connecticut activities in the transportation sector. The Institute, administered through the Office of the Dean of Engineering, is responsible for the following major program areas:

- The Connecticut Cooperative Highway Research Program
- The New England Transportation Consortium
- The Connecticut Advanced Pavement Laboratory
- The Transportation Technology Transfer Center, and
- The Transportation Research Program

During Fiscal Year 2002, the Institute administered the following grant-funded programs totaling $1,630,375.

**THE CONNECTICUT COOPERATIVE HIGHWAY RESEARCH PROGRAM ($267,434):**

The Connecticut Transportation Institute coordinates and administers the Connecticut Cooperative Highway Research Program (CCHRP). This continuing research program, a cooperative effort of the Connecticut Department of Transportation and the University of Connecticut, focuses on the development of solutions to high priority issues related to the safe and efficient operation of Connecticut’s road and public transit.


Graduate Assistantships for eight students were funded through CCHRP in Fiscal Year 2002.

**THE NEW ENGLAND TRANSPORTATION CONSORTIUM ($123,967):**

The New England Transportation Consortium (NETC), a joint undertaking of the six New England states, pools the financial, professional and academic resources of the region’s Departments of Transportation and state universities to research and develop improved methods of dealing with common problems in the planning, design, construction, maintenance and operation of the region's transportation system.

Assessment System, Development of a Prototype for Quick Determination of Moisture Content of Deicing Salt at Point of Delivery, Development of a Durable Sealing System for Small Movement Bridge Expansion Joints.

**THE CONNECTICUT ADVANCED PAVEMENT LABORATORY ($453,038):**

The Connecticut Advanced Pavement Lab (CAP Lab) at the University of Connecticut serves the needs of Connecticut and all New England States by acting as a resource for both state agencies and the hot mix asphalt industry. The CAP Lab provides advice on mix acceptance issues, field construction, and Superpave test procedures. The CAP Lab performs research on pavement-related topics and serves as a regional training center for transportation construction engineers and inspectors. Activities during the past year were focused around both research and training.

The CAP Lab continued working with Penn State University in support of a Northeastern States Project on pavement issues. In addition, work continued on two research projects: one for Connecticut Department of Transportation using thermal imaging to locate cool areas behind the HMA paver; and the other is a national study examining protocols of the new Dynamic Modulus Test to be included in the *2002 AASHTO Design Guide*.

Two graduate assistantships were funded through the Institute to support the above research projects.

In Fiscal Year 2002, the CAP Lab conducted nine training courses for inspectors, technicians, engineers and industry personnel. These training sessions included various preparatory courses for individuals seeking certification from the New England Transportation Technician Certification Program (NETTCP), NETTCP Binder Technician Certification, NETTCP Soils and Aggregate Inspector, NETTCP Laboratory Technician, and Superpave for Municipal Personnel. Personnel co-chaired a committee overseeing the rewriting of the *NETTCP HMA Paving Inspector Manual*.

**THE TRANSPORTATION TECHNOLOGY TRANSFER CENTER ($307,550):**

The Institute’s Technology Transfer Center provided education, training, technical assistance and information to Connecticut’s local governments on the planning, design, construction, maintenance, operation and management of roads, bridges and public transit.

The Institute’s Technology Transfer Center program accomplished the following during Fiscal Year 2002:

- Provided instruction and training to 2,300 state and local government employees
- Continued the Professional Development Seminar Series
- Partnered with the Connecticut Department of Transportation and the Federal Highway Administration to sponsor the Northeast Region Context Sensitive Solutions Conference
- Partnered with the Connecticut Highway Street Supervisors Association to sponsor the First Annual Technology Transfer Expo
- Partnered with the Connecticut Department of Transportation to offer the 2002 Research Showcase
- Provided 1,612 transportation-related publications, software, and videotapes in response to requests for information
- Provided two half-time Transportation Technology Transfer internships to University of Connecticut Civil and Environmental Engineering graduate students
THE TRANSPORTATION RESEARCH PROGRAM ($478,386):

This program includes research funded outside of the CCHRP. In Fiscal Year 2002, the Bureau of Transportation Statistics provided $58,192 in second year funding for “Using Multiple Response Hierarchical Bayesian Modeling to Select Exposure Measures for More Accurate Highway Crash Prediction” project. The Region I University Transportation Center (UTC) Program provided $63,390 funding for “A Real-time Risk-based Highway Accident Prevention System.” The Connecticut Transportation Institute administers and coordinates the University of Connecticut’s participation in the UTC program. The National Science Foundation provided $97,000 in total funding for two research projects: “Complex Systems: Cities in Their Environment (Bio-complexity Incubation Activity),” and “Developing a Model to Map Global Positioning System (GPS) Data onto Transportation Networks.” The Connecticut Department of Transportation provided $80,125 in funding for the “Lateral Variation in Pavement Smoothness” project. The New England Transportation Consortium sponsored the following research projects: “A Portable Method for Determining Chloride Concentration on Roadway Pavements” ($14,445), and “Effective Visualization Techniques for the Public Presentation of Transportation Projects” ($60,000). The U.S. Bureau of Transportation Statistics provided $55,000 for the “Development of Freight Commodity Generation Models” project. Other research funding by the Connecticut Transportation Institute included $20,234 for the “Route Choice Behavior in Transportation Networks” project.

Four graduate assistantships were funded through the Institute to support the above research projects. Three UTC graduate fellowships totaling $30,000 were awarded to two students concentrating in transportation and urban engineering, and one in psychology/human factors.
Taylor L. Booth Center for
Computer Applications and Research
Annual Report Summary
2001–2002

The Booth Research Center provides a physical and intellectual environment for interdisciplinary computer-oriented research and applications to meet the information technology challenges of the future. BRC has actively supported information technology research through cost-sharing, technical lab support, and investments in new research areas (startup packages, laboratory enhancements, etc.). The highlights of BRC activities for the 2001-2002 academic year include: we aggressively pursued and supported group and center-wide proposals; funded research continued to be strong; we established a new GRID/Cluster-Based Computing laboratory for advanced scientific computing; and we have been working on the merger of BRC with the Advanced Technology Institute into a new center called the T. L. Booth Engineering Center for Advanced Technology (BECAT).

During this academic year, Dr. Peter Luh, Director of BRC and professor of Electrical & Computer Engineering (ECE), was on sabbatical leave. Associate Director Ian Greenshields served as Interim Director for Academic Affairs until December and was then appointed Associate Dean for the School of Engineering. At that time, Professor Eugene Santos, Jr, (CSE) was appointed Interim Director, and he will assume the Associate Director position upon Peter Luh’s return.

RESEARCH AND APPLICATIONS

BRC is the primary research center on campus for activities involving information technologies. BRC uses its expertise and resources to support interdisciplinary research activities involving not only engineering departments, but also projects relating to psychology, physics, geophysics and mathematics.

BRC Research Laboratories. BRC is organized into 18 research laboratories in the following major thrust areas: Software Engineering and Artificial Intelligence; Distributed Computation and Information Systems; Intelligent Systems for Manufacturing Process Control; System Optimization in Centralized or Distributed Environments; Signal, Data, Image Processing and Systems; Optical Computing and Analog/Mixed Signal Computing; Biomedical Computing; Civil Engineering Computing; and Psychology Computing. In 2001-2002, the Center had approximately 120 participants, and enjoyed strong funded research activities with 63 externally funded grants and contracts totaling about $5.68 million. BRC faculty member, Professor Yaakov Bar-Shalom (ECE), was honored with a Distinguished Professor Award.

Grid Computing Research. This year we began to establish a brand new research project and facility in support of Grid computing for large-scale scientific computation. The main aspiration of the BRC Grid project is to provide (general purpose) distributed supercomputing power based on the available compute resources. Using GRID middleware (OS) on top of the commodity components in BRC, we can provide a super computing facility at no cost. This attempt to have super computing power available became feasible due to the current advances in GRID middleware. Using GRID middleware, a highly functional collection of interconnected computers can be viewed as a single virtual system. In this context, we can aggregate substantial compute power to tackle large-scale problems that cannot be solved on a single workstation, or to solve problems faster in a more cost effective manner. In other words, we are interested in providing a substantial compute power to the research community within the
School of Engineering (SoE) based on the existing resources. Currently, the BRC Cluster/GRID is up and running and consists of PCs running Linux interconnected through 100MB fast-ethernet switches and other networking plus infra-structure devices. Our next stage will be setting user accounts and testing the GRID in a compute intensive production environment.

FACILITIES AND SERVICES

BRC GRID Project. As we mentioned above, we have implemented a Grid computing system to help BRC, SoE and UConn researchers to explore advanced large-scale scientific computational problems on cluster-based systems that can offer super-computing-level power.

BRC Computing Laboratory. The new BRC Computer Lab was opened in BRC Room 60 with four new powerful Dell OptiPlex GX400 computers, two new Sun Blade™ 100 workstations and seven Sun Ultra™ 10 workstations, which provided a nice environment for the researchers. This laboratory is intended to offer an environment for new exploratory research that PIs wish to pursue. We are encouraging researchers to pursue new ideas by providing the facilities for conducting preliminary experiments.

Service and Support. The BRC technical staff continues to work closely with the Engineering Computing Services and the departmental technical staff on support for BRC members inside and outside the School of Engineering. The main activities included:

1. Regular desktop workstation support including computer installation, upgrades and problem solving in BRC affiliated offices and labs.
2. BRC Computer Lab support, including installation of hardware and software, handling software licensing, and printer maintenance.
3. Installation or maintenance assistance of some major research software applications and license servers on Unix systems, including Cadence, Silvaco, Matlab, Fluent and ArcInfo, etc.
4. Installation and maintenance of Solaris and Linux systems in BRC member labs outside the Engineering School (e.g., Psychology Department) and providing advice and assistance on non-standard Unix systems (Digital Unix, HPUX),
6. Investigations of computer security problems, including securing Windows/Unix/Linux systems and removing computer viruses.
7. Helping some BRC faculty members in selecting and purchasing new computer equipment.
8. BRC website maintenance.

BECAT

This year we spent significant time in preparing for the merger of BRC and ATI into BECAT. Our goal was to ensure that the merger carefully preserved the missions and capabilities of both original centers while enriching and strengthening the possibilities and potentials that such a unification could bring about. We established a steering committee consisting of PIs from both centers in order to establish a new mission statement and objectives for BECAT. It was a primary concern of the committee that we ensure the new center not disadvantage faculty who were previously associated with any of the prior centers. Indeed, we saw the new center as providing the School with an excellent opportunity to expand upon the already superb research base present in the old centers, and to move forward towards a center of excellence in all areas of engineering, encompassing not only pure research but also applied research in a variety of engineering disciplines.

The new Center began operations effective the first week of June. To that end, ATI administrative staff member Ms. B. J. McLaughlin moved from Engineering II to space in BECAT. Ms. Sandi Lizee and
Ms. Elizabeth Moore remain in their original offices in BECAT. Neither ATI nor BRC faculty should see any change in the mode of operations they are accustomed to in the new center.

**STAFFING UPDATE**

The Director of the Center reports to the Dean of Engineering. As a result of the merger, the organizational structure of BRC now consists of an Associate Director, Administrative Coordinator, Administrative Services Specialist, Secretary, graduate student technical support and undergraduate student support. Research specialists during this year include Edward Zeigler working with Michael Accorsi of CEE; Jae-Guan Nam, Earl DuBeck, Ravi Nori, Vicky Hsin-Wei Wang and Jeffrey Maddox working with Dong-Guk Shin of CSE; Nan Guang Chen working with Qing Zhu of ECE; Ju-Seog Jang and Thomas Naughton working with Bahram Javidi of ECE; and Alexander Gusev working with Harvey Swadlow of PSY. Also, Joon Hee Han, a visiting research scholar, is working with Dong-Guk Shin of CSE.
Biomedical Engineering
Annual Report Summary
2001–2002

Biomedical engineering activities at UConn have a rich 35-year history of success and accomplishment. The BME Program is located at the main campus in Storrs and the University of Connecticut Health Center (UCHC) in Farmington. The School of Engineering offers B.S., M.S. and Ph.D. degree programs in biomedical engineering (BME), and participates in the sequential BME B.S.-to-MD/DMD degree program.

The BME program officially initiated the BME B.S. degree program in 2001 and graduated two B.S. students at the end of our first year. In addition, the BME Program is part of the sequential B.S.-to-M.D. or D.M.D program. Admissions for 2002-03 are up +340% from the previous year and we should have almost 100 undergraduates in the program for the 2002-03 academic year. Dr. Mei Wei joined the BME Program in January 2002 as a new faculty member specializing in Biomaterials; she earned her Ph.D. from the University of New South Wales. Faculty joining the BME program this past academic year are Dr. Kazem Kazerounian (Biomechanics), Dr. Mansoor Sarfarazi (Bioinformatics, Cellular and Tissue Engineering), and Dr. Richard Simon (Bioinformatics, Signal Processing). Dr. Ranjan Srivastava (Biochemical Engineering) will join the BME faculty in August 2002, and Dr. Vincent Clark will be leaving UConn for the University of New Mexico in August 2002. The BME program is currently recruiting for the Marianne E. Klewin Endowed Professorship in Biomedical Engineering. Dr. John Enderle continues to serve as the BME Program Director.

During 2001-2002,

- Dr. Dong-Guk Shin received a $1.1 million seed grant from the National Institutes of Health/NIGMS to support planning for a Center of Excellence in Bioinformatics
- Dr. Carol Pilbeam received a $550K grant from the Donaghue Foundation for COX-2 Regulation of Osteoblast Replication and Apoptosis
- The following paper by John Oh et al. was selected as the Outstanding Paper for 2002 in the Journal Biomedical Instrumentation and Technology:
- Mr. Frank Painter and the UConn Clinical Engineering Program were highlighted in the May issue of the Biomedical Instrumentation & Technology Journal
- Dr. John Enderle was appointed Editor-in-Chief of the EMB Magazine

The objectives of UConn’s undergraduate curriculum in Biomedical Engineering (BME) are: (1) To provide a sound foundation in the areas of mathematics, physical and life sciences, engineering science and design, communications, humanities and social sciences; and to foster a world view of the biomedical engineer’s role in society. (2) To impart professional attitudes and encourage an awareness of social and ethical responsibilities. (3) To provide an up-to-date technical education in biomedical engineering with emphasis on synthesis, analysis, and design, so that the graduate may proceed to an entry-level position in the biomedical profession or continue to graduate studies in engineering, medical school, dental school, or related fields. 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 is part of the sequential B.S. + M.D. program, one of several that provide selected students guaranteed admission to the M.D. or D.M.D. degree programs at the UCHC, 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.

The goal of the biomedical engineering graduate program is to provide students the interdisciplinary training in biological and medical sciences, physical sciences, and engineering necessary to solve complex biomedical problems. Faculty members from engineering, biomedical sciences, materials sciences, chemistry, physics, medicine, and dental medicine form an interdisciplinary graduate degree program that spans the University of Connecticut campuses at Storrs and at the Health Center in Farmington. Biomedical engineering embraces the following research areas: biochemical engineering, bioinstrumentation, bioinformatics, biomaterials, biomechanics, biomedical imaging/biosignal processing, biosensors, biotechnology, cellular and tissue engineering, clinical engineering, ergonomics, physiological systems modeling, neurobiology, rehabilitation engineering. Approximately 10 graduate courses are offered each semester in biomedical engineering.

Besides the traditional M.S. program, a two-year 30-credit hour Clinical Engineering Internship M.S. program exists which 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, Yale-New Haven 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.

The student chapter of the Biomedical Engineering Society and the IEEE-EMBS Student Club are quite active and promote a seminar series, plant trips and fund raisers.

The following faculty (with areas of specialization) are members of the BME Program: Douglas Adams (Biomechanics, Rehabilitation), John Bennett Jr. (Biomechanics, Biofluid Dynamics), Leslie Bernstein (Auditory System, Physiological Modeling), James D. Bryers (Tissue Engineering, Biomaterials), William Chapple (Neuroscience, Physiological Modeling), Thomas Chen (Biotechnology), Martin Cherniack (Ergonomics, Epidemiology), Vincent Clark (Physiological and Biomedical Modeling), Christian Davis (Biomechanics, Biomaterials), Dipak K. Das (Physiological Modeling, Cardiovascular Systems), John Enderle (Biocontrols, Physiological Modeling, Oculomotor System, Signal Processing), Mary Ann Epstein (Biochemistry, Pharmacology, Physiological Modeling), Can Erkey (Biochemical Engineering), Monty Escabi (Biocontrols, Physiological Modeling, Signal Processing, Auditory System), Pouran Faghri (Rehabilitation Engineering), Martin Fox (Devices, Imaging, Medical Informatics, Ultrasound), A. Jon Goldberg (Biomaterials), Ian Greenshields (Bioinformatics, Imaging), Kazem Kazerounian (Biomechanics), Duck Kim (Auditory System, Physiological Modeling), Herbert Koenig (Biomechanics), Donald Kreutzer (Cellular and Tissue Engineering), Song Lai (Imaging), James Ligas (Respiratory Mechanics), Les Loew (Imaging), Andrew Moiseff (Neuroscience, Physiological Modeling), Francis Moussy (Biomaterials, Biosensors), Mary Lynn Newport (Biomaterials), Nejat Olgac
During the academic year 2000-2001, the program graduated 11 M.S. degrees and 1 Ph.D. degree. The BME program has approximately 50 undergraduate students, 40 master’s students and 24 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.

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.
STUDENTS AND GRADUATES

The Environmental Engineering Program presently has 9 M.S. and 16 Ph.D. graduate students, 11 undergraduate environmental engineering majors and 4 undergraduate minors enrolled; the majority of graduate students are full-time and financially supported. One Program Ph.D. student received a University Fellowship for the fall 2001 semester (Mr. Lucas Hellerich). The program graduated 5 M.S. and 2 Ph.D. students and the first two Environmental Engineering undergraduate majors graduated in May 2002 (one with Honors). Three Civil & Environmental Engineering students graduated with a minor in Environmental Engineering. During the past year, the program received 41 full graduate applications: of these, 16 were offered admission into the program, and 6 have accepted admission. In addition, 11 new undergraduate students were admitted as environmental engineering majors for fall 2002.

FACULTY

Detailed activities of the Environmental Engineering faculty can be found in the annual reports of their respective home departments. Some highlights follow: Professor Britt Holmén assumed responsibility as coordinator of the graduate program in 8/01 and Professor Nelly Abboud continued as coordinator of the undergraduate program with primary objectives of program outreach, student recruitment, retention, and undergraduate administration. Professor Nikolaidis (CEE) resigned to take a position at the University of Crete and is continuing as an Adjunct Professor for the program. Professors Smets (CEE) and Ogden (CEE) are currently on sabbatical leave for the academic year. Professor Baki Cetegen (ME) received the Outstanding Faculty Award 2001 for the Mechanical Engineering Department and Professor Emmanouil Anagnostou (CEE) received the School of Engineering Outstanding Junior Faculty Award. The program was engaged in three successful faculty searches. A junior faculty search was completed with the hiring of Dr. Guiling Wang (Ph.D., MIT), currently an Assistant Research Scientist at the Goddard Earth Science and Technology Center, University of Maryland at Baltimore County and NASA Goddard Space Flight Center. Dr. Wang’s research area is global climate change modeling, specifically land-plant-atmosphere interactions. The second faculty search for an NU endowed chair professor resulted in the hiring of Dr. Dani Or (Ph.D., Utah State University) who is currently a professor of Soil Physics at Utah State University. Dr. Or’s areas of expertise are vadose zone hydrology; characterization of soil hydraulic and mechanical properties; and porous media processes modeling. The third search for the Stamford campus resulted in the hiring of Dr. Ross Bagtzoglou (Ph.D., University of California, Irvine) at the associate level. Dr. Bagtzoglou’s research area is groundwater modeling.

Across the program, external research funding continues at an all-time high. In addition, our faculty continue to hold prestigious national research awards; NSF CAREER awards continue to be held by Profs. Helble (CHEG) and Smets and two new NSF CAREER awards were awarded to Professors Holmén (CEE) and Anagnostou (CEE). In addition to holding significant offices within the University (Director of the Environmental Research Institute (Hoag, CEE), Head of the Chemical Engineering Department (Helble), Chair of the Microbiology Graduate Field of Study (Noll, MCB)), our faculty hold appointments in various national professional and learned societies: Professor Cetegen is a member of the Combustion Institute’s executive board, Professor Smets is appointed to the National Research
Council’s Committee on Bioavailability of Contaminants in Soils & Sediments, Professor Cutlip is on the Executive Committee of the Chemical Engineering Division of the American Society of Engineering Education and an Academic Trustee of CACHE (Computer Aids for Chemical Engineering Education) Corporation; Professor Helble has several appointments in the American Association for Aerosol Research; Professor Fenton (CHEG) serves on numerous committees of the Electrochemical Society; Professor Anagnostou serves on NASA’s Tropical Rainfall Measuring Mission peer review and the International Precipitation Conference Steering Committee; Professor Abboud (CEE) is a Board member of the American Lebanese Engineering Society and serves on the National Education Committee for the American Filtration and Separation Society; Professor Bryers (Center for Biomaterials, UCHC) serves on the National Research Council Committee on Biotechnology Education and the U.S. Department of State Committee on Environmental Biotechnology and Professor Erkey (CHEG) serves on the Green Chemistry Division committee of the American Chemical Society. Professor Torgersen (MARN) is editor-in-chief of Reviews of Geophysics, associate editor of The Geochemical Journal and is on the AGU Board of Journal Editors, Professor Schulthess is associate editor of Soil Science Society of America Journal, Professor Bryers is associate editor of Biotechnology & Bioengineering and Professor Anagnostou is associate editor of the Journal of Applied Meteorology while Profs. Abboud, Hoag, and Smets serve on editorial boards of Fluid/Particle Separation Journal, Journal of Soil Contamination, and Biodegradation, respectively.

Internationally, Prof. Anagnostou serves as an advisor to the National Observatory of Athens, Athens, Greece; while Professor Abboud was keynote speaker at “Environmental Regulations and Management” in Beirut, Lebanon and received the National Order of the Cedar Medal from Lebanon’s President. Professor Ogden was on the International Scientific Committee of the 5th International Symposium of Hydrologic applications of weather radar in Kyoto Japan, and Professor Helble was conference chair of the Engineering Foundation Conference on Nanoparticles and Nanostructures through Vapor Phase Synthesis in Tuscany, Italy. Professor Anagnostou was also the recipient of the European Geophysical Society Plinius Medal.

PROGRAM

Several multi-investigator activities continue that will support research and education in Environmental Engineering in years to come. The fellowship award from the U.S. Department of Education, Graduate Assistance in Areas of National Need (GAANN) Program for “A Graduate Fellowship Program in Environmental Biotechnology at the University of Connecticut” enters its second year. The award constitutes a 3-year funding for up to nine fellows with institutional payments (Total Direct USDE funds: $688,500). Program participants are Professors Bryers, Noll (co-director), Smets (director), Vinopal and Wood. Eight doctoral students to date have been admitted to the program.

Funding was awarded for a joint Johns Hopkins-UConn-UMaryland proposal to the U.S. EPA to establish a Hazardous Substance Research Center “Center for Hazardous Substances in Urban Environments,” with a total EPA budget of $6 million for 5 years. Program participants are Professors Helble, Hoag, MacKay, Nikolaidis and Smets.

Joint collaborations of program participants are supported by the National Science Foundation Division of Undergraduate Education for Courses Curriculum and Laboratory Improvement, “System Dynamics of Detention/Retention Ponds” (Torgersen and Ogden) and the Willimantic Water Commission, “Studies of Nutrient Loading to the Mansfield Hollow Reservoir, Connecticut” (Ogden (CEE), Hoag (CEE), Warner (NRME)).

The new web page for Environmental Engineering was structured and launched this past fall. In addition, the program organized and hosted visitors from the Woodstock Academy this spring and was
well represented at the fall and spring Open Houses, Connecticut Invention Convention, Connecticut Science Expo, Engineering 2000 Program, the DaVinci summer program, guidance counselor breakfast and four high school recruiting visits. In addition, the program organized Haestad Methods workshops on "Water Distribution Modeling" and "Sanitary Sewer Modeling" and Haestad Methods (Waterbury CT) awarded the program an educational grant consisting of 20 licenses each of WaterCad, Water Distribution Modeling Software, and SewerCad, Sanitary Sewer Modeling Software.
The EUROTECH® program, the University’s only International Engineering Program, has completed its ninth year. The program is designed to help prepare the engineering student for working in the international marketplace by offering an opportunity to experience first hand the practice of engineering in another industrialized country. The program is a dual degree program consisting of engineering coursework leading to a Bachelor of Science degree in any of the undergraduate engineering programs and German coursework leading to a Bachelor of Arts degree in German Studies. The program also includes a six-month engineering internship with a firm in Germany, which permits the student to gain exposure to both the environment and the culture while also practicing engineering.

Connecticut’s German Sister State, Baden-Wuerttemberg, is starting its second decade of student exchange. During the first decade, over 840 students and 55 faculty members have participated in the Baden-Wuerttemberg-Connecticut Higher Education Exchange Program. Currently, 60 students from Connecticut are enrolled in German universities and 30 German graduate students are at Connecticut higher education institutions.

This academic year, the EUROTECH enrollment has increased by 45% to 58 students with 9 students participating in German internships and 5 German graduate students studying at UConn. Five students graduated this year bringing the total number of graduates to 19.

At the April 30, 2002 Annual Engineering Banquet, the following EUROTECH students received scholarships from industries or private donors supporting the program: Andrew D. Skewes – Bayer Corporation, Kara E. Morgansen – John S. Rydz, Peter M. Bohnenkamp – Sikorsky, Ian D. Rumsey – Charles H. Coogan Jr., Lindsay H. Amidon and Peter M. Bohnenkamp – Dominion Nuclear CT, Alexander W. Peslak – Eta Kappa Nu, Stephanie Iacadora – GE Industrial Systems, Christopher L. Johnson – SNET and Mary A. Chesery – ASME Hartford Section. Additionally, 2 first-year students received summer scholarships through the Baden-Wuerttemberg Exchange Program for intensive language training in Germany ($5,000 each) and 2 fourth-year students received $5,000 scholarships for their study abroad portion of the EUROTECH program.

The EUROTECH newsletter was published and distributed throughout the Northeast and overseas. A EUROTECH information brochure was distributed to high school guidance counselors, science and math teachers throughout the Northeast as well as to high school German language teachers (RI, CT, VT, MA and eastern NY). Information packets were sent to all students accepted into the School of Engineering for the fall 2002 term. Information was distributed at the Connecticut Invention Convention (K through 12 attendees) and Spring Engineering Open House. Recruiting efforts included visits to high schools that are top feeders into the UConn School of Engineering. In addition, the EUROTECH program activities were described in news articles appearing in the Hartford Courant, Manchester Journal Inquirer and UConn Advance.

The Co-Directors, presented aspects of the EUROTECH program at the 4th annual International Engineering colloquium sponsored by the University of Rhode Island and the German Academic Exchange. This colloquium is well attended by institutions with similar programs and industry recruiters. Additionally, UConn’s EUROTECH program was showcased at a month-long exhibition in the State Capitol Building sponsored by the Commissioner on Economic Development.
For additional information about the EUROTECH Program, please contact either Professor F. Weidauer at (860) 486-1533 or Assistant Dean of Engineering Marty Wood at (860) 486-5466.
The Management & Engineering for Manufacturing (MEM) undergraduate program graduated eight students this past year. Three completed their work in the spring, three finished in December, and two in August. Companies that hired the graduates included Pratt & Whitney Aircraft, UPS, and Sikorsky. The average starting salary for graduates who have accepted and reported offers was about $50,000.

Dr. Jeffrey Rummel was appointed Assistant Dean in the School of Business. Dr. Lakshman Thakur of the School of Business assumed the position of Co-Director of the MEM program alongside Dr. Robert Jeffers of the School of Engineering. Dr. Manuel Nunez joined the faculty in fall 2001. He taught the Computers in Manufacturing course (MEM 231) and the senior project course MEM 215W. This second course was team taught with Dr. Bzymek.

During the year, plant visits were made to Wiremold Corporation and Sikorsky Aircraft. Students from the program continue to do their internships at Sikorsky Aircraft, Northeast Utilities, BMW (in New Jersey) and Pratt & Whitney, among others. All of the students who worked with us were placed in summer internships.

During the spring semester, six students participated in a final design project as part of the capstone course of the program, MEM 215W. Sikorsky Aircraft sponsored the project. Dr. Zbigniew Bzymek coordinated the project with Dr. Nunez and the mentors at Sikorsky. The students made a number of presentations on campus that included representatives from the company.

There were more than 28 students associated with the program this year. We anticipate students again being admitted as freshmen to the program and have already spoken with a few of them.
During the 2001-02 academic year, the School of Engineering Undergraduate Program continued to grow at a rate much greater than the national growth rate. The fall 2001 entering class of 348 students was a growth of 94% compared to the fall 1997 entering class. The undergraduate student body has increased by 35% during this same period. Our Biomedical Engineering and Computer Science programs enrollment continue to show the largest growth. The quality of the entering engineering students continues to improve with an average SAT score of 1265, which is approximately 135 points higher than the average UConn entering student’s SAT score. UConn has an excellent Honors Program and, considering all 17 schools and colleges, the average percentage of honors students in each unit is 7.7% and the School of Engineering has 14% of our undergraduate population in the Honors Program. This is just one indication of our strong advising program. Graduation rate from the School of Engineering is approximately 60% compared to the University’s graduation rate of 68%. The School of Engineering was able to award more than $650,000 in scholarships to entering and continuing students this year. Additionally, the Assistant Dean assumed responsibility for the School’s Scholarship Donor’s Program. The number of admitted transfer students has more than doubled this year due to outreach efforts at the 12 community or technical colleges. The Undergraduate Programs Office hired a new Diversity Director and a Program Assistant this year.

OUTREACH/RECRUITMENT

The School of Engineering has various outreach/recruiting initiatives. In addition to the highly successful fall Open House and spring Visitation Day involving faculty, students and staff; the School of Engineering continued to conduct outreach to students and teachers in middle school through high school. Our largest event this year was hosting Connecticut’s Invention Convention for the fourth year. Over 650 K-12th grade students brought their inventions to Gampel Pavilion to be judged by more than 150 professionals and to be seen by more than 2,500 spectators. Many student chapters participate in recruitment and outreach. Our next largest event was a student chapter, Phi Sigma Rho, hosting and conducting workshops for 500 Girl Scouts. This one-day workshop consisted of many student led engineering and science projects that resulted in the girls earning Girl Scout badges. The da Vinci Project, a one-week residential program for middle and high school mathematics and science teachers, continues to be very popular. In August 2002, there are 40 teachers attending, up from 23 teachers last year. Our one-week Engineering 2000 residential program — which allows participating high school juniors and seniors to explore engineering disciplines via a variety of hands-on experiments, and to focus in a particular engineering discipline — continues to be popular. High school math and science teachers assist in the selection process. This year, in addition to the 80 students attending, we had a waiting list of 20 students. Thirty percent of our high school participants are female, 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.

Diversity and gender recruitment are the responsibility of all faculty, staff and students. Our new Diversity Director, Kevin McLaughlin, is the primary contact and coordinator of our Engineering Diversity activities. Our Pre-Engineering Program (PEP) for 7th, 8th and 9th grade under-represented students from inner-city school districts, has grown from 47 students to 60 students this year. A one-
day Multiply Your Options (MYO) workshop for 8th grade girls had over 245 students and 40 teachers attended the 34 different workshops. Each workshop presenter was a female professional in an area of science or engineering. The School of Engineering conducts a five-week residential summer BRIDGE program for admitted underrepresented minorities and women. The purpose of this summer program is to ensure that each participant receives and understands the basic tenets of chemistry, computer programming, mathematics, and physics. Thirty students completed the college prep program and the summer 2002 BRIDGE enrollment is 44 students, an increase of 46%. Our student chapters are very involved in recruiting and retention efforts. The National Society of Black Engineers (NSBE), Society of Women Engineers (SWE) and Society of Hispanic Professional Engineers (SHPE) student chapters attend recruiting activities in Bridgeport and Waterbury. Members of SWE visited elementary schools and conducted age-appropriate engineering projects. SHPE members hosted a one-day Eastern Technical & Career Conference – Pre-College Event at UConn, which was attended by students from 10 Connecticut high schools. The primary objective of this conference was to promote engineering and to develop a communication network with students and teachers from the 10 high schools. Members of the NSBE sponsored weekly study sessions, conducted biweekly either technical seminars or current event discussions for all students, raised scholarship funds and hosted an NSBE awards banquet.

SCHOLARSHIPS AND SCHOLARS

The University of Connecticut continues to offer full or partial scholarships to qualified entering students. Due to the highly successful fundraising of Dean Amir Faghri, not only does the School of Engineering have 17 new named and endowed chair professorships, but the School has sufficient funding to offer more than $290,000 to recruit over 120 highly qualified students this fall. For the Academic Year 2002-2003, we have admitted an unprecedented number (34) of valedictorian and salutatorians to the School of Engineering. At our annual awards banquet, 191 continuing students were awarded more than $395,000 in scholarships. Additionally, 17 engineering students received the Connecticut Infotech Scholarship and 26 students received the Connecticut Innovations Technology Scholarships this academic year. Ninety-eight undergraduate students are members of one of the many student honor societies, over 190 students are on the Dean’s list, 31 seniors received the National Collegiate Engineering Award for having a minimum of 3.7 cumulative GPA, 40 seniors were inducted into Who’s Who Among American Colleges and Universities for having a minimum of 3.6 cumulative GPA, and 30 juniors were inducted as All American Scholars for having a minimum of 3.5 cumulative GPA.

TUTORING AND ADVISING

The School of Engineering continued the expanded tutoring program instituted last year and provided supplemental instruction in chemistry twice a week. Tutoring will continue for lower division courses in mathematics, chemistry, computer programming and physics in a new location this coming year. The new location will allow each tutoring session to take place in its own separate area rather than in a shared common area. Additionally, four student honor society offices will be located in the same area so they can provide tutoring for upper division courses. Several professional student chapters conduct tutoring in their related topics.

ADDITIONAL ACTIVITIES

The School of Engineering invested three years in preparation for the program accreditation assessments. We conducted professional development workshops utilizing internal and external presenters, invited two teams of visitors to assess six undergraduate engineering programs and provide feedback on each curriculum. We participated in two major EBI surveys in preparation for the ABET/CSAB visit. The accreditation visit went very well. As a result of this visit, our computer science program was slightly revised. Additionally, as a result of our self-assessment and continuous
improvement process, we revised the following four-year programs: Computer Engineering, Computer Science and Engineering, and Electrical and Computer Engineering. The faculty approved two new minors this year: Bioinformatics and Information Technology, bringing our total available minors to five. The School of Engineering has approved and will establish a new undergraduate advising and resource center. The functions of this center are: (1) to provide peer course advising and mentoring to undergraduate students and (2) to provide tutoring and counseling. This does not replace faculty advisors but enables faculty advisors to mentor and to professionally guide the student to emerging or traditional technologies.
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