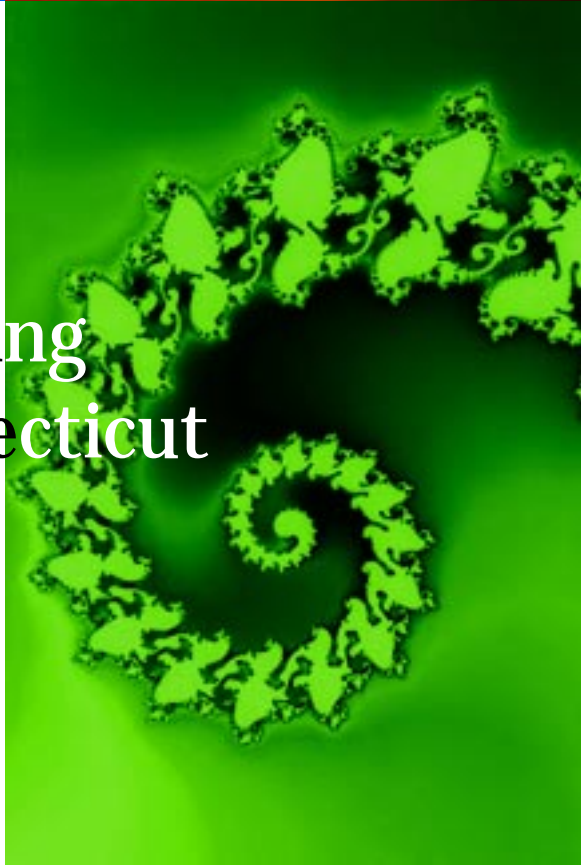


Annual Report
1999-2000
School of Engineering
University of Connecticut



University of Connecticut
 School of Engineering Annual Report
 1999–2000

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School of Engineering Annual Report 1999–2000

During the 1999-2000 fiscal year, the School of Engineering underwent dramatic growth as we redoubled our efforts to increase undergraduate enrollments, significantly enhance development and industry collaborations, and expand outreach.

NEW DEGREE PROGRAMS

Attracting a greater number of highly qualified undergraduate students requires a multi-faceted approach. Among the measures implemented in 1999-2000 was the addition of two new baccalaureate programs, in Biomedical Engineering and Engineering Physics. Both have been approved at all levels within the University and will debut with the fall 2000 term. Approval by the Connecticut Department of Higher Education is imminent during the 2000-2001 fiscal period.

The baccalaureate program in *biomedical engineering* builds upon the School's existing successful graduate degree program in biomedical engineering (which began in 1965 with both master's and doctoral degree programs) and derives from the medical community's increasing reliance on high-tech equipment, automated techniques, information transmission, monitoring devices and prostheses – all of which present design challenges. With areas of specialization comprising biochemical, bioelectrical, biomaterials and biomechanical areas, the program will prepare graduates to enter a practice of biomedical engineering at the basic level or undertake graduate study in engineering, medicine or related fields.

The *engineering physics* major, offered jointly by the School of Engineering and the Department of Physics, will offer students a strong foundation in physical science and engineering so that a wide range of career choices is available after graduation. The goal of the engineering physics degree program is to offer students a solid background in the fundamentals of physics while applying that knowledge to engineering disciplines. Students will combine core physics studies with coursework in one of three engineering disciplines: electrical engineering, mechanical engineering, or metallurgy & materials engineering. The program will provide students a solid foundation on which to build a career in industry or to pursue graduate studies in engineering, physics/applied physics, law or business.

STRATEGIC PRIORITIES

During 1999-2000, the School of Engineering continued to focus on the five areas of strategic importance established during the previous year: development, outreach, undergraduate enrollment, faculty recognition and facilities.

Development

The School maintained a vigilant and aggressive commitment to development activities aimed at attracting outside investments by Connecticut manufacturers. Lengthy negotiations with United Technologies Corporation and Northeast Utilities, and alumni donations, allowed the School of Engineering to establish nine new endowed positions and attract substantial funding during 1999-2000:

- United Technologies Corporation in March contributed a \$4 million investment in the School of Engineering, the largest corporate gift ever to a public school of engineering in New England. Paired with \$2 million in State endowment matching funds for a total \$6 million gift, the UTC investment will endow three chaired positions, establish four endowed fellowships, and a \$1 million fund toward undergraduate scholarships.

- The School also succeeded in winning approval from the State judiciary to establish a Northeast Utilities Environmental Engineering Clinic as part of NU's government settlement for environmental violations. NU contributed \$650,000 to the School of Engineering that, paired with \$350,000 in State endowment-matching funds, will fund the clinic, thereby providing environmental education to small businesses and school-age children in economically disadvantaged Connecticut cities.
- UConn School of Engineering alumnus and construction magnate Charles Klewin gave the School \$500,000 to establish a new endowed professorship in an emerging area to be identified by Engineering Dean, Amir Faghri. The new position will be called the Marianne E. Klewin Endowed Professorship.

Outreach

During 1999-2000, the School of Engineering remained committed to enhancing awareness of engineering careers, the quality of UConn's engineering programs, and the dramatic societal/economic impacts wrought by engineers. This campaign continued to focus on primary and secondary-school students, but was extended this year to encompass Connecticut middle and high school math/science teachers. Among the activities undertaken were:

- **Engineering 2000** – this summer engineering camp was expanded for promising Connecticut high school students, allowing 50 participants to examine core engineering and technological concepts during an all-expenses paid one-week program. Twenty percent of the program's participants are drawn from traditionally underrepresented populations and inner-city schools.
- **da Vinci Workshop** – a new five-day residential, all-expenses-paid workshop was developed for Connecticut math and science teachers with the objective of introducing them to hands-on engineering concepts that can be integrated into the middle- or high-school curriculum.
- **Connecticut Invention Convention** – for the second consecutive year, the School of Engineering again hosted and co-sponsored the Connecticut Invention Convention at Gampel Pavilion (April 8, 2000). The event attracted nearly 2,000 attendees, including 650 students from Connecticut schools.
- **Seminars and Conferences** – during the year, the School expanded its active involvement in bringing seminars and workshops of national stature to campus. Among the programs we sponsored during 1999-2000 were:
 - 26th Annual Northeast Bioengineering Conference (April 8-9, 2000)
 - Biological Nutrient Removal in New England (April 5, 2000)
 - Asia Environmental Partnership Workshop (February 7, 2000)
 - DETC/CIE 2002 Annual Meeting
 - Industrial & Hazardous Waste Conference

In addition, the School expanded its on-site Master of Engineering degree program for selected Connecticut companies, which debuted early in 1999. The program brings School of Engineering faculty into the corporate classroom to provide educational instruction for the company's engineering employees. To date, the Master of Engineering program has attracted more than 100 participants.

Undergraduate & Graduate Enrollment

The thrust to attract top undergraduate and graduate students continued for a second year and involved several strategic activities beyond those already discussed above. The School was rewarded with continued dramatic enrollment increases at the undergraduate level, which rose 19 percent from 1998-1999 (to 254 undergraduates) while average SAT scores increased by 1.5 percent during the same period.

During the year, we developed a new four-color brochure designed to appeal to a wide undergraduate audience as well as parents. The brochures were mailed to Connecticut high schools and passed out to all prospective undergraduate students.

Two editions of the twice-yearly School of Engineering newsletter, *Frontiers*, were published and disseminated during the year. With a publication focus on corporate-academic partnerships, alumni news, and timely faculty achievements, *Frontiers* provides invaluable promotional qualities. The newsletter continued to provide a recruiting vehicle at the graduate and new faculty levels, and to enhance the School's visibility and repute among alumni, the UConn community, Connecticut legislators and administrators, and deans of engineering nationwide.

A second School of Engineering color brochure was designed and published, intended for a broad audience of National Academy of Engineering members, corporate executives, deans of engineering schools nationwide, and Connecticut government leaders.

During the year, we also developed four-color brochures for the School's Engineering Diversity Program (EDP) and for one element of the EDP, Bridge. These are used for not only recruiting participants to the EDP's several core activities but also attracting funding from corporate donors.

Faculty Recognition & Awards

The faculty recognition awards and incentives debuted last year were continued during the 1999-2000 fiscal year. The awards included the following:

- Distinguished Engineering Professor Award for outstanding achievements in research, teaching and service. The award entails \$10,000/year for three years toward professional development. This year, three recipients were named, thus no award will be made in 2000-2001. The 1999-2000 faculty recipients were Theodore Bergman, Head and professor of Mechanical Engineering; Montgomery Shaw, professor of Chemical Engineering; and Peter Luh, Director of the Booth Research Center and professor of Electrical & Computer Engineering.
- Outstanding Teaching Faculty Award for superior achievements in teaching. This award includes a \$2,000 honorarium plus \$5,000 for professional development. The 1999-2000 recipient was John Ayers, Associate Head and associate professor of Electrical & Computer Engineering.
- Outstanding Junior Faculty Award given 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 1999-2000 award winners were Joe Helble, Head and associate professor of Chemical Engineering; and Barth Smets, associate professor of Civil & Environmental Engineering.

RENOVATIONS & OTHER SUPPORT

The most significant facilities milestone was our successful effort in gaining approval for a new Information Technology building. Plans and designs are already underway for construction of the 100,000 sq. ft. building scheduled for completion in March 2003. The team of Burt Hill and Preiss Breismeister, P.C. of Stamford was awarded the job. The building, to be constructed using \$30 million in State UConn 2000 monies, will be erected between the Homer Babbidge Library and the new School of Business building currently under construction.

When completed, the Information Technology building will house the Electrical & Computer Engineering (ECE) and Computer Science & Engineering (CSE) departments and be integrated with the Booth Research Center.

During the fiscal year, we also continued to support a significant amount of building renovation to improve the quality, functionality, safety and appearance of offices. Renovations were made in hallways and staircases within Engineering II, the F.L. Castleman Building, and UTEB.

PERSONNEL

During the year, the School experienced several changes in leadership at the departmental and center levels. Marcelle Wood, formerly assistant head in Mechanical Engineering, assumed the position of Assistant Dean for Undergraduate Education left vacant when Erling Murtha-Smith accepted the position as Head of Civil & Environmental Engineering. In Chemical Engineering, Joe Helble was elected Head, while Mehdi Anwar accepted the interim Head position in the Electrical & Computer Engineering Department. The Precision Manufacturing Institute underwent a name change to better reflect the future focus and expertise of the center; the new name is Advanced Technologies Institute (ATI), and Kazem Kazerounian was appointed Director. During the year, Norman Garrick of Civil & Environmental Engineering accepted the interim Director post at the Connecticut Transportation Institute.

In addition, the School conducted a nationwide search to hire an Alumni Development Officer. The search culminated in the hiring of Ms. Marni Churchill in January 2000. Ms. Churchill, who earned her B.A. in Rhetoric and Communications Studies from the University of Virginia (UVa), previously was Associate Director of Alumni Relations at Colgate Darden Graduate School of Business at the University of Virginia.

Chemical Engineering Department

Annual Report Summary

1999–2000

The 1999 – 2000 academic year has been an exciting period of growth for the Department of Chemical Engineering. Many key measures of scholarship, including faculty publications and presentations, level of external research funding, graduate program applications, and Ph.D. program enrollments showed marked increases over previous years. An endowment was created to support the hiring of a senior scholar to fill an Endowed Chair in combustion and air pollution. Several faculty were honored with major awards from professional societies. Changes to the undergraduate program were made to permit students flexibility in structuring their education to meet the changing needs of the profession. Several new electives were designed and scheduled to fill this need. Freshman enrollments were the largest in several years. With all of these positive indicators, we believe we are well positioned for continued growth toward a position of research and educational excellence over the coming decade.

SCHOLARSHIP

A review of the scholarly activities of the faculty this past year indicates that we are making excellent progress toward becoming a top ranked chemical engineering research department. While the number of active grants in the department remained steady, the amount of research funding increased to \$3.5 million on an annualized basis. This increase is the result of a change in faculty composition as well as an increase in average funding level per faculty member. In addition to increased external research funding, scholarly activity increased during the past year with 49 journal articles published, 35 conference proceedings published, 4 book chapters published, 3 patents granted, 31 invited presentations delivered, and 50 contributed presentations delivered.

Consistent with this, the number of Ph.D. students supervised by departmental faculty continued to climb. The number of graduate students remained constant at 64, while the number in the Ph.D. program increased from 38 one year ago to 48 this year. Our current first year class is reflective of this transition, with 10 of the 13 students entering the department in August 1999 now having qualified for the Ph.D. program. Demographics for the first year graduate class of 2000-2001 indicate continued growth. Fifteen new students are expected; all are expected to enter the Ph.D. program.

With regard to graduate enrollments, our program remained highly selective. Due in part to streamlining of the application process through use of our web site, the number of paid graduate applications doubled to 185. Of these, only 30 were offered admission. With the number of faculty-submitted research proposals showing an increase over the previous year, we are optimistic that growth will continue. These trends place us on track toward our goal of having 50 – 60 Ph.D. students supervised by departmental faculty by summer 2002.

Several of the faculty received external honors for their scholarly achievements. Professor Robert Weiss, the DiBenedetto Distinguished Professor of Engineering, was honored with the 2000 International Education Award by the Society of Plastics Engineers (SPE). This award was granted in recognition of outstanding contributions to education in the field of polymer science and engineering. Professor Montgomery Shaw was named a Fellow of SPE, joining Bob Weiss, who was named an SPE Fellow in 1999. Since the designation of Fellow was established in 1984, only 154 SPE members have been so named out of a membership of 32,000.

Professor Emeritus Anthony DiBenedetto was awarded an Honorary Doctorate by Brno University of Technology, the largest technical university in the Czech Republic, on the occasion of the university centennial.

Professor Thomas Wood was named recipient of the 1999 – 2000 Rogers Teaching Award for excellence in

teaching, in recognition of his efforts teaching the senior design class. Professor Montgomery Shaw was named recipient of a School of Engineering Outstanding Research Faculty Award in 1999. Professor Joseph Helble was named recipient of a School of Engineering Outstanding Junior Faculty Award in 1999.

PERSONNEL

Dr. Patrick Mather joined our faculty as a tenure track Assistant Professor in September 1999 after working in the Polymer Processing Group at the Air Force Research Laboratories. Professor Mather's research is in the area of polymeric materials, with emphasis on the relationships between polymer microstructural and physical properties and molecular architecture.

Professor James Bryers of the UConn Health Center was granted a joint appointment in Chemical Engineering. Prof. Bryers brings expertise in the area of biofilms and bacterial adhesion to our department, and is advising several chemical engineering graduate students on their thesis research in these areas.

Prof. Jeff Koberstein left the Department to become Head of the Chemical Engineering Department at Columbia University. A search is underway for a new faculty member in polymers and an offer is pending. The Department is also searching for a faculty member in the biochemical/biomedical engineering area.

The Department has initiated a search for a senior scholar to fill the recently established Northeast Utilities Endowed Chair in Combustion and Air Pollution. The Chair will conduct fundamental research in combustion and air pollution, provide scholarly leadership to the Department, direct the Environmental Engineering Educational Clinic, and teach courses in chemical engineering.

CURRICULUM

After considerable discussion and incorporating input from students, alumni, and our Industrial Advisory Board, the Department elected to modify the senior design sequence. Effective fall 2000, the two-course design sequence will be replaced by a single semester four-credit senior design class. This change was made in recognition of the use of design tools such as Aspen earlier in the curriculum, and as a means to provide students with greater flexibility in choosing electives. This latter reason is a reflection of students increasingly taking jobs in fields such as biotechnology, environmental chemical engineering, and polymer engineering, and is an attempt to give them the opportunity to pursue courses in these areas. As a result, the Professional Elective requirement was increased to 12 credits.

To permit students to take maximum advantage of this greater flexibility, four new electives have been scheduled for the next two years. These include engineering entrepreneurship, designed to include business decision-making aspects in an engineering course, a new course in catalysis, and a course in bioremediation. Students have been given a two-year schedule of electives to maximize their ability to plan for these courses.

UNDERGRADUATE STUDIES

Our 1999 – 2000 graduating class consisted of 23 students, including Maria Sanabria, the only University Scholar graduating from the School of Engineering this year, and Jennifer Fogue, one of only four graduating Honors Scholars in the School. Overall Honors Program enrollments remained strong, with approximately 25% of our undergraduates participating in the Honors Program. This is the highest percentage of Honors Students in the School of Engineering, and may be the highest in the university. Jennifer York, one of our graduating seniors, was honored with second place in a national technical paper national competition sponsored by the Society of Women Engineers.

ENROLLMENTS, RECRUITING, AND OUTREACH

Increased undergraduate enrollments have been established as a departmental goal. Although our current freshman class of approximately 30 students is the largest in several years, the number of fall 2000 students declaring

chemical engineering as a major is down. Recruitment activities have therefore increased to combat this trend. A new departmental brochure was completed and distributed, with an accompanying letter and invitation to visit, to the chemistry department heads at all Connecticut High Schools. The departmental web page was completely restructured and updated. Most prospective students were contacted by departmental faculty prior to the college decision date; next year, the members of the Industrial Advisory Board have agreed to make these calls and in some cases, to visit with prospective students. Acquisition of scholarship aid for entering freshmen has been established as a priority.

FACILITIES RENOVATIONS

The Department of Chemical Engineering main office renovations were completed. The renovated facilities are more functional in their layout and have a more contemporary and professional appearance than the previous space. Renovations to Room 214 have also been completed. This room will serve as main office space for 8 – 10 first year graduate students beginning August 2000.

OTHER ACTIVITIES

The departmental seminar series continued this year under the generous sponsorship of Uniroyal Chemical. Twenty external speakers presented their work to the department. Although a variety of topics were covered, the department highlighted Biochemical and Biomedical Engineering topics throughout the year.

During spring 2000, a meeting of our Industrial Advisory Board was convened in the South Campus Meeting Facilities. The meeting began with a luncheon to which several top students, ranging from sophomores to Ph.D. students close to graduation, were invited. The Board and the faculty then discussed the departmental vision of growing to become a top research department, and discussed undergraduate program objectives in preparation for accreditation review. Board guidance is being incorporated in our ongoing curriculum review.

Chemical Engineering Department
Archival Technical Journal Publications
1999–2000

Luke E. K. Achenie

“Design of Environmentally Benign Solvents via Global Optimization,” (with M. Sinha and G.M. Ostrovsky), *Computers & Chemical Engineering*, Vol. 23, pp. 1381-1394, 1999.

“Deterministic Methods of Flexibility Analysis,” (with G.M. Ostrovsky and Y. Wang), *Computers & Chemical Engineering Supplement*, Vol. 23, pp. 387-390, 1999.

“A New Approach to Flexibility Analysis,” (with G. M. Ostrovsky, V. Gomelsky and Y. Volin), *Hungarian Journal of Industrial Chemistry*, Vol. 29, pp. 27-30, 2000.

James P. Bell

“Electropolymerization of 2-Methacryloyloxy (ethyl) acetoacetate on Aluminum Using a Novel Initiation Method,” (with R. Agarwal), *Journal of Applied Polymer Science*, Vol. 71, pp. 1665, 1999.

“Studies of Arenediazonium Salts as a New Class of Electropolymerization Initiator,” (with X. Zhang), *Journal of Applied Polymer Science*, Vol. 73, pp. 2265, 1999.

“Coating Formation by Spontaneous Polymerization on Aluminum: Various Monomers,” (with R. Agarwal), *Journal of Applied Polymer Science*, Vol. 76, pp. 875, 2000.

“Quinone-amine Polyurethanes: New Coupling Agents for the Steel-epoxy System,” (with K. Vaideeswaran and D. E. Nikles), *Journal of Applied Polymer Science*, Vol. 76, pp. 1338, 2000.

“Structures and Properties of Polycarbonate-modified Epoxies from Two Different Blending Processes,” (with T.-M. Don and C.-H. Yeh), *Journal of Applied Polymer Science*, Vol. 74, pp. 2510-2521, 1999.

“Evaluation of Beta-diketone-containing Polymeric Coupling Agents for Enhancing the Adhesion of Epoxy to Aluminum,” (with S. L. Nesbitt and J. A. Emerson), *Journal of Adhesion*, Vol. 72, 2000.

James D. Bryers

“Plasma-deposited Membranes for Controlled Release of Antibiotic to Prevent Bacterial Adhesion and Biofilm Formation,” (with S. K. Hendricks, C. S. Kwok, T. A. Horbett and B. D. Ratner), *Journal of Biomedical Materials Research*, Vol. 50, pp. 160-170, 2000.

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Douglas J. Cooper

“Enhancing Process Control Education with the Control Station Training Simulator,” (with D. Dougherty), *Computer Applications in Engineering Education*, Vol. 7, pp. 203, 1999.

Robert W. Coughlin

“Surface Roughness Enhances Upward Migration of Bacteria on Polymer Fibers Above Liquid Cultures,” (with V. Rezmann, D. Mullen, M. Brancieri, R. Vieth), *Journal of Biomaterials Science, Polymer Edition*, Vol. 10, No. 8, pp. 827-844, 1999.

Michael B. Cutlip

“Selecting the Appropriate Numerical Software for a Chemical Engineering Course,” (with M. Shacham), *Computers & Chemical Engineering Supplement*, S645-S648, 1999.

“A Comparison of Six Numerical Software Packages for Educational Use in the Chemical Engineering Curriculum,” (with M. Shacham), *Computers in Education Journal*, Vol. IX, No. 3, pp. 9-15, 1999.

Can Erkey

“Supercritical Extraction of Heavy Metals from Aqueous Solutions: A Review,” *Journal of Supercritical Fluids*, Vol. 17, pp. 259, 2000.

“A Static Method Coupled with Gravimetric Analysis for the Determination of Solubilities of Solids in Supercritical Carbon Dioxide,” (with G. Sherman, S. Shenoy and R.A. Weiss), *Industrial and Engineering Chemistry Research*, Vol. 39, pp. 846, 2000.

“Effect of Ligand Modification on Homogeneous Hydroformylation in Supercritical Carbon Dioxide,” (with D. Palo), *Organometallics*, Vol. 19, pp. 81, 2000.

“Rhodium Catalyzed Homogeneous Hydroformylation of Unsaturated Compounds in Supercritical Carbon Dioxide,” (with D. R. Palo), *Reaction Engineering for Pollution Prevention*, (M. Abraham and R.P. Hesketh, eds.), Elsevier, 1999.

“Kinetics of the Homogeneous Catalytic Hydroformylation of 1-Octene in Supercritical Carbon Dioxide,” (with D. R. Palo), *Industrial and Engineering Chemistry Research*, Vol. 38, pp. 3786, 1999.

Joseph J. Helble

“A Model for the Air Emissions of Trace Metallic Elements from Coal Combustors Equipped with Electrostatic Precipitators,” *Fuel Processing Technology*, Vol. 63, pp. 125-147, 2000.

“Gas phase Transformations of Mercury in Coal-fired Power Plants,” (with C. L. Senior, A. F. Sarofim, T. Zeng and R. Mamani-Paco), *Fuel Processing Technology*, Vol. 63 (2/3) 2000.

“Emissions of Mercury, Trace Elements, and Fine Particles from Combustion Sources,” (with A. F. Sarofim and C. L. Senior), *Fuel Processing Technology*, Vol. 65-66, pp. 263-268, 2000.

“Formulation of Bi-directional Atmosphere-surface Exchanges of Elemental Mercury,” (with X. Xu, X. Yang, D. R. Miller and R. J. Carley), *Atmospheric Environment*, Vol. 33, pp. 4345-4355, 1999.

Jeffrey T. Koberstein

“The Effects of Low Energy End Groups on the Dewetting Dynamics of Poly(styrene) Films on Poly(methyl methacrylate) Substrates,” (with C. Yuan and M. Ouyang), *Macromolecules*, Vol. 32, No. 7, pp. 2329-2333, 1999.

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Patrick T. Mather

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“Rheology of Highly Swollen Chitosan/Polyacrylate Hydrogels,” (with H. Jiang, W. Su and T. J. Bunning), *Polymer*, Vol. 40, pp. 4593-4602, 1999.

“Synthesis and Characterization of Fluorinated Benzoxazole polymers with high TG and Low Dielectric Constant,” (with T. D. Dang, M. D. Alexander, Jr., C. Grayson, M. D. Houtz, R. J. Spry and F. E. Arnold), *Journal of Polymer Science A: Polymer Chemistry*, Vol. 38, pp. 1991-2003, 2000.

“Shape Memory and Nanostructure in Poly(norbornyl-POSS) Copolymers,” (with H. G. Jeon and T. S. Haddad), *Polymer International*, Vol. 49, pp. 453-457, 2000.

“Nanoscale Reinforcement of Polyhedral Oligomeric Silsesquioxane (POSS) in Polyurethane Elastomer,” (with B. X. Fu, B. S. Hsiao, H. White, M. Rafailovich, H. G. Jeon, S. Phillips, J. D. Lichtenhan and J. S. Schwab), *Polymer International*, Vol. 49, pp. 437-440, 2000.

Montgomery T. Shaw

“Reusing XLPE from Electrical Cable Waste Scrap- I. Materials Preparation and Characterization,” (with C. C. White and J. Wagenblast), *Polymer Engineering and Science*, Vol. 40, pp. 863-879, 2000.

“Structure Evolution and Phase Behavior of Polymer Blends Under Shear Flow,” (with Z. Hong and R. A. Weiss), *Polymer*, Vol. 41, pp. 5895-5902, 2000.

Robert A. Weiss

“Microstructure of Ionomers based on Sulfonated Block Copolymers of Polystyrene and Poly(ethylene-*alt*-propylene),” (with S. Mani, C. E. Williams and S. F. Hahn), *Macromolecules*, Vol. 32, pp. 3663-3670, 1999.

“Evidence for a Thermally Reversible Order-Order Transition Between Lamellar and Perforated Lamellar Microphases in a Triblock Copolymer,” (with S. Mani, M. E. Cantino, L. H. Khairallah, S. F. Hahn and C. E. Williams), *Eur. Polymer Journal*, Vol. 36, pp. 215-219, 2000.

“Miscible Blends of a Thermotropic Liquid Crystalline Polymer and Sulfonated Polystyrene Ionomers,” (with Y. Ghebremeskel and L. Charbonneau), *Polymer*, Vol. 41, pp. 3471-3477, 2000.

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“A Static Method Coupled with Gravimetric Analysis for the Determination of Solubilities of Solids in Supercritical Carbon Dioxide,” (with G. Sherman, S. Shenoy and C. Erkey), *IEC Research*, Vol. 39, pp. 846-848, 2000.

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Thomas K. Wood

“The Influence of Bacteria on the Passive Film Stability of 304 Stainless Steel,” (with K. M. Ismail, A. Jayaraman and J. C. Earthman), *Electrochimica Acta*, Vol. 44, pp. 4685-4692, 1999.

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“Inhibiting Sulfate-Reducing Bacteria in Biofilms on Steel with Antimicrobial Peptides Generated *in situ*,” (with A. Jayaraman, P. J. Hallock, R. M. Carson, C.-C. Lee and F. B. Mansfeld), *Applied Microbiology and Biotechnology*, Vol. 52, pp. 267-275, 1999.

Chemical Engineering Department
Books, Book Chapters, Book Sections & Edited Volumes
1999–2000

Luke E. K. Achenie

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James D. Bryers

“Microbial Biofilms,” *Encyclopedia of Bioprocess Technology: Fermentation, Biocatalysis, & Bioseparation*, J. Wiley & Sons, Inc. (M. C. Flickinger and S.W. Drew, eds.), pp. 292-305, 1999.

Douglas J. Cooper

Expanded *Practical Process Control*, 2nd Edition with three new chapters. The book is distributed to the 120 users of Control Station software package.

James M. Fenton

“Proceedings of the Symposia Tutorials in Electrochemical Engineering - Mathematical Modeling,” (with R. F. Savinell, A. West, S. L. Scanlon and J. Weidner), 99-14, 1999.

Montgomery T. Shaw

“Rheometry of Electrorheological Fluids,” (with R. C. Kanu), *Advanced in Non-Newtonian Flows and Rheology* (D. A. Siginer, D. DeKee and R. P. Chhabra, eds.), Elsevier, Amsterdam, pp. 775-795, 1999.

Robert A. Weiss

“Destruction of Short-Range Order in Polycarbonate/Ionomer Blends,” (with R. Tucker, B. Gabrys, W. Zajac, M. S. Kalhor and K. Andersen), *Scattering from Polymers*, (B. Hsiao, D. Lohse and P. Cebe, eds.), American Chemical Society, Washington, D.C., ACS Symposium Series Vol. 739, pp. 328-340, 2000.

Chemical Engineering Department
Conference Proceedings & Other Publications
1999–2000

Luke E. K. Achenie

“A New Approach to Flexibility Analysis,” (with G. M. Ostrovsky, V. Gomelsky and Yu Volin), Proceedings of PRESS '99 2nd Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Prevention, pp. 517-521, 1999.

“A New Approach to Flexibility Analysis,” PRESS'99, Budapest, Hungary, June 1999.

“Deterministic Methods of Flexibility Analysis,” ESCAPE-9, Budapest, Hungary, June 1999.

“Parameter Estimation and Electrochemical Reactor Optimization Using Fundamental Electrochemical Engineering Models,” (with R. Venkataraman and J.M. Fenton), Proceedings of the Symposia Tutorials in Electrochemical Engineering – Mathematical Modeling, (R.F. Savinell, A.C. West, J.M. Fenton and J. Weidner, eds.), The Electrochemical Society, Vol. 99-14, Pp. 261, 1999.

James D. Bryers

“Efficacy of Silver-coated Dacron Fabric to Reduce Colonization by *Staphylococcus epidermidis* Bacteria: Use of a Continuous Culture System,” (with V. E. Wagner, U. Klueh, S. Kelly and A. Johnson), Proceedings of the 6th World Biomaterials Congress, Kamuela, HA, 15-20 May, 2000.

“Protein, Macrophage, and Bacterial Cell Interactions with a Poly(ethylene glycol) grafted Polymer Network,” (with V. E. Wagner), Proceedings of the 6th World Biomaterials Congress, Kamuela, HA, 15-20 May, 2000.

“Bacterial Adhesion/Colonization of RGD-Grafted Biomaterials,” (with V. E. Wagner), Proceedings of the AIChE Annual Meeting, Paper 268b, Session 268 (Effect of Stimuli on Cell Adhesion), Dallas, TX, Oct. 31-Nov. 5, 1999.

Douglas J. Cooper

“Training Simulators Enhance Process Control Education,” (with D. Dougherty), Proceedings of the 1999 American Control Conference, IEEE Publications, NJ, pp. 997 – 1002, 1999.

Robert W. Coughlin

“A Comparison of Deglycerolization Processes,” (with H. Reddy, J. Draheim, D. Rudolph), Northeast Bioengineering Conference, University of Connecticut, Storrs, CT April 2000.

Can Erkey

“Effect of Ligand Modification on Homogeneous Hydroformylation in Supercritical Carbon Dioxide,” Proceedings of the Annual Green Chemistry and Engineering Conference, Washington, D.C., pp. 83-85, June 2000.

James M. Fenton

“Parameter Estimation and Electrochemical Reactor Optimization Using Fundamental Electrochemical Engineering Models,” (with R. Venkataraman and L. E. K. Achenie), Proceedings of the Symposia Tutorials in Electrochemical Engineering – Mathematical Modeling, (R. F. Savinell, A. C. West, J. M. Fenton, and J. Weidner, eds.), The Electrochemical Society, Vol. 99-14, pp. 261, 1999.

“Recycling of Post Consumer Tin Cans Using Electrochemical Methods,” (with J.-C. Lin, C. He, R. Venkataraman, A. J. Aldykiewicz, Jr., J. E. Dresty and P. J. Sweetser), Hazardous and Industrial Wastes; Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, (N. Nikolaidis, C. Erkey and B. F. Smets, eds.), Technomic Publishing Company, Inc., Lancaster, Pennsylvania, pp. 631, 1999.

“Hydrogen Purification Using a Membrane Cell,” (with C. He and H. R. Kunz), Hazardous and Industrial Wastes; Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, (N. Nikolaidis, C. Erkey and B.F. Smets, eds.), Technomic Publishing Company, Inc., Lancaster, Pennsylvania, pp. 652, 1999.

“Preparation of High Temperature Composite Membranes for Hydrogen Proton Exchange Membrane Fuel Cell,” (with J.-C. Lin, H. R. Kunz and M. B. Cutlip), Hazardous and Industrial Wastes; Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, (N. Nikolaidis, C. Erkey and B.F. Smets, eds.), Technomic Publishing Company, Inc., Lancaster, Pennsylvania, pp. 656, 1999.

“CO Tolerant Ternary Anode Catalyst Development for Fuel Cell Application,” (with C. He, R. Venkataraman and H. R. Kunz), Hazardous and Industrial Wastes; Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, (N. Nikolaidis, C. Erkey and B. F. Smets, eds.), Technomic Publishing Company, Inc., Lancaster, Pennsylvania, pp. 663, 1999.

Joseph J. Helble

“Bench Scale Examination of Mercury Oxidation Under Non-isothermal, Post-combustion Conditions,” (with R. Mamani-Paco), Proceedings of the Air and Waste Management Association Annual Meeting, June 2000.

“Modeling Mercury Emissions and Speciation from Coal-fired Power Plants,” (with C. L. Senior and A. F. Sarofim), Proceedings of the Air and Waste Management Association Specialty Conference on Mercury in the Environment, September 1999.

“Coal Quality Impacts on Alkali Vapor Emissions from Pressurized Fluidized Bed Combustors,” (with S. Niksa, M. Harada, T. Ando, J. Shigeta and I. Kajigaya), Proceedings of the International Conference on Coal Science, pp. 1337-1340, Taiyun, China, September 1999.

“Coal Quality Impacts on Alkali Vapor Emissions from Pressurized Fluidized Bed Combustors,” (with S. Niksa, M. Harada, T. Ando, J. Shigeta and I. Kajigaya), Proceedings of the Conference on Combustion Technologies for a Clean Environment, pp. 279-285, Lisbon, July 1999.

Patrick T. Mather

“Rheo-Optics Studies in the Development of Hybrid MWIR Polarizers,” (with W. Barnes, P. J. Hood and T. J. Bunning), Materials Research Society Proceedings, Vol. 559, pp. 51-56, 1999.

“New Wholly-Aromatic Thermotropic Polyesters with Controlled Flexibility,” (with D. S. Nagvekar, H. G. Jeon and L.-S. Tan), Materials Research Society Proceedings, Vol. 559, pp. 165-170, 1999.

“Thermosets Modified with Hybrid Inorganic/Organic Polyhedra,” (with T. S. Haddad, A. Lee and S. H. Phillips), Polymer Preprints, Vol. 41, No. 1, pp. 584, 2000.

“Strain Recovery in POSS Hybrid Thermoplastics,” (with H. G. Jeon and T. S. Haddad), *Polymer Preprints*, Vol. 41, No. 1, pp. 528-529, 2000.

“Synthesis and Microstructural Characterization of POSS-Based Triblock Copolymers Prepared Using Atom Transfer Radical Polymerization,” (with S. B. Chun, J. Pyun, K. Matyjaszewski and H. G. Jeon), *Polymer Preprints*, Vol. 41, No. 1, pp. 582-583, 2000.

“Mesogen-jacketed Liquid Crystalline Polymers via Stable Free Radical Polymerization,” (with P. Gopalan, S. Pragliola, C. K. Ober and H. G. Jeon), *Polymer Preprints*, Vol. 40, No. 2, pp. 372-373, 1999.

“Nanostructured Hybrid Organic/inorganic Materials. Silsesquioxane Modified Plastics,” (with T. S. Haddad, R. Stapleton, H. G. Jeon, J. D. Lichtenhan and S. Phillips), *Polymer Preprints*, Vol. 40, No. 1, pp. 496-497, 1999.

“Strain Recovery in POSS Hybrid Thermoplastics,” American Chemical Society National Meeting, Symposium on Hybrid Organic-Inorganic Polymers, *Polymer Preprints*, San Francisco, CA, March 26-31, 2000. Invited.

Montgomery T. Shaw

“A Study of the Electrorheology of Filled Silicone Elastomers,” (with B. Liu), *Proceedings of the ACS PMSE*, Vol. 81, pp. 132-133, 1999.

“Numerical Simulation of Dielectric and Electrical Properties of Anisotropically Filled Polymers,” (with B. Liu and S. A. Boggs), *Proceedings of the Conference Record, CEIDP*, pp. 82-85, 1999.

“Measuring the Low-frequency Linear Viscoelastic Properties of Polymer Melts: Trials with PDMS Using Sphere-plane Squeeze Flow and Interferometry,” (with E. C. Cua), *Proceedings of the SPE ANTEC*, Vol. 46, pp. 1070-1074, 2000.

“Sharkskin Melt Fracture: A New Perspective,” (with Y.-W. Inn and L. Wang), *Proceedings, 1999 Prague Meetings on Macromolecules*, Paper SL 5, Vol. K72, 1999.

Robert A. Weiss

“Compatibilization of Liquid Crystalline Polymer/Polyolefin Blends,” (with H. Zhang and Y. Son), *Proceedings of Polyblends 99, NRCC, Boucherville, Quebec, Canada*, 1999.

“Compatibilizers for Thermotropic Liquid Crystalline Polymer/Polyolefin Blends Prepared by Reactive Mixing: The Effect of Processing Conditions,” (with Y. Son), *Proceedings of the Annual Technical Conference, Society of Plastics Engineering*, Vol. 66, pg. 1557-1558, 2000.

Thomas K. Wood

“Aerobic Degradation of Tetrachloroethylene by Toluene/*o*-Xylene Monooxygenase of *Pseudomonas stutzeri* OX1,” (with D. Ryoo, H. Shim and P. Barbieri), *Proceedings of the American Society of Microbiology 2000 General Meeting*, p. 571, Los Angeles, May 23, 2000.

“Tetrachloroethylene, Trichloroethylene, and Chlorinated Phenols Induce Toluene/*o*-Xylene Monooxygenase of *Pseudomonas stutzeri* OX1,” (with P. Barbieri, D. Ryoo and H. Shim), *Proceedings of the American Society of Microbiology 2000 General Meeting*, p. 540, Los Angeles, May 22, 2000.

“Corrosion Control Using Regenerative Biofilms-An Update,” (with B. C. Syrett, J. C. Earthman, P. Arps, and F. Mansfeld), *Corrosion in Refinery Petrochemical and Power Generation Plants*, Venice, Italy, May 19, 2000.

Chemical Engineering Department

Active Research Grants and Contracts

1999–2000

Luke E. K. Achenie

“Optimization of Chemical Processes Under Uncertainty,” National Science Foundation, April 1, 1998 – March 31, 2001, \$197,532 (\$67,725).

“Optimization of Chemical Processes Under Uncertainty,” National Science Foundation REU Supplement, \$10,000, January 1999.

James P. Bell

“Surface Polymerized Coatings Process Development,” Mixed Sources, December 23, 1998 – December 23, 2000, \$386,000 (\$193,000).

“Corrosion Protection Using Surface-Polymerized Coatings,” Dacco Sci. Inc., March 5, 1999 – November 30, 2000, \$188,131 (\$107,503).

Supplemental Environmental Project (SEP), Pratt & Whitney, March 6, 2000 – December 31, 2000, \$46,000 (\$18,400).

James D. Bryers

“Interactions Between Substratum Surface Chemistry, Conformation of Organics Upon Adsorption, and Availability of Organics for Bacterial Degradation,” National Science Foundation, 1998-2001, \$360,000 (\$120,000), (3 years).

“A Gene Therapy Approach to the Prevention of Biomaterials Infections,” National Science Foundation, 1998-2001, (3 years), \$386,000 (128,666).

“Mass Transfer Mechanisms in Bacterial Biofilms,” National Institutes of Health, 1999-2005 (5 years), \$1,488,000 (\$297,600).

“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 (\$62,500) (\$125,000/year).

Douglas J. Cooper

UConn’s Process Control Consortium, Eli Lilly Corporation, May 2000 – April 2001, \$5,000.

UConn’s Process Control Consortium, Pavilion Technologies, March 1999 – February 2001, \$9,000.

UConn’s Process Control Consortium, SKC Inc., July 1999 – June 2000, \$4,500.

UConn’s Process Control Consortium, Laplace Technologies, January 1999 – December 2000, \$9,000.

UConn’s Process Control Consortium, Owens Corning, August 1999 – July 2000, \$8,000.

UConn’s Process Control Consortium, AlliedSignal Corp, September 1997 – August 2000, \$39,500.

UConn’s Process Control Consortium, Westinghouse Savannah River Co. , May 1997- May 2000, \$44,500.

UConn's Process Control Consortium, PPG Industries, January 1997 – December 1999, \$20,000.

UConn's Process Control Consortium, Training Workshops (various), July 1999 – June 2000, \$18,000.

Robert W. Coughlin

“Methodology for Development of Marketable Biotechnologies,” USAID Linkage Program, September 14, 1997 – December 31, 1999, \$100,000 (\$22,222).

Michael B. Cutlip

“Novel High-Temperature Composite Membrane,” (PI: J. M. Fenton; co-PI: H. R. Kunz), Contribution to an Energy Research Corporation (ERC) Proposal to Department of Energy (DOE) Solicitation No. DE-SC02-98EE50526, June 1, 1999 – August 30, 2000, \$112,906 (\$30,108).

Can Erkey

“Synthesis, Characterization and Activity of Homogeneous Catalysts Anchored to Polymers Soluble in Supercritical Carbon Dioxide,” American Chemical Society - Petroleum Research Fund-AC; September 1, 1997 – August 31, 2000, \$50,000 (\$16,666).

“Electrically Conductive Elastomer Foams,” (PI: R.A. Weiss), Connecticut Innovations, Inc., January 1, 1998 – December 31, 1999, \$186,476 (\$23,309).

“Synthesis of Nanoparticles in Supercritical Carbon Dioxide,” Connecticut Innovations, Inc., January 1, 1999 – December 31, 2000, \$179,931 (\$89,965).

“A Novel Approach to Design of Homogeneous Catalysts,” NSF, \$35,000, June 15, 2000 – May 31, 2000.

James M. Fenton

“Novel Electrochemical Ozone Generator for Disinfection of Spacecraft Water,” (co-PIs: R. Fisher and T. Wood), NASA Phase II funding to Giner, Inc., Waltham, MA, subcontract to UConn, July 1, 1999 – December 31, 2000, \$80,000, (\$17,778).

“Novel High-Temperature Composite Membrane,” (co-PIs: H. R. Kunz and M. B. Cutlip), Contribution to an Energy Research Corporation (ERC) Proposal to Department of Energy (DOE) Solicitation No. DE-SC02-98EE50526, June 1, 1999 – August 30, 2000, \$112,906 (\$60,216). [\$46,145 of additional funds were provided by the University of Connecticut for a total project cost of \$159,051].

Joseph J. Helble

“REU Supplement,” National Science Foundation CAREER Award, June 1999 – December 1999, \$10,000 (\$10,000).

“Combustion Aerosol Synthesis of Nanoscale Ceramics,” National Science Foundation CAREER Award, June 1998 – May 2002, \$210,000 (\$57,100).

“Air Toxics Emissions from Combustion Systems,” U.S. Department of Energy, May 1998 – March 2001, \$220,000 (\$88,000).

“Model of the Viscous Coalescence of Multiparticle Aggregates,” U.S. Environmental Protection Agency, September 1997 – August 1999, \$11,600 (\$1,000), (Project funds provided as part of R. Garabedian EPA STAR fellowship).

“Synthesis of Controlled Composition Particulate for Health Effects Study,” U.S. Environmental Protection Agency, June 1998 – June 2000, \$21,500 (\$15,000).

“Development of a Prototype *in-situ* Monitor for Determining the Size and Composition of Ambient Particulate,” Connecticut Innovations Inc., \$223,143 (\$83,700), September 1999 – August 2001.

“Evaluation of the Fitch Fuel Catalyst,” (co-PIs: B. Cetegen, S. Suib, and G. Hoag) Connecticut Innovations Inc., October 1999 – December 2000, \$200,000 (\$20,000).

“Development of Nanoscale Ceramics for Advanced Power Applications,” U.S. Department of Energy, \$50,000 (\$4,200), September 1997 – September 1999.

“Thermal Spray of Nanoscale Zirconia Thermal Barrier Coatings,” (Co-PIs: M. Gell, B. Cetegen, E. Jordan, N. Padture, *et al.*), U.S. Office of Naval Research Navy, \$8,300, May 2000.

Jeffrey T. Koberstein

“Surface Active Additives that Create Smart Biomimetic Surfaces,” ARO-AASERT, June 1997 – May 2000, \$113,632 (\$37,877).

“Durable Multilayer Coatings: A Modular Approach,” (co-PIs: T. Seery and P. Klemchuk), AFOSR, June 1997 – May 2000, \$1,200,000 (\$133,333).

“Masters Level Program Incorporating Significant Industrial Interaction,” (co-PIs: E. Kurz and O. Devereux), National Science Foundation, September 1997 – September 1999, \$356,411 (\$22,276).

“The Molecular Design of Surface Active Polymers that Create Functional Surfaces,” National Science Foundation, September 1998 – July 2001, \$300,000 (\$102,857).

“Control of Sensor/Tissue Interactions for Extended Lifetimes,” (co-PIs: D. Burgess, F. Papadimitrakopolous, S. Huang, F. Moussy, D. Kreutzer), National Institutes of Health, September 1998 – August 2001, \$1,052,131, (\$61,890).

“The Molecular Design of Smart Polymer Surfaces,” Army Research Office, June 15, 1999 – June 14, 2002, \$306,000 (\$102,000).

Patrick T. Mather

“Electroactive Gels for a Deployable Adaptive Mirror,” (STTR with Cornerstone Research Group), AFRL/DE, July 20, 1999 – August 20, 2000, \$100,000 (\$37,500).

“Laser Processing of a Net-Shape Polymeric Reflector Using Shape Memory Polymers,” (STTR with Cornerstone Research Group), NASA/LaRC, October 18, 1999 – October 19, 2000, \$100,000 (\$40,000).

“New Polymers and Processes for Space Applications,” AFOSR, December 15, 1999 – November 30, 2002, \$335,518 (\$112,722).

“NSF REU on Materials for Sensing and Actuating,” (PI: T. Seery; co-PIs: G. Sotzing, S. Huang, M. Shaw, S. Sung, K. Gonsalves, R. Weiss), National Science Foundation REU, January 1, 2000 – January 1, 2003, \$202,307 (\$5,500).

Montgomery T. Shaw

“Long-Term Aging of Nuclear Plant Cables,” Electric Power Research Institute, March 1, 1999 – December 31, 2003, (\$33,310), \$161,000.

“Rheometers for Materials Research,” U.S. Army Research Office, March 25, 1999 – March 24, 2000, \$381,000 (\$285,750).

“Natural vs. Artificial Aging of Nuclear Plant Components,” Electric Power Research Institute, August 1, 1984 – December 31, 2000, \$1,358,367 (\$112,000).

Robert A. Weiss

“Ionomer Containing Binary Polymer Blends,” National Science Foundation (DMR 97-12194), 1997-2002, \$491,022, (\$90,000).

“Neutron Reflectivity and Scattering Studies of Polymer Blends of Rods and Coils,” National Institute of Science & Technology, 1997-2001, \$365,301, (\$70,000).

“Conductive Elastomers,” (co-PI: C. Erkey), Connecticut Innovations, Inc., 1998-2000, \$186,476 (\$37,500).

“Novel Contact Lens Materials,” Wesley-Jesson, 1997-2001, \$231,624 (\$60,000).

“Compatibilizers for Liquid Crystalline Polymer Blends,” Connecticut Innovations, Inc., 1999-2001, \$258,000 (\$128,000).

“Improving Adhesion Between Fluoropolymers and Other Polymers,” Saint Gobain Corp., 2000-2001, \$88,864 (\$88,000).

Thomas K. Wood

“Corrosion Control Using Protective Biofilms Which Secrete Antimicrobials and Corrosion Inhibitors,” Electric Power Research Institute, January 1, 1998 – March 31, 2001, \$389,812 (\$119,942).

“Directed Evolution of Monooxygenases for Green Chemistry,” National Science Foundation, December 15, 1998 – November 30, 2000, \$214,063 (\$107,031).

“Directed Evolution of Monooxygenases for Green Chemistry,” National Science Foundation Research Experiences for Undergraduates, December 15, 1998 – November 30, 2000, \$10,000(\$5,000).

“Novel Electrochemical Ozone Generator for Disinfection of Spacecraft Water,” (PI: J. Fenton) Giner, Inc., sub-contract for NASA Phase II, SBIR, July 1, 1999 – December 31, 1999, \$80,000 (\$26,667).

“Rhizoremediation of Atrazine by Combining Engineered, Root-Colonizing Bacteria with Poplar Trees,” UConn New Faculty Research Account, June 1, 1999 – May 30, 2000, \$6,147 (\$5,635).

Chemical Engineering Department
Awards, Honors, Patents
1999–2000

Robert W. Coughlin

Fellow, American Institute of Chemical Engineers.

James M. Fenton

“Method and Apparatus for Electrochemical Delacquering and Detinning,” (with J. E. Dresty, Jr., R. Bodensteiner, C. He, J.-C. Lin, R. Venkataraman and A. Aldykiewicz, Jr.), U.S. Patent #6,045,686, April 4, 2000.

Joseph J. Helble

NSF Career Award.

1999 Outstanding Junior Faculty Award, School of Engineering, University of Connecticut.

Jeffrey T. Koberstein

“Ultra Thin Silicon Oxide and Metal Oxide Films,” U.S. Patent #5,962,079, October 5, 1999.

Patrick T. Mather

“High Temperature Polymers with Low Dielectric Properties,” (with F. E. Arnold, T. D. Dang, R. J. Spry and M. D. Alexander), U.S. Patent #6,057,417, May 2, 2000.

Montgomery T. Shaw

Appointed Fellow, Society of Plastics Engineers.

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

Robert A. Weiss

NSF Creativity Extension Award.

2000 International Education Award, Society of Plastics Engineers.

**Chemical Engineering Department
Major Professional Activities
1999–2000**

Luke E. K. Achenie

Session Chair, Posters - High Performance Computing [213], AIChE Annual Meeting, Dallas, TX, November 1999.

Panel Member, Issues in Mentoring Minorities in Higher Education, New England Board of Education, Academic Science and Engineering Support Network Conference, MIT, Cambridge, MA, October 1999.

UConn/Chemical Engineering Organizer of Information Session, AIChE Graduate Student Fair, AIChE Annual Meeting, November 1999, Dallas, TX.

Thomas F. Anderson

Treasurer, University of Connecticut Chapter of Sigma Xi.

James P. Bell

Advisory Board, *Polymer Engineering & Science*.

Advisory Board, *Journal of Adhesion Science & Technology*.

Advisory Board, *Journal of Polymer Engineering*.

Advisory Board, *International Journal of Adhesion and Adhesives*.

Research Excellence Award Committee, Adhesion Society.

James D. Bryers

Associate Editor, *Biotechnology & Bioengineering*.

Douglas J. Cooper

Chair, “Demonstration of Software for Chemical Engineering Education,” AIChE 1999 Annual Meeting, Dallas, TX, November 1, 1999.

Presentation: “A Hands-On Approach to Process Control Education,” AIChE 1999 Annual Meeting, Dallas, TX, 11/1/99.

Presentation: “Demonstration of the Control Station Process Control Training Simulator,” AIChE 1999 Annual Meeting, Dallas, TX, 11/1/99.

Michael B. Cutlip

National Chairman, Chemical Engineering Division of the American Society of Engineering Education, 1999-2000.

Trustee, CACHE Corporation (Computer Aids for Chemical Engineering Education).

Member, Executive Committee of the Chemical Engineering Division of the American Society for Engineering Education.

Member, Awards Committee of the Chemical Engineering Division of the American Society for Engineering Education.

Member, CACHE Corporation Curriculum Committee, Process Engineering Committee, Developing Innovative Engineers Committee, Simulated Laboratory Modules Committee.

Presentation: "Polymath Numerical Software for Windows™," (with Mordechai Shacham), AIChE Annual Meeting, Dallas, Texas, November 1999.

Can Erkey

Green Chemistry Symposia Chair, ACS Northeast Regional Meeting, Storrs, CT, June 2000.

Area 1F Session Coordinator, AIChE Annual Meeting, Los Angeles, CA, November 2000 (organizational planning activity initiated during 1999-2000).

Session chair, Applications of Supercritical Fluids in Foods and Pharmaceuticals, AIChE Annual Meeting, Los Angeles, CA, November 2000 (organizational planning activity initiated during 1999-2000).

Newsletter chair, Green Chemistry Division, American Chemical Society.

James M. Fenton

Co-chair of poster session for the 197th Meeting of The Electrochemical Society, Inc., May 14-18, 2000, Toronto, Canada.

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

Member, The Electrochemical Society Board of Directors, Publication Committee, New Technology Subcommittee, Education Committee, Technical Affairs Committee.

Member, Programming Committee for Area 1E of the AIChE.

Divisional representative, The Electrochemical Society's Council of Local Sections.

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

Joseph J. Helble

Program and Session Organizer, American Chemical Society Fall 2000 National Meeting, Division of Fuel Chemistry, 10 Year Retrospective on 1990 Clean Air Act Amendments, Washington, DC, August 2000 (organizational planning activity initiated during 1999-2000).

Scientific Conference Planning Committee, Engineering Foundation Conference on Vapor Phase Processing of Materials, Haikko Manor, Finland, July 1999.

Scientific Planning Committee, 4th International Symposium on Gas Cleaning at High Temperatures, Karlsruhe, Germany, September 1999.

Co-chair, Combustion Aerosols Committee, American Association for Aerosol Research.

Session chair, American Association for Aerosol Research annual meeting, October 1999.

Engineering Foundation Conference on Vapor Phase Processing of Materials, session chair, Haikko, Finland, July 1999.

Invited technical panelist, Air & Waste Management Association, Salt Lake City, June 2000.

Co-chair, AAAR Comb. Aerosols working group.

Jeffrey T. Koberstein

Chaired session on Polymer Interfaces at MRS meeting, San Francisco, CA, April 25, 2000.

Member, American Chemical Society, Polymer Division - Program Committee.

Member, Materials Research Society.

Member, International Association of Colloid and Interface Scientists.

Patrick T. Mather

Member, Editorial Advisory Board, *Polymer Engineering and Science*.

Committee member, The University of Connecticut Frontiers in Undergraduate Research in Arts, Sciences and Humanities (FURASH).

Invited Lectures

“Synthesis and Characterization of New POSS Hybrid Polymers,” American Chemical Society New England Regional Meeting, Storrs, CT, June 2000.

“Electroactive Gels for Adaptive Optics,” SAMPE Forum on Advanced Polymeric Materials for Space Applications, Long Beach, CA, May 23, 2000.

“Phase Behavior, Rheology and Morphology of Binary Blends of Thermotropic Polymers,” American Physical Society, Dillon Session for W.R. Burghardt, March 2000.

Montgomery T. Shaw

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

Treasurer, The Society of Rheology.

Member, Executive Committee, The Society of Rheology.

Society Treasurers Committee, American Institute of Physics.

Robert A. Weiss

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

Editor-in-Chief, *Polymer Composites*.

U.S. Representative for Organizing Committee of Macro99, Bath, England.

International Advisory Board, *Polymers and Polymer Composites*.

Board of Directors, Engineering Properties and Structure Division, Society of Plastics Engineers.

Chairman, Intersociety Committee, Engineering Properties and Structure Division, Society of Plastics Engineers.

Publications Committee, Society of Plastics Engineers.

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

Civil & Environmental Engineering Department

Annual Report Summary

1999–2000

OVERVIEW

The Department of Civil & Environmental Engineering experienced yet another year of significant changes. The department underwent a change in departmental leadership midway through the academic year. While the leadership transition was smooth, there were the inevitable changes in policies and style that faculty and staff had to accommodate. In addition, there was a major reassignment of laboratory space, and the year closed with major office reassignments underway. Despite these several upheavals, departmental programs continued to grow, particularly the graduate and research programs. In addition, faculty made major headway in implementing ABET 2000 accreditation requirements.

PERSONNEL CHANGES

Dr. Allison MacKay began her appointment as Assistant Professor in fall 1999. She holds a Ph.D. in Environmental Engineering from MIT and joined us after serving as a post-doctoral associate at the Connecticut Agricultural Experiment Station. Meanwhile, three faculty searches were underway by the close of the 1999-2000 academic year: the Northeast Utilities Foundation Chair in Environmental Engineering — an endowed professorship — and assistant professorships in Environmental Engineering and in Transportation Systems Engineering.

Early in the academic year, Domenico Grasso announced he was accepting an appointment at Smith College to be the founding Chair of their newly-approved engineering program, effective January 2000. After a nomination and election process conducted during the fall 1999, Associate Dean and Professor Erling Murtha-Smith was appointed Head for a three-year term, beginning January 1, 2000.

Associate Professor Nikolaos Nikolaidis was promoted to full Professor, and Assistant Professors B. John Ivan, Fred Ogden and Barth Smets were promoted to Associate Professor and granted permanent academic tenure.

ENROLLMENT

Undergraduate enrollment and graduation counts in Civil Engineering remain steady compared with slightly declining national trends. The Department also continues to provide a net “export” of student credit hours to other engineering programs in the applied mechanics courses CE 211, 212, and 287. However, the Department of Mechanical Engineering is assisting in staffing CE 212 which significantly helps balance of service course effort.

Progress was made in achieving diversity of the CEE student body. Overall, 28 percent of CEE undergraduates are female — the highest percentage in the School of Engineering — and the CEE freshman class entering fall 1999 also has the highest percentage in the School of female students at 43 percent female.

Meanwhile, graduate enrollment grew, and, in particular, there was an increase in the number of doctoral students and post-doctoral fellows supported.

RESEARCH FUNDING & AWARDS

Faculty research continues to grow. Research funding increased, with the department emerging as one of the leading funded research departments on campus. Further, more of the faculty members are receiving funding

from federal sources (e.g., Accorsi, Anagnostou, Demars, Epstein, Garrick, Ivan, Leonard, Malla, Masih, Murtha-Smith, Nikolaidis, Ogden, and Smets). Faculty are supporting more graduate students, and more faculty are supporting post-doctoral students (e.g., Anagnostou, Ivan, Garrick, Ogden, and Smets).

Dr. Smets was awarded a prestigious GAANN — Graduate Assistance in Areas of National Need — award from the U.S. Department of Education. This grant provides nine doctoral fellowships in environmental biotechnology that will be shared between Environmental Engineering and Microbiology programs. It is the first such award to the University of Connecticut and will provide a significant boost to the national prestige of the department. Dr. Smets is the Program Director and a co-PI. During 1999, Dr. Smets also received one of the two School of Engineering Outstanding Junior Faculty awards.

PROFESSIONAL SERVICE

Faculty continue professional service to the university and beyond. Most faculty serve as editors, associate editors and on editorial boards; serve on federal review panels; and organize and chair conference sessions. In addition, the faculty is increasingly visible internationally, chairing conference sessions at international conferences, presenting invited papers at international conferences, and serving as international advisors or scientific committees.

SPACE & OFFICE REASSIGNMENTS

The Space Committee completed their review of laboratory space allocation and use within the department and recommended reassignments based on current and predicted demands for instructional and research needs. Based on that report, laboratory reassignments were made in spring 2000 and are being completed during the summer of 2000. Incoming head Murtha-Smith also reviewed office space needs. The increasing enrollment of fully-funded graduate students and increasing numbers of post-doctoral fellows, combined with three new faculty, drove the need for the review. The laboratory reassignments included the creation of additional graduate student office space to partially accommodate the anticipated increase in the number of funded graduate students. The faculty office reassignments cluster faculty in three groups: environmental engineering/water resources engineering, in structures and applied mechanics, and in transportation engineering. The reassignments are being completed during the summer of 2000.

ACCREDITATION PREPARATION

The department faculty continued the transition of the undergraduate program to ABET 2000 criteria. This effort became particularly intense this year, primarily focused on the departmental curriculum and courses committee although all faculty were involved in activities during the spring 2000 semester.

A major feature of ABET 2000 is the intentional involvement of the constituencies served by the program. The criteria empower engineering programs to be more responsive to the changing needs of students and industry. The Civil Engineering undergraduate program objectives were defined and approved by faculty and then sent to practicing engineers and academics for their review and comment. The following program objectives were unanimously approved by these external “constituents.”

The undergraduate program in *Civil Engineering* develops the mathematical and scientific foundations of engineering, and the design abilities of our graduates so that they can enter professional practice or pursue advanced professional degrees. Our learning environment has small class sizes and strong faculty/student interaction. The objectives of our undergraduate program are that our graduates:

1. *Practice engineering* in the public and private sectors in the technical areas of environmental, geotechnical, structural, transportation, and water resources engineering;

2. *Become licensed* professional engineers, designing and constructing solutions to civil engineering problems in the natural environment and engineered infrastructure; and
3. *Continue learning* through post-graduate and professional education.

During the year, all faculty became involved in reviewing their courses with respect to the new requirements. The review of each course involves faculty from prerequisite and dependent courses, and, for courses offered to other programs in the School, review by faculty in their dependent courses. During the coming year, the Civil Engineering undergraduate program should be completely transitioned to ABET 2000.

Civil & Environmental Engineering Department
Archival Technical Journal Publications
1999–2000

Michael L. Accorsi

“Structural Modeling of Parachute Dynamics,” (with J.W. Leonard, R. Benney, and K. Stein), *AIAA Journal*, Vol. 38, No. 1, pp. 139-146, January 2000.

“Passive Vibration Suppression in Truss-Type Structures with Tubular Members,” (with H. Adib-Jahromi and M.L. Accorsi), *Journal of Spacecraft and Rockets*, AIAA, Washington, D.C., Vol. 37, No. 1, pp. 86-92, January-February 2000.

Emmanouil N. Anagnostou

“Statistical Adjustment of Satellite Microwave Monthly Rainfall Estimates,” (A. Negri and R. Adler), *Journal of Applied Meteorology*, Vol. 38, pp. 1590-1598, October 1999.

“Satellite Observations of the Diurnal Variability of Rainfall in Amazonia,” (A. Negri and R. Adler), *Journal of Geophysical Research-Atmospheres*, Vol. 104, No. D24, pp. 31477-31488, December 1999.

“On the Use of Real-time Radar Rainfall Estimates for Flood Prediction in Mountainous Basins,” (M. Borga and E. Frank), *Journal of Geophysical Research-Atmospheres*, Vol. 105, No. D2, pp. 2269-2280, 2000.

John T. DeWolf

“Short Term Strain Monitoring of Bridge Structures,” (with R. R. Sartor and M. P. Culmo), American Society of Civil Engineers *Journal of Bridge Engineering*, Vol. 4, No. 3, pp. 157-164, August 1999.

“Mathematical Model for Relaxation in High-Strength Bolted Connections,” (with J. Yang), *ASCE Journal of Structural Engineering*, Vol. 125, No. 8, pp. 803-809, August 1999.

“Relaxation in High-Strength bolted Connections Using Galvanized Sheet,” (with J. Yang), *ASCE Journal of Bridge Engineering*, Vol. 5, No. 2, pp. 99-106, May 2000.

Gregory C. Frantz

“Bond Performance of Rapid-setting Repair Materials Subjected to Deicing Salt and Freezing-Thawing Cycles,” (S. Li and J.E. Stephens), *Materials Journal*, American Concrete Institute, Vol. 96, No. 6, pp. 692-697, December 1999.

“Splitting Prism Test Method to Evaluate Bond Strength,” (D.G. Geissert, S. Li, and J.E. Stephens), *Materials Journal*, American Concrete Institute, Vol. 96, No. 3, pp. 359-366, June 1999.

George E. Hoag

“Kinetic Study of Oxidation of Trichloroethylene by Potassium Permanganate,” (with K. Huang, P. Chheda, B. Woody, and G. Dobbs), *Environmental Engineering Science*, Vol. 16, No. 4, 1999.

John N. Ivan

“Differences in Causality Factors for Single and Multi-Vehicle Crashes on Two-Lane Highways,” (with R.P. Pasupathy and P.J. Ossenbruggen), *Accident Analysis & Prevention*, Vol. 31, pp. 695-704, 1999.

John W. Leonard

“Structural Modeling of Parachute Dynamics,” (with M.L. Accorsi, R. Benney, and K. Stein), *AIAA Journal*, Vol. 38, No. 1, pp. 139-146, 2000.

Allison A. MacKay

“Sorption of Monoaromatic Hydrocarbons to Wood,” (with P.M. Gschwend), *Environmental Science and Technology*, Vol. 34, No. 5, pp. 839-845, 2000.

Ramesh B. Malla

“Dynamic Nonlinear Member Failure Propagation in Truss Structures,” (with B. Nalluri), *Structural Engineering and Mechanics — An International Journal*, Vol. 9, No. 2, pp. 111-126, February 2000.

“Passive Vibration Suppression in Truss-Type Structures with Tubular Members,” (with H. Adib-Jahromi and M.L. Accorsi), *Journal of Spacecraft and Rockets*, AIAA, Washington, D.C., Vol. 37, No. 1, Jan-Feb. 2000, pp. 86-92.

Rusk Y. Masih

“Dynamic Load Effect on Lift Slab Structures,” (with V. Hambertsumian), *ASCE Journal of Performance of Constructed Facilities*, Vol. 13, No. 1, pp. 34-38, 1999.

Nikolaos P. Nikolaidis

“Methodology for Site-Specific, Mobility-Based Cleanup Standards for Heavy Metals in Glaciated Soils,” (with L.A. Hellerich and J.A. Lackovic), *Environmental Science and Technology*, Vol. 33, No. 17, pp. 2910-2916, 1999.

“Evaluation of Remedial Alternatives of Lead from Shooting Range Soil,” (with R. Bruell and R.P. Long), *Environmental Engineering and Science*, Vol. 16, No. 5, pp. 403-414, 1999.

“Inorganic Arsenic Removal by Zero-Valent Iron” (with J.A. Lackovic and G.M. Dobbs), *Environmental Engineering and Science*, Vol. 17, No. 1, pp. 29-39, 2000.

“Development and Application of a Conceptual Site Model for Evaluating Contaminant Mobility and Remediation,” (with H. Shen), *Global NEST: The International Journal*, 2(1), pp. 67-76, 2000.

Fred L. Ogden

“Hydrologic Analysis of the Fort Collins, Colorado, Flash Flood of 1997,” (with H.O. Sharif, S.U.S. Senarath, J.A. Smith, M.L. Baeck, and J.R. Richardson), *Journal of Hydrology*, Vol. 228, pp. 82-100, 2000.

“On the Calibration and Verification of Distributed, Physically-Based, Continuous, Hortonian Hydrologic Models,” (with S.U.S. Senarath, C.W. Downer, and H.O. Sharif), *Water Resources Research*, Vol. 36, No. 6, pp. 1495-1510, 2000.

“Radar Studies of Heavy Convective Rainfall in Mountainous Terrain,” (with G. Landel, J.A. Smith, M.L. Baeck, and M. Steiner), *Journal of Geophysical Research-Atmospheres*, Vol. 104, No. D24, pp. 31 & 451, 1999.

“Fort Collins Flood Dataset Created,” (with J.R. Richardson, J.A. Smith, and M.E. Smith), *EOS, American Geophysical Union*, Vol. 80, No. 23, pp. 257-258, 1999.

Barth F. Smets

“Single-step Nitrification Models Erroneously Describe Batch Ammonia Oxidation Profiles when Nitrite Oxidation Becomes Rate Limiting,” (with K. Chandran), *Biotechnology and Bioengineering*, Vol. 68, No. 4, pp. 396-406, 2000.

“Surface Physicochemical Properties of a *Pseudomonas fluorescens* and Impact on Adhesion and Transport Through Porous Media,” (with D. Grasso, M. A. Engwall, and B. J. Machinist), *Colloids and Surfaces B: Biointerfaces*, Vol. 14, No. 1-4, pp. 121-139, 1999.

“A Sorptive Slurry Bioscrubber for the Control of Acetone,” (with R. E. Guha, T. J. Overcamp, and C. P. L. Grady, Jr.), *Journal of the Air and Waste Management Association*, Vol. 50, No. 6, pp. 174-185, 2000.

“Aerobic Biodegradation of Nitroglycerin in a Sequencing Batch Reactor,” (with J.V. Accasian and B.-J. Kim), *Water Environment Research*, Vol 72, No. 4, pp. 499-506, 2000.

Civil & Environmental Engineering Department
Books, Book Chapters, Book Sections & Edited Volumes
1999–2000

John T. DeWolf

Mechanics of Materials, Second Edition, (collaborator, with F. P. Beer; author: E. R. Johnston, McGraw Hill, Inc. 1992, at last check, in ninth printing (also published in the following editions: Chinese, International, Korean, Metric Edition, Portuguese, Spanish and Italian, Greek).

Nikolaos Nikolaidis

“Field Methods for Site Assessment and Remediation of Contaminated Ground Waters,” (with L.A. Hellerich), *Ground Water Contamination Control*, (K.L. Katsifarakis, ed.), Advances in Water Resources Series, WIT Press Southampton, UK, Chapter 5, pp. 203-244, 1999.

Fred L. Ogden

“GIS Modules and Distributed Models of the Watershed,” ASCE Task Committee Report, American Society of Engineers, ISBN: 0-7844-0443-7, 1999.

“External Task Force Review of the United States Geological Survey Federal-State Cooperative Water Program,” (et al.), U.S. Geological Survey Circular 1192, (S.F. Blanchard, ed.), State Cooperative Water Program, August 1999.

Civil & Environmental Engineering Department
Conference Proceedings & Other Publications
1999–2000

Nelly M. Abboud

“Sensitivity Analysis of Cake Porosity, Pressure, Concentration, and Solid Velocity with Respect to Cake Compressibility and Membrane Impedance,” Proceedings of the Advances in Filtration and Separation Technology for 2000, American Filtration and Separation Society, Vol. 14, pp. 455-464, 2000.

“A Model for the Transport of Microbial Particle in a Porous Column,” Proceedings of Computer Methods and Water Resources IV, Vol. 4, pp. 205-214, 2000.

Emmanouil N. Anagnostou

“Identification of WSR-88D Calibration Biases from TRMM Radar Reflectivity Observations,” (with C.A. Morales and T. Dinku) Proceedings of the 29th International Conference on Radar Meteorology, pp. 236-237, July 1999. Selected for inclusion on the cover page of the conference proceedings.

Christian F. Davis

“Poroelasticity of Bones: A Primer,” Proceedings of the IEEE 26th Annual Northeast Bioengineering Conference, pp. 7–8, April 2000.

Kenneth R. Demars

“Ash Reutilization Research at the University of Connecticut,” (with G.C. Frantz) Proceedings of the International Symposium on Sustainable Construction: Use of Incinerator Ash, Dundee, Scotland, pp. 317-329, March 20-21, 2000.

John T. DeWolf

“Remote Monitoring of Bridges in Connecticut,” (with T. Lengyel, Y. Fu, R. Lauzon, K. Bernard), CD-ROM Proceedings of ASCE Structures Conference, May 2000.

Howard I. Epstein

“Revisiting the Questions of ‘Why Four Years?’,” CD-ROM Proceedings of the ASEE Annual Meeting, Charlotte, NC, June 1999.

Gregory C. Frantz

“Ash Reutilization Research at the University of Connecticut,” (with K.R. Demars) Proceedings of the International Symposium on Sustainable Construction: Use of Incinerator Ash, Dundee, Scotland, pp. 317-329, March 20-21, 2000.

Norman W. Garrick

“Streets That Serve Our Needs: Functional Classification for Livable Communities,” (with T. Kuhnimhof) Conference Proceedings from the 2nd International Symposium on Highway Geometric Design, Transportation Research Board, Mainz, Germany, June 2000.

“Functional Classification: The Weak Link in Context Sensitive Roadway Design,” (with T. Kuhnimhof), Proceedings of the Transportation Research Boards Annual Meeting, Washington, DC, January 2000.

George E. Hoag

“Soil Oxidant Demand During Chemical Oxidation of Trichloroethylene by Permanganate in Soil Media,” (with K-C Huang, P. Chheda, B.A. Woody, and G.M. Dobbs), Proceedings of the 32nd Mid-Atlantic Industrial and Hazardous Waste Conference, 2000.

“Mass Transfer Study of the Oxidation of Gas Phase Trichloroethylene by Permanganate in a Bubble Column,” (with J. Fernet and P. Chheda), Proceedings of the 32nd Mid-Atlantic Industrial and Hazardous Waste Conference, 2000.

“Kinetics Study of Oxidation of Chlorinated Ethenes with Permanganate,” (with K-C Huang, P. Chheda, B.A. Woody, and G.M. Dobbs), Proceedings of Groundwater 2000: International Conference on Groundwater Research, Copenhagen, Denmark, June 2000.

John N. Ivan

“Representing Traffic Exposure in Multi-Vehicle Crash Prediction for Two-Lane Highway Segments,” (with C. Wang), CD-ROM Proceedings of the Transportation Research Boards Annual Meeting, Washington, D.C., January 2000.

“Rural Pedestrian Crash Rates: Alternative Measures of Exposure,” (with P.J. Ossenbruggen), CD-ROM Proceedings of the 25th International Forum on Traffic Records & Highway Information Systems, July 1999.

“Representing Traffic Exposure for Multi-Vehicle Crash Prediction on Two-Lane Highways,” (with C. Wang), CD-ROM Proceedings of the 25th International Forum on Traffic Records & Highway Information Systems, July 1999.

Rusk Y. Masih

“Multimedia – A Forum to Unify Engineering Standards and Engineering Education Throughout the World,” Proceedings of UICEE, Auckland, New Zealand, pp. 233-234, 1999.

“Enhancing the Students’ Learning Process Through Interaction Project between Academia and Industry,” ASEE-NE Conference, University of Massachusetts, Lowell, April 2000.

Nikolaos P. Nikolaidis

“Evaluation of the Hydrologic and Chemical Mass Balances of Copper Within an Urban Watershed,” (with B. Boulanger, R. Carley, and C. Perkins) Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, June 20-23, 1999, Storrs, CT.

“Modeling of Bromide in a Single-Well Injection-Withdrawal Experiment,” (with L.A. Hellerich, C.R. Johnson, and P.M. Gschwend) Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, June 20-23, 1999, Storrs, CT.

“A Site Assessment Methodology for the Characterization of Mixed Organics and Redox Sensitive Heavy Metal Plumes,” (with G.M. Dobbs and R.E. Post) Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, June 20-23, 1999, Storrs, CT.

“Redox-Sensitive Mobility of Arsenic in Proximity to a Municipal Landfill,” (with J.A. Lackovic and G.M. Dobbs) Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, June 20-23, 1999, Storrs, CT.

“Modeling the Mobility of Cadmium in Soils,” (with L.A. Hellerich and S. Seymour), Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, June 20-23, 1999, Storrs, CT.

“Nitrification Inhibition Measurement Using a Rapid Extant Respirometric Assay,” (with K. Chandran), Proceedings of the 31st Mid Atlantic Industrial and Hazardous Waste Conference, Storrs, CT: Technomic, Lancaster PA. (with C. Erkey and B. F. Smets, eds.), 1999.

“Modeling Runoff in Urban Storm Water Systems,” (with H.O. Sharif, B. Boulanger, and F.L. Ogden), American Geophysical Union, 1999 Spring Meeting, Boston, MA.

“Fate, Speciation and Transport of Copper in an Urban Watershed,” (with B. Boulanger), Proceedings of the 1999 SETAC Annual Conference, Philadelphia, PA, November 14-19, 1999.

“Evaluation of the Hydrologic and Chemical Mass Balances of Copper Within an Urban Watershed,” (with B. Boulanger, R. Carley, and C. Perkins), Proceedings of the 31st Mid-Atlantic Industrial and Hazardous Waste Conference, June 20-23, 1999, Storrs, CT.

Fred L. Ogden

“Numerical Studies of Radar-rainfall Error Propagation,” (with H.O. Sharif, W. Krajewski, E. Anagnostou, and M. Xue), Proceedings of the Spring Meeting, American Geophysical Union, San Francisco, CA, May 30-June 3, 2000.

“Modeling Runoff in Urban Storm Water Systems,” (with N. Nikolaidis, H.O. Sharif, and B. Boulanger), American Geophysical Union, 1999 Spring Meeting, Boston, MA.

“Evaluation of Range-dependent Radar-rainfall Error Propagation Through Runoff Predictions,” (with H. Sharif, W. Krajewski, E. Anagnostou, and M. Xue), Proceedings of the AGU Fall Meeting, San Francisco, CA, December 1999.

“The Role of Rainfall in Physics-Based Hydrologic Model Performance,” (with C. Downer), COST Symposium on the Future of Distributed Hydrologic Modeling, Leuven, Belgium, April 10-14, 2000.

“Numerical Studies of Radar-Rainfall Error Propagation,” (with H. Sharif, W. Krajewski, E. Anagnostou and M. Xue), Proceedings of the AGU Fall Meeting, San Francisco, CA, December 1999.

“Advances in Physically Based Hydrologic Modeling with CASC2D,” (with C. Downer, B. Johnson, and E. Meselhe), ASCE Watershed Management Conference, Fort Collins, CO, June 2000.

“Rainfall Input for Distributed Hydrologic Modeling – the Case for Radar,” (with H. Sharif), ASCE Watershed Management Conference, Fort Collins, CO, June 2000.

Barth F. Smets

“Simultaneous Estimation of the Biokinetics of Ammonia and Nitrite Oxidation from a Single Respirometric Profile using a Comprehensive Two-Step Nitrification Model,” (with K. Chandran), AC#9901002, CD-ROM Proceedings of the 72nd Annual WEF Conference and Exposition, CD-ROM, New Orleans, LA., Water Environment Federation, 1999.

“Nitrification Inhibition Measurement Using a Rapid Extant Respirometric Assay,” (with K. Chandran), Proceedings of the 31st Mid Atlantic Industrial and Hazardous Waste Conference, Storrs, CT, (N. Nikolaidis, C. Erkey, B.F. Smets, eds.), Technomic, Lancaster, PA, pp. 79-88, 1999.

“Nitroglycerin Denitration by Bacterial Cultures,” (with R.T. Vinopal, G.W. Johnson, H.H. Yang, and J.V. Accashian), CD-Rom Proceedings of the Ninth European Congress on Biotechnology, (M. Hoffman, ed.); Branche Belge de la Societe de Chimie Industrielle, Brussels, BE, 1999.

“Comparison of a Visual-based and Least-squared-error-based Method to Estimate Biofilm Kinetic Parameters,” (with R. G. Riefler), Proceedings of the IAWQ Specialized Conference on Biofilm Systems, October 17-20, 1999, New York, NY.

“Comparison of Different Physical-chemical Methods to Determine the Truly Soluble COD in Wastewater,” (with Z. Hu, K. Chandran, and D. Grasso), Proceedings of the 32nd Mid-Atlantic Industrial and Hazardous Waste Conference, June 26-28, 2000, pp. 581-590 (J. Kilduff, S. Komisar and M. Nyman, eds.), Technomic, Troy, NY.

“Reductive Transformation of Chlorinated Ethenes: Microcosm Studies to Elucidate Biological Processes in the Subsurface,” (with M.A. Panciera and O. Zelennikova), Proceedings of the 32nd Mid-Atlantic Industrial and Hazardous Waste Conference, June 26-28, 2000, pp. 182-191 (J. Kilduff, S. Komisar and M. Nyman, eds.), Technomic, Troy, NY.

“Kinetics of 2,4,6-trinitrotoluene Reduction by NAD(P)H:FMN Oxidoreductase,” (with R.G. Riefler), Proceedings of the 32nd Mid-Atlantic Industrial and Hazardous Waste Conference, June 26-28, 2000, pp. 192-200 (J. Kilduff, S. Komisar and M. Nyman, eds.), Technomic, Troy, NY.

Civil & Environmental Engineering Department
Active Research Grants and Contracts
1999–2000

Michael L. Accorsi

“New Structural Model for Parachute Inflation Simulations,” (PI: J.W. Leonard), U.S. Army Research Office, April 15, 1996 – July 14, 1999, \$236,356 (FY00 \$13,672).

“IPA on Advanced Parachute Simulations,” U.S. Army Natick RD&E Center, May 21, 1999 – August 26, 1999, \$12,524 (FY00 \$12,381).

“Simulation and Modeling of Wind Effects on Airdrop Systems,” (Co-PI: J. Leonard), Air Force Office of Scientific Research, February 1, 1998 – January 31, 2001, \$278,968 (FY00 \$65,232).

“Simulation and Evaluation of Innovative Tactical Parachute Systems,” (Co-PI: J. Leonard), Dept. of Defense AASERT, June 1, 1998 – May 30, 2001, 50% of \$98,925 (FY00 \$11,567).

“Computer Simulations and Design of High Performance Parafoil Systems,” (Co-PI: J. Leonard), Connecticut Innovations, Inc. Yankee Ingenuity Initiative, December 31, 1998 – December 30, 2000, \$135,246 (FY00 \$17,417).

“Advanced Structural Modeling for Fully-Coupled Parachute Dynamics,” (Co-PI: J. Leonard), U.S. Army Research Office, June 1, 1999 – May 31, 2002, \$223,998 (FY00 \$16,755).

“Analytical Determination and Optimization of the Mechanical Properties of Lattice Block Materials,” Office of Naval Research, June 1, 2000 – May 31, 2003, \$109,905 (FY00 \$0).

“IPA 2000 on Advanced Parachute Simulations,” U.S. Army Natick RD&E Center, May 23, 2000 – August 22, 2000, \$14,982 (FY00 \$0).

“A NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, Washington, D.C., June 1, 1999 – May 31, 2000, \$147,000 (FY00 \$4,050).

Emmanouil N. Anagnostou

“Calibration of Ground-Based Weather Radar Systems From TRMM Space-Based Radar Observations: A Demonstration Project,” Tropical Rainfall Measuring Mission, NASA, January 1, 1999 – December 31, 2001, \$213,484 (FY00 \$161,852).

“A NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, Washington, D.C., June 1, 1999 – May 31, 2000, \$147,000 (FY00 \$4,050).

“Understanding the Error Characteristics of Precipitation Estimates from Space-Based Observing Systems,” New Investigator Program-NASA, July 1, 1999 – June 30, 2002, \$124,428 (FY00 161,852).

Christian F. Davis

“A Visualization Method for Teaching Highway Design,” (PI: N.W. Garrick), U.S. Department of Transportation, September 1998 – December 1999, \$22,500 (FY00 \$5,893).

“Estimating Benefits from Specific Highway Improvements, Phase II,” (co-PI: J.N. Ivan and PI: N.W. Garrick), Connecticut Department of Transportation, June 1, 1997 – May 31, 2000, \$146,978 (FY00 \$16,434).

Kenneth R. Demars

“Till Core Sample Measurements,” U.S. Geological Survey, July 15, 1986 – December 31, 2000, \$11,830 (FY00 \$454).

“Wood Waste Material Performance Specifications for Erosion Control,” (Co-PI: R.P. Long), New England Transportation Consortium, May 1, 2000 – December 31, 2000, \$25,268 (FY00 \$0).

“Determining Properties, Standards, and Performance of Wood Waste Compost as an Erosion Control Mulch and as a Filter Berm,” (Co-PI: R.P. Long) in cooperation with ConnDOT, New England Transportation Consortium, July 1, 1998 – January 31, 2000, \$54,649 (UConn) + \$11,000 (Construction of Field Site to ConnDOT) (FY00 \$15,010).

John T. DeWolf

“Network of Continuous Computer-Based Bridge-Monitoring Systems in the State of Connecticut,” Connecticut Department of Transportation, June 1, 1994 – May 31, 2000, \$807,200 (FY00 \$142,200).

“Monitoring of Washington Bridge, Providence, Rhode Island,” Vanasse Hangen Brustlin/Rhode Island DOT, May 1, 1997 - present, \$10,350 (FY00 \$279).

“Evaluation of Sign Support Structures,” Connecticut Department of Transportation, June 1, 1998 – May 31, 2000, \$61,603 (FY00 \$28,612).

Howard I. Epstein

“Block Shear Investigation of Structural Tees and Other Tension Connections,” National Science Foundation, September 1997 – September 2000, \$180,292 (FY00 \$38,457).

Gregory C. Frantz

“Protection of Reinforcement with Corrosion Inhibitors,” (Co-PI: J.E. Stephens), Connecticut Department of Transportation, June 1, 1997 – May 31, 2000, \$119,309 (FY00 \$24,041).

Norman W. Garrick

“Estimating Benefits from Specific Highway Safety Improvements: Phase II,” Project 97-1, (Co-PIs: C.F. Davis and J.N. Ivan), Cooperative Research Program, June 1, 1997 – May 31, 2000, \$146,978 (FY00 \$16,932).

“A Portable Method for Determining Chloride Concentration on Roadway Pavements,” (Co-PI: N.P. Nikolaidis), New England Transportation Consortium, September 1, 1998 – December 31, 2000, \$211,664 (FY00 \$52,774).

“Visualization Method for Teaching the Geometric Design of Highways,” New England University Transportation Center, September 1, 1998 – December 31, 1999, \$22,500 (FY00 \$13,749).

“An Innovative Fiber Optic Weight-in-Motion System,” (PI: R.B. Malla), University of Connecticut Research Foundation, June 1, 1999 – May 31, 2000, \$10,652 (FY00 \$0).

“CT Advanced Pavement Laboratory Administration, Technology Transfer and Research,” Connecticut Department of Transportation, July 1, 1999 – June 30, 2000, \$198,550 (FY00 \$198,000).

“Management of the New England Transportation Consortium,” New England Transportation Consortium, July 1, 1999 – June 30, 2000, \$100,327 (FY00 \$79,568).

“Technology Transfer Center,” FHWA/Connecticut DOT/Participants Fees, July 1, 1999 – June 30, 2000, \$243,089 (FY00 \$228,882).

George E. Hoag

“Contaminant Site Assessment At the Norden Site, Norwalk, Connecticut,” (Co-PI: A. Dahmani), United Technologies Corporation, December 1, 1998 – September 30, 1999, \$71,980 (FY 00 \$65,260).

“DNAPL Remediation Initiative: Technology Evaluation for the Remediation of Subsurface Accumulations of Chlorinated Solvents,” (Co-PIs: J. Cherry and B. Parker), United Technologies Corporation, June 1, 1996 – February 28, 2000, \$926,750 (FY00 \$343,202).

“Groundwater, Soil and DNAPL Characterization and Treatability Study,” (Co-PI: P. Chheda), United Technologies Automotive, June 30, 1997 – July 1, 1999, \$754,976 (FY00 \$65,260).

John N. Ivan

“Rural Pedestrian Crash Rates: Alternative Measures of Exposure,” (Co-PI: P. Ossenbruggen, Univ. New Hampshire), U.S. Department of Transportation (New England University Transportation Center), September 1, 1998 – August 31, 1999, \$67,500 (FY00 \$0).

“Estimating Line Traffic Volumes by Month, Day of Week and Time of Day,” Cooperative Highway Research Project #99-3, June 1, 1999 – May 30, 2000, \$58,604 (FY00 \$41,131).

“Finding Strategies to Improve Pedestrian Safety in Rural Areas,” (co-PI: P. Garder, Univ. Maine), New England University Transportation Center (USDOT), September 1, 1999 – August 31, 2000, \$60,000 (FY00 \$24,068).

“Incorporating Intelligent Transportation Systems Deployment in Strategic Planning,” (co-PI: A. Sadek, U. Vermont), New England University Transportation Center (USDOT), September 1, 1999 – August 31, 2000, \$50,000 (FY00 \$6,805).

“UTC Fellowships – Year 12,” University Transportation Center, September 1, 1999 – August 31, 2000, \$20,000 (FY00 \$20,000).

John W. Leonard

“New Structural Model for Parachute Inflation Simulations,” (Co-PI: M.L. Accorsi), U.S. Army Research Office, April 15, 1996 – July 14, 1999, \$236,356 (FY00 \$13,672).

“IPA on Advanced Parachute Simulations,” U.S. Army Natick RD&E Center, May 21, 1999 – August 26, 1999, \$18,769 (FY00 \$18,571).

“Simulation and Modeling of Wind Effects on Airdrop Systems,” (PI: M.L. Accorsi), Air Force Office of Scientific Research, February 1, 1998 – January 31, 2001, \$278,968 (FY00 \$65,232).

“Simulation and Evaluation of Innovative Tactical Parachute Systems,” (PI: M.L. Accorsi), Dept. of Defense AASERT, June 1, 1998 – May 30, 2001, 50% of \$98,925 (FY00 \$11,567).

“Computer Simulations and Design of High Performance Parafoil Systems,” (PI: M.L. Accorsi), Connecticut Innovations, Inc. Yankee Ingenuity Initiative, December 31, 1998 – December 30, 2000, \$135,246 (FY00 \$17,417).

“Advanced Structural Modeling for Fully-Coupled Parachute Dynamics,” (PI: M.L. Accorsi), U.S. Army Research Office, June 1, 1999 – May 31, 2002, \$223,998 (FY00 \$16,755).

“IPA 2000 on Advanced Parachute Simulations,” U.S. Army Natick RD&E Center, May 23, 2000 – August 22, 2000, \$21,284 (FY00 \$0).

Ramesh B. Malla

“Study of Oxygen Generation De-Ionizing Bed Structure for Space Station,” Hamilton Standard Space Systems International, Inc., Windsor Locks, CT, June 10, 1999 – May 31, 2000, \$6,000 (FY00 \$4,982).

“Study of Oxygen Generation De-Ionizing Bed Structure for Space Station,” CT Space Grant Consortium, June 1, 1999 – February 28, 2000, \$6,000 (FY00: \$5,780).

“Preliminary Studies of Space Station Oxygen Generation Assembly Structural Systems,” Hamilton Standard Space Systems International, Inc., Windsor Locks, CT, June 1, 1999 – May 31, 2001, \$5,000 (\$54).

“A NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (UConn PI, with statewide faculty participants), NASA, Washington, D.C., June 1, 1999 – May 31, 2000, \$147,000 (FY00 \$14,050).

“Campus Director’s Administrative and Campus Activities Funds,” CT Space Grant Consortium, NASA (subcontract with Univ. of Hartford), March 1, 1999 – February 29, 2000, \$5,200 (FY00 \$2,843).

“An Innovative Fiber Optic Weigh-in-Motion System,” (co-PI: N.W. Garrick), UConn Research Foundation, June 1, 1999 – May 31, 2000, \$10,800 (FY00 \$0).

Rusk Y. Masih

“Analytical and Experimental Investigation of the Effects of Concrete Removal Operations on Adjacent Concrete that is to Stay,” New England Transportation Consortium, August 23, 1999 – August 23, 2001, \$99,689 (FY00 \$3,266).

Erling Murtha-Smith

“Design Against Progressive Collapse,” National Science Foundation, September 1, 1996 – August 31, 2000, \$189,277 (FY00 \$29,297).

Nikolaos P. Nikolaidis

“AC-6/AC-10 Natural Attenuation Study of Chromium and Chlorinated Ethenes at the Sikorsky Facility in Stratford, CT,” (Co-PI: B.F. Smets), United Technologies Corporation Center, January 1, 2000 – May 31, 2001, \$152,720 (FY00 \$299).

“Contribution of Copper-Based Architectural Material to Copper Concentrations and Toxicity in Storm Water Runoff,” International Copper Association and Copper Development Association, March 1, 1998 – November 1, 2000, \$319,213 (FY00 \$14,034).

“Long-Term Pilot Scale Demonstration of the AsRT Technology for *In-Situ* Remediation of Arsenic Contaminated Ground Water,” United Technologies Corporation, February 1, 1998 – January 31, 2000, \$35,000 (FY00 \$0).

“A Portable Method for Determining Chloride Concentration on Roadway Pavements,” (PI: N.W. Garrick), New England Transportation Consortium, September 1, 1998 – December 31, 2000, \$211,664 (FY00 \$52,774).

“Hydraulic Characterization of the Ground Water Aquifer at National Chromium Inc.,” Massachusetts Institute of Technology, June 1, 1997 – September 14, 1999, \$68,000 (FY00 \$0).

“Environmental Sampling and Analysis at Sikorsky/Stratford, CT,” United Technologies Research Center,

June 15, 1998 – September 15, 1999, \$141,109 (FY00 \$83,858).

“Phase II RCRA Facility Investigation Work Plan Corrective Action Program,” (Co-PI: A. Dahmani), United Technologies Research Center, August 1, 1999 – December 23, 1999, \$67,360 (FY00 \$66,230).

Fred L. Ogden

“Studies of Radar-Rainfall Error Propagation in Runoff Predictions,” U.S. Army Research, April 1, 1996 – March 31, 2001, \$191,068 (FY00 \$38,228).

“Measurements of Spatio-Temporal Variability Raindrop Size Distribution,” U.S. Army, March 2, 1998 – December 31, 1999, \$59,800 (FY00 \$35,846).

“Development of Innovative Algorithms for Culverts and Bridge Crossing in CASC2D,” University of Southwestern Louisiana, June 7, 1999 – July 31, 1999, \$10,731 (FY00 \$10,549).

“Addition of Lakes, Wetlands, and Detention Basins to CASD2D,” U.S. Army Engineers, Waterways Experiment Station, August 18, 1999 – August 17, 2000, \$119,373 (FY00 \$25,330).

“2-Dimensional Hydrological Modeling of Large Watersheds with Uncertain Input,” U.S. Army, March 6, 1998 – June 30, 2000, \$59,513 (FY00 \$7,689).

“Graduate Education in Distributed Hydrologic Simulation,” U.S. Army Research Office ASSERT, April 1, 1998 – March 31, 2001, \$90,000 (FY00 \$30,006).

“Assessment of the Applicability of Engineering Hydrologic Models in Connecticut,” (PI: G. Warner), Connecticut Department of Environmental Protection, January 1, 1997 – June 30, 2000.

“Symposium on Hydrologic Modeling of Diverse Regions with Sparse and Uncertain Data,” U.S. Army Research Office, September 1, 1999 – February 28, 2000, \$10,000.

Barth F. Smets

“Quantification of Horizontal Gene Transfer as Adaptive Response to contaminant Stress in Subsurface Microbial Communities,” National Science Foundation Career Development, July 1, 1997 – June 30, 2001, \$257,169 (FY00 \$29,198).

“Horizontal Gene Transfer as Adaptive Response to Heavy Metal Stress in Subsurface Microbial Communities,” Department of Energy 1997 NABIR 97-04, September 15, 1997 – September 14, 2000, \$305,649 (FY00 \$69,367).

“Fundamental Study for Biodegradation of Nitroglycerin in Biofilter,” U.S. Army Corps of Engineers (CERL), March 1, 1999 – December 31, 1999, \$36,469 (FY00 \$34,906).

“Evaluation of Engineered Bioattenuation at Sikorsky Stratford Site,” United Technologies Research Corporation, \$25,000 (FY00 \$25,000).

“Inhibition of Biological Nitrogen Removal: Microbiology, Physical Chemistry and Process Engineering,” (co-PI: D. Grasso), CT Department of Environmental Protection, March 15, 1999 – March 14, 2000, \$80,393 (FY00 \$60,550).

“AC-6/AC-10 Natural Attenuation Study of Chromium and Chlorinated Ethenes at the Sikorsky Facility in Stratford, CT,” (Co-PI: N.P. Nikolaidis), United Technologies Corporation Center, January 1, 2000 – May 31, 2001, \$152,720 (FY00 \$299).

Civil & Environmental Engineering Department
Awards, Honors, Patents
1999–2000

John T. DeWolf

C.R. Klewlin Award for Excellence in Teaching, 1999.

George E. Hoag

Fellow, Connecticut Academy of Science and Engineering.

“Chemical Oxidation of Volatile Organic Compounds,” (with P. Chheda, B.A. Woody, and G.M. Dobbs), U.S. Patent No. 6,019,548, issued February 1, 2000.

Nikolaos P. Nikolaidis

C.R. Klewlin Award for Excellence in Teaching, 1999.

LIDA Foundation – Excellence in Graduate and Research Education, 1999.

“Immobilization of Inorganic Arsenic Species Using Iron,” U.S. Patent Application serial number 09/100,177, granted July 2000.

Fred L. Ogden

Collingwood Prize, 1999, American Society of Civil Engineers (ASCE) for contributing to the paper: “Sediment Control at Water Intakes along Sand-Bed Rivers,” (with T. Nakato), ASCE Journal of Hydraulic Engineering, Vol. 124, No. 6, pp. 589-596, 1998.

Best Reviewer Award, 1999, ASCE Water Resources Division, Journal of Irrigation and Drainage Engineering.

Barth F. Smets

CAREER Award, National Science Foundation.

1999 Outstanding Junior Faculty Award, School of Engineering, University of Connecticut.

Civil & Environmental Engineering Department
Major Professional Activities
1999–2000

Nelly M. Abboud

Editorial Board Reviewer, *Fluid/Particle Separation Journal*.

Organizer/Chair, the “Engineering Technology in the New Millennium,” American Lebanese Engineering Society, Beirut, Lebanon, July 20-23, 2000.

Editor, “Engineering Technology in the New Millennium,” American Lebanese Engineering Society Proceeding, Vol. 1, 2000.

Reviewer, “Filtration Basic Short Course,” American Filtration and Separation Society, Myrtle Beach, South Carolina, March 14-15, 2000.

President, American Filtration and Separation Society, New England Chapter, March 1995-December 30, 1999.

President-elect, American Lebanese Engineering Society, June 1999-2000.

Board member, American Filtration and Separation Society.

Organizer/chair, the American Filtration and Separation New England Conference, South Walpole, MA, October 7, 1999.

Co-chair, the Cake Filtration Session at the American Filtration and Separation Society, “Filtration and Separations Technologies,” Myrtle Beach, South Carolina, March 14-17, 2000.

Member, Education Committee, American Filtration and Separation Society.

Member, Newsletter publication Committee, American Lebanese Engineering Society.

International Advisory Scientific Committee, American Lebanese Engineering Society, Orlando, Florida, June 1999-2000.

Ad hoc reviewer, *Fluid/Particle Separation Journal*.

Ad hoc reviewer, *Computer and Fluids, An International Journal*.

Ad hoc reviewer, *Kuwait Journal of Science & Engineering*.

Michael L. Accorsi

Technical Co-Chair, 16th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, Boston, MA, May 22-24, 2001, appointed 10/26/99.

Home Page Leader, AIAA Aerodynamic Decelerator Systems Technical Committee.

Kenneth R. Demars

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

Editorial Board Member, *Journal of Marine Georesources and Geotechnology*, published by Taylor & Francis, New York.

Chairman ASTM Subcommittee D18.92 on Geotechnical Testing Journal Vice Chairman-ASTM Subcommittee D18.13 on Marine and Freshwater Geotechnics.

Ad hoc reviewer, *ASCE Journal of Geotechnical and Geoenvironmental Engineering*.

Ad hoc reviewer, *ASTM Geotechnical Testing Journal*.

Ad hoc reviewer, *Journal of Marine Georesources and Geotechnology*.

Ad hoc reviewer, Connecticut Water Resources Program.

Chairman ASTM Subcommittee D18.92 on Geotechnical Testing Journal (1995- present).

Member, ASTM D18.13 on Marine and Freshwater Geotechnics (1987-present)- Chairman (1986-1995).

Member, ASTM Subcommittee D18.02 on Sampling and In-Place Testing (1977-present).

Member, ASTM Subcommittee D18.97 on Awards.

John T. DeWolf

Organized and Chaired “Vibratory Effects of Bridges,” American Society of Civil Engineers, Chair Session on “Vibratory Effects of Bridges,” April 2000 Structures Congress, Philadelphia.

Reviewer, American Society of Civil Engineers *Journal of Structural Engineering*.

Reviewer, American Society of Civil Engineers *Journal of Bridge Engineering*.

Reviewer, Transportation Research Board conferences and journal.

Reviewer, *Structural Engineering and Mechanics*.

Reviewer, *Advances in Structural Engineering* – an international journal.

Reviewer, *American Institute of Steel Construction Engineering Journal*.

Reviewer, Hong Kong Research Grants Council.

Member, American Society of Civil Engineers Committee on Methods of Monitoring and Evaluating Structural Performance.

Member, American Society of Civil Engineers Committee on Shock and Vibration.

Member, American Society of Civil Engineers Administrative Committee on Long Range Planning for Structures Congresses.

Member, Transportation Research Board Committee on Dynamic and Field Testing of Bridges.

Member, State Board of Examiners for Professional Engineers and Land Surveyors.

Howard I. Epstein

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

Member, ASCE Committee on Professional Publications.

Past Chairman of CSCE/ASCE Structures Technical Committee.

Reviewer, *ASCE Journal of Professional Issues in Engineering, Education and Practice* (unpublished).

Book Reviewer, *Choice* (A publication of the Association of College and Research Libraries).

Reviewer, *ASCE Journal of Structural Engineering*.

Member, CSCE/ASCE Structures Technical Committee.

Gregory C. Frantz

Ad hoc reviewer, *ACI Journal*.

Norman W. Garrick

Journal Reviewer, *IEEE Transactions on Systems, Man, and Cybernetics*.

Journal Reviewer, Environmental Engineering Science Transportation Research Board University Representative.

George E. Hoag

Editorial Advisory Board Member, *Journal of Soil Contamination*.

Reviewer, *Journal of Environmental Engineering Science*.

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

Reviewer, *Journal of Contaminant Hydrology*.

Fellow, Connecticut Academy of Science and Engineering.

John N. Ivan

Reviewer, American Society of Civil Engineers, Urban Transportation Division Committee on Advanced Technologies.

Reviewer, Transportation Research Board, Committee on Artificial Intelligence.

Reviewer, Committee on Bicycling, co-chair, subcommittee on Research Needs and Issues.

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

John W. Leonard

Associate Editor, *Ocean Engineering*.

Ramesh B. Malla

Associate Editor, *Journal of Spacecraft and Rockets*, American Institute of Aeronautics and Astronautics, Reston, VA.

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

Editorial Board Member, *International Journal of Space Structures*, UK.

Editorial Board Member, Proceedings of SPACE 2000 & ROBOTICS 2000 Conference, American Society of Civil Engineers, February-March 2000.

Steering Committee, SPACE 2000 & ROBOTICS 2000 Conference, Albuquerque, NM, February 25-March 2, 2000.

Member, Executive Committee, Aerospace Division, American Society of Civil Engineers.

Control Group member, Technical Committee on Dynamics and Controls, Aerospace Division, American Society of Civil Engineers (ASCE).

Member, Task Committee on Dynamics of Latticed Structures; Committee on Special Structures, ASCE-Structural Division.

Session Chair, "Aerospace Structures, Materials and Controls II," SPACE 2000 & ROBOTICS 2000 Conference, ASCE, Albuquerque, NM, Feb. 27-March 02, 2000.

Session Chair, "Dynamics of Civil Structures," SDM/AIAA Dynamics Specialist Conference, Atlanta, GA., April 2-6, 2000.

Rusk Y. Masih

Member, Committee on Design Loads on Structures During Construction, American Society of Civil Engineers.

Member, Committee on Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers.

Member, Committee on Structural Conditions Assessments and Rehabilitation of Buildings, American Society of Civil Engineers.

Member, Subcommittee on Seismic Rehabilitation of Buildings, American Society of Civil Engineers.

Member, Standards Committee on Wind Tunnel Testing of Buildings and Structures, American Society of Civil Engineers.

Nikolaos P. Nikolaidis

Editorial Board, *Journal Mediterranean Marine Science*.

Member, Scientific Council of the National Centre for Marine Research, Athens, Greece (Appointed by Minister of Development, Mrs. V. Papandreou), 1996-1999.

Member, Board of Directors (Connecticut) of the New England Section, American Water Resources Association, 1993-1999.

Member, Technical Advisory Group - Technical Guidance Document for Site Investigations and Demonstration of Compliance with the Remediation Standard Regulations, State of Connecticut review committee, Department of Environmental Protection.

Member, Watershed Modeling Steering Committee, State of Connecticut review committee, Department of Environmental Protection.

Reviewer, *Environmental Science and Technology*.

Reviewer, *Ground Water*.

Reviewer, *Water Environment Federation*.

Reviewer, *Environmental Engineering Science*.

Fred L. Ogden

Associate Editor, *ASCE Journal of Irrigation and Drainage Engineering* (1996 – 1999).

Member, ASCE Surface Water Hydrology Committee: Task Committee on GIC Modules and Distributed Models of the Watershed (1996 – 1999).

Member, Connecticut Institute of Water Resources Technical Committee.

Member, ASCE Surface Water Hydrology Committee: Task Committee on GIS Modules and Distributed Models of the Watershed (1996-1999).

Member, ASCE Task Committee on Experimental Uncertainty and Measurement Errors in Hydraulic Engineering (1998-present).

Chair, Symposium on Hydrologic Modeling of Diverse Regions with Sparse and Uncertain Input, U.S. Army Engineering Research and Development Center, Vicksburg, MS, November 8-19, 1999.

Reviewer, U.S. EPA.

Reviewer, U.S. National Science Foundation.

Reviewer, U.S. Army Research Office.

Reviewer, U.S. Department of State, International Science and Technology Center.

Reviewer, *Water Resources Research*.

Reviewer, *Journal of Hydrology*.

Reviewer, *ASCE Journal of Irrigation and Drainage Engineering*.

Barth F. Smets

Water Environment Federation Research Symposium Program Committee (1999-).

Member, National Research Council, Water Science & Technology Board, Committee on Bioavailability of Contaminants in Soils & Sediments (2000-2001).

Co-chair, New England Water Environment Association, Biological Nutrient Removal in New England, Specialty Seminar, April 5, 2000, Storrs, CT.

Reviewer, *Biotechnology and Bioengineering*.

Reviewer, *Journal of Environmental Engineering*.

Reviewer, *Environmental Science & Technology*.

Reviewer, *Environmental Engineering Science*.

Reviewer, *Trends in Biotechnology*.

Reviewer, proposals for Experimental Program to Stimulate Competitive Research (EPSCoR), NSF.

Computer Science & Engineering Department

Annual Report Summary

1999–2000

This has been an exciting year of challenges and success for the Computer Science & Engineering Department as we strive to maintain our commitment to excellence in education and research. In education, the department continued its emphasis on an integrated computer science and engineering approach and will try to balance the engineering paradigm with the scientific exploration. In addition, the department started offering two new undergraduate programs, in Computer Science and in Computer Engineering (jointly with the Electrical & Computer Engineering Department). In research, the external funding continues to increase at a pace that has never happened before in the history of this department.

RESEARCH HIGHLIGHTS

The department recognizes that the key factor in the reputation of any department is its faculty. Therefore, we are searching for the best faculty candidates from the top ranked universities. With the current state of the academic job market, this is another challenging task. Last fall, Dr. Alex Russell, who graduated from MIT and worked as a postdoc at the University of California, Berkeley, joined us. Dr. Alex Thomasian (elected as an IEEE Fellow this year) joined the Storrs campus as a professor-in-residence. In addition, two adjunct faculty were hired to handle the teaching load. The search for three new faculty is still in progress. Unfortunately, John Roulier will be retiring on June 1st but he plans to rejoin the department as an emeritus faculty.

The department's research and creative scholarship activities are aimed in several general directions. We are treating computing as a unified field of computer science and engineering for the advancement of computational systems. We view that computing is the core of many new scientific discoveries and emerging high technologies; and therefore, we are increasing our collaboration with diverse disciplines. We also view that computing plays an important role in economic development and we will intensify our interactions with industry for cooperative research and technology transfer. We further view that computing plays a major role in improving learning, and therefore, some of our research focus is on intelligent systems for learning.

Our research productivity has increased this year as assessed both by publications and by external funding. The department has several focused research areas including software systems, genome databases, distributed and network systems, data security, medical imaging, and computer aided instruction. The new external funding grants exceed \$1 million, according to the UConn Research Foundation report. Several of these grants are funded by major federal agencies such as NSF, NIH, and the United States Air Force. The number of research proposals has doubled. Our faculty have also increased their participation in professional societies as officers and on editorial boards and on international conferences' steering committees and as program chairs. Research results have been published in 20 journals, 61 professional conference papers, and three book chapters. Faculty members have also been invited to present their research directions and results, including keynote addresses in several major international and national conferences.

STUDENT RECRUITMENT, OUTREACH AND STUDENT ACTIVITIES

The job market for computer scientists and engineers continues to be very strong and our graduates have been placed very well and fast, particularly due to their engineering orientation. Currently, the department has around 40 percent of the School of Engineering students, 45 percent of its freshmen, and more than 40 percent of the 2000 Class. A number of sections have been added to many of our courses to accommodate the increased enrollment demands. This makes staffing our courses for the three degrees a very difficult and challenging problem.

Our commitment to excellence in education continues. Robert McCartney received a NSF grant to establish a scholarship program for computer science students. In addition, recently we endorsed a plan to create a minor in Bioinformatics in cooperation with the Biology Department. 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 funded by their governments (including USA) joining the department.

FACILITIES

Our current space is inadequate for the increased student enrollment and the growth in our research activities. The new IT building is essential to meet our needs for high quality educational and research laboratories and classrooms.

Equipment funds have been used mainly to expand departmental laboratories in the UTEB building and to upgrade several existing ones. Dean Amir Faghri funded a project to establish the first computer network laboratory. It will continue to be an important issue for expanding the needed laboratories and for coping with the rapidly changing technology

CONCLUDING REMARK

The department is in an expanding phase. Enrollment continues to increase, research is growing at a very good pace, and new faculty members have been hired and more positions have been planned in the next year. Although we will continue to face some difficult and challenging issues and growing pains, the department has changed its outlook and moves rapidly toward its new goal of excellence in both teaching and research.

MISSION STATEMENT

The mission of the department will remain the challenge of 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. Specific focuses include: (1) providing the needed human capital and upgrading the existing work force in the computing industry and organizations that depend on computing; (2) taking research leadership in exploring new directions and new developments in computing and its application areas; and (3) preparing all university students to enter the information era.

Computer Science & Engineering Department
Archival Technical Journal Publications
1999–2000

Steven Demurjian

“A Framework for Architectural Specification of Distributed Object Systems,” (with M. Bastarrica and A. Shvartsman), *Studia Informatica* (Intl. Journal of Informatics), Special Issue, Vol. I, 1999.

“An IDL to Ada95 Mapping to Support Propagation Modeling,” (with D. Needham and T. Peters), *Ada Letters*, Vol. XX, Number 2, March 2000.

Gerald L. Engel

“Curricula 2001: Bringing the Future to the Classroom,” (*et al.*), *Computer*, September 1999, pp. 85-89.

“Program Criteria for Software Engineering Accreditation Programs,” *IEEE Software*, November 1999, pp. 30-33.

Ian Greenshields

“Incorporating Thread-Safe Communication into MPI,” (with G. Weerasingle), *International Journal of Computers and Their Applications*, March 2000.

Lester Lipsky

“Impact of Aggregated, Self-Similar ON/OFF Traffic on Delay in Stationary Queueing Models (Extended Version),” (with Hans-Peter Schwefel), *Performance Evaluation*, June 2000.

“Hollow States of Lithium,” (with M. J. Conneely), *Physical Review A*, 61, February 2000.

Thomas J. Peters

“An IDL to Ada95 Mapping to Support Propagation Modeling,” (with D. Needham and S. Demurjian), *Ada Letters*, Vol. XX, Number 2, March 2000.

Alexander Russell

“An Ergodic Theorem for Read-Once Non-Uniform Deterministic Finite Automata Information Processings Letters,” (with M. Goldmann and D. Therien), *Information Processing Letters*, 73(1-2) (2000), pp. 23-28.

“Approximating Latin Square Extensions,” (with S. Ravi Kumar and R. Sundaram), *Algorithmica* 24(2), pp. 128-138.

“Extraction of Optimally Unbiased Bits From a Biased Source,” (with M. Naslund), *IEEE Transactions on Information Theory*, 46(3), pp. 1093-1104, 2000.

“Haar Measure and the Passage from the Combinatorial to the Continuous: An Easy Reduction of an Isoperimetric Inequality on the Sphere to Extremal Set Theory,” *American Mathematical Monthly*, MAA, January, 2000.

Eugene Santos, Jr.

“A Framework for Building Knowledge-Bases Under Uncertainty,” *Journal of Experimental and Theoretical Artificial Intelligence*, 11, 265-286, 1999.

“Probabilistic Temporal Networks: A Unified Framework for Reasoning with Time and Uncertainty,” (with J.D. Young), *International Journal of Approximate Reasoning*, 20, 263-291, 1999.

Dong-Guk Shin

“A Multistrategy Approach to Classification Learning in Databases,” (with C.H. Lee), *Data and Knowledge Engineering*, Elsevier Science, 31:67-93, 1999.

“Using Hellinger Distance in a Nearest Neighbor Classifier for Relational Databases,” (with C.H. Lee), *Journal of Knowledge-Based Systems*, Elsevier Science, 12(7):363-370, 1999.

Alexander Shvartsman

“Eventually-Serializable Data Services,” (with D. Gupta Fekete, N. Lynch and V. Luchangco), *Theoretical Computer Science*, special issue on Distributed Algorithms, Vol. 220, pp. 113-156, 1999.

“A Framework for Architectural Specification of Distributed Object Systems,” (with M.C. Bastarrica and S. Demurjian), *Studia Informatica*, Vol. 5, pp. 127-148, 1999.

Alexander Thomasian

“Performance Analysis of Database Systems,” in *Performance Evaluation White Book*, (G. Haring, C. Lindeman, and M. Reiser, eds.), Lecture Notes in Computer Science Series, Springer-Verlag, pp. 311-331, 2000.

“Performance Analysis of Concurrency Control Methods,” in *Performance Evaluation White Book*, (G. Haring, C. Lindemann, and M. Reiser, eds.), Lecture Notes in Computer Science Series, Springer-Verlag, pp. 333-357, 2000.

Computer Science & Engineering Department
Books, Book Chapters, Book Sections & Edited Volumes
1999–2000

Steven Demurjian

“Software Agents for Role Based Security,” (with T.C. Ting, Y. He, and M. Saba), in *Database Security, XIII: Status and Prospects*, (S. Jajocia, ed.), Kluwer, 2000.

Lester Lipsky

“Simulations With Heavy-Tailed Workloads,” Chapter 3 of *Self-Similar Network Traffic and Performance Evaluation*, (with M. E. Crovella), Wiley/Wiley-Interscience, 1999.

T.C. Ting

“Software Agents for Role Based Security,” (with D. Demurjian, Y. He, and M. Saba), in *Database Security, XIII: Status and Prospects*, (S. Jajocia, ed.), Kluwer, 2000.

“Intrusion Detection,” (with Ming-Yuh Huang, S. Pitcock, C. Clifton, and T.Y. Lin), in *Research Advances in Database Security and Information Systems Security*, (Vijay Atluri and John Hale, eds.) Kluwer Academic Publishers, 2000.

Computer Science & Engineering Department Conference Proceedings & Other Publications 1999–2000

Reda Ammar

“A New I/O Interface Architecture for High-Speed Data Communication,” (with Qi Gan and M. Abdallah), the 4th IEEE Symposium on Computers and Communications (ISCC’99), pp. 216-225, Sharm El-Shiekh, Egypt, July 4-8, 1999.

“Task Partitioning of Real-Time Distributed Processing Systems with Heterogeneous Processor Types,” (with X. Chen and H.A. Sholl), The 12th International Conference on Parallel and Distributed Computing Systems, pp. 134-139, Fort Lauderdale, FL, August 17-20, 1999.

“Scheduling Communication Nodes of Parallel Processes in Fork-Join Structure When Each Process has Multiple Requests to Access Shared Variables,” (with M-S. Kim and H.A. Sholl), The 12th International Conference on Parallel and Distributed Computing Systems, pp. 298-303, Fort Lauderdale, FL, August 17-20, 1999.

“Improved Distribution Techniques Applied to Colored Two-Dimensional Bar-code,” (with J. Jones and M. El Din Mahmoud), The 12th International Conference on Computer Applications in Industry and Engineering (CAINE-99), pp. 46-50, Atlanta, GA, November 4-6, 1999.

“A New Approach of Ultrasonic Beam Edge Tracking and Strip Generation for Ultrasonic Inspection Systems,” (with R. Elfouly, H. A. Sholl and D. Pagano), The 12th International Conference on Computer Applications in Industry and Engineering (CAINE-99), pp. 133-137, Atlanta, GA, November 4-6, 1999.

“Hierarchical Performance Modeling,” 1st Workshop on Information Technology, pp. 1-7, Cairo, Egypt, March 14-16, 2000.

“Nondestructive Testing and Evaluation for the Rail Industry,” (with H.A. Sholl and D. Pagano), ASNT Spring Conference and 9th Annual Symposium, pp. 37, Birmingham, AL, March 27-31, 2000.

“Partitioning Communication Processes for Efficient Execution of the Fork-Join Structures,” (with E.Y. Abdel Maksoud), 15th International Conference on Computers and Their Applications, pp. 219-222, New Orleans, LA, March 29-31, 2000.

“Prediction of Inner and Outer Diameter Flaws Using Ultrasonic Pipe Inspection System,” (with R. S. Elfouly and H. A. Sholl), 15th International Conference on Computers and Their Applications, pp. 368-372, New Orleans, LA, March 29-31, 2000.

Steven Demurjian

“Agent Approaches to Enforce Role-Based Security in Distributed and Web-Based Computing,” (with Y. He, T.C. Ting, and M. Saba), Proceedings of 13th IFIP WG 11.3 Working Conference on Database Security, Seattle, WA, July 1999.

“A Framework for Architectural Specification of Distributed Object Systems,” (with M. Bastarrica and A. Shvartsman), Proceedings of 3rd International Conference on Principles of Distributed Systems (OPODIS’99), Hanoi, Vietnam, October 1999.

“Towards a Distributed Object-Oriented Propagation Model Using Ada95,” (with D. Needham and T. Pe-

ters), Proceedings of 1999 SIGAda Conference, Redondo Beach, CA, October 1999.

“JINI: A Technology for 21st Century - Is it Ready For Prime Time?,” (with P. Barr), Proceedings of 24th Annual Software Engineering Workshop, Greenbelt, MD, December 1999.

“Structural Specification of a Distributed System Using I5,” (with M. Bastarrica, S. Craig, and A. Shvartsman), Proceedings of 5th International Conference on Computer Science and Informatics, IC2000, Atlantic City, NJ, February 2000.

Gerald Engel

“Professionalism and Social Issues in Informatics: An International Collaborative Curriculum Development Project,” Proceedings of the 1999 Frontiers in Education Conference, November 1999.

“The US/EU Cooperative Education Program in Computer Science & Engineering,” Proceedings of the Frontiers in Education Conference, November 1999.

“Societies Views of the Integration of ABET and CSAB,” Panel presentation in Proceedings of the Frontiers in Education Conference, November 1999.

“Development of the 2001 Curriculum Recommendations in Computing,” Panel presentation in Proceedings of the Frontiers in Education Conference, November 1999.

“Professionalism Issues in Software Engineering Education,” Panel presentation in Proceedings of the CSEET Conference, March 2000.

Ian Greenshields

“Data Security on Distributed Components Based Medical Network,” (with Z. Yang), Proceedings of the SPIE Conference on Internetworking in the 21st Century (VVII), pp. 391-400, August 1999.

“Incorporating Asynchronous Thread-Safe Communication Into MPI,” (with G. Weerasinghe), Proceedings of the ISCA 12th International Conference on Parallel and Distributed Computing Systems, pp. 552-559, Ft. Lauderdale, FL, 1999.

“Aspects of the Architecture of a Distributed Medical Informatics System,” Proceedings of the International Workshop, Cairo, Egypt, March 2000.

“Simulation of CSF Volume/Pressure Characteristics,” (with F. DiMario Jr.), 26th Annual IEEE Northeast Bioengineering Conference, pp. 125-126, May 2000.

“A Multigrid Approach to the Gibbsian Classification of Mammograms,” (with Z. Yang), 13th IEEE International Symposium on Computer-Based Medical Systems, pp. 169-174, Houston TX, June 2000.

“Distributed Visualization of Volumetric Medical Datasets,” 13th IEEE International Symposium on Computer-Based Medical Systems, pp. 241-246, Houston TX, June 2000.

“Urethral Segmentation from the VF Dataset,” 26th Annual IEEE Northeast Bioengineering Conference, pp. 123-124, May 2000.

Lester Lipsky

“Impact of Aggregated Self-Similar ON/OFF Traffic on Delay in Stationary Queueing Models,” (with H-P. Schwefel), Proceedings of SPIE, Vol. 3841 (Performance and Control of Network Systems III), Boston, MA, September 20-21, 1999.

Robert McCartney

“Random Sampling with Mobile Robots,” (with H. Sun), 31st International Symposium on Robotics, pp. 89-95, Montreal, CA, May 2000.

Thomas J. Peters

“Towards a Distributed Object-Oriented Propagation Model Using Ada95,” (with D. Needham, S. Demurjian, and K. El-Guemhioui), Proceedings of SIGAda99, pp. 203-210, Redondo Beach, CA. Oct 17-21, 1999.

“Geometric Models — One Size No Longer Fits All!” Proceedings of Implementation Road Map 1999, D. H. Brown Publ., pp. DCV-27-A-3: 3-14, Dearborn, MI, October 26, 1999.

Alexander Russell

“Hard-Core Functions: Survey and New Results,” (with M. Naslund), the 4th Nordic Workshop on Secure IT Systems (NORDSEC), Kista, Sweden, November 1-2, 1999.

“Spectral Bounds on General Hard Core Predicates,” (with M. Goldmann), Proceedings of the 17th International Symposium on Theoretical Aspects of Computer Science (STACS), Vol. 1770 of Lecture Notes in Computer Science, Springer-Verlag, Lille, France, February, 2000.

“Normal Subgroup Reconstruction and Quantum Computation Using Group Representations,” (with S. Hallgren and A. Ta-Shma), Proceedings of the 32nd annual ACM Symposium on Theory of Computing (STOC), pp. 614-625, Portland, OR, May 21-23, 2000.

Eugene Santos, Jr.

“Interfacing the Human into Intelligent Information Systems,” (with S. M. Brown), Proceedings of the SPIE 14th Annual International Symposium on Aerospace/Defense Sensing and Controls: AeroSense 2000, Orlando, FL, 2000. *Invited.*

“Active User Interfaces for Building Decision-Theoretic Systems,” (with S. M. Brown and S. Banks), Proceedings of the 1st Asia-Pacific Conference on Intelligent Agent Technology, Hong Kong, 1999.

“Reasoning with BKBs – Algorithms and Complexity,” (with T. Rosen and S. Shimony), Proceedings of the 6th International Symposium on Artificial Intelligence and Mathematics, Ft. Lauderdale, FL, 2000.

“Efficiency of Parallel Genetic Algorithms for Protein Folding on 2-D HP Model,” (with Eunice Santos and L. Lin), Proceedings of the 4th Joint Conference on Information Sciences, The 3rd International Workshop on Frontiers of Evolutionary Algorithms, 1094-1097, Atlantic City, NJ, 2000.

“Independence Semantics for BKBs,” (with S. Shimony and T. Rosen), Proceedings of the 13th International FLAIRS Conference, pp. 308-312, Orlando, FL, 2000.

“Generalizing Knowledge Representation Rules for Uncertain Knowledge,” (with G. Johnson), Proceedings of the 13th International FLAIRS Conference, pp. 186-190, Orlando, FL, 2000.

“Using Genetic Algorithm to Solve the Tactical Fixed Interval Scheduling Problem,” (with X. Zhong), Proceedings of the 13th International FLAIRS Conference, pp. 28-32, Orlando, FL, 2000.

“Cache Diversity in Genetic Algorithm Design,” (with Eunice Santos), Proceedings of the 13th International FLAIRS Conference, pp. 107-111, Orlando, FL, 2000.

“Parallel Complexity for Solving Tridiagonal Linear Systems with Multiple Right-Hand Sides on 2-D Torus

Interconnection Networks,” (with Eunice Santos), Proceedings of the HPC ASIA 2000, Beijing, China, June 2000.

Dong-Guk Shin

“Centroid Trees with Application to String Processing,” (with F. Shi), Proceedings of Stringology Club Workshop, pp. 61-72, Prague, Czech Republic, July 8-9, 1999.

“CBM: Visual Query Interface Model Based on Annotated Cartoon Diagrams,” (with R. Nori), Proceedings in Advanced Visual Interfaces, ACM Press, pp. 242-245, Palermo, Italy, May 24-26, 2000.

“Database Query and Interoperability Issues in Bioinformatics,” Proceedings of Workshop on Information Technology Trends, pp. 54-60, Cairo, Egypt, March 12-14, 2000.

“A Visual Data-Flow Editor Capable of Integrating Data Analysis and Database Querying,” (with R. Nori, J. Leone, R. Landers, and W. Grajewski), Proceedings of DOE Human Genome Program Contractor-Grantee Workshop VIII, pg. 54, Santa Fe, NM, February 27-March 2, 2000.

Alexander Shvartsman

“Evaluation of an Auction-Based Flexible Pricing Scheme for Renegotiated QoS Connections,” (with G. Malewicz), Proceedings of the 7th IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, Maryland, October 1999.

“A Framework for Architectural Specification of Distributed Object Systems,” (with M.C. Bastarrica and S. Demurjian), Proceedings of the International Conference on Principles of Distributed Computing OPODIS’99, Vietnam, October 1999.

“A Dynamic Primary Configurations Group Communication Service,” (with R. De Prisco, A. Fekete, and N. Lynch), Proceedings of 13th International Symposium on Distributed Computing, DISC’99, Slovakia, October 1999.

“Dynamic Load Balancing with Group Communication,” (with S. Dolev and R. Segala), brief paper in Proceedings of 13th International Symposium on Distributed Computing, DISC’99, Slovakia, October 1999.

“Towards A Modern Computer Architecture Curriculum,” (with D. Clements, W. King, and L. Chao), Proceedings of the Frontiers in Education Conference (FIE’99), Puerto Rico, November 1999.

“Graceful Quorum Reconfiguration in a Robust Emulation of Shared Memory,” (with B. Englert), Proceedings of the 20th IEEE International Conference on Distributed Computing Systems, ICDCS’2000, Taiwan, April 2000.

“An Inheritance-Based Technique for Building Simulation Proofs Incrementally,” (with I. Keidar, R. Khazan, and N. Lynch), Proceedings of the 22nd IEEE International Conference on Software Engineering, ICSE’2000, Ireland, June 2000.

T.C. Ting

“Agent Approaches to Enforce Role-Based Security in Distributed and Web-Based Computing,” (with Y. He, S. Demurjian, and M. Saba), Proceedings of 13th IFIP WG 11.3 Working Conference on Database Security, Seattle, WA, July 1999.

Computer Science & Engineering Department

Active Research Grants and Contracts

1999–2000

Reda Ammar

“Real-Time Architecture for High Speed Pipe Inspection,” (with PI: H. Sholl, Co-PI: I. Greenshields), Dapco Industries, September 1, 1998 - May 31, 2000, \$77,000.

“System Synthesis Environment,” (with PI: R. Ammar, Co-PIs: H. Sholl and R. Reddi), DARPA (INFOPIKE, Inc., Norwich, Connecticut), June 1998 - July 2000, \$750K (\$225K for UConn).

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$14,050).

“Workshop on IT in Network Based Environment,” NSF, March 2000 - February 2001, \$36,500.

“Lightweight Directory Access Protocol,” IBM Internet Division, Senior Design Project, \$5,000, Uconn Foundation.

Steven Demurjian

“JINI/JavaSpaces: Evaluating the Technology and Impact on Present and Future Army Systems,” (with PI: S. Demurjian), The Mitre Corporation, Eatontown, NJ, June 1, 1999 - September 30, 1999, \$15,332.

“Large-Scale, Multi-Agent, Distributed Mission Planning and Execution in Complex Dynamic Environments,” (with PD: E. Santos, CoPIs: S. Demurjian, A. Shvartsman, and M. Cox), AFOSR, January 1, 1999 - December 31, 2001. \$774,982. (UConn Funding: \$566,658. Wright State Funding: \$208,324. Note that an additional \$90,000 was funded for this project as a separate award to AFIT. \$774,982.)

“Feasibility Study of Information System Reengineering,” (with PIs: D.-G. Shin and S. Demurjian), State of Connecticut Insurance Department, \$60,062. January 25, 1999 - August 30, 1999.

“Feasibility Study of Information System Reengineering, Part II,” (with PIs: S. Demurjian and D.G. Shin), State of Connecticut Insurance Department, \$106,054, September 1, 1999 - August 30, 2000.

“Software Architectures and Database Interoperability for Distributed Systems,” (with PI: S. Demurjian; Co-PIs: D.-G. Shin and A. Shvartsman, The Mitre Corporation, Eatontown, NJ, June 1, 2000 - September 20, 2000, \$76,812.

Gerald Engel

“Issues in Systems Interoperability Workshop Series,” (with PI: G. Engel), Office of Navel Research, July 1, 1999 - December 31, 1999, \$50,000.

Ian Greenshields

“Real-Time Architecture for High Speed Pipe Inspection,” (with PI: Howard Sholl, Co-PI: R. Ammar), Dapco Industries, September 1, 1998 - May 31, 2000, \$77,000.

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with

UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“University of Connecticut’s High Performance Connections to the Internet,” (with PIs: R. Vietzke, P. Luh, M. Young, K. Pattipati, and D.-G. Shin), National Science Foundation, October 1, 1998 - September 30, 2000. \$350,000.

Lester Lipsky

“Requirements ATM-Wide Networks with Self-Similar Traffic Transient Behavior,” Technical University of Munich, June 6, 1998 - November 30, 1999, \$32,392.

Robert McCartney

Collaboration Grant, (with Co-PI: Michael Anderson), Connecticut Space Grant College Consortium, June 1, 1999 - May 30, 2000, \$10,000.

“Academic Diversity in Computer Science,” NSF Scholarship, July 1, 2000 - June 30, 2002, \$165,000.

Thomas J. Peters

“Integrating Topology and Numerics at CAD Interfaces,” National Science Foundation, January 15, 2000 - January 14, 2001, \$30,000.

Eugene Santos, Jr.

“Verification and Validation of Embedded Knowledge-Based Software Systems,” Air Force Office of Scientific Research, November 1, 1998 - November 30, 2001, \$165,000.

“Large-Scale, Multi-Agent, Distributed Mission Planning and Execution in Complex Dynamic Environments,” (with CoPIs: M. Cox, S. DeLoach, S. Demurjian, and A. Shvartsman), Air Force Office of Scientific Research, January 1, 1999 - December 31, 2001, \$776,000.

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“Active User Interfaces for Crew Intent Inferencing,” Air Force Research Labs, Human Effectiveness Directorate (subcontracted through Sytronics, Inc.), March 15, 2000 - September 30, 2000, \$40,000.

Dong-Guk Shin

“Software Architectures and Database Interoperability for Distributed Systems,” (with PI: S. Demurjian and Co-PI: A. Shvartsman), The Mitre Corporation, Eatontown, NJ, June 1, 2000 - September 20, 2000, \$76,812.

“A Graphical Ad Hoc Query Interface for GenBank,” National Institutes of Health, January 1, 1999 - December 31, 2001, \$555,011.

“Developing a Database Supporting Cell Biology Modeling – Feasibility Study,” (with CoPI: L. Loew), National Science Foundation, March 15, 1999 - February 29, 2000, \$99,994 (Dong-Guk Shin’s portion \$60,019)

“Prototype Development of State Insurance Information System,” (with Co-PI: S. Demurjian), State of Connecticut Insurance Department, September 1, 1999 - August 30, 2000, \$106,054 (Dong-Guk Shin’s portion \$66,514).

“Feasibility Study of Information System Reengineering,” (with Co-PI: S. Demurjian), State of Connecticut Insurance Department, \$60,062, January 25, 1999 - August 30, 1999.

“University of Connecticut’s High Performance Connections to the Internet,” (with Co-PIs: R. Vietzke, P. Luh, M. Young, I. Greenshields, K. Pattipati), National Science Foundation, October 1, 1998 - September 30, 2000. \$350,000.

Alexander Shvartsman

“Distributed Resource Management,” GTE Laboratories, Waltham, MA, December 1, 1997 - August 30, 1999, \$20,000.

“Large-Scale, Multi-Agent, Distributed Mission Planning and Execution in Complex Dynamic Environments,” (with PD: E. Santos, CoPIs: S. Demurjian and M. Cox), AFOSR, January 1, 1999 - December 31, 2001. \$774,982. (UConn Funding: \$566,658. Wright State Funding: \$208,324. Note that an additional \$90,000 was funded for this project as a separate award to AFIT. \$774,982.)

“Feasibility Study of Information System Reengineering, Part II,” (with PIs: S. Demurjian and D.G. Shin), State of Connecticut Insurance Department, \$106,054, September 1, 1999 - August 30, 2000.

“Principles and Practices of Dependable Distributed Systems,” National Science Foundation CAREER Award, June 1, 2000 - May 31, 2005, \$200,000.

“Architectural Mapping of Parallel Algorithms,” Northrop-Grumman, April 24, 2000 - December 31, 2000, \$25,000.

Computer Science & Engineering Department
Awards, Honors, Patents
1999–2000

Gerald Engel

Fellow, Association for Computing Machinery.

Outstanding Service Award, National Educational Computing Association.

Leadership Award, National Educational Computing Association.

Distinguished Contributions Award, Computing Sciences Accreditation Board.

IEEE Third Millennium Medal.

Incumbent in Leonhardt Chair of Computer Science & Engineering at the Stamford Campus.

Eugene Santos

Best Paper Award, The 13th International FLAIRS Conference, Orlando, FL.

Alexander Shvartsman

CAREER Award, National Science Foundation, 2000-2004.

Alexander Thomasian

Fellow, IEEE Honors.

Computer Science & Engineering Department
Major Professional Activities
1999–2000

Neal Alderman

Member, Tri-Campus Computing Committee.

Member, Hartford Campus Computing Committee.

Reda Ammar

Associate Editor, *Journal of Simulation*.

Associate Editor, *International Journal of Computers & Their Applications*.

Program Committee, the International Conference on Computers & Communication, Phoenix, AZ.

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 Committees on Simulation and on Parallel Processing.

Review Panel, National Science Foundation.

Reviewer, ISCA Conferences and Journals.

Reviewer, *Journal of Systems and Software*.

Invited Symposia & Colloquia

“Hierarchical Performance Modeling of Software System,” Faculty of Information and Computer Sciences, Ain Shames University, Cairo, Egypt, July 1999.

“Hierarchical Performance Modeling of Software System,” Workshop on Information Technology Trends, Cairo, Egypt, March 12-14, 2000.

“Performance-Engineered Software Systems,” NASA Ames, February 28, 2000.

“Hierarchical Performance Modeling and Analysis of Distributed Software Systems,” North Carolina High Performance Computer Center, April 28, 2000.

Steve Demurjian

Member, Association of Computing Machinery (ACM).

Member, IEEE Computer Society.

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

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, Academic/Industrial Advisory Board, Department of Computer Science, Central Connecticut State University, March 2000 - present.

Member, IEEE 1999 Software Engineering/Knowledge Engineering (SEKE) Conference, November 1999.

Member, IAT'99 First Asia-Pacific Conference on Intelligent Agent Technology, July 1999.

Member, ACM Principles of Distributed Computing (PODC) 2000, March 2000.

Member, IFIP WG11.3 Database Security Conference, May 2000.

Invited Symposia & Colloquia

“JINI: Evaluating the Technology & Impact on Present & Future Army Systems,” The Mitre Corporation, Eatontown, NJ, August 17, 1999.

“JINI: Evaluating the Technology & Impact on Present & Future Army Systems,” The Mitre Corporation, Bedford, MA, September 8, 1999.

“JINI: Evaluating the Technology and Impact on Present and Future Army Systems,” (with P. Barr), Mitre Working Note, Mitre Corporation, Eatontown, NJ, September 1999.

“JINI: A Technology for the 21st Century - Is it Ready for Prime Time?,” The Mitre Corporation, Bedford, MA, October 19, 1999.

Topic: Component Technologies, “JINI: A Technology for the 21st Century - Is it Ready for Prime Time?,” Software Engineering Methodologies Group, Technical Specialist Meeting, Carrier World Headquarters, Farmington, CT, October 14, 1999.

“JINI: A Technology for 21st Century - Is it Ready For Prime Time?,” 24th Annual Software Engineering Workshop, NASA Goddard, Greenbelt, MD, December 2, 1999.

Gerald Engel

President, IEEE Society on the Social Implications of Technology.

Chair, Accreditation Visit, Computer Science Accreditation Commission of the Computing Sciences Accreditation Board.

Computer Engineering Evaluator, Engineering Accreditation Commission, Accreditation Board for Engineering and Technology.

Chair, Steering Committee, 1999 Frontiers in Education Conference, San Juan, PR.

Chair, Steering Committee, 2000 Frontiers in Education Conference, Kansas City, MO.

Chair, By-Laws Committee, IEEE Region I.

Co-chair, IEEE Computer Society, ACM Software Engineering Education Project and ACM Curriculum 2001 Project.

Editorial Board, *Computer Science Education*.

Member, IEEE Technical Activities Board, IEEE Facilities Committee, IEEE Ethics Committee, IEEE Committee on Engineering Accreditation Activities.

Parliamentarian, IEEE Region I.

Ad hoc reviewer, National Science Foundation.

Ad hoc reviewer, *Computer Science Education*.

Ad hoc reviewer, *Computer*.

Ad hoc reviewer, *IEEE Software*.

Ad hoc reviewer, 2000 SIGCSE Symposium.

Ad hoc reviewer, 1999 Frontiers in Education.

Ad hoc reviewer, 2000 Frontiers in Education.

Ian Greenshields

Session Chair, 13th IEEE International Conference on Computer-Based Medical Systems, 2000.

Session Chair, International Workshop on IT, Cairo, Egypt, March 2000.

Member, Steering Committee, IEEE TC on Computational Medicine.

Reviewer, *Journal of Electronic Imaging*.

Reviewer, *International Journal of Computers and Their Applications*.

PTR Reviewer, American University in Cairo.

Lester Lipsky

Invited Symposia & Colloquia

“Simulation Techniques and Modules for Analyzing Telecommunications Systems,” German TELECOM, Munich, Germany, July 17, 1999.

“Why Standard Methods Don’t Work In Modeling Telecommunications Networks, What Does?,” (10 hours of lectures), presented to a group sponsored by Costello and Associates, Seattle, WA, November 11-12, 1999.

“Automatic Algorithms for Classifying Triply-Excited States in 3-Electron Systems,” Department of Mathematical Physics, National University of Ireland, Galway, January 20, 2000.

“Heavy-Tailed and Self-Similar Behavior in Telecommunications Networks, How to Detect It, And How To Model It,” ComVerse, Boston, MA, March 28, 2000.

“Comparison Of The Analytic N-Burst Model With Other Approximations to Self-Similar Telecommunications Traffic,” AT&T Research, Middletown, NJ, May 9, 2000.

Robert McCartney

Member, Program Committee, Diagrams 2000.

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

Reviewer, *IEEE Transactions of SMC*.

Reviewer, SIROCCO 2000.

Thomas J. Peters

Chair and organizer, Mini-symposium, Consistent Topology and Geometry for CAGD, Society of Industrial and Applied Mathematicians, 6th SIAM Conference on Geometric Design, November 2, 1999, Albuquerque, NM.

Member, Program Committee for ACM Symposium on Computational Geometry, 2000.

Industrial outreach collaborative research with The Boeing Company, Seattle, WA.

Mini-symposium organizer for Society of Industrial and Applied Mathematicians, Consistent Topology and Geometry for CAGD, November 2, 1999, Sixth SIAM Conference on Geometric Design, Albuquerque, NM.

Review panel, National Science Foundation funding.

Ad hoc reviewer, National Science Foundation.

Ad hoc reviewer, *CAD*.

Ad hoc reviewer, *Research in Engineering Design*.

Ad hoc reviewer, *IEEE Transactions on Visualization and Computer Graphics*.

Ad hoc reviewer, *IEEE Internet Computing*.

Ad hoc reviewer, *ASME Journal of Mechanical Design*.

Ad hoc reviewer, *AIEDAM*.

Member, Society for Industrial and Applied Mathematics.

Member, American Mathematical Society.

Member, Association for Computing Machinery.

Member, New York Academy of Science.

Invited Symposia & Colloquia

“Well-Defined Topology for Robust Geometric Modeling & Simulation,” Conference on Mathematical Foundations of CAD, Mathematical Sciences Research Institute, Berkeley, June 4-5, 1999.

“CAD-2K,” Prescient Technologies, Boston, MA, June 22, 1999.

“Geometric Accuracy: Graphics Is Not the Only Show in Town!,” Year Opening Lecture at the NSF Science and Technology Center for Graphics and Visualization, Sept. 30, 1999, simultaneously broadcast nationally to Brown University, Cornell University, University of North Carolina at Chapel Hill, University of Utah and California Institute of Technology.

John Roulier

Member, Society for Industrial and Applied Mathematics.

Member, Upsilon Pi Epsilon National Computer Science Honor Society.

Member, Society of the Sigma Xi.

Alexander Russell

Ad hoc reviewer, International Conference on Automata, Languages, and Programming, 2000.

Ad hoc reviewer, *Principles of Distributed Computing*, 2000.

Ad hoc reviewer, *Computational Complexity*, 2000.

Ad hoc reviewer, *SIAM Journal on Computing*.

Ad hoc reviewer, *Algorithmica*.

Ad hoc reviewer, *IEEE Transactions on Information Theory*.

Invited Symposia & Colloquia

“Mixed-Adic Analysis” 2000 Santa Fe Institute Workshop on Non-Uniform Deterministic Finite Automata and Harmonic Analysis, Santa Fe Institute, Santa Fe, NM, October 20-26, 1999.

“Spectral Bounds for Hard-Core Predicates,” Wesleyan University Computer Science Colloquium, Wesleyan University, November 18, 1999.

“Normal Subgroup Reconstruction and Quantum Computation Using Group Representations,” Yale University Computer Science Colloquium, Yale University, New Haven, CT, February 7, 2000.

“Expander Graphs and Representation Theory,” 2000 McGill Invitational Workshop on Computational Complexity, Bellairs Research Institute, Holetown, Barbados, February 27-March 5, 2000.

Eugene Santos, Jr.

Member, Steering Committee, Cognitive Science Program, University of Connecticut.

Member, Program Committee, Genetic and Evolutionary Computation Conference, American Association for Artificial Intelligence.

Member, Program Committee, The 2000 International Conference on Artificial Intelligence, the Computer Science Research, Education & Applications Press.

Member, Program Committee, AAAI 2000 Workshop on Leveraging Randomization and Uncertainty in Computation.

Co-Chair, The 13th International FLAIRS Conference, Special Track on Uncertainty, May 2000.

Member, Organizing Committee, AAAI 2000 Workshop on Parallel and Distributed Search.

Member, Program Committee, The 6th Bar-Ilan Symposium on Foundations of Artificial Intelligence (BISFAI-99), July 1999.

Session Chair, The 1st Asia-Pacific Conference on Intelligent Agent Technology (IAT '99), December 1999.

Associate Editor, *IEEE Transactions on Systems, Man, and Cybernetics: Part B*.

Invited Symposia & Colloquia

“Grand Challenges in Intelligent Computation,” Panelist, SPIE, AeroSense '00, Orlando, FL, May, 2000.

“Integrating the Human Into Computationally Intelligent Systems,” Panel Chair, SPIE AeroSense '00, Orlando, FL, 2000, May 2000.

“Intelligent Users Interfaces – Active User Interfaces,” invited talk, Air Force Research Laboratory Seminar Series, Information Directorate, Rome, NY, 2000, March, 2000.

“Modelling and Reasoning Under Uncertainty, invited talk, MITRE Corp. Eatontown, NJ, 2000, January 2000.

Dong-Guk Shin

Treasurer, IEEE Computer Society Computational Medicine Technical Committee.

Technical Advisor, Korean Bioinformatics Frontier Initiative, 2000.

Member, IEEE Computer Society.

Member, Korean Scientists and Engineers in America.

Member, Program Committee, 9th International Conference on Intelligent Systems, Louisville, KY, June 14-17, 2000.

Invited Symposia & Colloquia

“Pharmacogenetic Database and Genomic Database Federation,” Symposium on Bioinformatics, Korea Research Institute of Bioscience and Biotechnology, Taejon, Korea, January 13, 2000.

“Combining Database Querying and Data Analysis,” Georgetown University, School of Medicine, Washington, DC, February 15, 2000.

“Methods for Physiologic Data Collection,” National Academy of Sciences, Workshop on Bioinformatics, Washington, DC, February 16, 2000.

“Database Query and Interoperability Issues in Bioinformatics,” Workshop on Information Technology Trends, Cairo, Egypt, March 12-14, 2000.

“Ad hoc Database Querying and As Integrated Data-Flow Environment,” Rensselaer Polytechnical Institute, Hartford, CT, March 17, 2000.

“Pharmacogenetic Database and Genomic Database Federation,” National Institute of General Medical Sciences, Bethesda, MD, April 12, 2000.

“A Graphical Work-Flow Environment Seamlessly Integrating Database Querying and Data Analysis,” National Institute of Environmental Health Sciences, Research Triangle, NC, April 13, 2000.

“Combining Database Querying and Data Analysis,” Yale University, School of Medicine, New Haven, CT (planned in June 2000).

Alexander Shvartsman

Chair, Organizing Committee, 20th ACM Symposium on Principles of Distributed Computing, ODC'2001.

Member, Editorial Board, STUDIA INFORMATICA, International Journal of Information Technology, 2000.

Member, Program Committee, 3rd International Conference on Principles of Distributed Systems, OPODIS'1999, 1999.

Member, Program Committee, 19th ACM Symposium on Principles of Distributed Computing, ODC'2000, 2000.

Member, Program Committee, 7th International Colloquium on Structure of Information and Communication Complexity, SIROCCO'2000.

Member, Program Committee, 4th International Conference on Principles of Distributed Systems, OPODIS'2000.

Member, Computer Architecture, USA - European Union consortium for harmonization of undergraduate programs in computing sciences.

Voting Member, ACM.

Full Member, Sigma Xi.

Associate Member, IEEE Computer Society.

Member, IEEE Technical Committee on Enterprise Networking.

Member, Cornell Society of Engineers.

Ad hoc reviewer, 13th International Symposium on Distributed Computing, DISC'99, 1999.

Ad hoc reviewer, 19th ACM Symposium on Principles of Distributed Computing, PODC'99, 1999.

Ad hoc reviewer, 14th International Symposium on Distributed Computing, DISC'00, 2000.

Ad hoc reviewer, *Theoretical of Computer Systems*, 1999-2000.

Ad hoc reviewer, *IEEE Micro*, 2000.

Ad hoc reviewer, *Distributed Computing*, Springer-Verlag/ACM, 1999-2000.

Reviewer, National Science Foundation, *Parallel Computing Middleware*, December 1999.

Reviewer, National Science Foundation, *Distributed and Parallel Systems*, January 2000.

Invited Symposia & Colloquia

“Research Directions in Distributed Computing,” Institute of Informatics, University of Warsaw, October 1999.

“Distributed Cooperation in the Presence of Failures,” Yale University, February 2000.

Alexander Thomasian

Member, Program Committee, Workshop on Software Performance Engineering.

T.C. Ting

General Chair, 12th International Conference on Computer Applications in Industry and Engineering, Atlanta, GA, November 1999.

Invited Symposia & Colloquia

“Public Key Infrastructure for Internet Security,” Beijing University, Beijing, China, March 2000.

“Technical Challenges in Data Security for E-Commerce,” Tsing Haw University, Beijing, China, March 2000.

“Technical Challenges in Data Security for E-Commerce,” University of Singapore, Singapore, March 2000.

“Technical Challenges in Data Security for E-Commerce,” Yuan Tze University, Taipei, Taiwan, March 2000.

“The Pivotal Role of E-Commerce for China’s Economic Development,” Keynote Speaker, Beijing E-Commerce Exhibition, Beijing, China, March 2000.

Ruth Ungar

Member, ITAP Advisory Committee.

Representative, Articulation Agreement Meeting with Community and Technical College Representatives.

Electrical & Computer Engineering Department

Annual Report Summary

1999–2000

The Electrical & Systems Engineering Department underwent a name change to accurately reflect curricular and research strengths within the department. The new name, Electrical & Computer Engineering (ECE), reflects an expansion of the department's programs and emphasizes the intimate connection between electrical engineering and computer systems. These are exciting times in the ECE department: our undergraduate enrollment is increasing and the department will be moving to the newly constructed state-of-the-art Information Technology building by the summer of 2003.

The department continues to pursue excellence in the emerging research frontiers of the new millennium: (a) biotechnology, (b) materials, (c) micro/optoelectronics, (d) wireless communication and networking, (e) mechatronics, and (f) computing. The department's current strength in micro/optoelectronics, materials, biotechnology and systems engineering will be further augmented to include strong programs in Computer Engineering and Communications. Dr. Mansour Keramat, an expert in Very Large Scale Integration (VLSI) joined the department in the fall 1999 and is affiliated with the core of faculty members in the general area of Computer Engineering. The department is aggressively searching for top candidates to fill faculty positions in Computer Engineering, Communications and Biomedical Engineering. There currently is a search ongoing to attract a scholar with international reputation as the SNET Chair Professor in Information and Communications. Currently, we are hosting four visiting professors and international scholars.

The quality and diversity of our undergraduate program are always emphasized in the department. The department is committed to offering the best quality education. This is clearly evident in that two of our faculty have been named University of Connecticut Teaching Fellows and two of our faculty have earned the School of Engineering Outstanding Teaching Faculty Award, all in the last three years. Currently, we offer undergraduate degrees in Electrical Engineering, Computer Engineering and Biomedical Engineering. The School of Engineering faculty has also approved an undergraduate degree in Engineering Physics. The Senior Design Laboratory, the VLSI Laboratory and the departmental sophomore laboratories are going through major renovations. The renovated space will have new suspended ceilings and new flooring. The department also received funding from the School of Engineering to enhance our undergraduate education. The funding was targeted toward upgrading the VLSI and the sophomore laboratories. The VLSI Laboratory with its nine Sun workstations and 16 PCs is well equipped to run CADENCE and offer analog and digital VLSI design to the undergraduate as well as to the graduate students. The department has integrated "virtual instrumentation" and computer control of experiments throughout our curriculum using Labview™.

The faculty taught 37 undergraduate courses and 34 graduate courses; 12 independent studies were offered at the undergraduate level and 38 at the graduate level.

Scholarly productivity of the faculty has continued to be very strong. Over the past year, the faculty have published over 235 scholarly publications, including over 58 full-length journal articles, 22 book chapters, 157 full conference proceedings' papers, 15 lecture notes and 35 other publications. The faculty also published three books and 11 course manuals, and developed 12 software packages. They have offered short courses and have been invited to be keynote speakers at international conferences. The faculty have worked on over 100 sponsored grants with annual expenditures around \$3.9 million and have been awarded four patents and invention disclosures. This effort has been in conjunction with over 100 graduate students resulting in 10 awarded Ph.D. and 19 M.S. degrees. This level of scholarly productivity has been recognized through appointment of the faculty to five major journal editorships, 21 associate editorships or conference chairs, 25 other editorial appointments and a multitude of other officerships, honors and awards.

The faculty members continue to make significant contributions in their fields and have been recognized for their efforts. The Distinguished Professor Award was given to Peter Luh. Professor Bar-Shalom has been named the IEEE AESS Distinguished Lecturer. The faculty have continued to receive professional service appointments reflective of their contributions. Professors Luh and Pattipati hold editor or editor-in-chief positions for three major journals.

As we look to the future, we see challenges and opportunities. The next few years will bring continued change with the opportunity to define and change the direction of the department to meet external needs. At the same time, the program assessment and resource allocation processes will bring the department closer to well-defined goals and performance. Thus, the department will need to make intelligent choices and work with the other departments in the school to maximize the effectiveness of the faculty in carrying out the school's mission.

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“Investigation into the Peristaltic Contradiction of the Sigmoid Colon by Electrical Stimulation: A Pilot Study in the Pig,” (with B. Jenkins and F. Lee), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 109-110, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Investigation of Forces Imposed on the Wrist During Activities of Daily Living,” (with C. J. Rideout, M. D. Nowak and M. L. Newport), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 9-10, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“A Mobil, Digital Work Order Tool,” (with M. E. Zawalich, F. S. Varnum and A. Mobile), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 61-62, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“A Non-Invasive Cardiopulmonary Measurement System,” (with O. Torres, E. Rosow, J. Adam, C. Roth, F. Kiernan, J. Bronzino and M. Fox), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 51-52, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Custom Report Generator,” (with A. A. AlAqeel and N. Noyes), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 55-56, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Development of a Tibial Slider to Evaluate and Validate a Finite Element Model for Friction in Total Knee Implants,” (with K. Shaw, M. D. Nowak and C. Lewis), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 13-14, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Automating the Pharmacy: Implementing Cerner’s Millennium Pharmnet System,” (with D. Unfricht), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 59-60, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Decision Support Applications using Statistical Process Control (SPC) and Virtual Instrumentation (VI),” (with I. A. Gieras, E. Rosow, J. Adam and C. Roth), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 57-58, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“A Rapid Method for Determining the Erythrocyte Sedimentation Rate in a Sample of Anticoagulated Whole Blood,” (with S. Khan, R. A. Levine and S. Wardlaw), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 111-112, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“The Computerized Environmental Remote Control,” (with R. Guan and W. R. Pruehsner), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 147-148, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“The Learning Aide: A Device Developed for Autistic Children who are Computer Literate,” (with W. Vidal, III and W. R. Pruehsner), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 173-174, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Automatic Page Turner,” (with R. Duncan and W. R. Pruehsner), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 143-144, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Speak-n-See,” (with T. D. Michaud and W. R. Pruehsner), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 157-158, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Automatic Door Opener,” (with P. Y. Chan), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 139-140, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“iRemote,” (with Z. Khan), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 153-154, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Monitor Lift,” (with T. Nowik and B. Hallowell), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 163-164, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Motorized Chair,” (with K. Desai), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 141-142, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Easely,” (with B. Bemis), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 137-138, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Soni-Key Voice Controlled Door Lock,” (with E. Phelps and W. Pruehsner), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 165-166, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Remote Control Locker,” (with G. Mierzejewski), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 159-160, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Roaming Diagnostic Station,” (with K. Grayeck, K. Smart and B. Hallowell), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 145-146, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“E-Grip,” (with S. Sanchez and B. Hallowell), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 169-170, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Tap-Tap Environmental Controls Unit,” (with A. Hiscox and B. Hallowell), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 149-150, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“Tap-Tap Intercom,” (with A. Hiscox and B. Hallowell), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 151-152, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

“The Electronic Baseball Scorer,” (with G. Mierzejewski), Proceedings of the IEEE 26th Northeast Biomedical Engineering Conference, pp. 161-162, University of Connecticut, Storrs, Connecticut, April 8-9, 2000.

Faquir C. Jain

“The Photoassisted MOVPE Growth of ZnSSe using Tertiary-butylmercaptan,” (with D. W. Parent, A. Rodriguez, P. Li, X. G. Zhang, G. Zhao and J. E. Ayers), 1999 US Workshop on the Physics and Chemistry of II-VI Materials, Las Vegas, NV, Proceedings Digest, pp. 69-75, September 22-24, 1999.

“Design of Quantum Wire Modulation Doped Field-Effect Transistors (MODFETs) for above 500 GHz Operation: Simulation of InGaAs and SiGe Systems,” (with E. Heller), Emerging Microelectronic Technology (EMIT2K 2000) Conference, Bangalore, India (sponsored by IMAPS, USA), Proceedings Digest, pp. TP4-1.1-1.6, February 21-24, 2000.

“Asymmetric Coupled-Well Transport Channel in InAlAs-InGaAs Modulation Doped Field-Effect Transistors (MODFETs): A Novel Concept to Obtain above 550+ GHz Performance in Quantum Well and Wire Structures,” (with E. Heller), Proceedings of the Connecticut Microelectronics and Optoelectronics Symposium, pp. P4-1.1-1.3, United Technologies Research Center, East Hartford, CT, March 14, 2000.

“InGaN-AlGaIn Quantum Wire and Quantum Dot Lasers: Low Threshold Current Density due to Excitonic Transitions in the Presence of High Dislocation/Defect Density,” (with W. Huang), Proceedings of the Connecticut Microelectronics and Optoelectronics Symposium, pp. D2-1.1-1.3, United Technologies Research Center, East Hartford, CT, March 14, 2000.

“The Photoassisted MOVPE Growth of ZnSe(n)/GaAs(p+) Solar Cells,” (with D. W. Parent, A. Rodriguez and J. E. Ayers), Proceedings of the Connecticut Microelectronics and Optoelectronics Symposium, pp. P8-1.1-1.3, United Technologies Research Center, East Hartford, CT, March 14, 2000.

“Self-Aligned SiGe MOSFET with Modulation-Doped Quantum Wire Channel,” (with S. K. Islam), Proceedings of the Connecticut Microelectronics and Optoelectronics Symposium, pp. P11-1.1-1.2, United Technologies Research Center, East Hartford, CT, March 14, 2000.

“Efficient Doping of Nitrogen into ZnSe using TBA and a High Intensity Ultraviolet Light Source,” (with G. Zhao, A. Rodriguez, X. G. Zhang, P. Li and J. E. Ayers), Proceedings of the Connecticut Microelectronics and Optoelectronics Symposium, p. P26-1.1, United Technologies Research Center, East Hartford, CT, March 14, 2000.

“Index Compensation to Obtain Wider Angle of Incidence in Fabry-Perot Optical Filter/Modulator Structures Consisting of Multiple Quantum Well Cavity,” (with S. Cheung and W. Huang), Proceedings of the Connecticut Microelectronics and Optoelectronics Symposium, pp. P22-1.1-1.4, United Technologies Research Center, East Hartford, CT, March 14, 2000.

Bahram Javidi

“Joint Optoelectronic Project (JOP) Workshop,” (invited) sponsored by the National Science Foundation, DARPA, Japan Ministry of Trade & Industry, Proceedings of the Optoelectronic Industry Development Association and Japan Optoelectronic Industry Development Association, San Diego, CA, July 1999.

“Encrypted Holographic Memory Using Angular Multiplexing in LiNbO₃:Fe,” (with O. Matoba), International Symposium on Optical Science and Engineering, Proceedings of the Annual Meeting of the Optical Engineering Society (SPIE), Denver, Colorado, July 1999.

“Optical Encryption Using Joint Transform Correlator Architecture for Robust Alignment,” (with T. Nomura), International Symposium on Optical Science and Engineering, Proceedings of the Annual Meeting of the Optical Engineering Society (SPIE), Denver, Colorado, July 1999.

“Polarization Encoding for Optical Security System,” (with T. Nomura), International Symposium on Optical Science and Engineering, Proceedings of the Annual Meeting of the Optical Engineering Society (SPIE), Denver, Colorado, July 1999.

“1-p Norm Filters for Image Recognition,” (with N. Towghi), International Symposium on Optical Science and Engineering, Proceedings of the Annual Meeting of the Optical Engineering Society (SPIE), Denver, Colorado, July 1999.

“Securing Information with Optics,” Proceedings of the Optical Society of America’s Annual Meeting, (invited), Santa Clara, California, October 1999.

“Optically Encrypted Data Transmission and Retrieval Using Time to Space Converters,” (with O. Matoba), Proceedings of the Annual Meeting of the IEEE Lasers Electro-optical Society (IEEE LEOS), San Francisco, California, November 1999.

“Ultrafast Secure Data Storage with Multidimensional Keys,” (with O. Matoba), Proceedings of the Annual Meeting of the IEEE Lasers Electro-optical Society (IEEE LEOS), (invited), San Francisco, California, November 1999.

“High Speed Optical Encryption using Binary Encoding Algorithms,” (with T. Nomura), Proceedings of the Annual Meeting of the IEEE Lasers Electro-optical Society (IEEE LEOS), San Francisco, California, November 1999.

“Polarization Multiplexing for Information Security Systems,” (with T. Nomura), Proceedings of the Annual Meeting of the IEEE Lasers Electro-optical Society (IEEE LEOS), San Francisco, California, November 1999.

“Optical Security System using Polarization Encoding,” (with T. Nomura), Proceedings of the Optics Japan ’99, sponsored by the Optical Society of Japan and the Japan Society of Applied Physics, Osaka, Japan, November 23-25, 1999.

“Double Random Phase Encoding using Computer Generated Holograms,” (with T. Nomura), Proceedings of the Optics Japan ’99, sponsored by the Optical Society of Japan and the Japan Society of Applied Physics, Osaka, Japan, November 23-25, 1999.

“Secure Holographic Memory System using Double Random Phase Encryption,” (with O. Matoba), Proceedings of the Optics Japan ’99, pp. 91-92, sponsored by the Optical Society of Japan and the Japan Society of Applied Physics, Osaka, Japan, November 23-25, 1999.

“Evaluation of the Polarization Encoding of Optical Verification Systems,” (with T. Nomura), Proceedings of the 47th Spring Meeting of The Japan Society of Applied Physics, pp. 28-31, Aoyama Gakuin University, Tokyo, Japan, March 2000.

“Secure Holographic Memory System using Wavelength Keys,” (with O. Matoba), Proceedings of the 47th Spring Meeting of The Japan Society of Applied Physics, pp. 28-31, Aoyama Gakuin University, Tokyo, Japan, March 2000.

“Three Dimensional Image Processing and Recognition,” (with E. Tajahuerce), (invited) Proceedings of the International Symposium on Photonics for Aerospace Applications of Optics, International Society for Optical Engineering (SPIE), Orlando, Florida, April 2000.

“Three Dimensional Image Processing, Recognition, and Security,” (invited), Proceedings of Optical Computing 2000, sponsored by the Optical Society of America and the IEEE Lasers Electro-optical Society (IEEE LEOS), Canada, June 2000.

Mansour Keramat

“High-Speed/High-Resolution Data Converters,” Proceedings of the IEEE 42nd Midwest Symposium on Circuits and Systems, Las Cruces, New Mexico, August 8-11, 1999.

“Optimal Inflation Technique in Gradient Estimation of Parametric Yield of Electronic Circuits,” Proceedings of the IEEE 42nd Midwest Symposium on Circuits and Systems, Vol. 1, pp. 333-336, Las Cruces, New Mexico, August 8-11, 1999.

“A Novel Approach to Efficient Yield Estimation for Microwave Integrated Circuits,” (with J. Swidzinski and K. Chang) Proceedings of the IEEE 42nd Midwest Symposium on Circuits and Systems, Vol. 1, pp. 367-370, Las Cruces, New Mexico, August 8-11, 1999.

“CAD Techniques for Robust RF and Wireless IC Design,” (with J. Swidzinski and K. Chang), Proceedings of the IEEE 42nd Midwest Symposium on Circuits and Systems, Vol. 1, pp. 68-71, Las Cruces, New Mexico, August 8-11, 1999.

“Study of Noise in Sigma-Delta Analog-to-digital Converters,” Proceedings of the Connecticut Symposium on Microelectronics & Optoelectronics, pp. 13-1-13-6, East Hartford, Connecticut, March 2000.

“Tolerance Design of Two Stage CMOS Operational Amplifier,” Proceedings of the Connecticut Symposium on Microelectronics & Optoelectronics, pp. 10-1-10-4, East Hartford, Connecticut, March 2000.

Peter B. Luh

“Scheduling and Coordination of Distributed Design,” (with F. Liu and B. Moser), Preprints of the 14th IFAC World Congress, Vol. A, pp. 355-360, Beijing, China, July 1999.

“Architectural Design of Neural Network Hardware for Job Shop Scheduling,” (with X. Zhao, L. S. Thakur, K. H. Chen, T. D. Chieu and S. C. Chang), Proceedings of the 1999 CIRP General Assembly, pp. 373-376, Montreux, Switzerland, August 1999.

“An Integrated On-line Job Shop Scheduling System,” (with X. Zhao, K. H. Chen, T. D. Chiueh, S. C. Chang and L. S. Thakur), Proceedings of the SPIE: Sensors and Controls for Intelligent Machining and Manufacturing Mechatronics, pp. 180-187, Boston, Massachusetts, October 1999.

“A Macro-level Scheduling Method Using Lagrangian Relaxation,” (with Y. Zhang, K. Narimatsu, T. Moriya and T. Shimada), Proceedings of the 1999 IEEE International Conference on Systems, Man and Cybernetics, Vol. 4, pp. 457-462, Tokyo, Japan, October 1999.

“An Alternative Framework to Lagrangian Relaxation Approach for Job Shop Scheduling,” (with H. Chen), Proceedings of the 38th IEEE Conference on Decision and Control, pp. 913-918, Phoenix, Arizona, December 1999.

“Scheduling Job Shops with Machine Breakdowns,” (with F. Liu and L. S. Thakur), Proceedings of the 2000 NSF Design and Manufacturing Grantees Conference, Vancouver, Canada, (CD ROM), January 2000.

“Scheduling and Coordination in Manufacturing Enterprise Automation,” (H. Chen), Proceedings of the 2000 IEEE International Conference on Robotics and Automation, pp. 389-394, San Francisco, California, April 2000.

“The Performance of a New Material Control and Replenishment System: A Simulation and Comparative Study,” (with X. Zhou and R. N. Tomastik), Proceedings of the Quick Response Manufacturing 2000 Conference, pp. 807-826, Madison, Wisconsin, June 2000.

“Optimal Integrated Bidding and Generation Scheduling with Risk Management,” (with E. Ni), Proceedings of the Third World Congress on Intelligent Control and Automation, Hefei, Anhui, China, June 2000.

Krishna R. Pattipati

“Efficient Multidimensional Data Association for Multisensor-Multitarget Tracking Using Clustering and Assignment Algorithms,” (with M. R. Chummun, T. Kirubarajan and Y. Bar-Shalom), Proceedings of the 2nd International Conference on Information Fusion, Vol. I, pp. 510-517, Silicon Valley, California, July 1999.

“A Hidden Markov Model-based Algorithm for Online Fault Diagnosis with Partial and Imperfect Tests,” (with J. Ying and T. Kirubarajan), Proceedings of the Autotest Conference, pp. 355-366, San Antonio, Texas, September 1999.

“Application of Multiobjective Optimization and Neural Network Techniques to Process Design,” (with Z. Kadambaya), Proceedings of the 1999 IEEE International Conference on SMC, Vol. III, pp. 527-532, Tokyo, Japan, October 1999.

“Variable Structure Multiple Model Estimation,” (with T. Kirubarajan and Y. Bar-Shalom), Proceedings of the IEE Colloquium on Target Tracking: Algorithms and Applications, pp. 11-15, London, England, November 1999.

“An Integrated Support System for Rotorcraft Health Management and Maintenance,” (with A. Mathur), Proceedings of the IEEE Aerospace Conference, Technical Session T11, File No. 11-0101.pdf, March 2000.

“A Fast Optimal Algorithm for CWMA Multiuser Detection,” (with J. Luo, G. Levchuk and P. Willett), Proceedings of the Princeton Conference on Information Sciences, Vol. III, pp. FA 8-1:8-4, March 15-17, 2000.

“A Class of Coordinate Descent Algorithms for Multiuser Detection,” (with J. Luo, G. Levchuk and P. Willett), Proceedings of ICASSP 2000, Paper # 1525, 4 pages, CD ROM, Istanbul, Turkey, June 2000.

“Application of a Model-based Organizational Design Methodology for the Bridge to Global '99 Wargame,” (with W. G. Kemple, D. L. Kleinman, M. Luoma and Y. Levchuk), Proceedings of the Military Operations Research Society (MORS) Conference, Monterey, California, June 2000.

“Fault Diagnosis in Mixed-Signal Circuits via Neural-Network Based Classification Algorithms,” (V. Rajan and J. Luo), Proceedings of the International Mixed-signal Testing Workshop (IMSTW 2000), 9 pages, Montpellier, France, June 21-23, 2000.

“A Library of Optimization Algorithms for Organizational Design,” (G. Levchuk, Y. Levchuk, J. Luo and F. Tu), Proceedings of the 2000 Command and Control Symposium, 40 pages, Monterey, California, June 26-28, 2000.

“A Software Environment for the Design of Organizational Structures,” (with Y. Shlapak, J. Luo, G. Levchuk and F. Tu), Proceedings of the 2000 Command and Control Symposium, 15 pages, Monterey, California, June 26-28, 2000.

“Assessment of a Model-based Organizational Design Methodology in Bridge to Global '99,” (with Y. Levchuk, D. L. Kleinman, W. G. Kemple and M. Luoma), Proceedings of the 2000 Command and Control Symposium, 20 pages, Monterey, California, June 26-28, 2000.

Eric P. Soulsby

“University Learning Skills: A First Year Experience Orientation Course for Engineers,” Proceedings of the ASEE/IEEE 1999 Frontiers in Education Conference, pp. 11a7-6-11a7-11, San Juan, Puerto Rico, November 1999.

Peter Willett

“A PDAF with a Bayesian Detector,” (with R. Niu), Proceedings of the 1999 Conference on Data Fusion, pp. 493-500, San Jose, California, July 1999.

“Workpiece Burn Detection During Grinding by Acoustic Emission,” (with P. de Aguiar, Z. Wang and J. Webster), COBEM 99: 15th Brazilian Congress of Mechanical Engineering, Paper # 519.26, 10 pages, CD ROM, Sao Paulo, Brazil, November 1999.

“Wheel/Workpiece Contact Detection During Grinding Process by AE Signal,” (with Z. Wang, P. de Aguiar and J. Webster), COBEM 99: 15th Brazilian Congress of Mechanical Engineering, Paper # 519.3, 7 pages, CD ROM, Sao Paulo, Brazil, November 1999.

“Assignment versus PMHT in Multi-Sensor/Multi-Target Tracking,” (with Y. Ruan and R. Streit), Proceedings of the IEE (Part B) Conference on Target Tracking: Algorithms and Applications, pp. 12/1-12/4, London, England, November 1999.

“Tracking a General Frequency Modulated Signal in Noise,” (with T. Luginbuhl), Proceedings of the Conference on Decision and Control, pp. 5076-5081, Phoenix, Arizona, December 1999.

“A Bayesian Approach to the Missing Features Problem in Classification,” (with R. Lynch), Proceedings of the Conference on Decision and Control, pp. 3663-3664, Phoenix, Arizona, December 1999.

“Improvements and Comparisons of Multi-Chirp Signal Detection Methods,” (with Y. Sun), Proceedings of the 2000 CISS, TA1-25, Princeton, New Jersey, March 2000.

“Improved Power-Law Detectors for Transient Signals,” (with Z. Wang), Proceedings of the 2000 CISS, TA1-13 to TA1-18, Princeton, New Jersey, March 2000.

“A Fast Algorithm for CWMA Multiuser Detection,” (with J. Luo, G. Levchuk and K. R. Pattipati), Proceedings of the 2000 CISS, FA8-1 to FA8-4, Princeton, New Jersey, March 2000.

“Analysis of Waveform Effects on Tracking Performance,” (with R. Niu and Y. Bar-Shalom), Proceedings of the 2000 Aerospace Conference, Paper # 6.0702, 12 pages, CD ROM, Big Sky, Montana, March 2000.

“Signal Processing and Fault Detection with Application to CH46 Helicopter Data,” (with F. Wen and S. Deb), Proceedings of the 2000 Aerosense Conference, Paper # 11.0103, 12 pages, CD ROM, Big Sky, Montana, March 2000.

“Track Testing for Single Targets in Clutter,” (with Y. Bar-Shalom), Proceedings of the 2000 Aerosense Conference, Orlando, Florida, April 2000.

“Class-Specific Feature Selection Based on Uniform Dirichlet Priors,” (with R. Lynch), Proceedings of the 2000 Aerosense Conference, Orlando, Florida, April 2000.

“A Class of Coordinate Descent Methods for Multiuser Detection,” (with J. Luo, G. Levchuk and K. R. Pattipati), Proceedings of ICASSP 2000, Paper # 1525, 4 pages, CD ROM, Istanbul, Turkey, May 2000.

“A Modified PDAF Based on a Bayesian Detector,” (with R. Niu), Proceedings of the 2000 American Control Conference, Chicago, Illinois, June 2000.

“Target Classification Using Features Selected from Independent Sonar Echoes,” (with R. Lynch), Proceedings of the Undersea Defense Technology European Conference, June 2000.

Quing Zhu

“Effect of Source Coherence on Interferometric Imaging,” (D. Piao, N. Dutta and L. Otis), Optical Society of America, Biomedical Topical Meetings, Technical Digest, pp. 145-147, Miami Beach, Florida, April 2-5, 2000.

“Optimal Distribution of Near Infrared Sensors for Simultaneous Ultrasound and NIR Imaging,” (D. Piao, X.-H. Ding and P. Guo), Optical Society of America, Biomedical Topical Meetings, Technical Digest, pp. 472-474, Miami Beach, Florida, April 2-5, 2000.

“Optimal Design of Near Infrared Imaging Probe in Reflection Geometry,” (with X.-H. Ding and D. Piao), Optical Society of America, Biomedical Topical Meetings, Technical Digest, pp. 438-440, Miami Beach, Florida, April 2-5, 2000.

“Combined Ultrasound and NIR Imager,” (with P. Guo, D. Piao and J. Fikiet), Optical Society of America, Biomedical Topical Meetings, Technical Digest, pp. 97-99, Miami Beach, Florida, April 2-5, 2000.

“Application of the Most Probable Diffuse Paths to Localizing Absorbers in Turbid Media,” (with N. G. Chen and J. Bai), Proceedings of IEEE 26th Northeast Bioengineering Conference, pp. 67-68, The University of Connecticut, Storrs, Connecticut, April, 8-9, 2000.

“A New Imaging Method that Combines Ultrasound with Near Infrared Diffusive Light,” Proceedings of the Era of Hope Department of Defense Breast Cancer Research Program Meeting, Vol. 1, p. 251, Invited speaker for Platform Presentation of DOD ARMY Breast Cancer Program Meeting, Atlanta, Georgia, June 8-12, 2000.

Electrical & Computer Engineering Department

Active Research Grants and Contracts

1999–2000

Douglas Abraham

“Statistical Modeling of Non-Raleigh Low Frequency Active Sonar Reverberation,” NUWC, February 12, 1999-September 30, 1999, \$54,000 (\$25,200).

“Multipath Estimation using Electromagnetic Matched Field Processing for DS-CDMA Communication Systems,” (with Co-PI: T. Kirubarajan 25%), San Diego State University Foundation, March 10, 1999-January 9, 2000, \$27,998 (\$12,599).

“Signal Class Statistical Descriptions for Class-Specific Classifier,” NUWC, June 14, 1999-March 31, 2000, \$42,000 (\$39,790).

Mehdi Anwar

“Tunable Laser Diodes for Spectrometry,” (PI: C. Roychoudhuri (75%)), Perkin Elmer Corporation, September 20, 1993-December 31, 1999, \$30,000 (\$600).

“Quantum Well Infra-Red Photodetectors,” NASA, June, 1999-May, 2000, \$14,000 (\$12,971).

“Analog and Mixed-Signal VLSI Circuits Laboratory for Undergraduate Courses in the ESE Department,” (PI: M. Keramat (75%); co-PIs: F. Jain (5%), J. Ayers (5%), and M. Fox (5%)), SOE, January 1, 2000-May 31, 2000, \$13,242.

“Major Equipment Share: Photonics (match to NASA EPSCOR Prep. Grant 521039),” UCRF, October 1, 1999-May 31, 2000, \$2,000 (\$2,000).

“Reliability Study of Oxidized Deposited Polysilicon (ODP) Gate Oxide for SiC Power MOSFETs,” (PI: J. E. Ayers (33%); co-PI: F. C. Jain (33%)), NSF, July 1, 1999-May 31, 2001, \$38,898 (\$6,697).

“Hand-held Personal Communication Network,” Starrtel Cellular Group, Inc., July, 1, 1995-August 31, 2001, \$427,000 (\$69,243).

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$14,050).

“Network Analyzer and Coupled DC Parameter Analyzer System with Software for OEIC Testing,” (PI: G. Taylor (90%)), Office of Naval Research, April 3, 2000-April 30, 2003, \$199,204 (\$1,573).

John E. Ayers

“Electroluminescent Flat Panel Displays using MOCVD Grown ZnS and Ternary Compounds for Enhanced Blue Emission,” (PI: F. Jain (33%); co-PI: F. Papadimitrakopoulos (33%)), UCRF, January, 1998-December, 1999, \$14,711 (\$2,427).

“Development of High Brightness Quantum Dot Based Nanophosphors for Electroluminescent Flat Panel Displays and Illuminators,” (PI: F. Jain (40%); co-PI: F. Papadimitrakopoulos (40%)), BMDO/E-lite Technologies, April 14, 1999-December 22, 1999, \$109,205 (\$16,381).

“Growth of Quantum Dot Nanocrystals using UV and RF Enhanced Microwave Metal Organic Chemical Vapor Disposition (MOCVD) Reactor,” (PI: F. Jain (34%); co-PI: F. Papadimitrakopoulos (33%)), UCRF, January 1, 1998-December 31, 1999, \$12,783 (\$2,109).

“Development of Low Voltage, High Brightness Flexible Electroluminescent Lamps for Display Applications,” (PI: F. Jain (34%); co-PI: F. Papadimitrakopoulos (33%)), CII/Yankee Ingenuity Grant 97G025/DED, July 15, 1998-July 15, 2000, \$200,000 (\$33,000).

“Patterned Heteroepitaxial Processing: A New Approach to Mismatched Heteroepitaxy for the Fabrication of High Performance Semiconductor Devices,” (Co-PI: F. C. Jain (50%)), NSF, July 1, 1999-December 31, 2000, \$35,312 (\$11,771).

“Reliability Study of Oxidized Deposited Polysilicon (ODP) Gate Oxide for SiC Power MOSFETs,” (co-PIs: A. F. M. Anwar (33%) and F. C. Jain (33%)), NSF, July 1, 1999-May 31, 2001, \$38,898 (\$6,900).

Rajeev Bansal

“Graduate Research Program in Applied Electromagnetics,” United Technologies Research Center, November, 1998-Depletion, \$18,000 (\$1,364).

Yaakov Bar-Shalom

“Estimation with Multisensor/Multiscan Detection Fusion,” (co-PIs: K. R. Pattipati (10%) and P. K. Willett (10%)), AFOSR F49620-97-1-0198, April 1, 1997-November 30, 1999, \$379,286 (\$47,411).

“Distributed Tracking Algorithm Study,” CUBRC/Calspan/UB Research Center, June 12, 1998-December 31, 1999, \$32,200 (\$10,733).

“Estimation with Multisensor/Multiscan Fusion,” (co-PIs: K. R. Pattipati (10%) and P. K. Willett (10%)), AFOSR F49620-00-1-0052, December 1, 1999-November 30, 2000, \$130,000 (\$60,667).

“Multisensor-Multitarget Data Fusion, Precision Tracking and Pointing for Large-Scale Systems,” (co-PI: K. R. Pattipati (10%)), Office of Naval Research N00014-91-J-1950, June 1, 1991-December 31, 2000, \$1,210,267 (\$141,002).

“Tracking with Electronically Scanned Arrays,” (co-PIs: K. R. Pattipati (10%) and P. K. Willett (10%)), Office of Naval Research, N00014-97-1-0502, March 1, 1997-September 30, 2002, \$420,000 (\$96,000).

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“Feature-Aided Tracking for Robust Countering of Ballistic Missile Threats,” (PI: T. Kirubarajan (75%)), Office of Naval Research/BMDO, June 1, 2000-November 30, 2002, \$60,000 (\$2,500).

Steven A. Boggs

“Measurement of Electroluminescence from Polymers,” Union Carbide Corporation, 5/1/2000-December 31, 2000, \$40,000 (\$10,000).

“High Voltage Testing of Tree Wire,” Northeast Utilities Service Co., January 15, 1996-December 31, 1999, \$18,000 (\$9,000).

“Promotion of EPR Cable Technology,” DuPont Dow, Exxon, Kerite, Okonite and Uniroyal, January 1, 1999-December 31, 1999, \$150,000 (\$75,000).

“HRRM Cable Study: Phase II,” EPRI, WO5616-02, January 1, 1999-December 31, 1999, \$100,000 (\$50,000).

“Washington Heights Service Interruption,” Consolidated Edison Co., July 14, 1999-March 1, 2000, \$9,000 (\$9,000).

“Optimization of Clay Compatibilization for EPR Cable Compound,” (co-PI: T. Seery), The Okonite Co. & Burgess Pigment Co., September 1, 1999-July 31, 2000, \$50,000 (\$43,750).

“Analytical Services,” Northeast Utilities Service Co., February 8, 2000-infinite, \$25,000 (\$5,200).

Eric Donkor

“Low Power All-Optical Switching in a CdSSe-Doped Fiber,” UCRF, June 1, 1999-May 31, 2000, \$8,356 (\$7,660).

“40 Gb/s Grating Assisted Low-Power All Optical Switching in a CdSSe-Doped Non-linear Optical Fiber,” Yankee Ingenuity, CII, August 1, 1999-July 31, 2001, \$102,659 (\$47,052).

John D. Enderle

“Clinical Engineering Internship Program at Bridgeport Hospital,” Bridgeport Hospital/NovaMed., June 1, 1997-September 15, 1999, \$33,819 (\$3,758).

“UConn Biomedical Engineering Industrial Internship Program at UTRC,” (co-PI: J. D. Bronzino), United Technologies Research Center, May 24, 1999-May 24, 2000, \$26,971 (\$24,724).

“Annual Review of Engineering Senior Design Projects to Aid Persons with Disabilities,” (co-PI: M. B. Hallowell), NSF, August 15, 1998-July 31, 2000, \$138,058 (\$69,029).

“UConn Biomedical Engineering Industrial Internship Program at Corometrics,” Corometrics, Inc., August 23, 1998-August 22, 2000, \$46,234 (\$23,117).

“UConn Biomedical Engineering Industrial Internship Program at Neurogen,” Neurogen Corp., August 23, 1998-August 22, 2000, \$35,482 (\$17,741).

“Engineering Design Projects for the Disabled,” (co-PI: M. B. Hallowell), NSF, September 15, 1998-August 31, 2000, \$88,511 (\$44,256).

“26th Northeast Bioengineering Conference at the University of Connecticut,” February 1, 2000-January 30, 2001, \$10,000 (\$4,167).

“Biomedical Engineering Alliance for Central Connecticut (BEACON),” (PI: J. D. Bronzino; co-PIs: M. D. Fox and R. B. Northrop), Whitaker Foundation, January 1, 1997-June 30, 2001, \$328,200 (\$72,933).

“Chicago 2000,” IEEE-EMBS, December 1, 1998-December 31, 2001, \$20,000 (\$6,487).

“Industrial Internship Program in Biomedical Engineering at the University of Connecticut,” Whitaker Foundation, May 1, 1999-September 30, 2002, \$60,000 (\$17,561).

“Clinical Engineering Internship Program at Baystate Medical Center,” Baystate Medical Center, August 23, 1997-August 22, 2007, \$376,000 (\$37,600).

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

“Clinical Engineering Internship Program at UConn Health Center,” UConn Health Center, August 24, 1997-August 22, 2007, \$240,730 (\$24,073).

“Clinical Engineering Internship Program at Yale-New Haven Hospital,” Yale-New Haven Hospital, August 23, 1997-August 22, 2007, \$280,000 (\$28,000).

Martin D. Fox

“MORE: Magneto-Optical Rotation Effect for Diabetic Glucometry,” Torsana Diabetes Diagnostics A/S, February 1, 1999-May 9, 2000, \$125,224 (\$91,831).

Faquir C. Jain

“Electroluminescent Flat Panel Displays using MOCVD Grown ZnS and Ternary Compounds for Enhanced Blue Emission,” (co-PIs: J. E. Ayers (33%) and F. Papadimitrakopoulos (33%)), UCRF, January, 1998-December, 1999, \$14,711 (\$2,501).

“Development of High Brightness Quantum Dot Based Nanophosphors for Electroluminescent Flat Panel Displays and Illuminators,” (co-PIs: J. E. Ayers (20%) and F. Papadimitrakopoulos (40%)), BMDO/E-lite Technologies, April 15, 1999-December 22, 1999, \$109,205 (\$32,762).

“Growth of Quantum Dot Nanocrystals using UV and RF Enhanced Microwave Metal Organic Chemical Vapor Disposition (MOCVD) Reactor,” (co-PIs: J. E. Ayers (33%) and F. Papadimitrakopoulos (33%)), UCRF, January 1, 1998-December 31, 1999, \$12,783 (\$1,087).

“Tunable Narrowband Multiple Quantum Well Optical Filters/Wide Angle of Acceptance,” Materials Tech. Corporation and Rome Air Force Laboratory, July 1, 1996-June 30, 2000, \$21,200 (\$5,300).

“Development of Low Voltage, High Brightness Flexible Electroluminescent Lamps for Display Applications,” (co-PIs: J. E. Ayers (33%) and F. Papadimitrakopoulos (33%)), CII/Yankee Ingenuity Grant 97G025/DED, July 15, 1998-July 15, 2000, \$200,000 (\$34,000).

“Patterned Heteroepitaxial Processing: A New Approach to Mismatched Heteroepitaxy for the Fabrication of High-Performance Semiconductor Devices,” (PI: J. E. Ayers (50%)), National Science Foundation, July 1, 1999-December 31, 2000, \$35,312 (\$11,771).

“High Brightness Electroluminescent Flat Panel Displays and Illuminators,” (PI: F. Papadimitrakopoulos (50%)), Critical Technologies Program, #98 CT025, December 31, 1998-December 31, 2000, \$250,000 (\$62,500).

“Reliability Study of Oxidized Deposited Polysilicon (ODP) Gate Oxide for Silicon Carbide Power MOSFETs,” (PI: J. E. Ayers (34%); co-PI: M. Anwar (33%)), National Science Foundation, July 1, 1999-May 31, 2001, \$38,898 (\$6,697).

“Novel Site Specific Processing of Nanopatterns (10-30 nm) to Fabricate Ultrahigh Performance SiGe Quantum Well/Wire/Dot Devices,” UCRF, June 1, 2000-May 31, 2001, \$18,609 (\$1,551).

Bahram Javidi

“Presidential Young Investigator Award of the NSF,” NSF, September 1, 1990-December 31, 1999, \$30,000 (\$1,607).

“Electro-optics Equipment for Information Systems,” Melles Griot, June, 1999-June 2000, \$54,372 (\$49,841).

“Optical Pattern Recognition for Validation and Security Verification,” MetroLaser Corporation/US Air Force, Phase II SBIR, December 17, 1997-September 16, 2000, \$98,000 (\$34,588).

“Massively Parallel Secure Fault Tolerant Systems for Optical Storage and Transmission of Data,” National Science Foundation, August 1, 1999-July 31, 2000, \$30,000 (\$27,500).

“Fall 99 Equipment Grant 4000 x 4000 High-Definition Detector Array,” UCRF, February 1, 2000-December 31, 2000, \$32,095 (\$14,589).

“Optical Security and Anti-counterfeiting Device,” Connecticut Innovation, Inc., December 31, 1998-December 31, 2000, \$225,000 (\$112,500).

“Optical Security and Anti-counterfeiting Device,” Pitney Bowes, December 31, 1998-December 31, 2000, \$100,000 (\$50,000).

“Fall 99 Short-Term Guest Professorship: Joseph Rosen, Ben Gurion University,” UCRF, January 1, 2000-December 31, 2000, \$6,860 (\$3,430).

“Automated Detection and Analysis of Speed-limit Signs,” Connecticut Transportation Institute, Project# 00-2 CTI, June 1, 2000-May 31, 2001, \$50,000 (\$4,167).

David Jordan

“Development of Business/Technology Post-Baccalaureate Curricula,” (co-PI: M. Diaby (50%)), General Electric Fund & Duracell Corp., January 1, 1996-December 31, 2000, \$300,000 (\$30,000).

Mansour Keramat

“DSP Fellowship,” Texas Instruments, January, 2000-January, 2001, \$15,000 (\$7,500).

“VLSI Design and Test of Sigma-Delta A/D Converters for High Speed Applications,” UCRF, January 1, 2000-December 31, 2000, \$22,486 (\$11,243).

David L. Kleinman

“Adaptive Coordination for Flexible C3 Organizations,” (co-PI: K. R. Pattipati (30%)), Alphatech, Inc., May 1, 1995-August 31, 1999, \$284,947 (\$7,672).

“Organizational Adaptation in Dynamic and Uncertain Task Environments,” (PI: K. R. Pattipati (50%)), Office of Naval Research, November 1, 1996-March 31, 2000, \$472,642, (\$51,875).

Peter B. Luh

“Monitoring and Optimization of Power Management Systems,” (co-PI: K. R. Pattipati), General Electric, May 1, 2000-December 31, 2000, \$90,793 (\$68,095).

“The New Role of the Global Project Manager: UTC Requirements and Toolkit,” United Technologies Research Center, April 15, 1999-August 15, 1999, \$2930 (\$733).

“Distributed and Coordinated Production Scheduling,” United Technologies Research Center, October 6, 1998-December 31, 1999, \$40,000 (\$17,143).

“Editorial Support – IEEE Transactions on Robotics and Automation,” Texas A&M, April 1, 1995-March 31, 2000, \$12,000 (\$2,000).

“Forecasting Market Clearing Prices in the Deregulated Power Market,” Northeast Utilities, December 1, 1998-May 31, 2000, \$80,364 (\$49,111).

“Advanced Optimization and Cost Estimation for Utilities and Interruptible Customers,” September 1, 1998-August 31, 2000, National Science Foundation, \$116,482 (\$58,241).

“Improvement of the Macro-scheduling Method,” Toshiba Corporation, November 1, 1999-September 30, 2000, \$28,000 (\$20,364).

“Optimization Based Scheduling for Gas Insulated Switchgears Production,” Toshiba Corporation, September 10, 1995-December 31, 2000, \$145,000 (\$27,188).

“Dynamic Planning & Scheduling: A Part of the Allen-Bradley Led Team on Holonic Manufacturing Systems for the Intelligent Manufacturing Systems Feasibility Study,” (co-PI: D. Hoimet), United Technologies Research Center, January 1, 1993-December 31, 2000, \$45,000 (\$5,625).

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“Editor-In-Chief Support-IEEE Transactions on Robotics and Automation,” IEEE, January 1, 1999-December 31, 2000, \$83,668 (\$41,834).

“University of Connecticut’s High Performance Connections to the Internet,” (PI: R. Vietzke; co-PIs: M. F. Young, I. Greenshields, K. R. Pattipati and D. G. Shin), National Science Foundation, January 1, 1999-December 31, 2000, \$175,000 (\$29,167).

“Network-Based Scheduling and Coordination Systems with Extensions to Supply Chains,” (co-PI: L. S. Thakur), CII, December 31, 1998-December 31, 2000, \$98,446 (\$24,612).

“A New Generation of Neural Network Optimization Techniques with Applications to Manufacturing Scheduling,” (co-PI: L. S. Thakur), National Science Foundation, October 1, 1998-September 30, 2001, \$207,408 (\$69,136).

Krishna R. Pattipati

“Simulation-based Testability Analysis,” Sikorsky Aircraft, September, 1996-August 27, 1999, \$20,000 (\$1,111).

“Adaptive Coordination for Flexible C³ Organization,” (PI: D. L. Kleinman,(70%)), Alphatech, Inc., May 1, 1995-August 31, 1999, \$284,947 (\$3,288).

“Tracking with Electronically Scanned Arrays,” (co-PIs: P. Willett (10%) and Y. Bar-Shalom (80%)), Office of Naval Research, March 1, 1997-September 30, 2000, \$420,000 (\$7,522).

“Organized Adaptation in Uncertain and Dynamic Task Environments,” (co-PI: D. L. Kleinman (50%)), Office of Naval Research, November 1, 1996-March 31, 2000, \$472,642 (\$51,875).

“Estimation with Multisensor-Multiscan Detection Fusion,” (PI: Y. Bar-Shalom (80%); co-PI: P. Willett (10%)), Air Force Office of Scientific Research, F49620-97-1-0198, April 1, 1997-November 30, 1999, \$379,286 (\$7,112).

“Verification and Validation of High-integrity Software for Safety Critical Application,” NASA-Ames Research Center, December 1, 1997-May 31, 2000, \$119,970 (\$4,399).

“A Comparative Analysis of Dependency and Qualitative Physics,” Sikorsky, August 13, 1993-December 31, 1999, \$48,000 (\$3,789).

“Robust Design Techniques for the Tail RotorSpar Manufacturing Process,” Sikorsky, June 1, 1994-December 31, 1999, \$55,655 (\$5,060).

“University of Connecticut High Performance Connections to the Internet,” (PI: R. Vitezke; co-PIs: P. B. Luh, D.-G. Shin, I. Greenshields and M. Young), National Science Foundation, January 1, 1999-December 31, 2000, \$175,000 (\$6,856).

“Estimation with Multisensor-Multiscan Detection Fusion,” (PI: Y. Bar-Shalom (80%); co-PI: P. Willett (10%)), Air Force Office of Scientific Research, AFOSR F49620-00-1-0052, December 1, 1999-November 30, 2000, \$130,000 (\$6,500).

“Robust Design Techniques for the Tail RotorSpar Manufacturing Process,” Sikorsky, January 1, 2000-December 31, 2000, \$1,090 (\$545).

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“A Software Environment for the Analysis and Synthesis of Adaptive Organizations,” Office of Naval Research, May 1, 1998-April 30, 2001, \$109,620 (\$36,540).

“Analytic Model-Driven Design of Adaptive Organizations for Dynamic and Uncertain Mission Environments,” Office of Naval Research, N00014-00-1-0101, November 1, 1999-October 31, 2003, \$603,000 (\$139,500).

Geoffrey Taylor

“A New CCD/QWIP Combination for Infra-Red Focal Plane Arrays,” Intelligent Automation/BMDO, May 1, 1999-September 1, 1999, \$456,776 (\$228,388).

“III-V Image Sensors with Optical Outputs,” National Science Foundation, August 15, 1998-July 31, 2001, \$180,000 (\$60,000).

“III-V Infrared Image Sensors,” Yankee Ingenuity Initiative, Connecticut Innovations Inc., January 31, 1998-December 31, 2000, \$199,978 (\$99,989).

“Network Analyzer and Coupled DC Parameter Analyzer System with Software for OEIC Testing,” (PI: G. W. Taylor (90%); co-PI: M. Anwar (10%)), Office of Naval Research, April 3, 2000-April 30, 2003, \$199,204 (\$149,940).

Peter Willett

“In Process Grinding Damage Monitoring by Digital Signal Processing of Acoustic Emission Signals,” (co-PI: J. Webster), National Science Foundation, September 1, 1996-June 30, 2000, \$195,087 (\$50,892).

“Tracking with Electronically-Scanned Arrays,” (PI: Y. Bar-Shalom (80%); co-PI: K. R. Pattipati (10%)), Office of Naval Research, March, 1997-September, 2002, \$300,000 (\$7,522).

“Enhanced Signal Processing for Real-Time Supervisor of Reactive Systems,” Qualtech Systems, Inc., September 15, 1998-September 14, 2000, \$152,502 (\$76,251).

“Estimation with Multisensor-Multiscan Detection Fusion,” (PI: Y. Bar-Shalom (80%); co-PI: K. R. Pattipati (10%)), AFOSR, April, 1997-November, 1999, \$379,286 (\$7,112).

“Verification and Validation of High-integrity Software for Safety Critical Application,” (PI: Y. Bar-Shalom (80%); co-PI: K. R. Pattipati (10%)), NASA-Ames Research Center, December 1, 1997-May 31, 2000, \$119,970 (\$4,399).

“Hybrid Bayes/GLRT Signal Detection,” Office of Naval Research, January 1, 1998-June 30, 2000, \$96,775 (\$38,710).

“Application of the EM Algorithm to Target Tracking, Transient Detection, Matched Field Processing and Data Fusion,” NUWC, June 1, 1998-July 30, 2000, \$85,000 (\$39,231).

“Practical Issues in Transient Detection,” NUWC, September, 1999-August, 2000, \$47,223 (\$39,353).

“Estimation with Multisensor Fusion,” (PI: Y. Bar-Shalom (80%); co-PI: K. R. Pattipati (10%)), AFOSR, December, 1999-November, 2000, \$130,000 (\$7,583).

“The Probabilistic Multi-Hypothesis Tracker,” Office of Naval Research, May, 2000-December, 2000, \$48,016 (\$12,004).

Quing Zhu

“Optimization of a Novel Imaging System,” UCRF, January 1, 1999-December 31, 1999, \$20,656 (\$10,328).

“Breast Cancer Detection Using Ultrasound and NIR Diffusive Light,” Wendy Will Case Fund, July 1, 1999-June 30, 2000, \$25,000 (\$25,000).

“Diagnostic Optical Imaging of Periodontal Tissues,” National Institutes of Health (subcontract from UConn Health Center), August 1, 1999-July 31, 2000, \$72,477 (\$66,437).

“Interface Electronics for a Novel Three-Dimensional Imaging System,” UCRF, June 1, 2000-May 31, 2001, \$11,520 (\$960).

“A Novel Breast Imaging Device Using Ultrasound and Near Infrared Diffusive Light,” Connecticut Innovations, August 1, 1999-July 31, 2001, \$214,053 (\$98,108).

“A Novel Breast Imaging Device Using Ultrasound and Near Infrared Diffusive Light,” Multi-Dimensional Technology, August 1, 1999-July 31, 2001, \$40,000 (\$18,333).

**Electrical & Computer Engineering Department
Awards, Honors, Patents
1999–2000**

John Ayers

1999-2000 University Teaching Fellow, University of Connecticut.

1999 Distinguished Teaching Faculty Award, School of Engineering, University of Connecticut.

Yaakov Bar-Shalom

Honorary Chairman, 1999 International Conference Information Fusing, Sunnyvale, CA, July 1999.

IEEE AESS Distinguished Lecturer.

Steven Boggs

IEEE 3rd Millennium Medal.

Peter Cheo

“Clad Pumped, Eye-Safe, Multicore Pphan-locked Fiber Lasers,” U.S. Patent #6,031,850.

Eric Donkor

“A 100 Gb/s All-optical Switch Implemented with Semiconductor-doped Specialty Fiber,” Invention Disclosure, UCRF, March 15, 2000, U.S. Patent # 95038.

Faquir Jain

Member, Connecticut Academy of Sciences and Engineering.

Peter Luh

Citation of Excellence for the paper, “Scheduling of Design Projects with Uncertain Number of Iterations,” by P. B. Luh F. Liu, B. Moser in European Journal of Operations Research, Vol. 113, No. 3, March 1999, pp.575-592, ANBAR Electronic Intelligence.

Peter Willett

“Classification System and Method Using Combined Information Testing,” with R.S. Lynch, Jr., U.S. Patent No. 5,999,893, 12/7/99.

Electrical & Computer Engineering Department
Major Professional Activities
1999–2000

Mehdi Anwar

Peer Review Committee, National Science Foundation.

Douglas Abraham

Organizing Committee Member, IEEE Sensor Array Multi-channel Signal Processing Workshop, March 2000, Boston, Massachusetts.

Rajeev Bansal

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

Editor and Reviewer, *Journal of Electromagnetic Waves and Applications*, 1991-present.

Associate Editor, *Radio Science*, 1991-present.

Associate Editor, *IEEE Antennas and Propagation Magazine*, 1987-present.

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

Yaakov Bar-Shalom

Honorary Chairman, 1999 International Conference Information Fusing, Sunnyvale, CA, July 1999.

Member, Board of Governors, International Society Information Fusion (1999-2001).

President, International Society Information Fusion (2000).

Session Organizer and Chairman, IEEE Aerospace Conference, March 2000.

Member Peer Review Committee, DOD: DARPA (AMSTE/PFCT Program).

Member Peer Review Committee, BMDO (Hercules Project).

Member Peer Review Committee, National Air Traffic System (Scotland, UK)/Lockheed Martin Evaluation Committee.

Opening Address, FUSION 1999, July 1999.

Orincon, Atl. Aerosp./PSR.

Member, IEEE T-AES Editorial Board Nominations Committee.

Peter Cheo

Member, Peer Review Committee, DOD.

Member, Peer Review Committee, NSF.

Member, Peer Review Committee, OSA.

Member, Peer Review Committee, IEEE.

Eric Donkor

Editor/Chair (with Andrew Pirichr), SPIE Proceedings on Quantum Computing III, Vol. 4047, April 2000.

Vice Chair, IEEE LEOS Connecticut Chapter.

Program Committee Member, SPIE Conference on Enabling Photonic Tech. For Aerospace Applications II, Conf. 4042, Orlando, Fl., April 2000.

John Enderle

IEEE-EMBS Conference Chair, World Congress on Medical Physics and Biomedical Engineering in 2000.

Associate Editor, *IEEE EMB Magazine*.

Conference Chair, 2000 Northeast Bioengineering Conference, April 8-9, 2000 at UConn.

Editorial Board of Academic Press Biomedical Engineering Book Series.

Session Chair, 1999 Rocky Mountain Bioengineering Symposium.

Session Chair, 1999 Northeast Bioengineering Symposium.

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

Member, AIMBE Academic Council.

Member, Board of Directors, Rocky Mountain Bioengineering Symposium.

Member, CURE, Connecticut United for Research Excellence.

Peer Site Reviewer, Department of Education GAANN Program.

Chinese Conference on Biomedical Electronics, Nanjing, China, November 10-13, 1999.

Martin Fox

Member, Steering Committee, Northeast Bioengineering Conference.

Member, Steering committee, New England Doppler Conference.

Elected Convenor, Working Group 10, International Electrotechnical Commission Committee 87, Ultra-sound Medical Devices; participated as U.S. representative to Working Group 10, June-Sept. 1999.

Faquir Jain

Co-editor, Proceedings of CT Microelectronics and Optoelectronics Symposium, March 14, 2000, United Technologies Research Center, East Hartford, CT.

Coordinator, CT Microelectronics and Optoelectronics Consortium.

Reviewer, NSF Panels: Photonics, September 13, 1999, Electronics, September 27, 1999, Materials and Nanotechnology, December 9, 1999, and SBIR Phase II, April 6-7, 2000.

External Reviewer, Faculty Evaluation, Technion, Israel.

Conference presentation: “A Novel Approach for the Complete Removal of Threading Dislocations from Mismatched Heteroepitaxial Layers,” (with X. G. Zhang, A. Rodriguez, X. Wang, P. Li and J. E. Ayers), Electronics Materials Conference, Denver, CO, June 21-23, 2000.

Bahram Javidi

Topical Editor, *IEEE Press and SPIE Press Book Series on Optical Imaging*.

Topical Editor, *Optical Engineering*.

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

Conference Chair and Proceedings Editor with D. Psaltis, “Devices and Systems For Optoelectronics Processing,” International Symposium on Optical Science and Engineering, Annual Meeting of the Optical Engineering Society (SPIE), Denver, CO, July 1999.

Chair, “Pattern Recognition Symposium, 1999 Optical Society of America’s Annual Meeting, Santa Clara, CA, October 1999.

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 Francisco, CA, November 1999.

Program Committee, Optical Pattern Recognition Conference, International Symposium on Photonics for Aerospace Applications of Optics, sponsored by the International Society for Optical Engineering (SPIE), Orlando, Florida, April 2000.

Program Committee, Photonics Processing Technology and Applications, International Symposium on Photonics for Aerospace Applications of Optics, sponsored by the International Society for Optical Engineering (SPIE), Orlando, Florida, April 2000.

Program Committee, Quantum Computing, International Symposium on Photonics for Aerospace Applications of Optics, sponsored by the International Society for Optical Engineering (SPIE), Orlando, Florida, April 2000.

Program Committee, Hybrid Image Processing, International Symposium on Photonics for Aerospace Applications of Optics, sponsored by the International Society for Optical Engineering (SPIE), Orlando, Florida, April 2000.

Program Committee, 1999 Optical Society of America’s Annual Meeting, Santa Clara, CA, October 1999.

Member, Institute of Electrical and Electronics Engineers (IEEE) Neural Networks Council.

Chair, Optical Computing and Processing Working Group of Optical Engineering Society (SPIE).

Chair, Pattern Recognition Technical Committee, Optical Society of America.

Session Chair, International Symposium on Optical Science and Engineering, Annual Meeting of the Optical Engineering Society (SPIE), Denver, CO, July 1999.

Session Chair, Annual Meeting of the Institute of Electrical and Electronics Engineers (IEEE) Lasers and Electro-Optics Society (LEOS), October 1999.

Proposal Reviewer, National Science Foundation.

Mansour Keramat

Member, Technical Program Committee, IEEE Midwest Symposium Circuits & Systems, New Mexico, August 1999, International Conference.

Session Chair, IEEE Midwest Symposium, Circuits & Systems, New Mexico, August 1999.

Thiagalingam Kirubarajan

Associate Editor, *IEEE Transactions on Systems, Man and Cybernetics Part B*.

Chair, Estimation and Tracking, International Conference Information Fusion, Sunnyvale, CA, July 1999.

Co-Chair, Tracking Applications, IEEE Aerospace Conference, Big Sky, MT, March, 2000.

Peter Luh

Editor-in-Chief, *IEEE Transactions on Robotics and Automation*, 1999-2004.

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.

Program Committee, 1999 IEEE International Conference on Systems, Man, and Cybernetics, October 1999.

Program Committee, 1999 IEEE/RSJ International Conference on Intelligent Robots and Systems.

Program Committee and Video Proceedings Committee, 2000 IEEE International Conference on Robotics and Automation.

Program Committee, 2000 Third Asian Control Conference.

International Program Committee, The Third World Congress on Intelligent Control and Automation, June 2000.

International Program Committee, The 2nd Workshop on Intelligent Manufacturing Systems, September 1999.

Program Committee First DARPA-JFACC Symposium on Advances in Enterprise Control, November, 1999.

Session Chair, 1999 IEEE International Conference on Systems, Man, and Cybernetics.

Session Chair, 2000 IEEE International Conference on Robotics and Automation.

Session Chair, The Third World Congress on Intelligent Control and Automation.

President, Chinese American Control Caucus, 1999-2000.

Panel, National Science Foundation's "Action Agenda for Engineering Curriculum Innovation" Program.

Panel, National Science Foundation's "Production Systems Program."

Review Committee, IEEE Robotics and Automation Society, 1998-2000.

Review Committee, Kayamori Best Automation Paper, IEEE International Conference on Robotics and Automation, 1998-2000.

Member, Connecticut Academy of Science and Engineering.

Plenary Speaker, 1999 International Workshop on Symbiosis of Human, Artifacts and Environment, Kyoto, Japan, October 1999.

Long Range Planning Committee, IEEE Robotics and Automation Society.

Krishna Pattipati

Editor-in Chief, *IEEE Transactions on Systems, Man, and Cybernetics-Part B: Cybernetics* January, 1998-present.

Vice President, Technical Activities, IEEE Systems, Man and Cybernetics Society, January 1998-December 1999.

Vice President, Conferences and Meetings, IEEE Systems, Man and Cybernetics Society, January 2000-present.

Eric Soulsby

Secretary/Treasurer, American Society for Engineering Education (ASEE) Educational Research & Methods Division, 1998-present.

Executive Board Member, American Society for Engineering Education (ASEE) Educational Research & Methods Division, 1998-present.

Past Chairman, American Society for Engineering Education (ASEE) Freshman Programs Division, 1999-2000.

Executive Board Member, American Society for Engineering Education (ASEE) Freshman Programs Division, 1997-2000.

Reviewer, IEEE/ASEE ERM 2000 Frontiers in Education Conference, April 2000.

Geoffrey Taylor

Review Panel, NSF for unsolicited proposals, January 15, 2000.

Peter Willett

Associate Editor, *IEEE Transactions on Systems, Man, and Cybernetics*, 6/98-5/01.

Associate Editor, *IEEE Transactions on Aerospace and Electronic Systems*, 9/98-/8/01.

Program Committee Chair, FUSION99 Conference.

Program Committee, FUSION 2000 Conference

Member, IEEE Signal Processing Society's "Sensor Array and Multichannel" Technical Committee, (elected 5/00).

Quing Zhu

Session Chair, IEEE 26th Northeast Bioengineering Conference.

Mechanical Engineering Department

Annual Report Summary

1999–2000

During the 1999-2000 academic year, the Department of Mechanical Engineering had an undergraduate enrollment of 204 and a graduate enrollment of 86 (approximately 40 full-time students). Thirty-six bachelor's, nine master's and three doctoral degrees were conferred.

FACULTY AND STAFF

There are 14 full-time faculty and three part-time, tenure track faculty members (Dean Amir Faghri, Associate Dean Kazem Kazerounian, and Dr. John Bennett). The department added an Assistant Professor and a Professor-In-Residence, and had one resignation during the year. Mr. Marcelle Wood, who served as Associate Department Head, accepted the position of Assistant Dean of Engineering in January 2000. The department is home to three clerical staff members as well as two professional staff members.

Two endowed chair positions were secured. The *Pratt & Whitney Endowed Chair in Design & Manufacturing*, along with the *United Technologies Endowed Chair in Heat Transfer* were established with a book value of \$1 million each.

UNDERGRADUATE TEACHING AND CURRICULUM

Forty-nine undergraduate courses were taught during the past academic year. The faculty also taught in the Freshmen Engineering courses, and in courses offered in the Management & Engineering for Manufacturing Program. Fifteen industrially sponsored projects were included in the senior design capstone courses. Three interdisciplinary senior projects were co-advised with faculty from Electrical & Computer Engineering, as well as Chemical Engineering. Significant changes in the undergraduate curriculum, initiated this year, are slated for implementation in the fall of 2000. Introduction to Mechanical Engineering (ME 205) is evolving to meld with the new freshman course (ENGR 166). ME 271P (Experimental Methods) was dropped. ME 260W (Instrumentation Laboratory) and ME 262 (Thermal-Fluids Laboratory) are being updated. The new laboratory facilities will be housed in a 1200 sq. ft., renovated area in Engineering II. New elective courses were offered in acoustics as well as finite element methods.

GRADUATE PROGRAM

Our 86 graduate students were offered 14 courses. There were 148 applications, 117 admissions offered, and 27 applicants enrolled. Two undergraduates participated in a new *Accelerated Master's* program while five undergraduates accepted Dean's Graduate Assistantships for the coming academic year. Eight graduate courses were offered on-site at Pratt & Whitney in a *Master's of Engineering Program* that was newly established in the fall of 1999. Initial reports from the industrial partner indicate a high degree of satisfaction among the industrial students.

SCHOLARLY ACTIVITY AND RESEARCH

Department faculty members were associated with 40 externally-sponsored research (25) and senior design (15) projects. Annual expenditures (direct cost of external grants) were approximately \$1.2 million. The faculty published 28 journal articles and 34 conference proceedings. One patent was secured.

Professor Baki Cetegen played a leadership role in bringing UConn (in partnership with Yale) to a finalist position for a NSF Engineering Research Center (ERC) in the area of combustion technology. Seven university

teams around the nation were finalists for the ERC awards and the final funding decisions are pending. Another faculty member was an outreach partner on a competing ERC proposal that also reached a finalist position.

STUDENT RECRUITMENT AND STUDENT ORGANIZATION ACTIVITIES

Freshman enrollment in Mechanical Engineering for the fall 2000 semester, Mechanical Engineering freshman enrollment increased for fall 2000 to 30 compared to 21 in the fall 1999. This does not include any estimate for undecided students, most of whom decide upon a major within the School during their freshman year. In support of the top students in the incoming classes, nine students have accepted departmental scholarships. Eight students were supported by scholarships in the 1999-2000 academic year. The department participated in the Engineering 2000 program for high school sophomores and juniors in June 2000.

The student section of the American Society of Mechanical Engineers (ASME) had a membership of 97. As part of the department's assistance in the professional development of our students, ASME student dues were paid from private funds. The student section of ASME organized a dinner hosted by Pratt & Whitney for upper division students in all engineering disciplines. Three students made presentations at the Hartford Section ASME Student Night. Michael Castell won the event and placed second in a subsequent competition that included 15 participants from schools in New England and Eastern Canada. Pi Tau Sigma and ASME participated in the Engineers' Week events in February 2000.

FACULTY HONORS AND AWARDS

Matt Begley received a NSF Career Award in the area of micro-mechanics. Ranga Pitchumani was awarded the Mechanical Engineering outstanding faculty award. Bob Jeffers was nominated for the ASME Board of Governors in June 2000.

ALUMNI

Two alumni received *Distinguished Alumni Awards* from the School of Engineering. Mr. John Krenicki, Jr. (BS 1984) is VP and General Manager of General Electric Superabrasives. He is a corporate officer of GE and is GE's *University Executive* for the University of Michigan. Mr. Michael W. Toner (MS 1970) is President of General Dynamics Electric Boat. Mr. Toner previously served as VP of Operations, VP of Deliveries, VP of Innovation, and Senior VP of EB. Mr. John R. Parker (ME 1965) began his term as the 119th national President of the ASME in June 2000 while Mr. William Weiblen (MS 1967) was selected to be the 120th national President of ASME in the Summer of 2000.

**Mechanical Engineering Department
Archival Technical Journal Publications
1999–2000**

Matthew Begley

“Analysis of a Wedge Impression Test for Measuring the Interface Toughness Between Films/Coatings and Ductile Substrates,” (with D.R. Munn, A.G. Evans and J.W. Hutchinson), *Acta Materialia*, Volume 48, No. 12, pp. 3211-3220, 2000.

Theodore L. Bergman

“An Engineering Model for Laser-Induced Sintering of Polymer Powders,” *ASME Journal of Manufacturing Science and Engineering*, (with M. Kandis and C.W. Buckley), Vol. 121, No. 3, pp. 360-365, 1999.

“Three-Dimensional Sintering of Two-Component Metal Powders with Stationary and Moving Laser Beams,” (with Y. Zhang, A. Faghri and C.W. Buckley), *ASME Journal of Heat Transfer*, Vol. 122, No. 1, pp. 150-158, 2000.

“Three-Dimensional Simulation of Thermal Plasma Spraying of Partially Molten Ceramic Agglomerates,” (with I. Ahmed), *Journal of Thermal Spray Technology*, Vol. 9, No. 2, pp. 240-249, 2000.

Baki Cetegen

“Shock-induced Mixing of Nonhomogeneous Density Turbulent Jets,” (with J.C. Hermanson), *Physics of Fluids*, Vol. 12, No. 5, pp. 1210-1225, 2000.

“Experiments on Instability Modes of Buoyant Diffusion Flames and Effects of Ambient Atmosphere on Instabilities,” (with Y. Dong), *Experiments in Fluids*, Vol. 28, No. 6, pp. 546-558, 2000.

Wilson K.S. Chiu

“Effect of Buoyancy, Susceptor Motion, and Conjugate Transport in Chemical Vapor Deposition Systems,” (with Y. Jaluria), *ASME Journal of Heat Transfer*, Vol. 121, No. 3, pp. 757-761, 1999.

“Continuous Chemical Vapor Deposition Processing with a Moving Finite Thickness Susceptor,” (with Y. Jaluria), *Journal of Materials Research*, Vol. 15, No. 2, pp. 317-328, 2000.

“Numerical Simulation of Chemical Vapor Deposition Processes Under Variable and Constant Property Approximations,” (with Y. Jaluria, and N.G. Glumac), *Numerical Heat Transfer, Part. A: Applications*, Vol. 37, No. 2, pp. 113-132, 2000.

Amir Faghri

“Heat Transfer in the Micro Region of a Rotating Miniature Heat Pipe,” (with L. Lin), *International Journal of Heat and Mass Transfer*, Vol. 42, pp. 1363-1369, 1999.

“Coupled Liquid and Vapor Flow in Miniature Passages with Micro Grooves,” (with D. Khrustalev), *ASME Journal of Heat Transfer*, Vol. 121, No. 3, pp. 729-733, 1999.

“Complete Condensation of a Forced Convection Two-phase Flow in a Miniature Tube,” (with E. Begg, and D. Khrustalev), *ASME Journal of Heat Transfer*, Vol. 121, No. 4, pp. 904-915, 1999.

“Three Dimensional Sintering of Two Component Metal Powders with Stationary and Moving Laser Beams,” (with Y. Zhang, C.W. Buckley, and T.L. Bergman), *ASME Journal of Heat Transfer*, Vol. 122, No. 1, pp. 150-158, 2000.

Eric Jordan

“Rectangular Inclusion with Quadratic Eigenstrains,” (with J. Cheng and K.P. Walker), *International Journal of Engineering Sciences*, Vol. 37, pp. 1261-1276, 1999.

“A Simple Accurate Method for Calculating Local Stresses around Fibers in Periodic Composites,” (with J. Cheng and K.P. Walker), *Composites Engineering: Part B*, Vol. 30, pp. 457-463, 1999.

“An Approximate Analytical Expression for Elastic Stresses in Flat Punch Problems,” (with M.R. Urban), *Wear*, Vol. 236, pp. 134-143, 1999.

“Bond Strength, Bond Stress and Spallation Mechanisms of Thermal Barrier Coatings,” (with M. Gell, K. Vaidyanathan, K. McCarron, B. Barber, Y.H. Sohn and V.K. Tolpygo), *Surface and Coatings Technology*, Vol. 120-121, pp. 53-60, 1999.

Kevin Murphy

“The Effect of Non-Uniform Thermal Fields on the Vibration and Stability Characteristics of EDM Wires,” (with Z. Lin), *International Journal of Mechanical Sciences*, Vol. 42, pp. 1369-1390, 2000.

Nejat Olgac

“Robust Control of the Delayed Resonator Vibration Absorber,” (with M. Renzulli and R. Ghosh-Roy), *IEEE Transactions On Control Systems Technology*, Vol. 7, No. 6, pp. 683-691, 1999.

“Torsional Vibration Control of MDOF Systems Using the Centrifugal Delayed Resonator,” (with M. Hosek and H. Elmali), *Journal of Vibration and Control*, Vol. 5, No. 2, pp. 299-322, 1999.

“A Sensitivity Study on Optimum Delayed Feedback Vibration Absorber,” (with N. Jalili), *ASME Journal of Dynamic Systems, Measurement and Control*, Vol. 122, No. 2, Pp. 314-321, June 2000.

“Analysis and Design of Delayed Resonator in Discrete Domain,” (with H. Elmali), *Journal of Vibration and Control*, Vol. 6, No. 2, pp. 273-289, 2000.

Ranga Pitchumani

“Processing Envelopes for Supplemental Internal Resistive Heating During Composites Cure,” (with L. Zhu), *Journal of Reinforced Plastics and Composites*, Vol. 18, No. 13, pp. 1242-1253, 1999.

“Curing of Composites Using Internal Resistive Heating,” (with B. Ramakrishnan and L. Zhu), *ASME Journal of Manufacturing Science and Engineering*, Vol. 122, No. 1, pp. 124-131, 2000.

“Fractal Permeation Characteristics of Preforms Used in Liquid Composite Molding,” (with B. Ramakrishnan), *Polymer Composites*, Vol. 21, No. 2, pp. 281-296, 2000.

Marios Soteriou

“Inlet Condition Effects on Particle Dispersion in a Shear Layer,” (with X.Y. Yang), *Combustion Science and Technology*, Vol. 148, pp. 59-92, 1999.

“Development of Computational Aeroacoustics Equations for Subsonic Flows Using a Mach Number Expansion Approach,” (with S.A. Slimon and D.W. Davis), *Journal of Computational Physics*, Vol. 159, pp. 377-406, 2000.

Bi Zhang

“Vacuum-Preloaded Hydrostatic Shoe for Centerless Grinding,” (with F.L. Yang and J.X. Wang), *Annals of the CIRP*, Vol. 48, No. 1, pp. 269-272, 1999.

“Grinding Damage Prediction for Ceramics Via CDM Model,” (with X.H. Peng), *ASME Journal of Manufacturing Science and Engineering*, Vol. 122, pp. 51-58, 2000.

“Residual Stress and Damage Effects on Integrity of Ground Silicon Nitride,” (with R. Monahan), *Journal of Materials Science*, Vol. 35, pp. 1115-1124, 2000.

Mechanical Engineering Department
Books, Book Chapters, Book Sections & Edited Volumes
1999–2000

Nejat Olgac

Editor, Proceedings of the ASME, Dynamic Systems and Control Division, ISBN 0-7918-1634-6, 1999.

Mechanical Engineering Department
Conference Proceedings and Other Publications
1999–2000

Theodore L. Bergman

“3D Sintering of Two Component Metal Powders with Stationary and Moving Laser Beams,” (with A. Faghri and C.W. Buckley), Proceedings of the 1999 International Mechanical Engineering Congress and Exposition, HTD – Vol. 364-3, pp. 211-223, 1999.

Zbigniew Bzymek

“Design for the Next Millennium,” Proceedings of the Design Engineering Technical Conferences, DETC '99, pp. 1-12, 1999.

“Design and Utilization of Virtual Machines and Processes – Aided Modeling System. A Case Study,” Proceedings of the 1999 NIST-ASME Industrial Reality Symposium, MH-Vol. 5/MED – Vol. 9, pp. 127-137, 1999.

“SALD and SALDVI Virtual Laboratory,” (with D. Ferreira, H.L. Marcus and L.L. Shaw), Proceedings of the Tenth Annual SFF Symposium, pp. 147-154, 1999.

“Conceptual Design of Smart Portable SFF System,” (with C. Roychoudhuri, L.L. Shaw and W. Marks), Proceedings of the Tenth Annual SFF Symposium, pp. 487-494, 1999.

“Innovative Design in Quality Engineering,” (with S.B. Billatos), Proceedings of the ASME International Congress and Exhibition, DE-Vol. 103, pp. 65-74, 1999.

“Competitive Conceptual Design of Engineering Systems,” Proceedings of the ASME International Congress and Exhibition, DE-Vol. 103, pp. 56-73, 1999.

“Virtual Laboratory for SALD and SALDVI Solid Freeform Fabrication,” (with D. Ferreira), Proceedings of the ASME Mechanical Materials Conference, p. 413, 1999.

Baki Cetegen

“Unsteady Flow Dynamics of Buoyant Plumes and Diffusion Flames,” Proceedings of the Combustion Institute Eastern States Meeting, pp. 24-31, 1999.

“Instabilities of Buoyant Diffusion Flames Originating from Circular Nozzles: Mode Transition and Bifurcation,” Proceedings of the ASME Fluid Engineering Conference, FEDSM00-1195, 2000.

“Spectroscopic Temperature Measurements in DC-arc Plasma Thermal Sprays Including Effects of Transverse Injection Jets,” (with S.Y. Semenov), Proceedings of the Combustion Institute Eastern States Meeting, pp. 81-84, 1999.

Wilson K.S. Chiu

“Experimental and Numerical Study of Conjugate Heat Transfer in a Horizontal Channel Heated from Below: Applications to CVD Processing,” (with C.J. Richards and Y. Jaluria), Proceedings of the ASME International Mechanical Engineering Congress and Exposition, pp. 131-142, 1999.

“Validity of the Constant Property Approximations in CVD Reactor Modeling,” (with Y. Jaluria and N.G. Glumac), Proceedings of the ASME National Heat Transfer Conference, HTD99-49, 1999.

Amir Faghri

“Advances & Challenges in Micro/Miniature Heat Pipes,” (Keynote speaker), Proceedings of the 11th International Heat Pipe Conference, Vol. III, 1999.

“3D Sintering of Two Component Metal Powders with Stationary and Moving Laser Beams,” (with Y. Zhang, C.W. Buckley and T.L. Bergman), Proceedings of the 1999 International Mechanical Engineering Congress and Exposition, HTD – Vol. 364-3, pp. 211-223, 1999.

Eric Jordan

“Bond Strength, Bond Stress and Spallation Mechanisms of Thermal Barrier Coatings,” (with M. Gell), Proceedings of the 26th International Conference on Metallurgical Coatings and Thin Films, (A. Matthews, S.L. Rohde, J.H. Givens, W. Ensinger, eds.), pp. 53-61, 1999.

“Mechanisms of Spallation of Electron Beam Physical Vapor Deposited, Thermal Barrier Coatings with and without Platinum Aluminide Bond Coat Ridges,” (with K. Vaidyanathan and M. Gell), Proceedings of the TMS Meeting, St. Louis, MO, 15 pp. CD, 2000.

“Development of Laser Fluorescence as a Non-destructive Inspection Technique for Thermal Barrier Coatings,” (with M. Gell), Proceedings of the 1999 Advanced Turbine Systems Annual Review Conference, 5 pps. CD, 2000.

Lee Langston

“The Return of Gaslight,” *Mechanical Engineering Magazine – Power Supplement*, pp. 34-36, 1999.

“New DOE Gas Turbine Program to Start the New Millennium,” *Global Gas Turbine News*, Vol. 39, No. 2, pp. 4-5, 1999.

“Gas Turbine Industry Overview,” *Global Gas Turbine News*, Vol. 40, No. 1, pp. 5-8, 2000.

“Flight and Light,” *Mechanical Engineering Magazine – Power Supplement*, pp. 10-13, 2000.

Nejat Olgac

“A Quasi On-line Tuning Structure for Optimum Delayed Feedback Vibration Absorber,” (with N. Jalili), Proceedings of the Automatic Controls Conference '99, pp. 1550-1554, 1999.

“A Novel Technique for the Stability of Multiple Frequency Resonators,” Proceedings of the American Society of Mechanical Engineers/DETC '99, VIB99-No. 8023, (CD entry 5 pp.) 1999.

“A Single Step Automatic Tuning Algorithm for the Delayed Resonator Vibration Absorber,” (with M. Hosek), Proceedings of the American Society of Mechanical Engineers/IMECE '99, pp. 157-164, 1999.

“Relative Stability Analysis for Vibration Absorbers with Multiple Delayed Feedback,” (with C. Huang), Proceedings of the Automatic Controls Conference 2000, pp. 2097-2101, 2000.

Ranga Pitchumani

“Novel Synthesis of Hierarchical, Multiscale Fibrous Composites,” (with X. Guan), Proceedings of the 2000 NSF Design & Manufacturing Research Conference, 4pp, CD, January 3-6, 2000.

“Resistive Curing of Composite Materials,” (with B. Ramakrishnan, and L. Zhu), Proceedings of the 2000 NSF Design and Manufacturing Research Conference, 10pp, CD, January 3-6, 2000.

Marios Soteriou

“Computational Prediction of Acoustic Fields Due to Low Mach Number Shear Flows,” (with S.A. Slimon), Proceedings of the AIAA-2000-0220, pp. 1-10, 2000.

“Numerical Study of the Impact of Collisions on Particle Dispersion in a Shear Layer,” (with J.H. Mosley), Proceedings of the 1999 Fall Technical Meeting of the Eastern States Section of the Combustion Institute, pp. 455-458, 1999.

Bi Zhang

“Chatter Suppression with Multiple Time Varying Parameters in Turing,” (with F.L. Yang, and J.Y. Yu), Proceedings of the 1997 ASME International Mechanical Engineering Congress and Exposition, ASME MED – Vol. 2, pp. 237-242, 1999.

Mechanical Engineering Department

Active Grants and Contracts

1999–2000

Matthew Begley

“Determining Time and Temperature Dependent Material Properties for Small Components: Integrated Teaching and Research,” National Science Foundation Career Award, June 1, 2000 – June 30, 2003, \$196,144.

“Modeling and Determining Braze Alloy Mechanical Properties,” (with co-PI: M. Wood), Hamilton Sundstrand, August 23, 1999 – May 22, 2000, \$5,000.

John C. Bennett

“PATHS Toward the Future: A Community of Learners,” U.S. Department of Education in conjunction with its GEAR-UP Program, September 1, 1999 – August 31, 2000, \$90,756.

Theodore L. Bergman

“Void Formation and Part Growth During Non-isothermal Powder Sintering,” National Science Foundation, March 1, 1997 – February 28, 2001, \$240,029.

“Advanced Coating Technology Durability and Reduced Cost in Naval Applications,” (PI: M. Gell; co-PIs: E. Jordan, B. Cetegen, P. Klemens, N. Padture, L. Shaw, J. Helble and D.M. Pease), Office of Naval Research, December 15, 1997 – December 14, 2001, \$2,992,505.

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“Practical Computer-Based Simulation of Arc-Interruption Physics,” (with co-PI: B. Cetegen), General Electric, March 9, 2000 – December 31, 2002, \$127,900.

“Design of a Surgical Liquid Delivery System,” (with co-PI: E. Jordan), United States Surgical, August 23, 1999 – May 22, 2000, \$5,000.

Zbigniew Bzymek

“Loose Roll Winder,” (with co-PI: N. Olgac), Rogers Corporation, August 23, 1999 – May 22, 2000, \$5,000.

“Pliers Venture – Increased Durability and Cutting Performance,” (with co-PI: M. Wood), The Stanley Works, August 23, 1999 – May 22, 2000, \$5,000.

Baki Cetegen

“Advanced Coating Technology Durability and Reduced Cost in Naval Applications,” (with co-PIs: E. Jordan, M. Gell, T. Bergman, P. Klemens, N. Padture, and D.M. Pease), Office of Naval Research, December 15, 1997 – December 14, 2001, \$2,992,505.

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“Practical Computer-Based Simulation of Arc-Interruption Physics,” (with co-PI: T. Bergman), General Electric, March 9, 2000 – December 31, 2002, \$127,900.

“Preliminary Research on Fitch Fuel Catalyst for Improved IC Engine Combustion,” (with co-PIs: J. Helble, and S. Suib), Connecticut Innovations Inc., March 2000 – December 2000, \$200,000.

“Velocity Field Characterization of a Flashback Arrestor-premixer Device,” Precision Combustion Inc., July 1999 – June 2000, \$6,000.

“Transport Phenomena in Thin Rotating Liquid Films Including Nucleate Boiling,” (with co-PI: A. Faghri), NASA Microgravity Fluid Physics Program, March 2000 – December 2003, \$340,000.

“Zero Gravity Bellows Sensor System,” (with co-PI: M. Wood), Hamilton Sundstrand, August 23, 1999 – May 22, 2000, \$5,000.

Wilson K.S. Chiu

“Improving Coating Quality and Deposition Rate in the Optical Manufacturing Process,” University of Connecticut Research Foundation, October 1999 – June 2001, \$14,140.

Amir Faghri

“Critical Phenomena in Miniature Passages with Microgrooves During Vaporization and Forced Convection and/or Capillary Action,” National Science Foundation, September 1, 1997 – June 30, 2000, \$120,214.

“Micro/Miniature Heat Pipe Science and Technology for Electronic Cooling,” U.S. Air Force, September 1, 1997 – August 31, 2000, \$195,000.

“Evaporation, Boiling and Condensation on/in Capillary Structures of High Heat Flux Two Phase Devices,” NASA Microgravity Science & Application Division, April 1, 1996 – September 30, 2000, \$360,000.

“Transport Phenomena in Thin Rotating Liquid Films Including Nucleate Boiling,” (with co-PI: B. Cetegen), NASA Microgravity Fluid Physics Program, March 2000 – December 2003, \$340,000.

Robert G. Jeffers

“Abrupt Pull Text Fixture,” (with co-PI: M. Wood), The Wiremold Company, August 23, 1999 – May 22, 2000, \$5,000.

Eric Jordan

“Chemical/Mechanical Instabilities at Thermal Barrier Coating Interfaces,” (with co-PI: M. Gell), Department of Energy, ATS with the University of Pittsburgh, June 13, 1997 – June 12, 2000, \$261,375.

“Advanced Coating Technology Durability and Reduced Cost in Naval Applications,” (with co-PIs: M. Gell, T. Bergman, B. Cetegen, P. Klemens, N. Padture, and D.M. Pease), Office of Naval Research, December 15, 1997 – December 14, 2001, \$2,992,505.

“Development of Non-destructive Inspection Technique for Thermal Barrier Coatings,” Department of Energy, ATS program, with Clemson University, February 1, 1999 – January 31, 2001, \$292,156.

“Design of a Surgical Liquid Delivery System,” (with PI: T. Bergman), United States Surgical, August 23, 1999 – May 22, 2000, \$5,000.

Kazem Kazerounian

“Design for Manufacturing and Automation of Pocket Thermometers,” Cooper Instrument, Inc., January 1996 – June 2000, \$175,000.

“EDM Turbine Blade Fixturing System,” (with PI: B. Zhang), Pratt & Whitney, August 23, 1999 – May 22, 2000, \$5,000.

“Electromechanical Label Applicator,” Gerber Technology, August 23, 1999 – May 22, 2000, \$3,000.

Herbert Koenig

“Automation of Series 6 Loadbar Assembly,” (with co-PI: M. Wood), Siemon Company, August 23, 1999 – May 22, 2000, \$5,000.

Lee Langston

“Velocimeter for Low Speed Water Flow,” (with co-PI: M. Wood), Pratt & Whitney, August 23, 1999 – May 22, 2000, \$5,000.

Kevin Murphy

“Nonlinear Vibrations, Stability and Control of Axially Moving Material in Manufacturing Processes,” National Science Foundation, CAREER Program, Dynamic Systems and Control Division, July 1996 – June 2001, \$210,000.

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“Pliers Venture – Force Multiplier,” (with co-PI: M. Wood), The Stanley Works, August 23, 1999 – May 22, 2000, \$5,000.

Nejat Olgac

“A New Vibration Cancellation Mechanism Using Smart Materials,” CII (\$156,000) and Sikorsky Aircraft (\$10,000 cash, \$110,000 in-kind), June 2000 – June 2002.

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“Loose Roll Winder,” (with PI: Z. Bzymek), Rogers Corporation, August 23, 1999 – May 22, 2000, \$5,000.

“Active and Variable Force Absorber,” (with co-PI: M. Wood), Sikorsky Aircraft, August 23, 1999 – May 22, 2000, \$5,000.

Ranga Pitchumani

“Processing Fundamentals and Process Modification for Rapid Liquid Molding of High-Performance Composites,” National Science Foundation, October 1, 1995 – September 30, 2000, \$224,460.

“Total Quality Optimal Manufacturing of Composite Materials via Liquid Molding,” Office of Naval Research – Young Investigator Award, June 1, 1996 – May 31, 2000, \$359,990.

“Intelligent Simulation-Assisted Liquid Composite Molding,” Office of Naval Research, June 1, 1997 –

May 31, 2000, \$190,561.

“Development of an Automated Precisely-metered Injection System for Resin Transfer Molding,” National Science Foundation – REU Supplement, October 1, 1997 – September 30, 2000, \$10,000.

“NASA EPSCoR Preparation Grant to Stimulate Competitive Aerospace Research in Connecticut,” (with UConn PI: R. Malla and statewide faculty participants), NASA, June 1, 1999 - May 31, 2000, \$147,000 (\$4,050).

“Exploratory Investigations on a Novel Process for the Fabrication of Multiscale Reinforced Polymer Composites,” National Science Foundation, September 1, 1999 – August 31, 2000, \$70,000.

“Design and Optimization of Ablative and Contact Head Materials for Electrical Circuit Breakers,” General Electric Corporation, March 9, 2000 – December 31, 2002, \$89,600.

“Advanced Tribometer and Non-Contact Profilometer for Structural, Magnetic and Bio-Materials Applications,” (with co-PIs: L. Shaw, N.P. Padture, *et al.*), Office of Naval Research – DURIP Program, February 1, 2000 – January 31, 2001, \$176,796.

“Nylon Membrane Filter Process and Control,” (with co-PI: M. Wood), Cuno Incorporated, August 23, 1999 – May 22, 2000, \$5,000.

Marty E. Wood

“Label Printer, Transporting and Applicator System – Zero Waste,” Pitney Bowes, August 23, 1999 – May 22, 2000, \$5,000.

“AI Alternative Power Source for Vessels and Other Marine Devices,” (with co-PI: J. Fenton), Office of Naval Research/MIT, August 23, 1999 – May 22, 2000, \$5,000.

“Modeling and Determining Braze Alloy Mechanical Properties,” (with PI: M. Begley), Hamilton Sundstrand, August 23, 1999 – May 22, 2000, \$5,000.

“Pliers Venture – Increased Durability and Cutting Performance,” (with PI: Z. Bzymek), The Stanley Works, August 23, 1999 – May 22, 2000, \$5,000.

“Zero Gravity Bellows Sensor System,” (with PI: B. Cetegen), Hamilton Sundstrand, August 23, 1999 – May 22, 2000, \$5,000.

“Abrupt Pull Text Fixture,” (with PI: R.G. Jeffers), The Wiremold Company, August 23, 1999 – May 22, 2000, \$5,000.

“Automation of Series 6 Loadbar Assembly,” (with PI: H. Koenig), Siemon Company, August 23, 1999 – May 22, 2000, \$5,000.

“Velocimeter for Low Speed Water Flow,” (with PI: L.S. Langston), Pratt & Whitney, August 23, 1999 – May 22, 2000, \$5,000.

“Pliers Venture – Force Multiplier,” (with PI: K. Murphy), The Stanley Works, August 23, 1999 – May 22, 2000, \$5,000.

“Active and Variable Force Absorber,” (with PI: N. Olgac), Sikorsky Aircraft, August 23, 1999 – May 22, 2000, \$5,000.

“Nylon Membrane Filter Process and Control,” (with PI: R. Pitchumani), Cuno Incorporated, August 23, 1999 – May 22, 2000, \$5,000.

Bi Zhang

“Microgrinding of Nanostructured Materials,” \$168,278 + \$168,344 by Inframat Corporation January 1, 1999 – December 31, 2000.

“EDM Turbine Blade Fixturing System,” (with co-PI: K. Kazerounian), Pratt & Whitney, August 23, 1999 – May 22, 2000, \$5,000.

Mechanical Engineering Department
Awards, Honors, Patents
1999–2000

Matthew Begley

CAREER Award, National Science Foundation, May 2000.

Theodore L. Bergman

1999 Distinguished Engineering Professor Award, School of Engineering, University of Connecticut.

Amir Faghri

Introduction to OSU Council of Academy of Distinguished Engineering, 1999.

AIAA Certificate of Distinguished Service, 1999.

Kevin Murphy

AAUP Teaching Award, May 2000.

Nejat Olgac

“Tunable Torsional Vibration Absorber: The Centrifugal Delayed Resonator,” (with M. Hosek, and H. Elmali), U.S. Patent No. 5,934,424, issue date: August 10, 1999.

“A Single Step Automatic Tuning Algorithm for the Delayed Resonator Vibration Absorber,” (with M. Hosek), ASME Dynamic Systems and Control Division top three finalist certificate, ASME-IMECE, November 1999.

Ranga Pitchumani

Mechanical Engineering Outstanding Faculty Award, University of Connecticut, 2000.

Bi Zhang

“Outstanding Reviewer for 1999 *ASME Journal of Manufacturing Science and Engineering*,” 1999.

Mechanical Engineering Department
Major Professional Activities
1999–2000

Matthew Begley

Recording Secretary, Applied Mechanics Division Executive Committee, ASME.

Recording Secretary, Applied Mechanics Division General Committee, ASME.

Symposium Chair, Fretting Fatigue and Related Issues, SES Annual Meeting, Austin, TX, October 1999.

John C. Bennett

“Interactive, Collaborative Classes: An Alternative for Any Curriculum,” invited Symposium Facilitated at Ryerson Polytechnic University, Toronto, Canada, January 2000.

Theodore L. Bergman

Editorial Advisory Committee Member, *ASME Heat Transfer Recent Contents*.

Technical Program Co-Chairman, 2001 National Heat Transfer Conference, Anaheim, CA.

Session, Co-Chair, “Transport Phenomena in Spray and Coating Processing,” ASME IMECE, 2000.

Zbigniew Bzymek

Special Issue Editor on CAD planned for 2000-2001, *International Journal of Computers and their Applications*.

Invited Visiting Professorship at Fairfield University, June/July 1999.

Baki Cetegen

Member, Board of Directors, Combustion Institute Eastern States Section Treasurer, Combustion Institute Eastern States Section.

Member, Connecticut Academy of Sciences and Engineering Task Force on Diesel Bus Technology Evaluation.

Wilson K.S. Chiu

Session Co-Chair, Transport Phenomena in Net Shape Manufacturing, ASME IMECE, 2000.

Amir Faghri

North American Editor, *Journal of Enhanced Heat Transfer*.

Executive Editor, *Heat Transfer Engineering Journal* (Thermal Storage & Heat Pipes).

Editorial Board, *Journal of Applied Thermal Engineering*.

Editorial Board, *Journal of Heat Transfer Research*.

Honorary Editorial Advisory Board, *International Journal of heat and Mass Transfer*.

Honorary Member, Editorial Advisory Board for *Communication in Heat and Mass Transfer*.

Editorial Advisory Board, *International Journal of Numerical Methods for Heat and Fluid Flow*.

Editorial Board, *Journal of Process Mechanical Engineering*.

Member, International Scientific Committee, Heat Pipes, Heat Pumps, Refrigeration, 1999.

Organizing Committee members, Symposium on Energy Engineering in the 21st Century, Hong Kong, January 9-13, 2000.

Chair, *Thermophysics Conference*, 1999 Aerospace Sciences Meeting & Exhibition, Reno, NV, January 11-14, 1999.

Chair, Engineering Committee, Louisiana Board of Regents, Departmental Excellence Through Faculty Excellence, 2000.

Robert G. Jeffers

Senior Vice-President, American Society of Mechanical Engineers International.

Member, Council Coordinating Committee, American Society of Mechanical Engineers International.

Co-Chair, Task Group for Sections and Regions Committee on merger of American Society of Mechanical Engineers International and Society of Manufacturing Engineers.

Nominated for Board of Governors of American Society of Mechanical Engineers.

Eric Jordan

Advanced Turbine System Annual Program Review, DOE, one of only 2/80 invited to present research results to whole body, Pittsburgh, PA, November, 1999.

Invited speaker to make four presentations at the Thermal Barrier Coatings International Workshop, ONR, Stuttgart, Germany, May 29-June 1, 2000.

Kazem Kazerounian

Associate Technical Editor, *ASME Journal of Mechanical Design*.

Member, ASME Applied Mechanics Review Advisory Board.

Chairman, 2000 ASME Mechanisms and Robotics Conference.

General Chairman, 2002 ASME Joint Design Conferences.

Designated Chairman, ASME Mechanisms Committee (2002).

Lee S. Langston

Vice-President of the American Society of Mechanical Engineers for the International Gas Turbine Institute, 1998-2000.

Member, Board of Directors, International Gas Turbine Institute.

Kevin Murphy

Co-organizer, Symposium on Dynamics and Control of Nonlinear Systems, 1999 ASME Noise and Vibration Conference, Las Vegas, NV.

Nejat Olgac

Associate Editor, *ASME, Dynamic Systems, Measurement and Control*, 1997-2000.

Program Chair, ASME/Dynamic Systems and Control Division for the IMECE '99, Nashville, TN.

Symposium organizer, "Active Vibration Control and Acutation Using Smart Materials," ASME DETC, 17th Conference on Vibration and Noise, 1999, Las Vegas, NV.

ASME Dynamic Systems and Control Division top three finalist certificate, ASME-IMECE 1999 Conference, for the paper, "A Single Step Automatic Tuning Algorithm for the Delayed Resonator Vibration Absorber," (with M. Hosek), ASME/IMECE '99, November 1999.

Ranga Pitchumani

Editorial Board member, *Journal of Thermoplastic Composite Materials*.

Bi Zhang

Organizer, Symposium on Grinding and Abrasive Technologies, ASME IMECE Nashville, TN, November 1999.

Metallurgy & Materials Engineering Department

Annual Report Summary

1999–2000

The department has focused this year on increasing enrollments, increasing research funding and hiring a faculty member to fill the vacancy left by Owen Devereux's retirement last year. These activities have been guided by the Department's Strategic Plan that was written in 1998, revised in 1999 and revised again this year at a day-long, strategic planning meeting. The meeting was attended by the Dean, members of our external advisory board, students, staff and faculty. The plan calls for becoming a tier one program through a department-wide commitment to excellence in education, research and service.

CHANGES IN PERSONNEL

Dr. Mark Aindow joined the Department in September as an Associate Professor. Previously, he had been a senior lecturer at the University of Birmingham in the U.K. Dr. Leon Shaw was promoted to Associate Professor and was granted tenure. Professor Philip Clapp spent the year in France while on sabbatical leave. Both Dr. David Alley and Dr. Terry Hennessey were hired on a part-time basis to help with courses and recruiting, while Ms. Barbara Garton was hired briefly to help produce our graduate brochure. Over 200 faculty candidates were considered for our faculty opening. Currently we are in our second round of candidate interviews.

UNDERGRADUATE PROGRAM

Recruiting students for our new undergraduate program was our highest priority for the year. Displays or presentations were given at a number of functions to inform students and parents about our materials program. These included two University Open Houses, the Connecticut Invention Convention, Connecticut Science Fair, and the CPTV Family Science Expo. In addition, the department held two Career Days to inform current engineering students about our programs. These activities were led by Leon Shaw, who enlisted help from students, staff and faculty. Other recruiting activities included a mass mailing to Connecticut High School guidance councilors, math and science teachers, and principals. Also, presentations were made at one middle school and one high school. To advertise our program to engineers, all ASM International Chapters in the Northeast were contacted about announcing our program in their monthly newsletter. Also, our department web page was expanded to include information on the metallurgy and materials engineering major. Until our undergraduate major is offered in the junior and senior years, upper division students continue to opt for the double major. This year, 20 double majors were graduated.

GRADUATE PROGRAM

Recruiting full-time graduate students was another high priority this year. By employing an aggressive recruiting strategy, Dr. Nitin Padture, our graduate student coordinator, was able to attract top students from distinguished overseas universities. As a result of his efforts, four students joined our department in fall 1999 and seven joined in spring 2000. Next year, 11 students are expected to join the department in fall 2000. These numbers compare favorably with our departmental goal of 10 new full-time graduate students/year. Enrollment of part-time students is expected to rise as well with our participation in the new Master of Engineering degree program. Total graduate students in the MMAT program currently number 37. Of these students, four M.S. and six Ph.D.s graduated. Fifty-one percent of all applicants were admitted to the graduate program, and 59 percent of prospective graduate students receiving offers accepted.

RESEARCH

Research spending this year was \$2.2 million, up from \$1.2 million last year. In addition, single and multi-year proposals whose lead PIs were MMAT members and that had budgets of \$5,985,137 were approved. More than

half of the faculty continue to have at least one major grant from an external agency and they have 20 grants overall. Also, the faculty continue to be active scholars, producing published 25 journal articles and 27 conference proceedings, while contributing 50 reviews of papers and proposals. In addition, they made 37 contributed presentations at conferences and gave 38 invited lectures.

HONORS AND AWARDS

The student chapter won an ASM International “1999 Chapter of Excellence Award” for their technical programming. Professor John Morral was named a Distinguished Alumni of the Ohio State University, School of Engineering, while Professor Philip Clapp was an invited visiting professor at the National Institute of Applied Science in Lyon, France. In addition, Associate Professor Nitin Padture won the department’s “Most Valuable Member Award.”

ASM/TMS JOINT STUDENT CHAPTER

The 1999-2000 academic year featured a full and varied schedule of events. These included business meetings, technical meetings, guest speakers, field trips, outreach to people and students of all levels, cooperation with the local professional societies and other student chapters, as well as social outings. Highlights were field trips to Pratt & Whitney’s East Hartford plant and to Wyman-Gordon in North Grafton, MA; participation in numerous recruiting activities for the Department; and our 2nd Annual UConn Student Night at the Hartford ASM meeting. The chapter now maintains a website to publicize its activities at <http://137.99.20.107/home.htm>.

MATERIALS ACADEMIC ADVISORY BOARD

A new expanded Advisory Board was formed to help the Department with strategic planning and other activities, for example, recruiting, fundraising and program assessment. The Chair of the new board is Dr. Robert Klug from Allegheny Ludlum.

Metallurgy & Materials Engineering Department
Archival Technical Journal Publications
1999–2000

Mark Aindow

“On the Effect of Antiphase Domain Boundaries on ALCHEMI,” (with N. Jiang, T.S. Rong, I.P. Jones), *Phys. Stat. Sol.*, Vol. 214, pp. 237-243, 1999.

“A High-Resolution Electron Microscopy Study of Steps on Lamellar γ/α Interfaces in a Low Misfit TiAl-Based Alloy,” (with P. Shang, T.T. Cheng), *Phil. Mag. A*, Vol. 79, pp. 2553-2575, 1999.

“Interfacial Dislocation Mechanism For Diffusional Phase Transformations Exhibiting Martensitic Crystallography: Formation Of TiAl + Ti₃Al Lamellae,” (with R.C. Pond, P. Shang, T.T. Cheng), *Acta Materialia*, Vol.48, pp. 1047-1053, 2000.

“Analysis of a 69.3° Vicinal HAGB in Pure Titanium,” (with S. Wang), *Interface Sci.*, Vol. 8, pp. 17-25, 2000.

“Self-Assembly of Size-Selected Colloidal Metal Clusters: Crystalline Descriptions of Non-Close-Packed Arrangements,” (with S.N. Williams, R.E. Palmer, J. Fink and C.J. Kiely), *Phil. Mag. Lett.*, Vol. 79, pp.569-574, 1999.

“High-Resolution Electron Microscopy of Steps on Lamellar γ/α_2 Interfaces in a Ti-44 at.% Al - 8 at.% Nb Alloy,” (with P. Shang and T.T. Cheng), *Phil. Mag. Lett.*, Vol. 80, pp.1-10, 2000.

“Orientational and Translational Ordering of Sub-Monolayer Films of Passivated Multiply Twinned Gold Clusters,” (with A. Wellner, P.D. Nellist, T.E. Palmer, and J.P. Wilcoxon), *Journal of Phys. D: Appl. Phys.*, Vol. 33, pp. L23-L26, 2000.

Philip C. Clapp

“Molecular Dynamics Simulation of Friction,” (with P. Chantrenne and M. Raynaud), *Surface Science Letters*, Vol. 426, L, pp. 413-419, 1999.

James M. Galligan

“Instantaneous Dislocation Velocities in Iron at Low Temperatures,” (with T.J. McKrell), *Scripta Materialia*, Vol. 42, pp. 79-82, 1999.

Maurice Gell

“Mechanism of Spallation in Platinum Aluminide/Electron Beam Physical Vapor Deposited Thermal Barrier Coatings,” (with E. Jordan, *et al.*), *Materials and Metallurgical Transactions*, Vol. 30A, pp. 427-435, 1999.

“Assessment of Damage Accumulation In Thermal Barrier Coatings Using a Fluorescent Dye Infiltration Technique,” (with E. Jordan, *et al.*), *Journal of Thermal Spray Technology*, Vol. 8, pp. 79-86, 1999.

“Bond Strength, Bond Stress and Spallation Mechanisms of Thermal Barrier Coatings,” (with E. Jordan, *et al.*), *Surface and Coatings Technology*, Vol. 120-121, pp. 53-60, 1999.

Theodoulos Z. Kattamis

“Effect of Annealing on Cohesion, Adhesion and Tribological Behavior of Amorphous Si-DLC Coatings on Steel,” (with S. Skolianos and C. Fountzoulas), *Journal Adhesion Science Technol.*, Vol. 14, No. 6, pp. 805-811, 2000.

Harris Marcus

“Gas-Phase Selective Area Laser Deposition (SALD) Joining of SiC,” (with S. Harrison), *Materials and Design*, Vol. 20, pp. 147-152, 1999.

“Silicon-29 Solid State MAS NMR Investigation of Selective Area Laser Deposition Silicon Carbide Material,” (with S. Harrison, Xiangqun Xie, K. J. Jakubenas), *Journal of the American Ceramic Society*, Vol. 82(11), pp. 3211-4, 1999.

“Selective Area Laser deposition (SALD) Joining of Monolithic Silicon Carbide Structures Using Dual Lasers,” (with S. Harrison), *Journal of Advanced Materials* 32, no. 2, pp. 3-8, 2000.

Arthur J. McEvily

“A Coaxing Effect in the Small Fatigue Crack Growth Regime,” (with S. Ishihara), *Scripta Materialia*, Vol. 40, pp. 617-622, 1999.

“An Improved Method for the Determination of the Maximum Thermal Stress During a Quench Test,” (with T. Yoshimoto, S. Ishihara, T. Goshima, and T. Ishizaki), *Scripta Materialia*, Vol. 41, pp. 553-559, 1999.

“Effect of Atmospheric Humidity on the Fatigue Crack Propagation Behavior of Short Surface Cracks in Silicon Nitride, (with S. Ishihara and T. Goshima), *Journal of the American Ceramic Society*, Vol. 83, pp. 571-577, 2000.

John E. Morral

“Transient Liquid Phase Bonding in Two-phase Ternary Systems,” (with C.W. Sinclair and G.R. Purdy), *Met. Mater. Trans. A*, pp. 1187-1192, 2000.

Nitin P. Padture

“Engineering Resistance to Sliding-Contact Damage Through Controlled Gradients,” (with S. Sures, M. Olsson, A.E. Giannakopoulos and J. Jitcharoen), *Acta Materialia*, Vol. 47, pp. 3915-26, 1999.

“High Temperature Properties of Liquid-Phase-Sintered SiC,” (with R.P. Jensen, W.E. Luecke, S.M. Wiederhorn), *Materials Science and Engineering A*, Vol. 282, pp. 109-114, 2000.

“Densification of Liquid-Phase-Sintered SiC,” (with V.V. Pujar and R.P. Jensen), *Journal of Materials Science Letters*, Vol. 19, pp. 678-81, 2000.

Leon L. Shaw

“Solid Freeform Fabrication of In-Situ SiC/C Thermocouples in Macro-Components,” (with L.-C. Sun), *Metallurgical & Materials Transactions*, Vol. 30A(9), pp. 2549-2551, 1999.

“Nanostructured TiN Powder Prepared via an Integrated Mechanical and Thermal Activation Process,” (with R.-M. Ren and Z.-G. Yang), *Material Science Engineering*, Vol. A286, pp. 65-71, 2000.

Metallurgy & Materials Engineering Department
Books, Book Chapters, Book Sections & Edited Volumes
1999–2000

Harold D. Brody

Web-based Tutorial, Part III: Filling of Castings, Gating Systems, at:

www.eng2.uconn.edu/vc/index.html, 2000.

Philip C. Clapp

“Nanostructured Materials,” *Computer Simulation of Nanomaterials*, (with C.C. Koch, ed.), Noyes Publications, Westwood, NJ.

Harris Marcus

“Gas Phase Solid Freeform Fabrication,” (with L. Shaw), *Handbook of Rapid Prototyping and Layered Manufacturing: Technologies, Fundamentals and Applications*, (M.C. Leu, ed.), Academic Press, 2000.

Co-editor, Proceedings of the 1999 Solid Freeform Fabrication Symposium, University of Texas, 1999.

John E. Morral

“Estimating Diffusivities of Multicomponent Alloys,” (translated into Chinese by Zhiyu Qiao), Chapter 7, *Computerized Physical Chemistry of Metallurgy and Materials*, (Qiao Zhiyu, Xu Zhihong, Liu Honglin, eds.), Metallurgy Industry Publishers, Beijing, China, pp. 162-168, 1999.

Leon Shaw

“Gas Phase Solid Freeform Fabrication,” (with H. Marcus), *Handbook of Rapid Prototyping and Layered Manufacturing: Technologies, Fundamentals and Applications*, (M.C. Leu, ed.), Academic Press, 2000.

Metallurgy & Materials Engineering Department Conference Proceedings and Other Publications 1999–2000

Mark Aindow

“Nucleation of Recrystallisation Near Prior Grain Boundaries,” (with S.J. Lillywhite and P.S. Bate), Proceedings of ReX’99 (JIMIS-10), pp. 143-148, 1999.

“Grain Boundary Influence on Texture Evolution during Deformation and Recrystallisation,” (with S.J. Lillywhite and P.S. Bate), Proceedings of ICOTOM-12, pp. 1619-1624, 1999.

“ALCHEMI Studies of B2 Nb-Al-V Alloys,” (with T.S. Rong, N. Jiang and I.P. Jones), Inst. Phys. Conf. Ser., Vol. 161, pp. 439-442, 1999.

“Dislocation Networks in Single Crystal MoSi₂ Deformed at High Temperatures,” (with C.G. Jiao), Inst. Phys. Conf. Ser., Vol. 161, pp. 475-478, 1999.

“Electron Microscopy Studies of the Oxidation of Nd-Fe-B Magnets,” (with Y. Li, H.E. Evans and I.R. Harris) Inst. Phys. Conf. Ser., Vol. 161, pp. 483-486, 1999.

“The Metastable C40 Structure in Sputtered MoSi₂ Thin Films,” (with X.Y. Wang and I.T.H. Chang), Inst. Phys. Conf. Ser., Vol. 161, pp. 491-494, 1999.

“Microstructural Study of Nd-Fe-Co-Ga-B Magnet Alloys During The Hydrogenation Disproportionation Process,” (with Y. Hu, O. Gutfleisch and I.R. Harris), Inst. Phys. Conf. Ser., Vol. 161, pp. 503-506, 1999.

“Catalysed Carbon Deposition on Austenitic Stainless Steel,” (with G.R. Millward, H.E. Evans and C.W. Mowforth), Inst. Phys. Conf. Serv., Vol. 161, pp. 557-560, 1999.

“Observations of Non-Close packed arrangements in Multilayers of Passivated Gold Cluster,” (with A. Wellner, P. Brown, C.J. Kiely and J.P. Wilcoxon), Inst. Phys. Conf. Ser., Vol. 161, pp. 561-564, 1999.

“Microstructure of Laser-Ablated La₂CuO₄F_x Thin Films on SrTiO₃,” (with G. Kong, M.O. Jones, I. Gameson, S.T. Lees, K.E. Gibbons, J.S. Abell and P.P. Edwards), Inst. Phys. Conf. Ser., Vol. 161, pp. 609-612, 1999.

Philip C. Clapp

“Molecular Dynamics Simulation of Friction,” (with P. Chantrenne, M. Raynaud, J.A. Rifkin and C.S. Becquart), Proceedings of Eurotherm Conference, Vol. 18, pp. 49-56, 2000.

“Etude des Mecanismes de Generation de Chaleur Lors d’un Contact Glissant Entre Deux Solides Metalliques,” (with E. Bournex, P. Chantrenne, M. Raynaud and J.A. Rifkin), Proceedings of Congres franais de Thermique, SFT 2000, Lyon, France, May 1-17, 2000.

James M. Galligan

“Mobile Dislocations, Electrons and Chaos,” (with T.J. McKrell, A. Krokhin and E. Viguera), Proceedings in APS, Vol. 45, p. 931, 2000.

“Stress Maximum in Iron,” (with M.T. Robson and T.J. McKrell), Proceedings in APS, Vol. 45, p. 931, 2000.

Maurice Gell

“Bond Strength, Bond Stress and Spallation Mechanisms of Thermal Barrier Coatings,” (with E. Jordan, *et al.*), Metallurgical Coatings and Thin Films 1999, Proceeding of 26 International Conference on Metallurgical Coatings and the Films, (A. Mathews, *et al.*, eds.), San Diego, CA.

Theodoulos Z. Kattamis

“Mechanical Behavior of Amorphous Silicon-Containing Diamond-Like Carbon (Si-DLC) Coatings on Steel in the AS -Deposited and Annealed Conditions,” (with S. Skolianos, C. Fountzoulas, A.I. Nakhla), Proceedings of the First International Conference on Coatings in Manufacturing Engineering, (K.D. Bouzakis, H.K. Toenshoff and M. Geiger, eds.), pp. 249-259, Thessaloniki Greece, Oct. 14-15, 1999.

Harris Marcus

“Effect of Hydrogen on Silicon Carbide Deposition from Tetramethylsilane-Raman scattering Studies,” (with L. Sun, J.E. Crocker and L.L. Shaw), Proceedings of the 1999 Solid Freeform Fabrication Symposium, University of Texas, Austin, pp. 479-486.

“Structural Analysis of Silicon Carbide Deposited by Gas-Phase Selective Area Laser Deposition (SALD),” (with S. Harrison), Proceedings of the 1999 Solid Freeform Fabrication Symposium, University of Texas, Austin, pp. 471-479.

“Processing and Characterization of SALDVI Ceramics Structures,” (with J.E. Crocker, L. Sun, H. Ansquer and L.L. Shaw), Proceedings of the 1999 Solid Freeform Fabrication Symposium, University of Texas, Austin, pp. 495-502.

“SALD and SALDVI Virtual Laboratory,” (with Z.M. Bzymek, D. Ferreira and L.L. Shaw), Proceedings of the 1999 Solid Freeform Fabrication Symposium, University of Texas, Austin, pp. 147-154.

“A SFF Approach Utilizing Condensed Gas Precursors and Pulsed Laser Deposition,” (with E. Geiss), Proceedings of the 1999 Solid Freeform Fabrication Symposium, University of Texas, Austin, pp. 537-542.

“Localized CVD and Ultrafine Grain Structure,” (with J.E. Crocker, L. Sun, S. Harrison and L.L. Shaw), Proceedings of the Ultrafine Grained Materials Symposium, TMS Annual Meeting, pp. 13-21, Nashville, TN, 2000.

“Gas Phase Solid Freeform Fabrication of SALDVI of SiC Cermets,” (with J.E. Crocker and L. Shaw), Proceedings of the Solid Freeform and Additive Symposium, MRS Meeting, April 2000, San Francisco, CA.

Arthur J. McEvily

“Analysis of Small Crack Growth Under Two-step Loading Conditions, in Small Fatigue Cracks: Mechanics, Mechanisms, and Applications,” (with S. Ishihara), *Elsevier*, (K.S. Ravichandran, R. O. Ritchie and Y. Murakami, eds.), pp. 389-401, Oxford, UK, 1999.

“On Fatigue Damage and Small Crack Growth Behavior of Silicon Nitride Under Cyclic Thermal Shock Loading,” (with S. Ishihara, T. Goshima and T. Ishizaki), *Elsevier*, (K.S. Ravichandran, R. O. Ritchie and Y. Murakami, eds.), pp. 421-428, Oxford, UK, 1999.

“A Constitutive Relation for Fatigue Crack Growth,” (with H. Bao and S. Ishihara), Proceedings of Fatigue '99, (X. R. Wu and Z. G. Wang, eds.), pp. 329-336, 1999.

“Effect of an Overload on the Threshold Level of Ti-6-22-22, in Fatigue Crack Growth Thresholds, Endurance Limits and Design,” (with M. Ohashi, R. Shover and A. DeCarminé), ASTM STP 1372, (J.C. Newman and R.S. Piascik, eds.), pp. 123-134, 2000.

“On the Growth of Small Fatigue Cracks in Two Squeeze-Cast Aluminum Alloys,” (with S. Ishihara and K. Shiozawa), Material Science Forum, Vols. 331-337, pp. 1427-1432, 2000.

John E. Morral

“Interdiffusion Microstructure Maps,” (with H. Chen and F. Meisenkothen), Diffusion and Reactions, Scitec Publications Ltd., (M. Danielewski, ed.), pp. 105-109, 2000.

“Interdiffusion Microstructure Map Topology,” (with H. Chen and F. Meisenkothen), Nucleation and Growth, Proceedings of the 1999 MRS Fall Meeting, Vol. 580, pp. 41-44, 2000.

Nitin P. Padture

“Thermal Conductivity of Zirconia Containing Yttria: Effect of Porosity,” (with K.W. Schlichting and P.G. Klemens), Thermal Conductivity, Vol. 25, pp. 162-67, 2000.

Leon L. Shaw

“Desk-Top- Selected Laser Sintering of Stereometric Shapes,” (with Z.M. Bzymek, T. Manzur, C. Roychaudhuri, L.-C Sun and S. Theis), Proceedings in Smart Structures, (J. Holnicki-Szulc and J. Rodellar, eds.), Kluwer Academic Publishers, Netherlands, pp. 27-36, 1999.

“Investigations on Morphology and Microstructure of the SALD SiC,” (with L.-C Sun, J.E. Crocker and H.L. Marcus), Proceedings in Solid Freeform and Additive Fabrication, (D. Dimos, S.C. Danforth and M.J. Cima, eds.), MRS Symp. Proc., Vol. 542, pp. 37-42, 1999.

“Silicon Nitride Coatings Formed using the Selective Area Laser Deposition (SALD) Technique,” (with L.-C Sun and H.L. Marcus), Proceedings in Properties and Processing of Vapor-Deposited Coatings, (R.N. Johnson, W.Y. Lee, M.A. Pickering and B.W. Sheldon, eds.), MRS Symp. Proc. Vol. 555, pp. 179-184, 1999.

“Processing and Characterization of SALDVI Ceramic Structures,” (with J.E. Crocker, L.-C Sun, H. Ansquer, H.L. Marcus), Proceedings in the 10th SFF Symposium Proceedings, (D.L. Bourell, J.J. Beaman, R.H. Crawford, H.L. Marcus and J.W. Barlow, eds.), The University of Texas, pp. 495-502, 1999.

“Effect of Hydrogen on Silicon Carbide Deposition from Tetramethylsilane - Raman Scattering Studies,” (with L.-C Sun, J.E. Crocker and H.L. Marcus), Proceedings in the 10th SFF Symposium Proceedings, (D. L. Bourell, J.J. Beaman, R.H. Crawford, H.L. Marcus and J.W. Barlow, eds.), The University of Texas, pp. 479-486, 1999.

“Conceptual Design of a Smart Portable SFF System,” (with Z.M. Bzymek, C. Roychoudhuri and W. Marks), Proceedings in the 10th SFF Symposium Proceedings, (D.L. Bourell, J.J. Beaman, R.H. Crawford, H.L. Marcus and J.W. Barlow, eds.), The University of Texas, pp. 487-494, 1999.

“SALD and SALDVI Virtual Laboratory,” (with Z.M. Bzymek and D. Ferreira), Proceedings in the 10th SFF Symposium Proceedings, (D.L. Bourell, J.J. Beaman, R.H. Crawford, H.L. Marcus and J.W. Barlow, eds.), The University of Texas, pp. 147-154, 1999.

“Localized CVD and the Ultrafine Grain Structure,” (with J. Crocker, L.-C. Sun, S. Harrison and H. Marcus), Proceedings in Ultrafine Grain Materials, (R.S. Mishra, S.L. Semiatin, C. Suryanarayana and N. Thadhani, eds.), TMS, pp. 13-21, 2000.

Metallurgy & Materials Engineering Department

Active Research Grants and Contracts

1999–2000

Mark Aindow

“Defects in Lamellar Interfaces in TiAl-Based Alloys,” University of Connecticut Research Foundation, September 1, 1999 – August 31, 2000, \$19,347.

“Interfacial Structure and Processes in Lamellar TiAl-Based Alloys,” National Science Foundation, July 1, 2000 – June 30, 2004, \$431,815.

Harold D. Brody

“Solution Heat Treatment of Aluminum Alloys,” (co-PI: J. Morral), Center for Heat Treating Excellence, January 1, 2000 – December 31, 2000, \$116,887.

Owen Devereux

“Master’s Level Materials Program with Significant Industrial Interaction,” (co-PI’s: Ed Kurz, L. Shaw, *et al.*), National Science Foundation, September 1, 1997 – August 31, 2000, \$371,110.

“School of Engineering, Grinding Center - Research & Development,” various sources, January 1, 1995 – December 31, 1999, \$112,000.

Maurice Gell

“Advanced Coatings Technology Development for Enhanced Durability and Reduced Cost In Naval Applications,” (co-PIs: T. Bergman, B. Cetegen, E. Jordan, N. Padture, L. Shaw), Office of Naval Research, 1997-2001, \$1,040,000.

“Development of Laser Fluorescence as a Non-Destructive Inspection Technique for Thermal Barrier Coatings,” (PI: E. Jordan), DOE/South Carolina Institute for Energy Studies, 1999-2001, \$150,000.

“Thermal Barrier Coatings Research,” (co-PI: E. Jordan), ABB, GE Power Systems, Howmet International, Pratt & Whitney, Rolls Royce-Allison, Solar Turbines, 1999-2001, \$60,000.

“Chemical and Mechanical Instabilities at Thermal Barrier Coating Interfaces,” (PI: E. Jordan), University of Pittsburgh/DOE/SCIES, 1997-2000, \$120,000.

“Advanced Thermal Barrier Coatings for Industrial Gas Turbine Engines,” (PI: N. Padture), DOE/SCIES, 2000-2002, \$140,000.

“Bond Strength & Stress Measurements in Thermal Barrier Coatings,” ABB, GE Power Systems, and Solar Turbines; September 1, 1995 – December 31, 1999, \$30,000.

Harris Marcus

“Institute of Materials Science IMS - Solid Freeform Fabrication from Gas,” Office of Naval Research, July 1, 1995 – June 30, 2001, \$654,462.

“Development of In Situ Materials Analysis Techniques for Materials Optimization of Methane Combustion Catalysts,” (co-PI: G. Fernando), Connecticut Innovations Inc., July 1, 1999 – August 31, 2001, \$199,981.

“Laser Assisted Solid Freeform Fabrication MFG of Micro/Meso ‘Photonic’ Crystals,” (PI: F. Papadimitrakopoulos), March 1, 2000 – February 28, 2003, Office of Naval Research, \$450,000.

John E. Morral

“Square Root Diffusivity,” National Science Foundation, August 1994 – January 2000, \$631,620.

“Solution Heat Treatment of Aluminum Alloys,” (PI: H. Brody), Center for Heat Treating Excellence, January 1, 2000 – December 31, 2000, \$116,887.

Nitin Padture

“Fundamental Studies in Contact-Damage-Resistant Ceramics,” (co-PI: S. Suresh, MIT), AFOSR, December 15, 1999 – December 14, 2002, \$375,000 (\$125,000).

“Advanced Thermal Barrier Coatings for Industrial Gas Turbine Engines,” (Co-PI: M. Gell), Department of Energy, February 1, 2000 – January 31, 2002, \$300,000.

“Thermal Barrier Coatings,” (Co-PI: M. Osendi), U.S. State Department and Spain, July 1, 1999 – June 30, 2001, \$10,000.

“Advanced Coatings Technology for Navy,” (PI: M. Gell; co-PIs: E.H. Jordan, B. Cetegen, T. Bergman, P.G. Klemens, L. Shaw, J. Helble), Office of Naval Research, June 16, 1997 – January 15, 2002, \$510,000.

“Fabrication of an Apparatus for the Processing of Novel, Functionally-Graded Ceramics with Contact-Damage Resistance,” University of Connecticut Research Foundation, June 1, 1999 – May 31, 2000, \$15,077.

Donald Potter

“Metallurgy Microstructure versus Mechanical Properties of Copper Alloy Strip,” Waterbury Rolling Mills, Waterbury, CT, September 1, 1999 – August 31, 2001, \$5,000.

“Hydrogen Evolution from Optical Cable Materials,” CiDRA Corporation, Wallingford, CT, March 16, 1998 – December 31, 1999, \$4,274.

Leon Shaw

“Dense, Nanostructured Ceramic Coatings for Enhanced Durability and Reduced Costs in Naval Applications,” (PI: M. Gell; co-PIs: E.H. Jordan, B. Cetegen, N. Padture, T. Bergman, P.G. Klemens, J. Helble), Office of Naval Research, October 1, 1997 – September 31, 2001, \$3,400,000.

“Sintering Behavior of Nanostructured WC/Co,” University of Connecticut Research Foundation, January 1, 1999 – December 31, 2000, \$18,084.

“Rapid Prototyping of Dental Restoration through Multi-Materials Laser Densification,” National Science Foundation, September 1, 1999 – August 31, 2002, \$360,000.

“Advanced Tribometer and Non-Contact Profilometer for Structural, Magnetic and Bio-Materials,” (with Co-PIs: J.I. Budnick, M. Gell, J. Goldberg, E.H. Jordan, N. Padture, R. Pitchumani, M.T. Shaw and B. Zhang), Office of Naval Research, March 31, 2000 – March 30, 2001, \$176,796.

“Master’s Level Materials Program with Significant Industrial Interaction,” (PI: O.F. Devereux; Co-PIs: E. Kurz, *et al.*), National Science Foundation, September 1, 1997 – August 31, 2000, \$371,110.

Metallurgy & Materials Engineering Department
Awards, Honors, Patents
1999–2000

Maurice Gell

“Ceramic Materials for Thermal Barrier Coatings,” (with N. Padture and P.G. Klemens), awarded U.S. Patent No: 6,015,630.

John E. Morral

Distinguished Alumni, College of Engineering, Ohio State University, September 1999.

Nitin P. Padture

“Ceramic Materials for Thermal Barrier Coatings,” (with M. Gell and P.G. Klemens), awarded U.S. Patent No. 6,015,630.

Leon Shaw

Honorary Advisory Professorship, Harbin Institute of Technology, Harbin, China, 1999.

Metallurgy & Materials Engineering Department
Major Professional Activities
1999–2000

Mark Aindow

Chair of the Organizing Committee, Electron Microscopy and Analysis 1999, Sheffield, England, Aug. 24-27, 1999.

Organizer, Materials Research Society Meeting Symposium Y: Influences of Interface and Dislocation Behavior on Microstructure Evolution, Boston, MA, Nov. 27 - Dec.1, 2000.

Harold D. Brody

Co-chair, M.C. Flemings Symposium on Solidification Processing, Cambridge, MA, June 27-30, 2000.

Harris Marcus

Organizer, "Solid Freeform fabrication Symposium," August 1999, Austin, Texas.

Editorial Board, *Rapid Prototyping Journal*, MCB University Press.

John E. Morral

Deputy Editor, *Journal of Phase Equilibria*.

Associate Editor, *Journal of Mining and Metallurgy*.

Congress Co-Chair, ASM International Heat Treating Congress, Gotheburg, Sweden, June 7-9, 2000.

Chair, ASM Alloy Phase Diagram Committee.

Symposium Co-Organizer, High Temperature Coatings IV, TMS Annual Meeting, 2/11-15, 2001.

Symposium Co-Organizer, Teaching Diffusion, TMS Annual Meeting, 2/11-15, 2001.

Nitin P. Padture

Associate Editor, *Journal of the American Ceramic Society*.

Program Co-Chair, 52nd Pacific Coast Regional and Basic Science Division Fall Meeting, The American Ceramic Society, September 6-9, 2000, San Francisco, CA.

Symposium Co-Organizer, Symposium M: Thermal Barrier Coatings, Fall Meeting of Materials Research Society, November 27 - December 1, 2000, Boston, MA.

Program Co-Chair, Basic Science Division Program, 103rd Annual Meeting of the American Ceramic Society, April 22-25, 2001, Indianapolis, IN.

Leon L. Shaw

Organizer, Symposium on "Processing and Properties of Nanostructured Materials," Materials Week '99, Cincinnati, OH, October 1999.

Organizer, Symposium on “Ceramic Coatings for Thermal, Environmental and Mechanical Applications,”
AcerS 103rd Annual Meeting, Indianapolis, IN, April 22-25, 2001.

Guest Editor, *Materials Science and Engineering*.

“Evolution of Microstructures and Nitrogen Sorption during High Energy Milling of Silicon in Ammonia,”
(with Z.-G. Yang and R.-M. Ren), keynote presentation, Symposium on Nanostructured Materials at the 5th
IUMRS International Conference on Advanced Materials, Beijing, China, June 1999.

Advanced Technology Institute (ATI) Annual Report Summary 1999–2000

RESTRUCTURING FOR THE NEW MILLENNIUM

The Advanced Technology Institute (ATI) is housed in the School of Engineering at the University of Connecticut. ATI is the outcome of major restructuring and a shift in focus from the former Precision Manufacturing Institute (PMI) in the School of Engineering. The restructuring and shift in focus reflect the evolving expertise of the faculty and the technological needs and opportunities in the State. The primary mission of ATI is to help revitalize the Connecticut technology-based economy through applying its resources to support existing industries, to 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
- Bio-engineering
- 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 with particular emphasis on smaller industries. 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 the 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. In this respect, ATI will act as an incubator and provide technology resources as well as marketing and administrative support for such ventures.

PERSONNEL

Effective June 1999, Dr. Kazem Kazerounian, the Associate Dean for Research and Outreach, was also appointed Director of ATI by the Dean of Engineering.

Ms. Tricia Bergman joined the Institute as the Associate Director of ATI in June 1999. Ms. Bergman earned a B.S. Degree in Mechanical Engineering and an M.S. in Industrial Management from Purdue University. Tricia brings to PMI 14 years of expertise in technology and industrial management.

Ms. Laurie Macfarlane joined ATI in September 1999 as Program Assistant. Laurie brings significant administrative and managerial skills gained over a period of six years in various public and private institutions. Laurie continues to work on her M.S. in Management on a part-time basis.

Mr. Bernard Vaillette, a technical manager for the grinding center, left ATI in December 1999 to pursue a career in grinding at Pratt & Whitney. His contributions to the grinding center at UConn have been very valuable.

PHYSICAL INFRASTRUCTURE

Planning continues for the manufacturing Enterprise Building, which will be funded with \$2 million from the Department of Commerce (EDA) grant and \$667,000 from the University. This building will have about 16,000 square feet. The intended functions for the building are:

- Near term and company-sponsored research and development tasks to aid in manufacturing competitiveness.
- Innovative research projects leading to new products and processes capable of opening new markets and business for Connecticut-based existing and spin-off companies.
- Professional education and training program for maintaining and upgrading the technical workforce in Connecticut-based companies.
- Business assistance program in cooperation with related organizations within the University.

The contractors for the construction are selected and construction will begin in fall 2000.

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 Pratt & Whitney. The program started in fall 1999 with all students concentrating in Mechanical Engineering. During the spring 2000 semester, Metallurgy & Materials program offerings at Pratt & Whitney were also managed by ATI. In the fall and spring semesters, 62 students registered for a total of 89 classes.

Currently, ATI is working with Electric Boat in Groton as well as UConn-Avery point campus to develop a series of professional short courses for EB personnel.

RESEARCH ACTIVITIES

ATI currently supports research efforts in the following areas:

- Image sensory 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.

ATI has just entered a three-year research and development contract worth \$1.5 million to provide R&D work to General Electric-Industrial Systems. There are more than eight faculty researchers from the School of Engineering at UConn are involved in this exciting initiative.

Connecticut Transportation Institute Annual Report Summary 1999–2000

The Connecticut Transportation Institute is the focal point for the University of Connecticut activities in the transportation sector. Faculty and students throughout the University participate in its programs of education, research and service.

The Institute, administered through the Office of the Dean of Engineering, is responsible for the following major program areas:

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

During Fiscal Year 2000, the Institute administered the following grant-funded programs totaling \$1,143,323.

THE COOPERATIVE RESEARCH PROGRAM (\$274,637)

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

During the Fiscal Year 2000 period, the Cooperative Research Program funded the following research projects:

- Protection of Reinforcement with Corrosion Inhibitors
- Estimating Benefits from Specific Highway Safety Improvements
- Development of a Test to Measure Tendency for a Hot Mix to Segregate
- Determination of PG Binder to Use in RAP-Mix
- Estimating Link Traffic Volumes by Month, Day of Week and Time of Day
- Hydrodynamic and Transport Models of Coastal Waters for Use in the Design and Management of Highway Structures
- Evaluation of Sign Support Structures

Four Graduate Assistantships were funded through the program to support the above research projects.

THE NEW ENGLAND TRANSPORTATION CONSORTIUM (\$102,588)

The New England Transportation Consortium, 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 systems. The Connecticut Transportation Institute provides administrative, fiscal, and technical management for the Consortium's \$600,000 annual program.

The following research projects totaling \$479,002, funded by the New England Transportation Consortium and awarded to faculty at the University of Connecticut, were active during Fiscal Year 2000:

- Optimizing GPS Use in Transportation Projects
- A Portable Method to Determine Chloride Concentration on Roadway Pavements
- Determining Properties, Standards and Performance of Wood Waste Compost as an Erosion Control Mulch and as a Filter Berm
- Analytical and Experimental Investigation on Adjacent Concrete that is to Remain
- Superpave Implementation
- Early Distress of Open Friction Course

THE TRANSPORTATION RESEARCH PROGRAM (\$242,974)

This program includes research funded outside of the Cooperative Research Program and New England Transportation Consortium.

The Region I University Transportation Centers (UTC) Program provided \$110,000 of Fiscal Year 2000 funding. The Region I University Transportation Center includes the University of Connecticut, the Massachusetts Institute of Technology, Harvard University and the five other state universities in New England. The Massachusetts Institute of Technology is the Center's lead university and the Connecticut Transportation Institute administers and coordinates the University of Connecticut's participation in the program. Other research funding included \$69,840 provided by the Connecticut Transportation Institute for the project "Smoothness of Pavement in Connecticut," and \$30,000 provided by the Pennsylvania Department of Transportation for the project "I-95 Corridor Coalition Field Operational Test 10: Coordinated Safety Management."

Three Graduate Assistantships were funded through the program to support the above research projects. During Fiscal Year 2000, \$13,134 of funding was provided by Transcore for a Transportation Systems Engineering Internship, and two UTC graduate fellowships totaling \$20,000 were awarded to students concentrating in transportation engineering studies and psychology.

THE CONNECTICUT ADVANCED PAVEMENT LABORATORY (\$280,035)

The Connecticut Advanced Pavement Lab (CAP Lab) at the University of Connecticut serves the needs of Connecticut as well as the other 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 as well as the 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. The CAP Lab also provides fee based testing utilizing the Superpave methods.

The CAP Lab's activities during the past year were focused around both research and training. The research activities were focused around several projects. The CAP Lab completed and submitted the final reports for two New England Transportation Consortium (NETC) projects, "Superpave Implementation" and "Early Distress of Open Graded Friction Courses." The "Superpave Implementation" project provided guidance to the New England states for their implementation of the Superpave Asphalt Binder specifications. The "Early Distress of Open Graded Friction Courses" project tried to identify reasons for open graded friction course failures early in their service life.

The CAP Lab also completed work on a Joint Highway Research Advisory Council (JHRAC) project as well as starting an additional JHRAC project. The JHRAC project, which was completed, was the development of a test to measure a Hot Mix's tendency to segregate. The new JHRAC project started by the CAP Lab was to identify the proper asphalt binder grade to use when making mixes that contain recycled asphalt pavements. The CAP Lab also worked with Penn State University in support of a Northeastern States Pooled Fund Project examining pavement issues including those associated with Superpave.

The CAP Lab conducted over 20 training courses during the winter period for inspectors, technicians, engineers and industry personnel. These training sessions included: Superpave techniques, Superpave Mix Design Methods, Preparatory courses for individuals seeking certification from the New England Transportation Technician Certification Program (NETTCP), NETTCP Binder Technician Certification Courses as well as several workshops, co-sponsored with the Technology Transfer Center, for municipal personnel discussing how the implementation of Superpave would affect their activities.

CAP Lab personnel were also very active with the Connecticut Department of Transportation task forces for the improvement of hot mix asphalt pavements. CAP Lab personnel attended meetings and reviewed reports on topics including: joint construction, quality assurance, Superpave implementation and construction specifications.

THE TRANSPORTATION TECHNOLOGY TRANSFER CENTER (\$243,089)

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 the Fiscal Year 2000 period:

- Provided instruction and training to 1,263 state and local government employees
- Researched and responded to 157 requests for technical assistance and information
- Provided 1,866 transportation-related publications, software, and videotapes in response to requests for information
- Published three issues of the Center's newsletter
- Provided one half-time Transportation Technology Transfer Internship to a University of Connecticut Civil & Environmental Engineering graduate student

Taylor L. Booth Center for Computer Applications and Research Annual Report Summary 1999–2000

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 also provides computing and networking support and services for the School of Engineering.

The highlights of BRC activities for the 1999-2000 academic year include:

- Completion of the connection to Internet 2 in November 1999;
- External assessment of BRC services by four outside, impartial reviewers in November 1999;
- Successful execution of a move to the Homer Babbidge Library (HBL) building in January 2000; and
- Installation of new networking equipment, and purchase of a soon-to-be-installed new file server.

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, mathematics, business, and geophysics.

BRC Laboratories: BRC is organized into 17 research laboratories, each having a specialized area of expertise and on-going funded projects. Most laboratories involve multiple faculty members and graduate/undergraduate student researchers, and are equipped with workstations, PCs, and specialized experimental apparatus. In 1999-2000, the Center had approximately 100 participants, and enjoyed strong funded research activities with 63 externally funded grants and contracts, totaling about \$5.7 million. The quality and quantity of research evaluated in terms of journal publications and the level of professional society involvement and recognition are outstanding.

Internet 2: BRC has strategically placed itself in a position to make significant contributions on network-based information technology. A team consisting of researchers from BRC, the University Computer Center, and the School of Education was awarded an NSF grant of \$350,000. The project entails connecting the University to the new national “High Speed Backbone Network System,” and is the centerpiece of the University-wide Internet 2 effort. BRC researchers involved include Ian Greenshields, Peter Luh, Krishna Pattipati, and Dong-Guk Shin. The connection to Internet 2 was completed last November, and communication from UConn to other Internet 2 institutions has been significantly improved. The connection from BRC to Internet 2 institutions has seen even greater performance improvement after moving to HBL since BRC is now directly homed onto the router that serves Internet 1 and 2.

FACILITIES AND SERVICES

Physical Facility: BRC had been in the basement of the Wilbur Cross Building since it was created. In mid-January 2000, BRC was moved to Level A of the Homer Babbidge Library Building, and the move went very smoothly without major disruptions to services. With support from the Chancellor’s Office, the Deanery, Facilities Management, and the Library, we now have a beautiful new facility of about 25,000 square feet. This new facility, designed by BRC staff, has many open spaces for interaction, and is conducive to research. It was decided that BRC would remain in HBL permanently, and we will be connected to the new IT building to be constructed adjacent to the Library through a tunnel.

BRC External Assessment by Four Reviewers: BRC underwent an external assessment by a team of four computer system administrators and network experts from Columbia University, Rensselaer Polytechnic Institute, MIT, and University of Michigan in November 1999. The team visited BRC and interviewed many faculty and staff members. A report written by Mr. Alan Crosswell of Columbia is available at:

<http://www.engr.uconn.edu/brc/strategy/BRC99EvaluationReport1.pdf>

We have been addressing the issues identified by the reviewers and have made great strides toward resolving them. A summary of our efforts is available at:

<http://www.engr.uconn.edu/brc/strategy/BRCAssessmentResponseV1-2.pdf>

Networking: BRC redesigned and implemented a new network for the School of Engineering. This new 100 MB network is of star configuration connecting all engineering buildings to BRC, and is based on switched Ethernet technology. It is compatible with the network equipment installed by the University Computer Center (UCC). BRC has also transferred all Domain Name Service (DNS) responsibilities to UCC except the engineering domain after years of managing the DNS for the University.

Computing Services: BRC will replace its main file server equipment with a special-purpose computer to provide file service, and this will considerably reduce the system administration complexity. BRC has multiple SUN servers, which provide naming services, e-mail, FTP services, backups, and web services to the School. For e-mail, BRC provides the majority of the services for SoE, with users having the option to choose the services provided by UCC. Mail is accessible both locally and remotely through the POP mechanism. Telnet access from outside the School, however, has been locked out for security reasons since the last hacker attack in May/June 1999. We have been investigating and testing a security system called "Secure Shell" or SSH. SSH will provide password security, allow remote access to UNIX accounts, and will be used to secure passwords in access to e-mail. We shall deploy it after the testing is completed. Security of servers and computers is also a major concern. The efforts needed include timely patch management, virus management, and access management and monitoring. However, in view of the very limited BRC staff, we have been reactive as opposed to proactive, struggling to keep up-to-date in this area. BRC also manages two public laboratories to provide Windows NT and UNIX environments for SoE students.

Software and User Services: BRC supports software packages of general interest to SoE faculty and students for both the Unix and NT environments. This entails installation and maintenance of these packages, as well as sufficient training to be able to deal with problems. We currently manage about 75 packages in the UNIX environment and another 75 in the NT environment. To provide a good service to all, faculty should discuss the resource/time needs with BRC staff before requesting the installation of very large or complex packages. In addition, enough lead-time should be provided. During 1999-2000, BRC also managed the University-wide site licenses for Matlab, as well as the software update service contracts with Sun Microsystems and Compaq. BRC has continued its Workshop Series to provide training and exposure to Unix, Windows NT, and other selected software and network tools that we support. The "virtual" Help Desk, established last year, became real after BRC moved to its new HBL facility, and is staffed from 9 a.m. to 5 p.m. Monday through Friday.

Y2K Issues: BRC transitioned from 1999 to 2000 with minimal impact. As the coordinator for Y2K issues for the School of Engineering, BRC administered a considerable amount of money for replacement/repair of old computers, about \$321,850 for the entire School, among which \$138,000 were for BRC (including the Engineering Learning Center). We took advantage of this opportunity to eliminate many older computers from our inventory. The School was given an additional 20 computers purchased with Y2K funds from excess inventories at UCC, among which 13 went to the Engineering Learning Center and one for BRC network support. We had one package (backup software from Legato) that failed due to Y2K non-compliance.

SPECIAL SERVICE FACILITY

BRC was designated as a Specialized Service Facility (SSF) of the University on July 1, 1981. BRC develops laboratory facilities, hires and trains personnel (mostly graduate students) to use the facilities (including the 17 laboratories discussed earlier), and provides needed expertise and services to carry out various projects in support of its mission as related to computer applications and research. Use of the SSF facilities must comply with federal guidelines, and charges are made against a funded project for hours of usage of the facilities and services.

STAFFING AND THE STEERING COMMITTEE

The Director of the Center reports to the Dean of Engineering. The support staff, responsible for providing the services necessary to carry out the mission of BRC, includes network, software and hardware specialists, programmers, facilities operators (usually graduate students), administration, secretarial support, etc., and is funded through internal and external sources. The BRC Steering Committee is to oversee BRC's operations. Members of the Committee include Reda Ammar, Yaakov Bar-Shalom, Nejat Olgac, Krishna Pattipati (Chair), Dong-Guk Shin, T.C. Ting, and Peter Willett. The committee's focuses are on high quality of service to undergraduate and graduate laboratories and on excellence in research. Visiting scholars during this year include Professor Han Woo Kim, working with Professor Dong-Guk Shin (CSE); Professor Nan Guang Chen, working with Professor Qing Zhu (ECE); Professor Solomon Shimony, working with Professor Eugene Santos (CSE); and Professor Lixin Tang, working with Professor Peter Luh (ECE).

CONCLUSIONS

The mission of the School depends on reliable and high performance computing and communication infrastructure. Recent developments in IT further offer a new way of conducting teaching and research, with associated complexity. BRC has made significant progress in improving the computing and communication facilities through the installation of new network technology, a new file server, upgraded mail and web servers, more attention to security, and improved efforts in user services.

Engineering Diversity Program Annual Report Summary 1999 – 2000

MISSION

In 1987 a Minority Engineering Program (MEP) was established at the University of Connecticut to address issues surrounding minority recruitment and retention within the School of Engineering. Today, the Engineering Diversity Program (EDP) comprises activities, projects and services designed to recruit, retain and graduate women and underrepresented minorities in the field of engineering. In addition EDP seeks to provide programs that address K-12 engineering education and awareness.

SUMMARY

Since 1988, the Pre-Engineering and BRIDGE programs have been operating with the goal of enhancing recruitment and retention. To date, approximately 500 middle school students have participated in the Pre-Engineering Program and 250 undergraduate students have participated in BRIDGE. In 1995 a one-day conference called Multiply Your Options was created to increase the interest of middle school girls in careers in mathematics, science and engineering. Six conferences have been held at the University of Connecticut reaching over 850 participants.

PRE-ENGINEERING

The 1999-00 Pre-Engineering program continued to provide hands-on enrichment activities involving mathematics, science and engineering projects for 14 Saturdays from September to April. Middle school participants from the 7th, 8th and 9th grade traveled to the University of Connecticut campus and engaged in projects during a three-hour time block. 58 middle school students participated in the program. Fifty-two percent of the students were from the Bloomfield school system, three percent were from the Windsor and Windham area, and 31 percent were from the East Hartford school system. Of the participants, 62 percent of the middle school students were males and 38 percent were females. The ethnic breakdown represented 55 percent African American, 31 percent Caucasian, seven percent Hispanic, 3.5 percent Puerto Rican and 3.5 percent indicated multicultural or two or more categories for ethnicity.

In the previous year, 1998-99, 68 students participated in the Pre-Engineering program. Fifty-four percent were from Bloomfield, and four percent were from the Windsor school system and 41 percent were from East Hartford. At the closing session of the 1999-2000 Pre-Engineering program family and parents were invited to an overview of the Pre-Engineering Sessions, which highlighted student activities and projects. In addition, the closing ceremonies included participation in the Northeast Bioengineering Conference.

BRIDGE

BRIDGE seeks to expose students to the engineering curriculum by preparing them with classes in mathematics, chemistry, physics and computers for six-weeks during the summer. BRIDGE has had 250 participants since the start of the program in the summer of 1988. To date, 30 percent of the participants have been female and 70 percent have been male. Of the 250 participants, 70 students have graduated from the University of Connecticut. Thirty-nine percent (27) of the graduates received engineering degrees and 61 percent (43) received degrees in other areas. Ninety-nine students remain as active undergraduates at the University of Connecticut. Seventy-five percent still remain in the School of Engineering and another 25 students or 25 percent are enrolled in other degree programs making a total of 99 active students who participated in BRIDGE. Eighty-one students, or 32 percent, are inactive by way of withdrawals or dismissals from the University.

The most recent participants during the summer of 1999 consisted of 20 participants. Ten (50%) participants were female and 10 (50%) were male. The ethnic backgrounds of the students included 9 (45%) African American students, 4 (20%) Puerto Rican/Hispanic students, and 7 (30%) Caucasian female students. BRIDGE 1998 consisted of 24 students, 11 (46%) female and 13 (54%) male students. The ethnic breakdown consisted of 4 (17%) African Americans, 6 (24%) Hispanic, 5 (20%) Caucasian females, 3 (13%) Asian students and 3 (13%) Puerto Rican students.

An analysis of the past two years of BRIDGE participants (1998 and 1999) indicates that of the 44 participants, 40 (91%) are still actively enrolled in the University of Connecticut, 4 (9%) have departed due to withdrawals or dismissals. Of the actively enrolled participants, 5 (13%) are currently pursuing degrees other than engineering and 35 (87%) are still actively pursuing engineering degrees.

MULTIPLY YOUR OPTIONS

Multiply Your Options (MYO) was developed to address the problem of females not entering into careers in mathematics, science and engineering at the same rate as their male counterparts. Most of this is due to females self-selecting not to take the necessary preparatory classes in mathematics and science at the high school level. What developed was a one-day conference involving professional women in education and industry who present hands-on workshop activities and act as role models and mentors for a target group of middle school 8th grade girls. For the sixth year, MYO has been held at the University of Connecticut and to date has included the participation of over 850 middle school girls.

Two hundred-nineteen eighth grade girls attended the MYO 2000 conference. Of these, 190 completed pre-test and post-test surveys. Survey results show that when asked to select a possible career choice, participants who selected "engineer" rose from 12 percent to 27 percent (an increase of 15%) on the post-test questionnaire. In addition, those girls who responded "absolutely no" to a possible career choice in engineering in the pre-test showed a decrease from 55 percent to 42 percent on the post-test questionnaire. Based on a national survey of more than 2,250 students between 14-18 years of age (*State of the Nation*, Alger Associates 1998), the responses from the participants of the MYO conference offer promising results because results of the larger national survey indicated that only 0.9 females (less than 1%) selected engineering as a possible career choice.

ADDITIONAL ACTIVITIES

The General Electric (GE) Mini-Professorship program was designed in 1996 to encourage undergraduate women and underrepresented students to engage in three major responsibilities that are typical activities of faculty members, namely teaching, research and professional service. Funds provided by GE were used to support these activities. In the first year, three students chose to participate in the program, representing the Electrical, Chemical, and Civil engineering departments. The program name was changed to the Faculty of the Future program. In 1997-98, two more students from the Civil and Chemical engineering departments took part in the program. During the 1998-1999 academic year two more students representing Mechanical and Civil engineering participated in the Faculty of the Future program. For the 1999-2000 academic year four students representing Civil, Chemical, and Electrical Engineering took part in the program, making the total number of participants to be 11 engineering students as of 1999-2000.

Other activities include Project Elevate, which for the past three years has been sponsored by the Otis Elevator Company. Project Elevate provides supplemental instruction, tutoring, skills building, and community activities in order to enhance the retention of freshman first year students. Twenty-two freshmen participated in Project Elevate during the 1998-1999 academic year. For the final year of funding, a total of 78 students have taken part in Project Elevate activities.

CLOSING

Women and minorities are key in replenishing the engineering pipeline. The strategies used in the Engineering Diversity Program to attract and retain women and minorities to the field of engineering are crucial mainly because the demand for U.S. engineers currently outnumbers the supply. By focusing on efforts to increase the number of women and minorities in engineering, the University of Connecticut's School of Engineering can assist in the efforts to assure that the next generation of engineers maintains the U.S. global competitive edge needed to compete in today's increasingly diverse and technological educated society.

Environmental Engineering Program Annual Report Summary 1999–2000

STUDENTS AND GRADUATES

The Environmental Engineering Program presently has 15 M.S. and 10 Ph.D. students enrolled; the majority of students are full-time and financially supported. During the past year, the program received 52 full applications, while 21 were accepted into the program. Two program Ph.D. students received University Fellowships (Mr. Luke Hellerich and Ms. Liv Brakewood). The program graduated three M.S. and 3 Ph.D. students. Six students graduated with a minor in Environmental Engineering; two sophomore-level students are currently pursuing an Environmental Engineering major (officially online since fall 1999).

FACULTY

Detailed activities of the Environmental faculty can be found in the annual reports of their respective home departments. Some highlights follow: Nikolaos Nikolaidis stepped down as director of the Program; the program is currently governed by a committee (Professors Thomas Wood (CHEG), Fred Ogden (CEE), and Barth Smets (CEE, chair)), with Nik Nikolaidis (CEE) continuing as coordinator of the undergraduate program. Domenico Grasso left the University and currently is founding chair of the Engineering Program at Smith College (Northampton, MA); he retains an adjunct appointment with the Environmental Engineering Program. Allison MacKay (Ph.D. 1997, MIT) joined the Environmental Engineering Program and Department of Civil & Environmental Engineering during fall 1999, after postdoctoral work at the Connecticut Agricultural Experiment Station. Recent promotions include: Nik Nikolaidis, promotion to professor; Fred Ogden, tenure and promotion to associate professor; Barth Smets, tenure and promotion to associate professor; and Tom Wood, tenure as associate professor.

Across the program, external research funding is at an all-time high. In addition, our faculty continue to hold prestigious national research awards; e.g., Joe Helble (CHEG) and Barth Smets hold NSF Career Awards, while Emmanouil Anagnostou (CEE) holds and NASA New Investigator Award, and Fred Ogden holds and U.S. ARO Young Investigator Award. Dr. Ogden also received the Collingwood Price and the Best Reviewer Award from the ASCE Water Resources Division.

Many of our faculty hold significant offices within the University, as well. Mike Cutlip (CHEG) is Director of the University Honors Program; George Hoag (CEE) is Director of the Environmental Research Institute; Dr. Helble is Head of the Chemical Engineering Department; Kenneth Noll (MCB) is Chair of the Microbiology Graduate Field of Study; Robert Vinopal (MCB) is Chair of the Biotechnology Program. In addition, our faculty hold appointments in various national professional and learned societies: Dr. Smets is appointed to the National Research Council's Committee on Bioavailability of Contaminants in Soils & Sediments; Dr. Cutlip serves as National Chairman of the Chemical Engineering Division of the American Society of Engineering Education; Dr. Helble has several appointments in the American Association for Aerosol Research; Jim Fenton (CHEG) serves on the Board of Directors of the Electrochemical Society; Dr. Anagnostou serves on NASA's Tropical Rainfall Measuring Mission; Nelly Abboud (CEE) is a Board member of the American Filtration and Separation Society; James 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; Dr. Schulthess (PLSC) serves on the American Society of Agronomy and Can Erkey (CHEG) serves on the Green Chemistry Division, American Chemical Society. Tom Torgersen (MARN) is editor of *Reviews of Geophysics* and associate editor of *The Geochemical Journal*; Dr. Ogden is associate editor of the *Journal of Irrigation and Drainage*, ASCE; while Drs. Abboud and Hoag serve on editorial boards of *Fluid/Particle Separation Journal* and *Journal of Soil Contamination*, respectively.

Internationally, Drs. Anagnostou and Nikolaidis serve on the Scientific Council of the National Center for Marine Research and consult to the *National Observatory of Athens*, Athens, Greece, respectively; while Dr. Abboud is organizing chair of the conference, “Engineering Technology in the New Millennium” in Beirut, Lebanon.

Dr. Joseph J. Pignatello, Adjunct Associate Professor of Environmental Engineering (Dr. Pignatello’s primary appointment is at Connecticut Agricultural Experiment Station), is an active collaborator with program faculty; he co-authored 7 peer reviewed publications and obtained research funding from the USDA National Research Initiative Competitive Grants Program and the Northeast Utilities Service Company.

PROGRAM

Through the Al Geib Distinguished Lecture Fund, the program participated in the campus-wide “Teale Lecture Series” by hosting Peter Matthiesen, naturalist and National Book Award winning author, who spoke on the Everglades.

This year has been marked by several multi-investigator activities that can support research and graduate education in Environmental Engineering in years to come:

- An award was received 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.” This constitutes the first such award received by the University. The award constitutes a three-year funding for up to nine fellows with institutional payments (Total Direct USDE funds: \$688,500) Program participants are Drs. Bryers, Noll (co-director), Smets (director), Vinopal and Wood.
- A joint Johns Hopkins-UConn-UMaryland proposal was submitted 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 five years. Program participants are Drs. Helble, Hoag, MacKay, Nikolaidis, and Smets.
- A joint Yale-UConn proposal was submitted to NSF to establish an Engineering Research Center Initiative “Combustion Engineering Center.” The Center would entail a total budget of \$17 million from NSF and of \$5 million from industry for five years. Program participants are Drs. Baki Cetegen (ME) and Helble.
- Finally, a proposal was submitted to the NSF Division of Undergraduate Education for Courses Curriculum and Laboratory Improvement. This entails a total budget of \$250,000 for three years, with Drs. Torgerson and Ogden the participants.

Eurotech Program Annual Report Summary 1999–2000

The EUROTECH program has completed its seventh year. It 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 in which the student gains exposure to both the environment and the culture while actively practicing engineering.

This past year, the EUROTECH program saw the retirement of one of its founding Directors, Richard P. Long. In December of 1999 Patricia S. Bergman, Associate Director of the Advanced Technology Institute, was named Co-Director of EUROTECH. Tricia joins Friedemann Weidauer, Assistant Professor of German from the Department of Modern and Classical Languages in this joint directorship.

To date, EUROTECH has six graduates: three mechanical engineers, two chemical engineers and one from computer science. Present enrollment in the program is about 30 students. Currently, six students are participating in internships in Germany. Michael Leary is with Siemens; An Huynh is interning with Fraunhofer; Kris Noiseux is with Huttinger; and Brian Harris, Alex Trestman and Alex Wu are working for Trumpf.

At the April Annual Engineering Banquet, four students received EUROTECH scholarships from industries supporting the program: Peter Bonzani – Bayer, Padma Srimatkandada – John S. Ryzd (Music Memories), Lindsay Amidon – Sikorsky and Alexander Peslak – United Technologies.

The Fall Newsletter was published and distributed throughout the Northeast and abroad. A new information brochure was created and distributed to Northeast high school Science and Math teachers and the high school German teachers (RI, CT, VT, MA and eastern NY). Information packets were sent to all accepted students to the School of Engineering for the fall of 2000. Information was distributed at the Connecticut Invention Convention and Spring Engineering Open House.

The Co-Directors spent a day benchmarking with the University of Rhode Island's International Engineering Program Directors. The EUROTECH program was represented at the 2nd annual colloquium at the University of Rhode Island in the fall of 1999. The program was also represented with papers at the Connecticut Organization of Language Teachers conference and at the Thunderbird 2000 conference on Global Management and International Education.

Management and Engineering for Manufacturing Annual Report Summary 1999–2000

The Management & Engineering for Manufacturing (MEM) graduated six students this past year. One completed his work in the fall, and five finished in the spring. Companies that hired the graduates were Pitney Bowes, Bell Atlantic (in Maryland), Whitcraft LLC and United Parcel Service (who hired two students), and the average starting salary for graduates who have accepted offers was \$46,325, and increase in almost \$3,000 from last year. Four more students have complete all of the MEM coursework and will graduate in December.

A major priority for this year was again to coordinate the placement and internship activities of the program. The web site was improved. A section was added where we will post notices from companies looking for students. The web site also provides general information about the program and will be enhanced over the summer to include sections about what kind of jobs our students take (now that we've had a few graduating classes).

Curriculum changes were made for the program. This included the new engineering core courses, adding an additional civil engineering course and dropping a humanities elective that was no longer required for the degree to be accredited by ABET. The changes were incorporated into the new catalog, although it proved difficult to make the presentation consistent between the School of Engineering and the School of Business Administration. This is an issue that will be addressed next year. There are some other curriculum issues that will be discussed next year, probably leading to a few more small changes to the list of courses the students must take.

During the year, plant visits were made to Sikorsky Aircraft and Wiremold Corporation. Next year the plan is to increase the number of plant visits, to give students more experience prior to their internships. Students from the program are doing their internships at Sikorsky Aircraft (two students), General Electric (three students), JDS Uniphase, Pitney Bowes, Hartford Ball Company, Northeast Utilities, OEM Controls, BMW (in New Jersey) and Pratt & Whitney. Other companies that contacted potential interns but did not hire were United Parcel Service, Seton Identification Products, Rogers Corporation, Wiremold, and Spirol International. All of the students who worked with me were placed in summer internships (12 students).

During the spring semester, eleven students participated in final design projects as part of the capstone course of the program, MEM 215W. There were four projects, all sponsored by Wiremold Corporation in West Hartford. Mr. Marty Wood was promoted to Assistant Dean for Undergraduate Education in the School of Engineering and ceased teaching the capstone course. He was replaced by Dr. Zbigniew Bzymek.

There were 43 students associated with the program this year (up from 31 last year). We anticipate students again being admitted as freshmen to the program and have already spoken with a few of them. A number of students also join the program after their participation in MEM 151 in the spring semester of the freshman year. A few students have had academic trouble this year and for the first time we are in a position to put students on academic probation and only allow top students to continue in the program (during the first years of the program, students were exempted from the usual GPA requirements). This is good news, as it will increase the quality of the students our recruiters see and emphasize with our current students the need to maintain their academic performance at high levels.

Undergraduate Education Annual Report Summary 1999–2000

The Office of the Assistant Dean of Undergraduate Education supervises the activities of the Director of Advising, Director of the Engineering Diversity Program, the Director of our Eurotech Program and a staff person from Career Services. Additionally, this office is responsible for all 12 undergraduate programs. The increased intensity of promoting the seven new programs has resulted in an increase in enrollment of nearly 60% over the last two years. Along with the increase in freshman enrollment, the average SAT scores of these incoming students are 40 points higher than two years ago. Fall 2000 initial admission data indicates that applications are up approximately 6% overall from last year and up 34% at the regional campuses. Six hundred seventy-four students were admitted to the School of Engineering and 254 students have accepted admission, bringing the undergraduate population to 1,200 students. The student body is 14% female, 11.5% underrepresented minorities. There are 86 students in the Honors Program and 85 students in the Engineering Honor Society, Tau Beta Pi.

The Undergraduate Dean's Office instituted several new initiatives this year. One of the initiatives has been to empower Associate Department Heads by involving them in the Summer Orientation Program. During advising and registration, each new freshman is advised by the respective Associate Department Head, thus establishing a closer link to his/her major. Tutoring in selective lower division courses has been instituted for the fall 2000 semester. Bi-weekly tutoring is available from 6:00-10:00 p.m. in chemistry, physics, calculus and engineering courses. The tutoring consists of supplemental instruction from 6:00-7:00 p.m. and peer tutoring from 7:00-10:00 p.m.

The School of Engineering staff and students sponsored and participated in the Women in Non-Traditional Careers Conference, and the Director of Engineering Diversity Program conducted a workshop at this same conference. Our Engineering Diversity Program continues its highly successful lineup, which includes: academic tutoring; Pre-Engineering programs; and the conference on Multiply Your Options (MYO), which was attended by 219 girls. The summer Bridge program has 34 first-year students enrolled; this is the largest class in 10 years to participate in this college prep residential program for underrepresented minorities.

This year the School of Engineering has developed two new Bachelor of Science in Engineering programs. Both the Biomedical Engineering and Engineering Physics programs have been approved by the Board of Trustees and have been submitted to the Board of Governors, Department of Higher Education. Additionally, the School of Engineering has been proactive in recruiting high quality students by offering a four-year \$10,000 Academic Merit Scholarship. Over 100 scholarships were offered and 82 scholarships were accepted. At the annual School of Engineering Awards Banquet 101 continuing students were awarded merit scholarships totaling \$170,000.

The School of Engineering has been very proactive in reviewing the status of our engineering students' progress toward graduation, as well as those engineering students that are 'Shadow Engineering' majors in the Academic Center for Exploratory Students (ACES). Through our friendly and positive approach to advising, students experiencing academic problems can be counseled and guided through these situations. The result is increased retention and morale. The emphasis is on being there for our students: all faculty members are involved in the advising process, the school's personal computer laboratory is open extended hours, and we provide state-of-the-art computers and software.

This year, the School of Engineering's Open House activities continued to attract over 400 prospective students and their parents. The School hosted the Connecticut Invention Convention again this year in Gampel Pavilion.

Over 650 Connecticut school children in grades K-12 demonstrated their inventions in this state competition. Approximately 2,500 parents, sponsors and teachers attended this all-day event. One hundred fifty judges evaluated and selected winners in each grade level. During the judging of exhibits, the School of Engineering hosted an informational session for teachers, administrators, and guidance counselors providing an overview of engineering preparation and careers, the daVinci program for teachers, and the Engineering 2000 program for high school sophomores and juniors. Each of these programs is a one-week residential program where teachers can conduct experiments and integrate them into their curricula. Engineering 2000 provides an opportunity for high school sophomores and juniors to learn-by-doing what various engineering disciplines do in their profession.

The School of Engineering observed National Engineers Week by honoring its 197 Dean's List students with a banquet. In addition, the ASME student chapter and Pratt & Whitney sponsored a dinner where 120 undergraduates, faculty members, and engineers from both ASME and Pratt & Whitney were in attendance. There also was an impromptu engineering design competition sponsored by General Electric, and an interactive Annual International Space Station Conference, which linked NASA engineers remotely with UConn engineering students.

The School of Engineering continues to prepare their undergraduate programs for ABET 2000 accreditation process and graduating students for the engineering profession.

If you have recommendations, comments or suggestions regarding this Annual Report, please contact Nan R. Cooper at (860) 486-2297 or nrcooper@engr.uconn.edu.

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