



A NEWSLETTER FOR ALUMNI AND FRIENDS OF THE DEPARTMENT OF MECHANICAL ENGINEERING AT THE A. JAMES CLARK SCHOOL OF ENGINEERING, UNIVERSITY OF MARYLAND.

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New Faculty Enrich Department Research Centers

This fall the Department of Mechanical Engineering in the A. James Clark School of Engineering at the University of Maryland celebrates the addition of five new research faculty to help build an outstanding research program supporting the continued economic development of Maryland, the DC Metropolitan region, and the nation. These new additions also strengthen the Department's existing connections to Federal laboratories and centers, international institutions, and the global professional community - building national and international visibility that will strengthen the Department's role and effectiveness in technology transfer.

Dr. Millard S. Firebaugh is appointed as the Minta Martin Professor of Practice, and Dr. James Short as Visiting Professor of Mechanical Engineering - both are set to contribute to efforts in the **Center for Energetics Concepts Development (CECD)** and the **Energetics Technology Center (ETC)** of Southern Maryland. Myra Torres joins as an Assistant Research Scientist for the **Center for Advanced Life Cycle Engineering (CALCE)**, Dr. Azar Nazeri as Visiting Associate Professor with the **Energy Education and Research Collaboration (EERC)**, and Dr. Travis Horton as a Research Assistant Professor in the **Center for Environmental Energy Engineering (CEEE)**.

Dr. Millard S. Firebaugh was President and Chief Operating Officer of SatCon Technology Corporation from 2005 to 2006. Before his time with SatCon, he worked with the Electric Boat Corporation, a division of General Dynamics Corp., where he served as Vice President of Innovation and Chief Engineer, responsible for the operations of a 2,800 person nuclear submarine design and engineering group. Rear Admiral Firebaugh served for more than 33 years in the U.S. Navy, retiring in 1995 as the Deputy Commander for Design Engineering and Chief Engineer for the Naval Sea Systems Command.



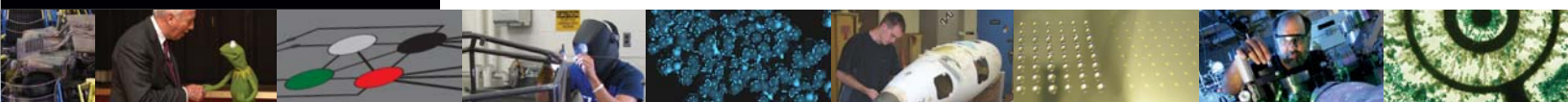
FIREBAUGH

Dr. James Short has served as the CECD Deputy Director since 1998 in addition to his duties while with the Office of the Deputy Under Secretary of Defense for Laboratories and Basic Sciences as Director of Defense Laboratory Programs and Acting Director



SHORT

New Faculty Research Leaders continues on page 3





BAR-COHEN

STRENGTHENING OUR STUDENT SERVICES, ENRICHING THE ACADEMIC EXPERIENCE

The Department's extraordinary progress in the past decade has provided us with the opportunity to become one of the best mechanical engineering programs in the nation. To help achieve that goal, the Department continues to strengthen the undergraduate and graduate educational experience, with the aim of creating ME and RE "programs of distinction" – attracting and graduating the finest, most diverse students and providing them with an outstanding engineering education. To support this effort, the department recently enlarged and strengthened the undergraduate and graduate student services team. Beginning in the fall semester, the Department's student services team includes Prof. David Bigio, who has assumed the position of Director of Undergraduate Studies; Prof. Bala Balachandran, who continues to serve

as the Director of Graduate Studies (and Associate Chair); and Dr. Sami Ainane, who assumed the new role of Director of Student Affairs. They are supported by Ms. Terry Island, who recently joined the Department as the Assistant Director of Undergraduate Studies, along with Mr. Amarildo DaMata and Mr. Fitz Walker, Coordinators of Graduate Studies.

As Director of Undergraduate Studies, Bigio chairs the Undergraduate Committee, provides academic leadership for the Undergraduate program, and devotes significant effort to establishing the new undergraduate "career paths". In the newly created position of Director of Student Affairs, Dr. Sami Ainane's role will be to synergize and align student services across the department, including student recruiting and orientation efforts, summer internships, post-Ph.D. placements, overseas studies, and the Department's competition projects.

Reflecting the extracurricular dimensions of a Maryland ME education, in 2007 the Department's undergraduate students were part of the best American Solar Decathlon entry in the U.S., raced to a top-15 finish in the Formula SAE West competition, took 10th place in single-person Human Powered Submarine races, and contributed to a 10th place finish in the underwater robotics contest in San Diego (page 11). Some of the ME undergraduates studied at Universities in countries from Australia to Italy, while others traveled to Colorado to present a award-winning undergraduate paper (page 10). Three of the Department's graduate students, Ms. Gayatri Cuddalorepatta, Mr. Jie Gu, and Ms. Elnaz Kermani were recently recognized with scholarships, from SMTA, IEEE, and the Barbara Hulka Fellowship, respectively (pages 11-13).

As a further testament to the growing quality of our Ph.D. program – ranked 10th in the nation in 2007 – four of our recent Ph.D. graduates: Dr. Andrew Dick (advised by Profs. Balachandran and Mote), Dr. Leila Ladani (advised by Prof. Dasgupta), Dr. Nathan Sniadecki (advised by Prof. DeVoe), and Dr. Nathan Williams (advised by Prof. Azarm) – accepted faculty positions in 2007, at Rice University, Utah State University, University of Washington – Seattle, and Washington State University in Pullman, respectively.

The Department has been blessed by the generosity of its friends and supporters. We are especially thankful to the Dieters and the Willie Webb estate, as well as to the Hoffmans and the Mardirossians for their magnanimous support of undergraduate scholarships. Without their contributions, along with the support of the citizens of Maryland and our indefatigable faculty and staff, we would be unable to continue our pursuit of excellence in all that we do.

Thank you!
Dr. Avram Bar-Cohen
Chair and Distinguished University Professor
Mechanical Engineering

FALL 2007 LEADERS IN MECHANICAL ENGINEERING LECTURE SERIES

Amir Riaz, Stanford University - Sept. 21
"Modeling Geologic Scale Multiphase Flow in Porous Media to Address Significant Challenges in Carbon Dioxide Sequestration and Enhanced Oil Recovery Processes"

Janos Beer, MIT - Oct. 5
"Fossil Fuel Based Electricity Generation in a Carbon Constrained World"

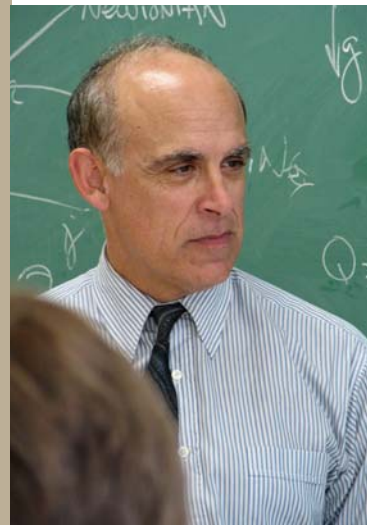
Suresh Garimella, Purdue - Oct. 19
"Thermal Microsystems for Electronics Thermal Management across Multiple Scales"

Jaydev Desai, UMD - Nov. 2
"Medical Robotics Research at Robotics, Automation, Manipulation, and Sensing (RAMS) Laboratory"

Eitan Tadmor, UMD CSCAMM - Nov. 9
"Edge Detection using Separation and Decomposition of Scales"

For upcoming information on our lecture series, visit:

www.enme.umd.edu/seminars



BIGIO

NEW FACULTY RESEARCH LEADERS

continued from cover story

of Basic Research. Short will take leadership of the planning, coordinating, and chairing of symposia and/or international conferences in the general area of energetics for CECD and ETC. He received his Ph.D. in Mechanical Engineering (combustion theory and reactive gas dynamics) from the University of California, Berkeley.

Myra Torres will enhance the research activities of the **Center for Advanced Life Cycle Engineering (CALCE)** as Assistant Research Scientist for the Prognostics and Health Management (PHM) Laboratory. She brings over fifteen years of component reliability and product risk assessment as well as engineering management experience from Sun Microsystems. Myra will be involved with (PHM) methodologies, implementations for electronic systems, and integration of new technologies. Ms. Torres received her M.S. in technology management from Pepperdine University.



TORRES

Dr. Azar Nazeri is a new Research Manager facilitating the **Energy Education and Research Collaboration (EERC)** between the University of Maryland and the Petroleum Institute at Abu Dhabi. She brings with her over fifteen years of experience as a research scientist and program manager at the Naval Research Laboratory and the Office of Naval Research, overseeing the management and completion of vital Naval technology developments and materials research programs. Nazeri received her Ph.D. in materials science and engineering at UCLA.



NAZERI

Dr. Travis Horton joins the **Center for Environmental Energy Engineering (CEEE)** research faculty, supporting the center's software group, guiding student research, and directing new research projects. Previously Horton managed thermo-fluidics research groups and was the technical lead for refrigeration research at Tecumseh Products Research Laboratory in Ann Arbor, Michigan. Horton will also be teaching courses in thermodynamics and energy conversion in the Department. Horton received his Ph.D. in mechanical engineering from Purdue University.



HORTON

DEPARTMENT WELCOMES NEW FACULTY THIS FALL AND SPRING

Dr. Byeng Youn and **Dr. Nikhil Chopra** have joined the Mechanical Engineering faculty this fall, and **Sarah Bergbreiter** is expected to join in the spring, all as Assistant Professors of Mechanical Engineering. Chopra and Bergbreiter will both hold a joint appointment in the Institute for Systems Research.

Dr. Byeng D. Youn served as an Assistant Professor of Mechanical Engineering – Engineering Mechanics (MEEM) at the Michigan Technological University. He earned his Ph.D. degree from the University of Iowa in 2001 and has focused his efforts on the development of rational design methods based on mathematics, physics, and statistics for use in complex engineering systems. His current research includes risk-based design, prognostics, stochastic defect mechanics, and Bioinspired design and has led to several notable awards including an ASME DETC Black & Decker Best Paper Award (2001) and ISSMO/Springer Prize for a Young Scientist (2004).



YOUN

Dr. Nikhil Chopra was a Postdoctoral Research Associate in the Coordinated Science Laboratory at the University of Illinois at Urbana-Champaign. He received his Ph.D. degree in Systems and Entrepreneurial Engineering in 2006 from the UIUC where he had previously completed an MS degree. His research interests include control theory, robotics, bilateral teleoperation and synchronization theory.



CHOPRA

Ms. Sarah Bergbreiter will be joining the department in the spring semester as Assistant Professor of Mechanical Engineering with a joint appointment in the Institute for Systems Research. She graduated with a B.S.E. in electrical engineering from Princeton University in 1999. After a short period at a small startup company, she began graduate school at UC Berkeley. In 2004, she received her M.S.E.E. for designing the CotsBots - a networked robotics platform built on top of Berkeley's Mica motes and TinyOS. She is presently completing her Ph.D. degree in electrical engineering by designing and fabricating autonomous jumping microrobots. Her research interests are in microrobotics, networked multi-robot systems, and sensor networks.



BERGBREITER

GO ONLINE - TO LEARN MORE ABOUT THESE NEW RESEARCH FACULTY, VISIT:
www.enme.umd.edu/research/faculty.html

DESAI PROGRAM CHAIR OF IEEE 2008 BIOROB CONFERENCE

Associate Professor **Jaydev Desai** (Mechanical Engineering and Graduate Program in Bioengineering) will be the Program Chair for



DESAI

the Institute of Electrical and Electronics Engineers (IEEE) BioRob 2008 International Conference on Biomedical Robotics and Biomechatronics, to be held on October 19-22 in Scottsdale, Arizona.

BioRob covers both theoretical and experimental challenges

posed by the application of robotics and mechatronics in medicine and biology. The primary focus of Biorobotics is to analyze biological systems from a “biomechatronic” point of view, trying to understand the scientific and engineering principles underlying their extraordinary performance. This profound understanding of how biological systems work, behave and interact can be used for two main objectives: to guide the design and fabrication of novel, high performance bio-inspired machines and systems, for many different applications; and to develop novel nano-, micro-, macro- devices that can act upon, substitute parts of, and assist human beings in diagnosis, surgery, prosthetics, rehabilitation and personal assistance.



GUPTA

S.K. GUPTA ELECTED ASME FELLOW

Associate Professor **S.K. Gupta** (ME/ISR), has been elected a Fellow of the American Society of Mechanical Engineers (ASME).

“Dr. Satyandra K. Gupta has made significant contributions to the field of computer aided design and manufacturing by incorporating application specific intelligence into geometric reasoning algorithms. An author of over one hundred fifty technical papers in journals and conferences, he has given more than forty invited seminars throughout the world on the topics related to computer aided design and manufacturing. He currently serves as Associate Editor for ASME Journal of Computing and Information Science in Engineering and is a past chair of ASME Design for Manufacturing technical committee. A recipient of fifteen recognition awards, he received the Presidential Early Career Award for Scientists and Engineers in 2001 from President George Bush for his outstanding contributions,” reads the award citation.

The PECASE Award mentioned in the citation was for Gupta’s work in developing a new molding process and decision support tool for manufacturing multi-material parts. The PECASE is the highest honor given by the U.S. government to outstanding scientists and engineers in the early stages of establishing their research careers. Only twenty NSF-supported PECASEs are awarded each year.

Gupta has received other prestigious honors in his career. He was an ONR Young Investigator (2000), won the Society of Manufacturing Engineers’ Robert W. Galvin Outstanding Young Manufacturing Engineer Award (2000), received an NSF CAREER Award for “Automated Design of Multi-Piece Molds—A Step towards Manufacturing of Geometrically Complex Heterogeneous Objects” (2001) and was given ISR’s Outstanding Faculty Award for 2000-2001.

BONGTAE HAN ELECTED FELLOW OF ASME

Professor **Bongtae Han**, has also been elected a Fellow of the American Society of Mechanical Engineers (ASME).

“Dr. Han serves critical industrial needs through measurement and interpretation of thermo-mechanical deformations of micro-electronic and photonic devices. His contributions center around experimental analyses by optical techniques. Han developed, extended and utilized special measurement means, including Moiré Interferometry, Micro-Moiré Interferometry, Far Infrared Fizeau Interferometry and Shadow Moiré, thereby providing instrumentation for, and analyses of, electronic package behavior; instrumentation that he developed is widely used in industry today. These experimental analyses provide critical guidance and verification for extensive computational analyses. Dr. Han disseminated his research and development accomplishments through extensive publications, presentations, patents and importantly through training of his students. His work has been a seminal contribution to the industry,” reads the award citation.

Han has received other prestigious honors in his accomplished career. He was awarded the ASME Journal of Electronic Packaging Associate Editor of the Year Award in 2005. He is also a Fellow in the Society for Experimental Mechanics (SEM) and an Associate Editor for ASME Transactions, Journal of Electronic Packaging. Dr. Han was approved for a patent in 2007 for his invention “Shadow Moiré Using Non-Zero Talbot Distance,” by the U.S. Patent and Trade Office.



HAN

HERRMANN JOINS QUEST HONORS FELLOWS PROGRAM AS ASSOCIATE DIRECTOR

Associate Professor **Jeffrey Herrmann**, who holds a joint appointment in the Department of Mechanical Engineering and the Institute for Systems Research, now serves as Associate Director for the University of Maryland Quality Enhancement Systems and Teams (QUEST) Honors Fellows Program effective July 1.

QUEST is a unique undergraduate experience found only at College Park that unites honors students in business, engineering, and computer, mathematical and physical sciences. Administered through the Robert H. Smith School of Business, the program offers special courses and experiences that are focused on cross-functional collaboration, quantitative methods, interactive planning and quality principles.

NSF BOOSTS NANOTECH CURRICULUM

Associate Professor **Hugh Bruck**, Department of Materials Science and Engineering (MSE) Lab Coordinator Robert

Bonenberger, Ph.D., MSE Professor and Chair Robert M. Briber, Jaime Cardena-Garcia, Ph.D., and MSE Associate Professor Luz Martinez-Miranda recently completed work on an NSF-funded project titled “Development of Educational Materials and Acquisition of Equipment for a Nanoscale to Microscale Engineering Laboratory.” The project, supported by the NSF’s Course, Curriculum and Laboratory Improvement (CCLI) program, was used to develop new laboratory experiments that effectively engage undergraduate engineering students in the scientific processes and exploration of concepts in nanotechnology. Work funded under the proposal also helped integrate significant advances in nanotechnology research with the undergraduate engineering laboratory curriculum through the development of a new teaching lab.

Two significant experimental systems were assembled to give students an enhanced laboratory experience: a pair of micro-tensile testers, used for determining the mechanical properties of micron-scale devices and materials; and an integrated nanoindentation/scanning probe microscope (SPM) testing system, used for measuring the hardness and

for buoyant flows in channels, heat sink optimization and pool boiling of dielectric liquids; and for seminal contributions and leadership in research, practice and education in the thermal management of micro and nanoelectronic systems.” Honorary Membership with ASME has come to be regarded as recognition of a lifetime of service to engineering or related fields. The recognition was first awarded in 1880, the founding year of the Society. The roster of Honorary Members contains the names of leaders of world renown who were selected under carefully drawn procedures rigorously maintained by the Society over the years.

University President Dr. C.D. Mote, Jr., the only other Maryland faculty member to attain this recognition, says “Dr. Bar-



CHRONICLE OF HIGHER EDUCATION RANKS ME 10TH

IN EARLY 2007 THE CHRONICLE OF HIGHER EDUCATION RANKED THE DEPARTMENT AMONG THE TOP 10 MECHANICAL ENGINEERING PROGRAMS IN THE COUNTRY. MECHANICAL ENGINEERING AT MARYLAND RANKED TENTH IN ITS CATEGORY, 4TH AMONG PUBLIC INSTITUTIONS.

elasticity of materials at the nanoscale, and for imaging samples.

The equipment forms the core of the new Modern Engineering Materials Instructional Laboratory (MEMIL). Located in the Jeong H. Kim Engineering Building, the 2241 square-foot facility serves as a shared undergraduate lab for materials testing and characterization and is used to accommodate the needs of multiple departments within the Clark School.

Bruck’s junior-level ENME 382: Engineering Materials and Manufacturing Processes class was one of those that benefited from the new equipment and curriculum.

BAR-COHEN ELECTED HONORARY MEMBER OF ASME

Dr. **Avram Bar-Cohen**, Chair of Mechanical Engineering and Distinguished University Professor, was unanimously elected as an Honorary Member of the American Society of Mechanical Engineers (ASME) in June. His elevation to Honorary Member will be announced at the Honors Convocation of the ASME International Mechanical Engineering Congress & Exposition in Seattle, Washington this November.

Bar-Cohen was selected “for development of the scientific foundation for thermal management of electronic components and systems, specifically

Cohen is highly deserving of this prestigious recognition, having contributed so much to engineering. He is an excellent engineer, a gifted teacher, and a prolific scholar. To be selected by the profession for a lifetime of contributions to engineering is a distinction that is truly extraordinary.”

At the Honors and Awards Luncheon of the recent ASME InterPACK Conference in Vancouver, Canada, Avram Bar-Cohen was honored with the InterPACK Achievement Award “for his long term and continued contributions in the field of Electronics and Photonics Packaging.” The presentation of this bi-annual award was followed by Bar-Cohen’s Keynote lecture on “Hot Aisles to Hot Spots – Thermal Packaging for a Small Planet.”



CUKIER

CUKIER ADVISES ON WIRELESS SECURITY

College students do it. Coffee shop customers do it too. Your neighbor in Apartment 3C is probably doing it right now.

Many computer users search for an available wireless network to tap

into—whether at the mall, at school or at home—and whether they have permission to use that network or not. Knowingly or unknowingly, these wireless “parasites” may be doing more than filching a signal. When they connect, they can open up the network—and all the computers on it—to an array of security breaches.

These problems are compounded when someone allowed to use an organization’s wireless network adds an unauthorized wireless signal to increase the main network’s signal strength. These unauthorized access points are especially vulnerable, often unprotected by any security measures that may exist on the main network.

At home, people usually use passwords to protect their wireless network from unauthorized access. But a new study by the A. James Clark School of Engineering’s **Michel Cukier** indicates passwords alone may not provide enough protection for home wireless networks and are particularly inadequate for the wireless networks of larger organizations. Cukier is an assistant professor of mechanical engineering and affiliate of the Clark School’s Center for Risk and Reliability and Institute for Systems Research at the University of Maryland.

At many organizations and locations around the country, thousands of users access widespread wireless network

legitimately at any given time. But in turn, some of these users set up their own wireless networks, linked to the official network, to increase the signal in their office or home—what computer experts call an “unmanaged wireless access point.”

“If these secondary connections are not secure, they open up the entire network to trouble,” Cukier said. “Unsecured wireless access points pose problems for businesses, cities and other organizations that make wireless access available to customers, employees, and residents. Unsecured connections are an open invitation to hackers seeking access to vulnerable computers.”

Cukier recommends that wireless network owners and administrators take the following precautions to better secure wireless networks from “parasites” trolling for access and unsecured connections set up by legitimate users:

Limited signal coverage

Limit the strength of your wireless network so it cannot be detected outside the bounds of your home or office.

Turn off SSID broadcasting

A Service Set Identifier (SSID) is a code attached to packets (bits of information) on a wireless network that is used to identify each packet as part of that network. When SSID broadcasting is enabled on a wireless network, this network can be identified by all wireless clients within range. Conversely when SSID broadcasting is disabled, the wireless network is not visible (to casual users) unless this code is entered in advance into the client’s network setting.

WPA/WEP encryption

Encrypted communication will protect confidential information from being disclosed. If the traffic over the wireless network is encrypted, an attacker must decrypt the password before retrieving

information transmitted over the network. There are two encryption schemes available: Wired Equivalent Privacy (WEP) and Wi-Fi Protected Access (WPA). In practice, only one of them can be used at a time. Regular changing of the encryption key may also help to protect the network. Whenever possible WPA should be used, as WEP can be decrypted by hackers equipped with special software.

Key management

Even if encryption is used, if the key to this encryption (generated by the network) is not changed often, a hacker might crack the key and decrypt the communication. Therefore, the key must be regularly changed.

MAC address

If a wireless access point only accepts connections from known MAC addresses (essentially a serial number unique to each manufactured network adaptor), a potential attacker will need to learn the addresses of legitimate computers in order to access the wireless network.



NPR SEGMENT ON OIL DEPENDENCE FEATURES CEEC DIRECTOR RADERMACHER

“AFTER OIL,” A RADIO DOCUMENTARY ABOUT OUR NATION’S DEPENDENCE ON CHEAP OIL, QUOTED LEADING RESEARCHERS IN THE ENERGY FIELD INCLUDING PROFESSOR REINHARD RADERMACHER. THE HOUR-LONG PIECE WAS FEATURED ON THE WASHINGTON, D.C. NATIONAL PUBLIC RADIO STATION WAMU, AND WAS PRODUCED BY THE PURDUE UNIVERSITY COLLEGE OF ENGINEERING AND WFYI IN INDIANAPOLIS.



BIO-INSPIRED ENGINEERING CURRICULUM FEATURED IN IOP JOURNAL

“Training Mechanical Engineering Students to Utilize Biological Inspiration During Product Development,” a paper co-authored by Associate Professor **Hugh Bruck**, Associate Professor **Satyandra K. Gupta**, Emeritus Professor **Edward Magrab**, Alan L. Gershon, Ira Golden, Lawrence S. Gyger, Jr., and Brent W. Spranklin was posted in the Institute of Physics Publishing journal *Bioinspiration & Biomimetics* (bb.iop.org) in October.

The paper describes educational tools currently included in several undergraduate courses at Maryland, including ENME 489L: Bio-Inspired Robots, facilitated by a Concurrent Fabrication and Assembly process the authors developed that allow students to design and manufacture bio-inspired robots. Educational modules highlighted in the paper are used in a number of courses available to undergraduate students.

The paper will be featured in the December 2007 print version of *Bioinspiration & Biomimetics* and currently appears free in the online edition at www.iop.org.

CEEE COGENERATION ENERGY EXPERT QUOTED IN MARYLAND GAZETTE

Dr. **Joe Orlando**, Director of the University of Maryland’s Mid-Atlantic Combined Heat and Power Application Center, was quoted in a November 10 article of the *Maryland Gazette* as an expert in “cogenerated” energy. The article referenced the center director in regards to a new partnership between the Quarantine Road Landfill in Baltimore and neighboring Coast Guard Yard at Curtis Bay, where the Coast Guard will run methane gas through a mile-long pipe from the landfill to the yard, where generators will churn the gas into energy. This example of ‘cogeneration’ of energy will be one of the largest renewable energy projects in the region, and is expected to be running in spring of 2009. “Cogeneration means using less energy to get the same output”, said Orlando in the article.

GO ONLINE - TO LEARN MORE ABOUT ENVIRONMENTAL ENERGY ENGINEERING RESEARCH, VISIT:

www.enme.umd.edu/ceee/



DEPARTMENT FEATURED ON LOCAL CABLE NEWS 8

STUDENT AFFAIRS DIRECTOR DR. SAMI AINANE WAS INTERVIEWED ON THE JUNE 20TH “COMCAST NEWSMAKERS” PROGRAM OF CABLE NEWS 8, WHERE HE DISCUSSED THE DEPARTMENT’S UNDERGRADUATE AND GRADUATE PROGRAMS WITH REPORTER TONY HILL.



AZARM RECEIVES PRESTIGIOUS ASME AWARD

Professor of Mechanical Engineering **Shapour Azarm** at University of Maryland, College Park, was the recipient of the 2007 Design Automation Award by the Design Automation Committee of the American Society of Mechanical Engineers (ASME).

“The Design Automation Award is granted from time to time but no more than once each year to recognize sustained meritorious contribution to research in Design Automation. This award is only given after the recommendation of 75% of the members of the Honors and Awards Technical Subcommittee.” It was reported that in the case of Prof. Azarm the vote of the H&A

committee members for granting this award to him was unanimous.

The citation for the award will read: “For his sustained and meritorious contributions to research in Design Automation, specifically in computational design optimization and engineering design decision making.”

The award was given to Professor Azarm during a conference dinner of the ASME International Design Engineering Technical Conferences (IDETC) held in Las Vegas, Nevada, September 4-7.



AZARM

NEW CLINIC SURGE PLANNING MODEL SOFTWARE RELEASED

Associate Professor **Jeffrey Herrmann** (ME/ISR) and his research team have released a new product related to their respected Clinic Planning Model software.

The Clinic Surge Planning Model is specifically designed for short-duration, high-volume clinics that have a surge of patients when the clinic opens. This model helps planners predict how long the clinic will need to be open to handle the initial surge as well as the patients who arrive after that. The model is an Excel workbook that the user can download and begin using immediately.

The model was developed by Adam Montjoy, a student in ISR's summer Research Experiences for Undergraduates program.

Since the launch of the software release, Herrmann has developed the Public Health Preparedness Modeling blog to support public health emergency preparedness planners and the researchers who are developing models for this community.

Herrmann has a background in operations research and industrial engineering. His public health planning research concentrates on models of mass dispensing and vaccination clinics, also known as "points of dispensing," or PODs. His Clinic Planning Model Generator software creates a Microsoft Excel workbook for POD planning. Public health planners in 25 states have used the software to evaluate and improve their POD plans.

This work is sponsored by the Montgomery County, Maryland, Advanced Practice Center for Public Health Emergency Preparedness and Response. Other models for planning POD operations, and the Clinic Surge Planning Model are available for download at the team's web site here:

www.isr.umd.edu/Labs/CIM/projects/clinic/

There is no charge for the software.

PUTTING IT ALL TOGETHER

PIRLS Lab is more than just shop talk.

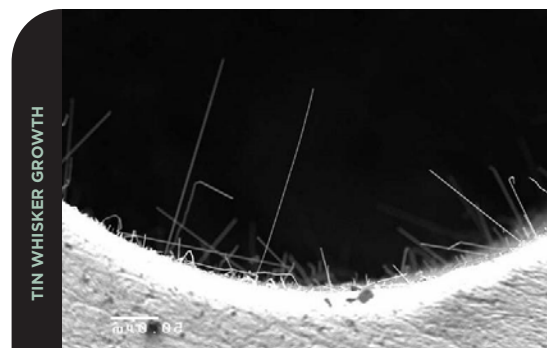
The Product Innovation & Realization Laboratory Suite (PIRLS) recently expanded to better serve undergrad students who design and build prototype models for class projects. Most of the students who use the lab are from the ENME 371: Product Engineering and Manufacturing and ENME 472: Integrated Product and Process Development classes.

The prototype section of the PIRLS lab doubled in size, adding a Tungsten Inert Gas (TIG) welder and a chopsaw, both to help students make metal models and prototypes. Students also have the capability to create plastic rapid prototype and paper models there as well. The design section of the lab added an electronics assembly station, digital multimeters and soldering equipment.

These improvements and additions help undergrads centralize their product development realization and modeling in one convenient location. PIRLS is monitored and managed under the guidance of Drs. Linda Schmidt and Chandra Thamire. To learn more about the PIRLS lab or schedule a visit, contact PIRLS Lab Manager Greg Teitelbaum by e-mail at gftbaum@umd.edu.

WORRIED ABOUT TIN WHISKERS?

Research results from the Center for Advanced Life Cycle Engineering (CALCE) were featured in the article "Should you be worried about metal whiskers?" by Ryan DeBeasi. The article appeared on Computerworld.com and various other online news outlets in late summer, and explored the phenomenon where electrically conductive 'tin whiskers' develop on electronic products using lead-free pure tin coatings.



PROTOTYPE LAB EXPANDS

UNDERGRADUATE STUDENTS IN THE PRODUCT INNOVATION & REALIZATION LABORATORY SUITE (PIRLS) CAN WALK THROUGH THE PRODUCT REALIZATION PROCESS FROM COMPUTER-AIDED DESIGN, VISUALIZATION, TESTING, THEN TO CREATING PROTOTYPE MODELS OUT OF PAPER, PLASTIC OR METAL. TO LEARN MORE, VISIT:

WWW.PIRLS.UMD.EDU/

MECHANICAL ENGINEERING MISSION

The mission of the Department of Mechanical Engineering at the University of Maryland is to provide an outstanding education, conduct innovative, ground breaking research, address the needs of citizens, industry, and government, and provide related service to the campus community and the community at large.

The mission shall be guided by a commitment to continuous improvement in the overall quality of teaching, research, and service. Providing engineering education with sufficient scope to include the basic and specialized engineering training necessary for the current and emerging needs of society is a major focus of this Department. The Department has a related responsibility to contribute to the advancement of knowledge by conducting research at the cutting edge of science and technology. Given the rapid advances in science and technology, the Department also has a professional responsibility to provide continuing education to the practicing engineer.

The Department faculty and administration also see as part of this mission, an obligation to serve the needs of the campus community and the community at large in the spirit of collegial cooperation.

By staying focused on the Strategic Plan and achieving its quantitative and qualitative goals, we aspire to place and sustain the Department of Mechanical Engineering at the University of Maryland among the nation's top 15 Mechanical Engineering programs among all universities -public and private - and top 10 among the publicly supported research universities, by 2011.

DEGREE PROGRAMS

Mechanical Engineering: B.S., M.E., M.S., Ph.D.
 Reliability Engineering: G.C.E.N., M.E., M.S., Ph.D.
 Professional Master of
 Engineering & Public Policy

MAJOR RESEARCH CENTERS

Center for Advanced Life Cycle Engineering
 Center for Energetic Concepts Development
 Center for Environmental Energy Engineering
 Center for Nano Manufacturing and Metrology
 Center for Risk and Reliability
 Smart Materials & Structures Research Center

INSTRUCTIONAL DIVISIONS

Design and Reliability of Systems

- Design · Information Sciences
- Risk and Reliability · Manufacturing

Electronic Products and Systems

- Physics of Failure & Reliability
- Supply Chain Engineering
- Competitive Systems

Mechanics and Materials

- Solid Mechanics · Materials
- Dynamics and Control · MEMS/NEMS

Thermal, Fluids and Energy Sciences

- Energy Systems · Fluid Mechanics
- Thermal Sciences · Reacting Flows

2005 STATISTICS FROM THE FACULTY ACTIVITY REPORT

42	Faculty
61	Professional Society Fellows
7	National Academy of Engineering Members
9	Journal & Book Series Editors
30	Journal Associate Editors
8	Published Books
15	Published Book Chapters
131	Published Journal Articles
313	Conference and Seminar Presentations
9	Plenary Speakers

2005-2006 ACADEMIC CALENDAR STATISTICS

600	Undergraduate Students (Fall 2006)
1280/1410	SAT 25/75 Percentiles of Entering Freshmen
4.038/4.0	Average GPA of Entering Freshmen
33	% of Women/Minority Entering Freshmen
25	% of Undergraduates in Honors Programs
291	Graduate Students (Fall 2006)
3.57/4.0	Average GPA of Entering Graduate Students
174	B.S. Degrees Awarded
53	M.S. Degrees Awarded
47	Ph.D. Degrees Awarded



GRADUATE PROGRAM

Dr. Balakumar Balachandran
Director of Graduate Studies
Professor and Associate Chair of Mechanical Engineering



BALACHANDRAN

Enrollment

In the 2005-2006 academic year the Department of Mechanical Engineering had 271 graduate students enrolled. Of these, 66 were Master of Science students and 205 were Doctoral students. 16% of these students were female and 8% were minority students.

Degrees

The Department granted 54 Master's degrees (18 Master of Engineering degrees in ME, 11 in Reliability; 24 MS degrees in ME and 11 in Reliability) and 44 Doctorates (7 in Reliability Engineering, 37 in Mech. Eng.) in 2005-2006. Dissertation titles and the names of Doctoral and M.S. students' advisors are listed later in the report.

Recruitment

363 students applied to the graduate program for entrance in 2005-2006. Of these applicants 93 were offered and 60 enrolled, most with financial assistance in the form of a graduate teaching assistantship, graduate research assistantship, or graduate fellowship.

Research and Fellowships

During the 2005-2006 academic year, the Department supported 72 students through teaching assistantships and 104 through research assistantships. In addition, 24 of our students have been awarded fellowships for the 2004-2005 academic year.

Student Credentials

The students who enrolled in our program in 2005-2006 had an average GRE score of 537 Verbal, 759 Quantitative, a 4.25 Analytic score.

B.S./M.S. Program

The B.S./M.S. program continues to provide students with the opportunity to earn both a B.S.M.E. and an M.S.M.E. following five years of study. In 2005-2006, the Department admitted 12 new students and had a total of 37 enrolled in this program. In 2005-2006 there were 8 BSMS students who advanced into the graduate portion of the program, with one completing their MS.

UNDERGRADUATE PROGRAM

Dr. Sami Ainane
Director of Undergraduate Studies



AINANE

Enrollment

Enrollment in the undergraduate program during the 2005-2006 academic year reached 600 students. 54 of these were minority students and 24 were female students, and 200 are in the University Honors Program. The entering freshmen class of 2006 had an average SAT score of 1340 and an average high school GPA of 4.038. Last year, we awarded 174 Bachelor's degrees.

Our program features design throughout the undergraduate curriculum and unique teaching methods, including a practical classroom design experience in a course supported by Black & Decker, tailored to students participating in the competition projects, and cutting edge electives.

Career Paths

Several areas of concentration are suggested to the student in the senior year. These areas of focus, such as Computer-Aided Design and Manufacturing; Controls, Sensors, and Electronic Packaging; Energy and the Environment; Engineering Management; General Mechanical Engineering; and MEMS and Microfabrication Technologies enable students to study in unique courses in their areas of interest and to better prepare themselves for professional careers of their choice.

Honors Program

The departmental Honors Program, now in its seventh year, consists of three levels of involvement available to students. The University has a general honors program primarily for freshmen and sophomores, the School of Engineering has an honors program primarily for juniors and seniors, and the Department of Mechanical Engineering has an honors program for students at all levels. It is possible for students to participate in any combination, including all three of the honors programs. The program currently has about 100 participants and has been highly successful in attracting talented students to the Department.

QUEST & Gemstone Programs

The QUEST Program, offered jointly with the Smith School of Business, places students in the workplace to research and develop quality enhancement recommendations for corporate partners. The Gemstone Program focuses students from diverse majors on research that addresses technological and social issues.

2005-2006 PH.D. GRADUATES*Name followed by faculty advisor***Fall 2005**

Shao, Cheng
Azarm, Shapour

Yang, Jianming
Balaras, Ilias

Bahadur, Raj
Bar-Cohen, Avram

El Sabbagh, Adel Mohamed Moneeb
Baz, Amr

Chung, Kuan-Jung (ENRE)
Bernstein, Joseph

Cheng, Wei-Jen
Li, Lihua
Piekarski, Brett H,
DeVoe, Donald

Cardone, Antonio
Gupta, Satyandra

Yuan, Zhe
Herold, Keith

Zhang, Lei
Hristu-Varsakelis, Dimitrios

Plaia, Joseph M
Jackson, Gregory

Henry, Christopher Douglas
Kim, Jungho

Forrester, Yashika Nichole
Jacopino, Andrew Guisepppe (ENRE)
Mosleh, Ali

Fang, Tong (ENRE)
Fukuda, Yuki
Tiku, Sanjay
Zhao, Ping
Pecht, Michael

Nayak, Sandeep M.
Radermacher, Reinhard

Yue, Zhihua
Robbins, Donald

Kleyner, Andre V
Sandborn, Peter

Liu, Yingkai
Smela, Elisabeth

Spring 2006

Besharati, Babak
Azarm, Shapour

Li, He
Long, Xinhua
Balachandran, Balakumar

Kim, Kyoung Joon
Bar-Cohen, Avram

Li, Xiaojun (ENRE)
Bernstein, Joseph

Huang, Yue
Bigio, David

Yashar, David Anthony
DeVoe, Donald

Furey, Deborah Ann
Duncan, James

Yao, Xiaobo
Marshall, Andre

Dash, Manas R
McCluskey, Patrick

Fretz, Kristin Ann (ENRE)
Modarres, Mohammad

Zhu, Dongfeng (ENRE)
Mosleh, Ali

Ovchinnikov, Victor
Piomelli, Ugo

Gado, Amr Alaa
Radermacher, Reinhard

Summer 2006

Zhang, Xiaohu
Bernstein, Joseph

Zhu, Likun
DeVoe, Donald

Linck, Martin Brendan
Gupta, Ashwani

Moghaddam, Saeed A.
Kiger, Kenneth

Vichare, Nikhil Manohar
Pecht, Michael

Jin, Dae Hyun
Richardson, David Hallam
Radermacher, Reinhard

Bhaskaran, Harish
Sandborn, Peter

Ghose, Susmita
Huang, Bing
Smidts, Carol

2005-2006 M.S. GRADUATES

Graduate name followed by faculty advisor name

Fall '05

Nguyen, Vincent Phuc
Balachandran, Balakumar

Lewis, Monte Allen
Herold, Keith

Amoedo, Maria Mercedes
Modarres, Mohammad

White, George Otis
Mosleh, Ali

Mishra, Rajeev Kumar
Pecht, Michael

Bian, Ji
Radermacher, Reinhard

O'Hara, Steven Robert
Schultz, Gregory

Fanning, Steven Christopher
Smela, Elisabeth

Beumer, Nicholas Eduard
Yates, Scott William

Spring '06

Treadwell, Mark Andrew
Herrmann, Jeffrey

Muehlbauer, Jan
Ors, Ahmet
Radermacher, Reinhard

Pettit, Duane Henry
Roush, Marvin

Summer '06

Chaudry, Atif Hussain 2
Baz, Amr

Jinka, Krishna Kumar
Dasgupta, Abhijit

Genson, Kevin William
Fourney, William

Spranklin, Brent William
Gupta, Satyandra

Cox, Austin Bradley
Han, Bongtae

Brochtrup, Brad Michael
Herrmann, Jeffrey

DiSabatino, Ronald Joseph
McCluskey, Patrick

Sengupta, Shirsho
Pecht, Michael

Delille, Remi Alain
Smela, Elisabeth

PROFESSIONAL MASTER OF ENGINEERING PROGRAM

Reliability Program Advisor:

Prof. Ali Mosleh

Mechanical Program Advisor:

Prof. Keith Herold

Fall '05

Bever, David
Byron, Glenn Patrick
Islam, Shazed
Nelson, Kent
Reese, Shad McKentrick
Remer, Jonathan
Smith, Gavin Lloyd
Thomas, Bose
Zhu, Bin
Canon, Dan

Spring '06

Batallas, Freddy
Caron, Jason
Fichter, Ross
Giri, Anil
Moseley, Samuel
Potter, Wesley
Young, Takeyah

Summer '06

DePola, Matthew
Doyle, Dennis
Lee, Geoun Tack
Pisha, Roger
Stone, David

UNDERGRADUATE AWARDS

Mechanical Engineering Department undergrad students received recognition at the 2006 Engineering Honors and Awards Ceremony on April 24 in the Grand Ballroom of the Stamp Student Union.

Within the Clark School several ME Students were recognized:

The Dinah Berman Memorial Award, presented to an engineering student who has combined academic excellence with demonstrated leadership or service to the college as a freshman and sophomore:
Brittany Chardee Blueitt

The Outstanding Engineering Co-op/Intern Award, presented to students who have demonstrated outstanding academic excellence, exceptional work performance, and remarkable potential for a successful career in engineering: *Christopher James Colvin*

Department awards for academic achievement and outstanding contributions included the following:

American Society of Mechanical Engineers' Senior Award

Presented to the senior member who has contributed most to the student chapter: *William J. Michie*

Society of Automotive Engineers Senior Award:

Presented to the senior member who has contributed most to the student chapter: *Pablo Javier Szejn*

Pi Tau Sigma Outstanding Service Award

Presented to a student for outstanding service and contributions to the chapter: *Michael Blair Lochner*

Pi Tau Sigma Memorial Award

Presented to the senior in mechanical engineering who has made the most outstanding contributions to the University: *Rifat Jafreen*

Pi Tau Sigma Outstanding Sophomore Award

Presented to the most outstanding sophomore in mechanical engineering on the basis of scholastic average:
Stephanie Ann Karpovitch

Department of Mechanical Engineering Academic Achievement Award

Presented to the junior in mechanical engineering who has attained the highest overall academic average:
Brittany Chardee Blueitt

Department of Mechanical Engineering Chairman's Award:

Presented for excellence in academics, outstanding service to the Department, or leadership in the Department: *Eric Jones*

Congratulations to these outstanding students who have contributed to the overall excellence of the department.

BOARD OF VISITORS

Mr. Mostafa Aghazadeh
Director, Chandler Associate
Technology Development, Intel Corp.

Dr. Arthur Bergles
Emertius Professor
Rensselaer Polytechnic Institute

Dr. George Dieter
Emeritus Professor of Mechanical
Engineering,
University of Maryland

Dr. Eugene DeLoatch
Dean, School of Engineering
Morgan State University

Mr. Greg Moores
VP, Technology & Manufacturing Group
Black & Decker

Dr. Hratch Semerjian
Chief Scientist, NIST

Dr. Alex Severinsky
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Innovation
American Society of Civil Engineers

Mr. Tom Stricker
Corporate Manager – Director
Toyota Motor North America, Inc.

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School of Mechanical Engineering
Georgia Institute of Technology

Mr. Edward Warfield
Chief, Plant Design Engineering
Bechtel Power Corporation

Alternates:

Mr. Aris Cleanthous
Project Engineer, Black & Decker

Dr. Howard Harary
Deputy Director
NIST Manufacturing & Engineering Lab

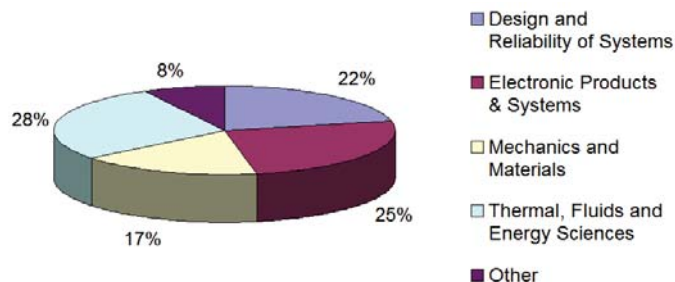


RESEARCH EXPENDITURES

ME faculty in 2005-2006 have participated in a wide variety of research efforts in various fields of mechanical engineering, obtaining support from the private sector as well as from many federal and corporate contracts. FY '06 fiscal expenditures, shown by research area in the table and chart below, indicate that 25% of the expenditures were from the electronic products & systems domain, 17% in mechanics and materials, 28% in the thermal, fluids and energy sciences division, and 22% in design and reliability of systems.

FY '06 RESEARCH EXPENDITURES BY DIVISION

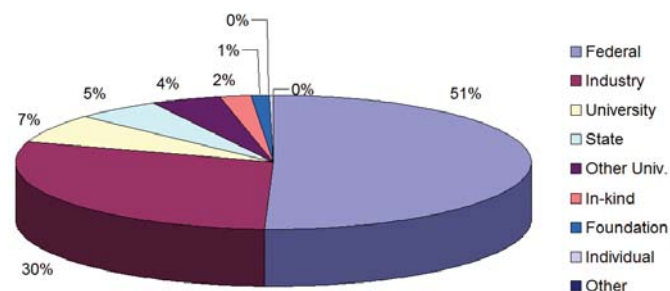
Design and Reliability of Systems	\$4,484,768
Electronic Products & Systems	\$5,221,740
Mechanics and Materials	\$3,576,938
Thermal, Fluids and Energy Sciences	\$5,836,969
Other	\$1,588,516
Total	\$20,708,931



\$26.5M Total Department Expenditures
233 Research Grants

FY '06 RESEARCH REVENUE BY SOURCE

Federal	\$9,259,601
Industry	\$5,441,921
University	\$1,289,164
State	\$929,611
Other Univ	\$810,760
In-kind -06	\$362,097
Foundation	\$228,325
Individual	\$34,678
Other	\$8,831
Total	\$18,364,988



NSF RESEARCH EXPENDITURE STATISTICS

The ME faculty's significant success in attracting funding for a broad range of research topics has underpinned the Department's rise to the U.S. News and World Report's top 25 rankings among both graduate and undergraduate Mechanical Engineering programs. The National Science Foundation's Academic Research and Development Expenditures: Fiscal Years 1999 – 2005 shows that the department ranked between 11th and 16th in total research and development expenditures, and 12th-16th in Federal R&D expenditures in for 1999-2005. It is noteworthy that in 2005 the department's research and development expenditures were equal to the University of Illinois Urbana-Champaign, and greater than that of other institutions like University of Texas in Austin, Purdue, Texas A&M, and Ohio State.

Year	Total R&D expenditures by university	Federally-Funded R&D expenditures by university	Non-Federal R&D expenditures by university	Total R&D expenditures in mechanical engineering	Federal R&D expenditures in mechanical engineering
1999	30th	30th	26th	11th	16th
2000	34th	38th	32nd	11th	14th
2001	35th	41st	31st	14th	13th
2002	31st	31st	31st	12th	13th
2003	34th	42nd	32nd	12th	14th
2004	37th	48th	31st	16th	13th
2005	38th	49th	34th	15th	12th

From: Academic Research and Development Expenditures: Fiscal Years 1999 - 2005. National Science Foundation. http://www.nsf.gov/statistics/pubseni.cfm?seni_id=19#2004

RAINMAKERS

Ten faculty and staff from the department were among the top “rainmakers” in FY ‘06, bringing in \$500,000 or more in research funding:

Dr. Davinder Anand

Professor Emeritus of Mechanical Engineering
Director, Center for Energetic Concepts Development

Dr. Avram Bar-Cohen

Chair and Distinguished University Professor of Mechanical Engineering

Dr. Amr Baz

Professor of Mechanical Engineering
Director, Smart Materials and Structures Research Center (SMSRC)

Dr. Satyandra Gupta

Associate Professor of Mechanical Engineering

Dr. Gregory Jackson

Associate Professor of Mechanical Engineering

Dr. Mohammad Modarres

Professor of Nuclear Engineering and Reliability Engineering
Director of the Nuclear Engineering Program

Dr. Michael Pecht

George E. Dieter Professor of Mechanical Engineering
Director of The Center for Advanced Life Cycle Engineering (CALCE)

Dr. Reinhard Radermacher

Professor of Mechanical Engineering
Director of the Center for Environmental Energy Engineering (CEEE)

Dr. Elisabeth Smela

Associate Professor of Mechanical Engineering

Dr. Michael Zachariah

Professor of Mechanical Engineering and Chemistry,
Director, Center for NanoEnergetics Research,
The Center for Nano Manufacturing and Metrology
Coordinator of the UMCP/NIST Co-Laboratory on NanoManufacturing and Metrology

TOP CORPORATE SPONSORS

- Arbitron, Inc
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- Boeing Co.
- General Dynamics
- Hamilton Sundstrand
- Honeywell
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- Korea Institute of Machinery and Materials
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- Raytheon Company
- Rockwell Collins
- Samsung Techwin
- Schlumberger
- SRC
- SunMicrosystems
- Toshiba
- Wyle Labs



FY '06 RESEARCH SPONSORS

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 ARTI
 ASHRAE
 ASME International
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 ATEC
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 Battelle
 Beacon Management Group
 Beihang Univ.
 Benchmark Electronics
 BGE
 BioAssay Works
 BioEng
 Black & Decker
 Boeing
 Bosch Siemens (BSHG)
 Cabot
 Calient Networks
 Caterpillar
 Copeland Corporation
 DA Information Services
 Daikin
 Daimler Chrysler
 DARPA
 Dell
 Denso
 DHS
 DOD - Navy.NSWC
 DOD - Navy.ONR
 DOE - Chicago
 DOI - Interior Other Gov.Works
 DOT - FAA
 Dupont Dow
 Dynamic Details Incorporated
 EADS
 Edo Evi
 EMC2 Corp.
 Emerson
 Emerson Advanced Materials Center
 Emerson Copeland
 Emerson Electric Co.
 Emerson Energy Systems
 Emerson- Liebert
 Ericsson AB

ERS, Inc.
 ES&T
 ESM Technology, Inc
 Exxon Mobil Corporation
 FDA
 Filtronic
 Fisher-Rosemount Systems
 Fox Chevrolet
 GCAS, Inc.
 GEMSAM
 General Dynamics
 General Vortex
 Gentag, Inc
 Goodrich
 Hamilton Sundstrand
 Heatcraft
 Hewlett Packard
 HHS
 Honeywell
 Idaho Nat'l Eng. & Env. Lab
 Improved Mobility Systems
 InDt
 Infinite Biomedical Technologies Corp.
 Ingersoll - Rand Thermo King
 Intel
 Intellipark, LLC
 Interior
 Itron
 Jet Propulsion Lab
 Johns Hopkins University
 Korea Institute of Machinery and Mat.
 Laird Technologies
 LG Electronics
 Lockheed Martin
 Luna Innovations
 Lutron
 Luvata Grenada LLC (Heatcraft)
 Mantech
 Marriott
 MDA
 MDOT/SHA
 Medtronic
 Mercury Computer Sys
 Mitsubishi
 Modine
 Monarc Constructions, Inc.
 Montgomery County
 Motorola
 Mtech
 Muniz Engineering, Inc
 NanoDynamic
 NASA
 Nat'l Institute of Aerospace
 Navy - NSWC
 Navy - ONR
 Neltec, Inc
 NIH
 NIST
 NOAA
 Nokia
 Nomadics, Inc.

Northrop Gruman
 NRC
 NSA
 NSF
 Oak Ridge Nat'l Lab
 Paratek Microwave, Inc.
 Parker Hannefin
 Philips Netherlands
 Potomac Photonics, Inc
 Practical Engineering Inc.
 Prioprity One Services, Inc
 Qinetiq
 Rampf
 Raytheon
 Reactive Nano Technologies
 Research in Motion, Ltd.
 Respironics
 Rockwell Automation
 Rockwell Collins
 Rolls Royce
 Safety Consulting Engineers, Inc.
 Sakamoto
 Samsung
 Samsung Techwin
 Sandia National Laboratories
 Sanyo
 SAP
 Schlumberger
 Seagate Technologys
 Siemens
 Sierra Shelving
 Skyworks Solutions, Inc
 SRC
 Storage Tech
 Sullivan and Cromwell
 SunMicrosystems
 Superconductor Technologies
 Symbol Technologies
 Tecumseh Products Company
 TEDCO
 Teradyne, Inc
 Tessera Tech.
 Test Solvers
 Thermo-King
 Tobar Construction, Inc
 Toshiba
 Toyota Motor North America Inc.
 Trace Laboratories
 TRW
 U. of Stavanger
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 Wescam, Inc.
 Westland Helicopters
 Whirlpool
 White Rodgers
 Wyle Lab
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HEATING & COOLING GIFT HELPS CEEE RESEARCHERS

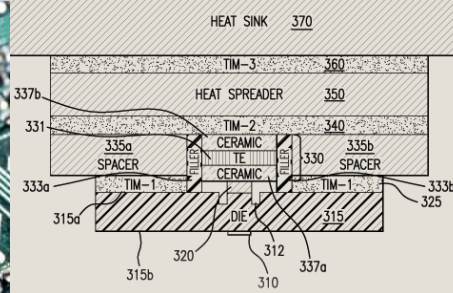
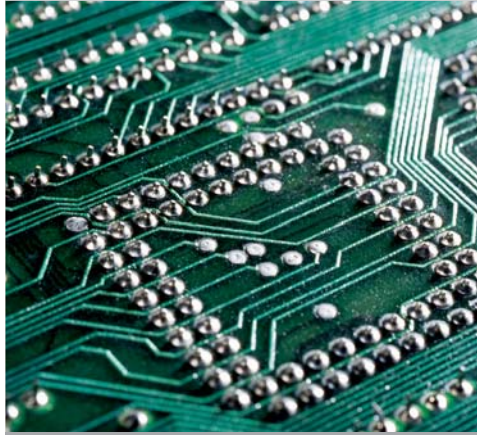
The Center for Environmental Energy Engineering (CEEE) received a Variable Refrigerant Volume (VRV) System donated from consortium partner Daikin Industries, Ltd. The Daikin® VRV system is an “intelligent,” modular inverter-driven compressor air conditioning system that enables the output of the outdoor unit to be varied, modulated by the cooling or heating demands of the zone that it controls. CEEE researchers have performed heating and cooling efficiency tests on VRV systems in the past, and will use the donated technology to allow research staff to better understand a diversity of heating and cooling systems.



PHOTO BY ELISABETH SMELA

WE'VE MOVED!

MARYLAND MEMS AND MICROFLUIDICS LABORATORY (DIRECTOR: D. DEVOE) AND THE THE LABORATORY FOR MICROTكنولوجIES (DIRECTOR: E. SMELA) HAVE MOVED TO THE THIRD FLOOR OF GLENN L. MARTIN HALL IN ORDER TO BETTER SERVE OUR RESEARCH FACULTY AND STUDENTS. BOTH LABS HELP US UNDERSTAND MORE ABOUT BIO-INSPIRED MICRO- AND NANOTECHNOLOGIES AND CELL-BASED SENSORS.



TOP RIGHT: DIAGRAM FROM THE INVENTION “NOVEL CONFIGURATION OF THERMOELECTRIC COOLERS TO HIGH-HEAT-FLUX HOT SPOTS,” (U.S. PATENT 7,290,596) BY ASSISTANT PROFESSOR BAO YANG AND PROFESSOR AVRAM BAR-COHEN WAS ISSUED ON NOVEMBER 6, 2007.

inventionFEATURE

2007 PATENTS AND INVENTIONS

“Novel Configuration of Thermoelectric Coolers to High-Heat-Flux Hot Spots,” (U.S. Patent 7,290,596) by Assistant Professor Bao Yang and Professor Avram Bar-Cohen was issued on November 6, 2007. The invention serves to concentrate the cooling effect of a miniaturized thermoelectric device so as to provide more efficient thermal management of localized “hot spots” on semiconductor devices.

“Shadow Moiré Using Non-Zero Talbot Distance,” was issued on June 12, 2007 to Professor Bongtae Han and colleague Dr. C.W. Han of the Reliability and Failure Analysis Center of the Korea Electronics Technology Institute. Their invention copes with the limitations of shadow moiré encountered in high precision in-situ warpage measurements. Using the non-zero order Talbot distances, the dynamic range of measurements is increased substantially and high measurement sensitivity becomes practical, which are critically required for the warpage measurements of high-end microelectronics devices.

“Fiber Tip Based Sensor System for Measurements of Pressure Gradient, Air Particle Velocity and Acoustic Intensity,” was issued on May 29, 2007 to Professor Balakumar Balachandran, Dr. Moustafa Al-Bassiyouni and Assistant Professor Miao Yu. Their invention helps realize a miniature fiber tip based sensor system for pressure measurements that can be used to detect acoustic and vibration fields over a broad frequency range.

“Electrohydrodynamically (EHD) Enhanced Heat Transfer System and Method with an Encapsulated Electrode,” by Professor Michael Ohadi and Research Associate Professor Serguei V. Dessiatoun was approved by the U.S. Patent and Trade Office in early 2007. Their invention helps increase the efficiency of waste heat utilization in low temperature heat recovery applications as well as in low temperature power and refrigeration cycles.

For more information on these inventions, including detailed links to invention information, visit:

www.enme.umd.edu/research/patents.html



Andy Eisold near the Sydney Opera House in Australia.

STUDY ABROAD IN ITALY, GERMANY, AUSTRALIA

Mechanical Engineering undergrads Alba Serrano and Andy Eisold participated in Maryland's Study Abroad Program this spring and summer, complementing their core coursework with experience and study overseas.

Alba Serrano, a senior mechanical engineering undergrad from Bethesda, Maryland, took engineering courses in advanced technical design and automobile engines at the University of Genova, Italy in early 2007.



Alba Serrano in Camogli, Italy.

"Both of the courses were taught entirely in Italian, which was very interesting at first seeing that I had only taken 2 semesters of Italian language prior to studying abroad. The entire grade for both of my engineering classes was based on an oral exam, where the professor could ask you anything covered during the semester and to elaborate upon it. It was strange to have

my entire grade be based on an oral, and not have to turn in any assignments or projects. Overall I really enjoyed studying engineering while in Italy, it gave me an outlook into how engineering is taught in Europe, and how that differs from our style of teaching. Taking these engineering classes in Italian also really helped me improve my Italian," says Serrano, who is also pursuing a minor in International Engineering. Serrano is complementing her automobile engines course with the ENME 489V - Vehicle Dynamics course taught by Dr. Greg Schultz.

Andy Eisold of Mt. Airy, Maryland, is also a mechanical engineering senior undergrad pursuing the same minor, who traveled to Wollongong, New South Wales Australia this summer. There he completed four classes which counted towards his degree and core requirements: Sustainable Transport Technologies; Engineering Materials, Business Innovation, Technology, and Policy; and HIST124: The Cold War and After.

Eisold has a personal interest in renewable energy, and particularly enjoyed his Sustainable Transport Technologies class. "We covered a lot of material including human powered vehicles, internal combustion engines, alternative fuels, Stirling engines, electric vehicles, fuel cells, and hybrid vehicles. I learned an incredible amount in the class concerning today's transportation and what is in store for tomorrow. In fact, I would like to see more renewable energy related courses offered through the A. James Clark School of Engineering," says Eisold. He adds, "The entire experience was amazing. There needs to be a stronger push for engineering students to go abroad."

Before traveling Down Under, Andy studied renewable energy in a three-week winter term in Kassel, Germany. There he enrolled in a renewable energy course and a supplementary German language course. The renewable energy class was unlike American courses as the lectures were delivered in different locations by different professionals in each field. As part of these course-related travels Andy was able to experience on-site tours of wind farms, photovoltaic plants, and biofuelled power plants.

UNDERGRADUATE PAPER EARNS HONORABLE MENTION AT ASME CONFERENCE IN COLORADO

Undergraduate research by Mechanical Engineering undergrad students **Alvin Yew**, **Dan Chinn**, and **Elvis Nditafon** received an honorable mention in the Student Paper B.S. level Competition at the 2007 ASME Bioengineering Conference held in Keystone, Colorado in June. Their paper titled "Thermal Therapy Protocols for Benign Prostatic Hyperplasia" won the mention in the "Solid Mechanics, Design, and Rehabilitation" category. Awards were based on averages of review scores obtained for paper and presentation. The research was directed by Dr. **Chandra Thamire** of Mechanical Engineering.

MARYLAND ROBOTICS TEAM COMPETES IN SAN DIEGO

The robotics@Maryland student team finished 10th out of 27 teams for their team's Autonomous Underwater Vehicle (AUV) debut in the 10th annual Association for Unmanned Vehicle Systems International competition, sponsored by the Office of Naval Research and co-hosted with the Association for Unmanned Vehicle Systems International, a trade group of manufacturers.

Their participation was noted in the July 15 edition of the Los Angeles Times in an article entitled: *It's the Super Bowl with a Science Bent: Students' creations are put to the test in an underwater robotics contest in San Diego.* The robotics@Maryland team is comprised of undergraduates, grad students, professors, and corporations in the College Park area, some of whom are mechanical engineering students.

SUMMER RACING TEAM RESULTS

Two entrants from Maryland participated in the 9th International Submarine Races held June 25-29 at the Naval Surface Warfare Center's Carderock Division David Taylor Model Basin in Bethesda, Maryland. The biennial engineering design competition hosted 22 experimental human-powered submarine teams with 26 subs from the U.S., Canada, Mexico and the United Kingdom. The event challenges the engineering creativity of college, high school and independent students, inventors and entrepreneurs.

Of the two entrants from the University of Maryland, RSR Fourier was the contender, placing 10th in the One Person Propeller category with a speed of 1.285 knots.

The Terps Racing baja vehicle team took on the Baja SAE course at the Rochester Institute of Technology on June 7-10, placing 15th overall. Of the 140 universities registered, 126 made it to the competition. In specific categories, Maryland placed 10th in the hill climb, 17th in the suspension and traction event,



19th in the acceleration event, 28th in design, 32nd in costing, and 44th in maneuverability.

The formula vehicle team competed in the Formula SAE® West races at the California Speedway in Fontana, CA on June 13-16. Maryland again placed 15th in this race out of 80 registered teams. By category, they placed 5th in the Acceleration competition and 1st in Fuel Economy.

Terps Racing offers Maryland undergraduate students the opportunity to design, build and race their own baja all-terrain and formula racing vehicles in various regional and national competitions.

Maryland's LEAFHouse Takes 1st in the Nation

The University of Maryland's entry into the 2007 Solar Decathlon took 1st place among national competitors, placing 2nd internationally behind the Technische Universität Darmstadt of Germany. UM won the BP Solar People's Choice Award.

The UM team won the subjective lighting, energy balance and communications contests during the competition and took second place in the architecture, lighting (overall) and market viability portions of the decathlon. There were also contests involving how the team's house supported appliances, produced hot water, powered a solar car and how comfortable the house was. The team placed 6th in the engineering portion of the competition and was one of seven teams to have a perfect score in the "energy balance" segment of the competition.

In other contests at the event, the UM team took first place in the National Association of Home Builders' Marketing Curb Appeal contest and also was recognized by the American Society of Heating, Refrigeration and Air-conditioning Engineers for "Integration for Renewables for Sustainable Living."

At a separate event, the Potomac Valley chapter of the American Institute of Architects gave the team its Advancement of the Art and Science of Architecture Award.

The following students from the Department of Mechanical Engineering contributed to the BP Solar People's Choice Award winner at the 2007 Solar Decathlon in Washington, D.C.:

- Matthew Caplins, Jacob Cigna, Tony Giampapa, Tyler Sines and Daniel Zimmerman helped design, build and host Maryland's LEAFHouse entry on the National Mall;
- Dan Feng (M.S., 2006) helped with fundraising, public relations, construction, and mentoring from her experience with the 2005 team;
- Development contributors - some of whom may have graduated - included Alexis Cox, Kyu S. Jang, Chang H. Lee, David Lemus, Rifat Jafreen (also a 2005 alumna), Jake Pomerantz, Ho Tsui, and Erik Vollmerhausen.

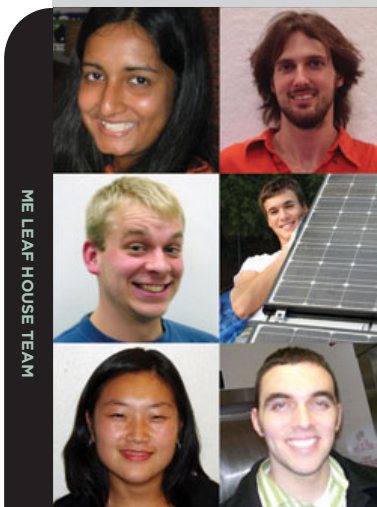
The team's entry, LEAFHouse, used the Chesapeake Bay watershed as the inspiration for a smart, adaptable, resource-efficient home powered by renewable energy. "LEAF" stands for "leading everyone to an abundant future."

"The name 'LEAFHouse' reflects our interest in the elegant marriage of biological knowledge and cutting-edge technology. The leaf in nature is a perfect machine for converting sunlight into energy." The UM team was made up of students from several schools on campus, including engineering and architecture.

This is the third time UM participated in the Solar Decathlon, organized by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy.

PHOTO: Clockwise from top left: Rifat Jafreen, Matthew Caplins, Jacob Cigna, Tony Giampapa, Dan Feng and Tyler Sines.

PHOTO: JEFF KUBINA



CALCE Ph.D. CANDIDATE AWARDED CHARLES HUTCHINS GRANT

Gayatri Cuddalorepatta, a Ph.D. candidate working with Professor Abijit Dasgupta,



CUDDALOREPATT

was recently awarded the 2007 Charles Hutchins Educational Grant from the Surface Mount Technology Association (SMTA) and Circuits Assembly magazine. Her research, “Cyclic Plasticity vs Cyclic Creep Fatigue of SnAgCu (SAC) Solder: A Micromechanics Approach,” won the

recognition in a competitive field of nine other candidates for the award.

Cuddalorepatta’s project includes experimental studies and fundamental mechanics-based modeling to quantify the behavior of various candidate materials for Pb-free solders.

The \$5000 grant is awarded annually to a graduate-level student pursuing a degree and working on thesis research in electronic assembly, electronics packaging, or a related field. Cuddalorepatta has been invited to the conference to attend the sessions and present her project. The award will be presented in SMTA Annual Meeting and International conference on October 10th in Orlando, Florida.

Cuddalorepatta was also the runner-up for the 2007 Dr. Mabel S. Spencer Award for Excellence in Graduate Achievement awarded by Maryland’s Graduate School. Her research seeks to facilitate the elimination of lead from electronics. The focus of her research is the in-depth understanding of micro- and nanoscale damage accumulation mechanisms in lead-free solders. Her research has received numerous honors including the Future Faculty Fellowship Award, the 2007-2008 Amelia Earhart International Award, and a best student presenter award at the spring 2007 CALCE technical review meetings in recognition of and support for her research.

CAN YOUR BUILDING PASS AN ‘ENERGY AUDIT’?

Mechanical engineering graduate students performed an ‘energy audit’ this fall for two buildings in Maryland as part of their Energy Efficiency and Conservation independent study. An energy audit is the first step to assess how much energy a building consumes and to evaluate what measures can be taken to make the building more energy efficient. The audit reveals problems that may, when corrected, save significant amounts of money over time. During the audit, energy systems engineers pinpoint where a building is losing energy. These audits also determine the efficiency of a building’s heating and cooling systems, and may also show ways to conserve hot water and electricity.

Cara Martin, Jon Schoenfeld, Magnus Eisele, Ethan Lust, and Billy Grayson conducted energy audits for the Woods Memorial Presbyterian Church in Severna Park, and for the Whole Foods Supermarket in Silver Spring this summer. During the Woods Church audit, Center for Environmental Energy Engineering (CEEE) faculty research assistant Jan Muehlbauer and undergraduate intern Matt Huffman also provided support. These audits were part of the independent study course ENME 808W: Energy Efficiency and Conservation, put together by CEEE Director Dr. Reinhard Radermacher, and Director of Mid-Atlantic CHP Application Center Dr. Joe Orlando, also of the CHP/IES System Integration Research Program Consortium. The course and requisite project studies help complete the graduate Energy Systems Engineering coursework.

“We looked for elements in the church and supermarket that were contributing to excessive energy costs and usage, examining the mechanical systems, building lighting, and any other features that could be improved to reduce energy consumption. A number of recommendations were made for both cases which included cost analyses and energy



A CEEE researcher performs an energy audit of a rooftop heating and cooling system.

savings,” says project leader Cara Martin.

The Director of the Woods Memorial Presbyterian Church, Thomas Lerario, has already implemented many of the short-term recommendations from the audit report, including the replacement of compact incandescent light bulbs with fluorescent ones, and a motion sensing on/off switch for utility rooms - changes which are expected to save \$15,000 in utility costs annually. Future energy-saving projects include isolating the climate-controlled area around the church’s organ pipes to a smaller volume, replacing old doors and windows, and installing solar parking lights in the parking lots.

KNOWLES RECOGNIZED AS 2007 OUTSTANDING TEACHING ASSISTANT BY PI TAU SIGMA

The student members of Pi Tau Sigma (PTS), the mechanical engineering honor society at the University of Maryland, selected Mr. **Philip Knowles** to receive the Best Teaching Assistant Award for Fall 2007. Philip is a teaching assistant for ENME 331, Fluid Mechanics. PTS members cited his willingness to help students and for giving clear explanations of the difficult subject matter. A certificate and a \$500 check will be presented to Mr. Knowles at the PTS induction ceremony, and his name will be added to a plaque outside of the Mechanical Engineering office. Mr. Knowles was also honored as a Distinguished Teaching Assistant by the UMD Graduate School and the Center for Teaching Excellence in 2004 and 2007.





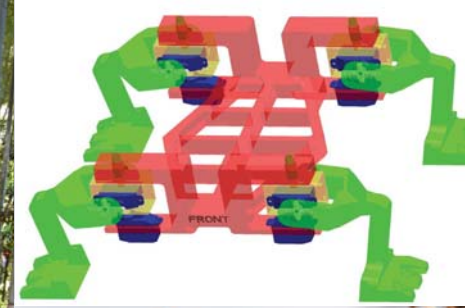
PH.D. STUDENT JIE GU EARNS IEEE RELIABILITY SCHOLARSHIP

Jie Gu has been selected for the 2007 IEEE Reliability Scholarship in recognition of his activity in the IEEE reliability society. Jie Gu is advised by Professor Michael Pecht of The Center for Advanced Life Cycle Engineering (CALCE). The focus of his research is prognostics and health management of electronics.

The competition for this scholarship was strong, and the fact to be chosen to receive a scholarship is a testimony to the outstanding scholastic achievements and demonstrated interest in IEEE and reliability-related professional activities.

KERMANI AWARDED HULKA ALTERNATIVE ENERGY FELLOWSHIP

Graduate student **Elnaz Kermani** was the recipient of the Barbara Hulka Fellowship this July in support of her research towards the “Cooling of Photovoltaic Arrays for High Efficiency Solar Energy Conversion Systems,” to establish a more economic and eco-friendly power generation base. The fellowship was established to support the research of a graduate student working on alternative energy generation or storage such as solar energy, wind, geothermal, tidal and hydroelectric. Kermani is advised by Professor Michael Ohadi.



BIO-INSPIRED DESIGN TAKES TIME-TESTED CONCEPTS FROM NATURE. BAMBOO (LEFT) INSPIRES FUNCTIONALLY GRADED MATERIALS. THE IDEA OF VELCRO WAS BORROWED FROM THE PLANT BURR (LOWER RIGHT). (TOP RIGHT) AN ENME 489L: BIO-INSPIRED ROBOT PROJECT CAD DESIGN BASED ON A CROCODILE’S METHOD OF LOCOMOTION.

designFEATURE

BIO-INSPIRED DESIGN

The bio-inspired curriculum on page 7 developed by Associate Professor **Hugh Bruck**, Associate Professor **Satyandra K. Gupta**, and Emeritus Professor **Edward Magrab** is explained in depth on the Biologically-Inspired Product Development website at www.bioinspired.umd.edu as follows:

Why should engineers look at nature’s designs when they have been developing and improving engineering methods for hundreds of years? The answer is that nature has been “engineering” its creations for millions of years. As a result, nature offers engineers a blueprint of its designs that after several “redesigns” have become:

Effective: nature has had millions of years to evolve and perfect its designs to solve specific problems and be best suited for a given environment. As a result, nature produces designs that deliver high performance and functionality. For example, biological materials, such as wood or antler bone, exhibit exceptional performance due to the detail of their design. Such effectiveness is also present in nature’s manufacturing processes, which are able to shape and assemble materials far better than our current capabilities. As a result, nature produces structures that have multi-material design, geometrically complex interfaces, continuous material grading, massively parallel assemblies, and achieve a high degree of articulation.

Efficient: nature’s designs are based upon the minimum use of energy. Many living things, including animals and plants, have evolved such that they expend the least amount of energy and resources that are needed to survive. Additionally, nature is able to produce very diverse products from only a few common components, whereas we use a great number of materials and components to achieve new designs. Therefore, adapting ideas from nature to engineering problems may result in more efficient and less costly solutions in terms of both design and manufacturing.

Adaptive: every part of nature is constantly changing, in the sense of both short-term adaptation and long-term evolution. Animals and plants are always responding to their environment and often adapt their shape or structure accordingly. This ability translates to designs that may be able to adapt their geometry or orientation to best suit the current conditions. Additionally, engineers may be able to create materials and structures that evolve over time, constantly modifying their design. Such an idea may even extend to creating materials and structures that are able to design themselves.

Brittany C. Blueitt, B.S. '06, has entered her first year at Harvard University Law School where she will study Intellectual Property Law. She was awarded a \$30,000 Intellectual Property scholarship for law school from the American Intellectual Property Association, as well as a \$3,000 civil rights scholarship from the Earl Warren Legal Training Program.

Robert Fishman, Ph.D. '80, mechanical engineering, became the chief executive officer of Ausra, Inc., a developer of utility-scale solar thermal power technology. Fishman previously was executive vice president of Calpine Corporation.

Jessica Galie, B.S. '04, has been awarded a full tuition scholarship to the Masters Degree program in the Department of Mechanical Engineering at MIT. For the past three years, Jessica has worked for GE Healthcare, first in Milwaukee as part of the Technical Leadership Program, and then in Boston with the Surgery division. She is currently on an educational leave of



GALIE

George Gellrich, B.S. '81, has become plant manager for Public Service Enterprise Group at their Salem, N.J. facility.

Giuseppe Iorio, B.S. '01, currently working in Carderock Division's Structures and Materials department, and has recently developed Safety Watch, a watch-like device that aids in personal safety. Iorio is currently enrolled in the Professional Master of Engineering (ENPM) graduate program.

Richard Jackson, B.S. '70, has been elected senior vice president at Bechtel Corporation.

Kiwesa King-Yara, M.S. '92, has won the 2007 Professional Women in Construction Special Recognition Award. King-Yara is president and founder of Suretech Engineering.

Mary Lacey, B.S. '78, the only woman in the University of Maryland's undergraduate class of 1978 who majored in mechanical engineering, is leading the transformation of pay rules and labor/management relations that affect the Defense Department's 740,000 civilian employees as Program Executive Officer (PEO). The implementation of the National Security Personnel System (NSPS) is arguably one of DOD's greatest internal challenges. Lacey is a member of the Senior Executive Service and three-decade DOD veteran.

John "Jack" Lesko, B.S. '87, has been named special assistant to the vice president for research at Virginia Tech. Lesko is also a professor in the Department of Engineering Science and Mechanics at Virginia Tech.

Craig McSavaney, M.S. '90, has been named chief operating officer of IP Commerce, Inc., a software company.

Steven Rosenstock, B.S. '85, is the Manager of Energy Solution at the Edison Electric Institute, working with member companies and government agencies on technical applications and studies of end-use equipment, such as distributed generation, building and appliance codes and standards, and Internet data centers.

Eric Schade, B.S. '92, was recently promoted to senior engineer by Constellation Energy, where he works for the Engineering Response Unit.

Vince Scheuerman, B.S. '99, released a rock music CD along with his band, Army of Me. The album 'Citizen' debuted under the Atlantic-Doghouse Records label. Scheuerman founded the band during his last year at the University of Maryland.



SCHEUERMAN

Laura Stubbs, Ph.D. '01, is a reservist who recently returned to active duty with the U.S. Navy.

Dirk D. Thomas, B.S. '82, has joined the Washington, D.C., office of Dewey Ballantine LLP and will co-chair the international law firm's intellectual property litigation group.

Derrick Treichler, B.S. '06, traveled to New Orleans in March of '06 and to Gulfport in January '07 on Hurricane Katrina relief trips organized by the school of engineering's chapter of Tau Beta Pi. He is currently pursuing a master's degree in mechanical engineering at the University of Maryland under the advisement of Dr. Ken Kiger.

Michael Weaker, B.S. '04, graduated from Maryland with undergraduate degrees in both mechanical engineering and fine art. This summer Weaker obtained an internship at GM's Design Center to create six new Chevrolet concept cars for the year 2012.

IN MEMORIAM:

Over the past months we learned of the passing of alumni **Mike Lyons** (B.S. '91), **Peter F. Vial** (B.S. '43), and **Ronald Keith Warner** (B.S. '47 and M.S. '49).

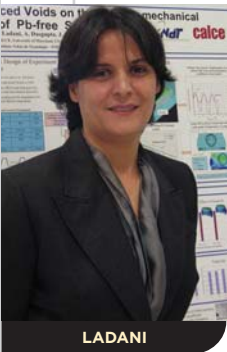
ME GRADS JOIN UNIVERSITY FACULTY ACROSS THE NATION

The following Mechanical Engineering alumni have recently joined the faculty of other academic institutions:



DICK

Andrew J. Dick, Ph.D. '07, joined the MEMS Department at Rice University as an Assistant Professor in the Fall of '07. His advisors at Maryland were Professors Bala Balachandran and University President Dr. C. D. Mote, Jr.



LADANI

Leila Ladani, M.S. '05 & Ph.D. '07, joined the Mechanical and Aerospace Engineering Department at Utah State University as an Assistant Professor in the Fall of '07. Her advisor at Maryland was Professor Abhijit Dasgupta.



SNIADECKI

Nathan Sniadecki, M.S./Ph.D. '03, joined the Mechanical Engineering department at the University of Washington in Seattle as an Assistant Professor in the Fall of '07. His advisor at Maryland was Associate Professor Don DeVoe.

Nathan Williams will join the Washington State University School of Architecture and Construction Management in Pullman as a tenure-track Assistant Professor in Spring '08. He successfully defended his Ph.D. dissertation in November under the advisement of Professor Shapour Azarm.

DIETERS ESTABLISH UNDERGRAD SCHOLARSHIP

With a gift of \$200,000 former Clark School dean George E. Dieter and his wife Nancy have established a merit-based scholarship for a mechanical engineering student involved in the Women in Engineering Program. The scholarship will be named in honor of their daughter, Barbara, who passed away from cancer before the age of 30.

“The Dieters’ generous gift will help the department recognize and reward the growing numbers of academically brilliant female undergraduate students in mechanical engineering,” said Avram Bar-Cohen, chair of the Department of Mechanical Engineering. “This is one of the most urgent needs facing the Department today.”

To learn more about the Great Expectations campaign and how you can make a difference in the Clark School’s progress, please contact Steve Beeland, Assistant Dean for External Relations, sbeeland@umd.edu, (301) 405-0317.



DIETER

GIFT SUPPLEMENTS RELIABILITY FELLOWSHIP

A bequest of \$250,000 by Willie Webb will augment the Miss Willie M. Webb Reliability Engineering Fellowship to assist and encourage graduate students, women and minorities in the area of reliability engineering.

“Willie Webb’s generous contribution will allow the Reliability Engineering Program to attract excellent students and offer the deserving ones fellowships,” said Prof. Mohammad Modarres, program director. “The gift will clearly enhance scholarship and student diversity in the Clark School for a very long time to come.” To honor her accomplishments and contributions to the field of reliability engineering, the reliability engineering program has named its library the Willie Webb Reliability Engineering Library.

Those wishing to make a gift toward the Miss Willie M. Webb Reliability Engineering Fellowship should contact Radka Nebesky at radka@umd.edu or by phone at (301) 405-8072.

The Department is also thankful to Leon D. Hoffman, Jr. and Virginia M. Hoffman, and to Aris and Marianne Mardrossian for their generous contributions to undergrad scholarships. Other named scholarship funds previously established include the Redfield W. Allen, Charles R. Dodson, C. R. Hayleck, Arsen Mardrossian, Mechanical Engineering Faculty Scholarship Fund, and the Charles A. and Elsie S. Shreeve Scholarship.



WEBB

greatEXPECTATIONS

Contribute to the department through the University of Maryland's Great Expectations campaign and support our mission to transform lives through exceptional educational and research opportunities. Your contributions can support mechanical engineering initiatives such as graduate fellowships, undergraduate scholarships, and named professorships. Please visit www.greatexpectations.umd.edu to learn more.

Gifts may be made by check to "University of Maryland College Park Foundation (UMCPF)." Please designate "The Department of Mechanical Engineering" in the memo line, and mail to:

Avram Bar-Cohen, Professor and Chair
Department of Mechanical Engineering
2181 Glenn L. Martin Hall
University of Maryland, College Park, MD 20742

You can help make a difference with a gift of any amount!

METRICS is published for alumni and friends of the Department of Mechanical Engineering at the A. James Clark School of Engineering.

Your alumni news and comments are welcome. Please send them to: Editor, Department of Mechanical Engineering, 2181 Glenn L. Martin Hall, College Park, MD, 20742. Visit our Web site at: www.enme.umd.edu

Department Chair: Dr. Avram Bar-Cohen
Chair's Assistant: Felicia Stephenson
Editor: Jim Barrett

MIAO YU RECEIVES AFOSR YIP AWARD

ASSISTANT PROFESSOR OF MECHANICAL ENGINEERING MIAO YU RECEIVED THE AIR FORCE OFFICE OF SCIENTIFIC RESEARCH (AFOSR) YOUNG INVESTIGATOR PROGRAM (YIP) AWARD FOR HER RESEARCH PROPOSAL TO STUDY THE DEVELOPMENT OF FLY EAR-INSPIRED SENSORS ON A MICRO-OPTO-ELECTRO-MECHANICAL SYSTEM (MOEMS) PLATFORM FOR USE IN MICRO-AIR-VEHICLES. AS A PART OF THIS RESEARCH, A NOVEL BIO-INSPIRED LOCALIZATION SCHEME WITH ADAPTIVE CAPABILITIES WILL BE STUDIED BY USING A SINGLE SENSOR WITH AUTONOMOUS POSITION CONTROL. EARLIER THIS YEAR, PROFESSOR YU WAS THE RECIPIENT OF THE NSF CAREER AWARD. IN 2006 SHE RECEIVED THE RALPH POWE JUNIOR FACULTY ENHANCEMENT AWARD FROM THE OAK RIDGE ASSOCIATED UNIVERSITIES (ORAU) CONSORTIUM.



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