



CONNECTIONS

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A. JAMES CLARK SCHOOL of ENGINEERING

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A NEWSLETTER FOR ALUMNI AND FRIENDS OF THE DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING AT THE A. JAMES CLARK SCHOOL OF ENGINEERING, UNIVERSITY OF MARYLAND, COLLEGE PARK.

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Celebrate our 100th Anniversary: ECE Centennial Weekend, Sept. 26-27

Department Will Mark Milestone with Luncheon, Forum Events, and Evening Gala Featuring Inventor Dean Kamen

The University of Maryland's Department of Electrical and Computer Engineering (ECE) will celebrate its 100th anniversary (1908-2008) with a special Centennial weekend of events on the College Park campus September 26-27, 2008.

The ECE Centennial Weekend will include an alumni reception on the evening of Friday, Sept. 26; a luncheon and pair of daytime forum events featuring experts from across the country speaking about "The Future of Information Systems and Communications" and "The Future of Energy" on Saturday, Sept. 27; and a dinner and gala event on Saturday evening that will include a talk by inventor **Dean Kamen**.

Dean Kamen is an inventor, entrepreneur, and a tireless advocate for science and technology. He is the founder of DEKA Research & Development Corporation, where he develops internally generated inventions and provides research and development for major corporate clients. He holds more than 440 U.S. and foreign patents for innovative devices that have expanded the frontiers of health care worldwide. Some of his notable inventions include the first wearable insulin pump for diabetics, the HomeChoice™ portable peritoneal dialysis machine, the INDEPENDENCE® IBOT® Mobility System,

and the Segway® Human Transporter. Among Mr. Kamen's proudest accomplishments is founding FIRST (For Inspiration and Recognition of Science and Technology), an organization dedicated to motivating the next generation to understand, use, and enjoy science and technology.



DEAN KAMEN

Mr. Kamen was awarded the National Medal of Technology in 2000, the Lemelson-MIT Prize in 2002, is a member of the National Academy of Engineers and was inducted into the National Inventors Hall of Fame in May 2005.

The ECE Centennial is sponsored by **Texas Instruments, Qualcomm & Booz Allen Hamilton**.

Alumni and friends can **register online** for Centennial events at www.ece.umd.edu. The reception on the evening of Friday, Sept. 26 is free. Tickets for the daytime luncheon and forum events on Saturday, Sept. 27 are \$20/each, and tickets to the gala on Saturday evening are \$50/each. For more information, please contact Director of Public Relations **Ted Knight** at teknight@umd.edu or by phone at 301-405-3596. 

ECE100
1908-2008



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Celebrating 100 years of Electrical Engineering at the University of Maryland.
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message from the chair



PATRICK O'SHEA

CELEBRATING OUR CENTENNIAL ANNIVERSARY: 1908-2008

'When the expectations of wireless experts are realized everyone will have his own pocket telephone and may be called wherever he happens to be.'
- Hampton's Magazine, 1908

One hundred years ago this fall, a new curriculum was established in electrical engineering at the University of Maryland. In 1908, electrical engineering represented an emerging new field at the university, whose science curriculum focused primarily on agricultural education to train the state's farmers, and an engineering program that initially revolved around mechanical engineering.

In his book *America 1908*, author Jim Rasenberger, describes that year of astonishing innovation, and quotes the New York World asking: "What will the year 2008 bring us? What marvels of development await the youth of tomorrow?" At the time, few could have predicted how profoundly different the world would be in 100 years. Most of the innovations of the 20th and early 21st centuries that have both improved our quality of life and extended our life expectancy evolved from electrical engineering, and would not have been possible without it. It is hard to imagine that in 1908 the life expectancy of Marylanders was about 50 years. Electrical engineers have changed our lives completely, through innovations in, for example, healthcare, transportation, entertainment, and communications. Few of us stop to consider this because we take so many of our ubiquitous daily luxuries for granted. But the fact remains that without electrical engineering, life would be, in the words of Thomas Hobbs, "poor, nasty, brutish, and short."

To put it simply, electrical engineers bring us modern life.

On September 26-27, 2008, this is the general theme we will celebrate in College Park. From our inception in 1908, to the addition of the computer engineering major in 1997, and on to our 100th anniversary year in 2008, ECE at Maryland remains committed to improving life for humankind. We invite you to join us for our Centennial Celebrations, where leaders in engineering, science, and technology will discuss some of the most important global problems and challenges that electrical—and computer—engineers must help solve in the next 100 years: creating technology for sustainable living; improving alternative energy technology; responding to climate change; maintaining the efficiency of vast communication networks; managing ever-growing, complex information systems; developing innovative new treatments for the deadliest human diseases; and making clean water accessible to the world's growing population. What will the year 2108 bring us?

I hope you will return to the College Park campus to hear Dean Kamen and our distinguished forum guests offer ideas on how electrical and computer engineers can address these critically important global issues.

Details on ECE Centennial Weekend can be found on the cover and back page of this newsletter. You can register online for our Centennial Celebrations at www.ece.umd.edu. See you in September.

Patrick O'Shea
Professor and Chair

ECE MOVES UP, MAINTAINS HIGH U.S. NEWS RANKINGS

Elec. Eng. ranked #14, Comp. Eng. #17

The latest *U.S. News and World Report's* Best Graduate Schools issue again ranked both the Electrical and Computer Engineering programs highly in the 2009 edition of the rankings.

The University of Maryland's Electrical Engineering program was ranked 14th overall this year (up from 16th last year) out of 170 programs, and 7th among public universities.

The University of Maryland's Computer Engineering program was ranked 17th overall this year (up from 18th last year) out of 140 programs, and 10th among public universities.

The University of Maryland was also ranked 2nd in Plasma Physics, and 5th in Atomic/Molecular/Optical Physics — two key areas in which many ECE faculty and students are engaged.

The Clark School of Engineering continues to rank highly in various surveys. The school maintained its place as 13th among engineering schools worldwide according to the Institute of Higher Education at Shanghai Jiao Tong University in China.

U.S. News and World Report ranked the Clark School 17th in the nation and 11th among public universities in its listing of top graduate engineering schools in the U.S. for 2009. ☐

ECE GRADUATES RECORD NUMBER OF PH.D. STUDENTS

The Department of Electrical and Computer Engineering (ECE) graduated 64 Ph.D. students in the year between July 2006 and June 2007, a record figure for the department. The number was well in excess of the average of the previous five years.

"We are on track to continue exceeding the long-term average this year, as we graduated 55 students between July 2007 and May 2008," said ECE Chair Patrick O'Shea.

The quantity of Ph.D. graduates is a criterion for *U.S. News and World's* Best Graduate Schools ranking formula. ☐

ECE Faculty Contribute Major Gifts to Department

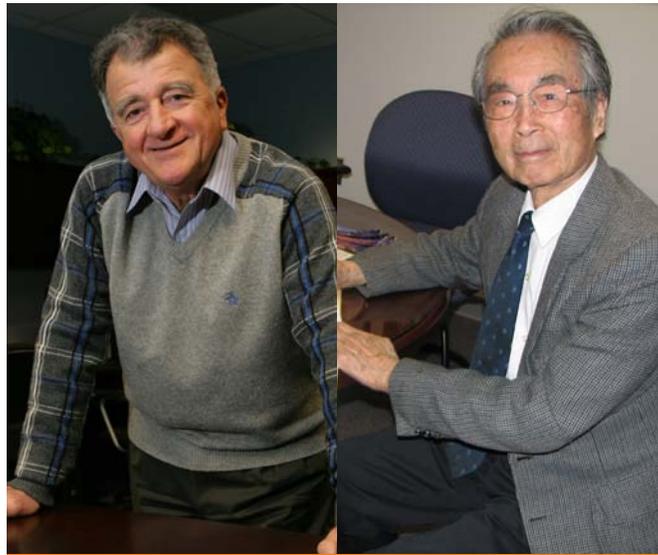
Prof. Anthony Ephremides Establishes Chair Professorship while Prof. Hung C. "Jimmy" Lin Encourages Innovation with Gift

Two Electrical and Computer Engineering (ECE) faculty members recently made significant gifts to the Department, contributing to the University's ongoing Great Expectations campaign, which has passed the halfway mark in its quest to raise \$1 billion.

Dr. **Anthony Ephremides**, Cynthia Kim Professor in Information Technology, and his wife, Jane, pledged \$1.5 million to the Clark School for the creation of the Anthony Ephremides Chair in Information Sciences and Systems. The chair professorship will provide annual support for a faculty member in the field of information sciences and systems in the ECE Department.

ECE Chair **Patrick O'Shea** said the gift raises the prestige of the department and will help with faculty recruiting.

"We are delighted and honored that Prof. Ephremides has chosen to bestow such a generous gift on the Department of Electrical and Computer Engineering,"



PROF. ANTHONY EPHREMIDES (LEFT) & PROF. HUNG C. "JIMMY" LIN

O'Shea said. "He is an outstanding educator, scholar, researcher, and colleague."

Ephremides has been with the University of Maryland since 1971. He said that the chair professorship is his way of giving back to the university where he has spent his academic career.

Professor Emeritus **Hung C. "Jimmy" Lin** donated \$100,000 to the ECE Department for the creation of the Jimmy

Lin Fund for Innovation and Invention. The goal of the gift is to promote innovation among ECE students, staff and faculty by stimulating, encouraging and rewarding the invention and patenting process.

The fund, to be administered by the department, will help innovative students, staff and faculty to move their ideas through the complicated and often pricey patenting process.

"As engineers it is our duty to make sure that our innovations result in better lives for people," said O'Shea. "Prof. Lin's gift will enable us to stimulate and reward the process of launching our inventions

beyond the walls of the University, so that they can do good things for society."

Lin is a past inductee of the Clark School's Innovation Hall of Fame.

To learn more about the Great Expectations campaign and how you can make a difference in the Clark School's progress, please contact **Ted Knight** at teknight@umd.edu or 301-405-3596. 

Booz Allen Hamilton Sponsors ECE Colloquium Series

Booz Allen Hamilton has made a gift to the University of Maryland's A. James Clark School of Engineering to sponsor the Distinguished Colloquium Series in Electrical and Computer Engineering (ECE).

The ECE Department's Distinguished Colloquium Series has been held weekly on Friday afternoons since it was inaugurated in Spring 1997. The purpose of the series is to provide a forum for talks on innovative research and technology by external lecturers from academia, industry, and government, as well as by ECE faculty researchers, who share their research and scholarly studies with their peers.

"This important gift will allow us to bring more distinguished speakers from across the globe to speak here on the College Park campus," said Prof. **Patrick O'Shea**, Chair of the ECE Department. "We are very grateful to Booz Allen Hamilton for supporting our Colloquium series."

Starting this fall, the series will be renamed the Booz Allen Hamilton Distinguished Colloquium Series in Electrical and Computer Engineering.

Booz Allen's gift included a sponsorship of the ECE Department's Centennial Celebration, as well as support for a Capstone Design

Project. With the gift, Booz Allen Hamilton became a member of the ECE Corporate Affiliates program as well as the Clark School's Corporate Partners program.

For more information about the Colloquium series, including a schedule of speakers, please visit the Booz Allen Hamilton Colloquium website, which can be found at www.ece.umd.edu/colloquium.

To learn more about ECE Centennial sponsorship opportunities, the ECE Corporate Affiliates program, and how your gift can make an impact on the Great Expectations campaign, please contact **Ted Knight** at teknight@umd.edu. 

ECE Researchers Develop World's First True Invisibility Cloak Technology at the Nanoscale

Harry Potter may not have talked much about plasmonics in J. K. Rowling's fantasy series, but University of Maryland researchers are using this emerging technology to develop an invisibility cloak that exists beyond the world of bespectacled teenage wizards.

An ECE research team in the A. James Clark School of Engineering comprised of Professor **Christopher Davis**, Research Scientist **Igor Smolyaninov**, and graduate student **Yu-Ju Hung**, has used plasmon technology to create the world's first invisibility cloak for visible light.

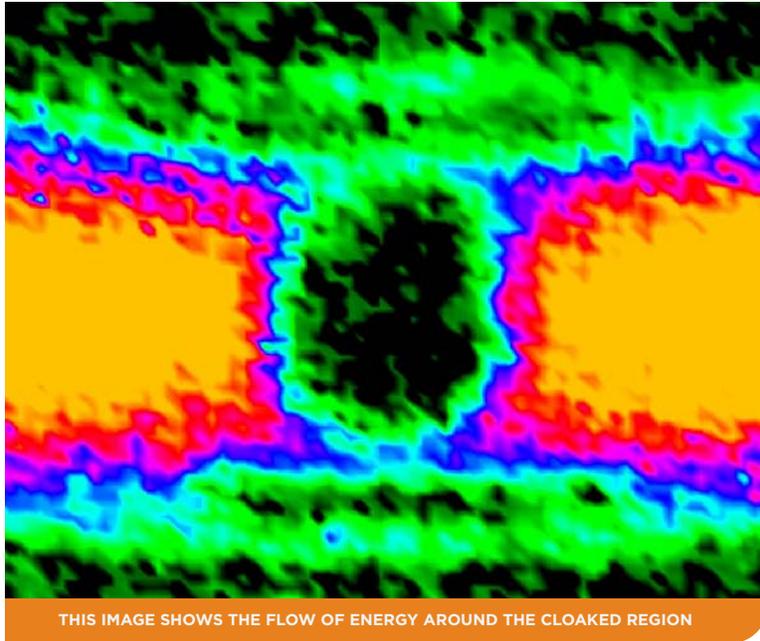
Generally speaking, when we see an object, we see the visible light that strikes the object and is reflected. The Clark School team's invisibility cloak refracts (or bends) the light that strikes it, so that the light moves around and past the cloak, reflecting nothing, leaving the cloak and its contents "invisible."

The invisibility cloak device is a two-dimensional pattern of concentric rings created in a thin, transparent acrylic plastic layer on a gold film. The plastic and gold each have different refractive properties. The structured plastic on gold in different areas of the cloak creates "negative refraction" effects, which bend plasmons—electron waves generated when light strikes a metallic surface under precise circumstances—around the cloaked region.

This manipulation causes the plasmon waves to appear to have moved in a straight line. In reality they have been guided around the cloak much as water in a stream flows around a rock, and released on the other

side, concealing the cloak and the object inside from visible light. The invisibility that this phenomenon creates is not absolutely perfect because of energy loss in the gold film.

The team achieved this invisibility



THIS IMAGE SHOWS THE FLOW OF ENERGY AROUND THE CLOAKED REGION

under very specialized conditions. The researchers' cloak is just 10 micrometers in diameter; by comparison, a human hair is between 50 to 100 micrometers wide. Also, the cloak uses a limited range of the visible spectrum, in two dimensions. It would be a significant challenge to extend the cloak to three dimensions because researchers would need to control light waves both magnetically and electronically to steer them around the hidden object. The technology initially may work only for small objects of specific controlled shape.

The team also has used plasmonics to develop superlens microscopy technology, which can be integrated into a conventional optical microscope to view nanoscale details of objects that were previously undetectable.

The superlens microscope could one

day image living cells, viruses, proteins, DNA molecules, and other samples, operating much like a point-and-shoot camera, revolutionizing the capability to view nanoscale objects at crucial stages of their development. The team believes

they can improve the resolution of their microscope images down to about 10 nanometers—one ten thousandth of the width of a human hair.

A large reason for the success of the group's innovations in both invisibility and microscopy is that surface plasmons have very short wave lengths, and can therefore move data around using much smaller-scale guiding structures than in existing devices. These small, rapid waves are generated at optical frequencies, and can transport large amounts of data. The group also has made use of the unique properties of

metamaterials, artificially structured composites that help control electromagnetic waves in unusual ways using plasmonic phenomena.

Related plasmonics research offers applications for military and computer chip technologies, which could benefit from the higher frequencies and rapid data transfer rates that plasmons offer.

The team's research has been funded by the National Science Foundation and ECE Corporate Affiliate BAE Systems.

Smolyaninov and Davis published an article about their invisibility cloak research in the June 2008 *Optics Letters* titled "Two-dimensional metamaterial structure exhibiting reduced visibility at 500 nm," and an article about their superlens microscope technology in the journal *Science*, titled "Magnifying Superlens in the Visible Frequency Range." 

New Cell-Based Sensors Sniff Out Danger

New Cell-Based Sensors on a Chip Use Olfactory, Biological Cells to Detect Dangerous Substances, Pathogens, and Impurities

Researchers in the University of Maryland's A. James Clark School of Engineering are collaborating across engineering disciplines to create new "cell-based sensors-on-a-chip" technology. **Pamela Abshire**, electrical and computer engineering (ECE) and Institute for Systems Research (ISR); **Benjamin Shapiro**, aerospace engineering and ISR; and **Elisabeth Smela**, mechanical engineering and ECE; are working on new sensors that take advantage of the sensory capabilities of biological cells.

These tiny sensors, only a few millimeters in size, could speed up and improve the detection of everything from explosive materials to biological pathogens to spoiled food or impure water.

Today's biochemical detectors are slow and produce an unacceptable number of false readings.

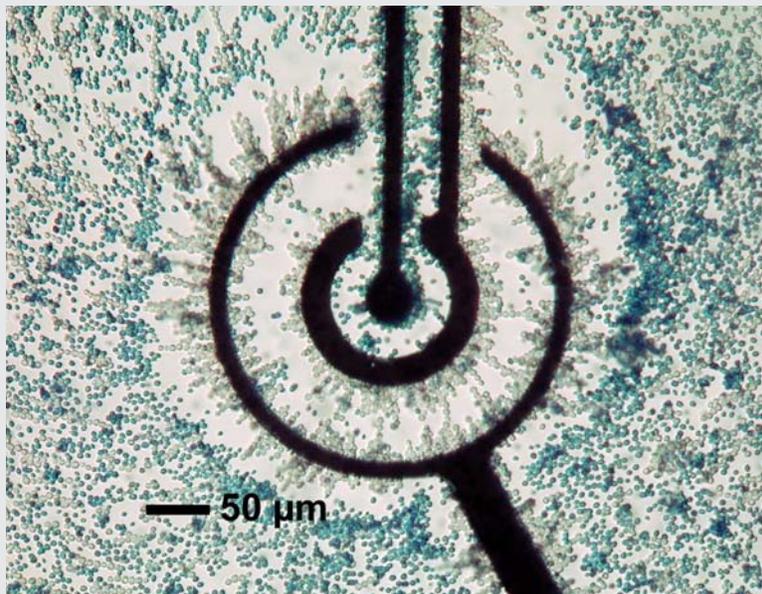
They are easily fooled because they often cannot distinguish subtle differences between deadly pathogens and harmless substances, and cannot fully monitor or interpret the different ways these substances interact with biological systems. To solve this problem, the Clark School researchers are learning how to incorporate real cells into tiny micro-systems to detect chemical and biological pathogens.

Different cells can be grown on these microchips, depending on the task at hand. Like a bloodhound hot on the trail of a scent, a chip containing a collection of olfactory cells plus sensing circuits that can interpret their behavior could detect the presence of explosives.

The researchers plan to use other

specialized cells much like a canary in a coal mine. The cells would show stress or die when exposed to certain pathogens, and the sensing circuits monitoring them would trigger a warning—more quickly and accurately than in present systems.

The researchers are tackling the many challenges that must be met for such chips to become a reality. Abshire, for example, is building circuits that can interact with the cells and transmit alerts about their condition.



YEAST CELLS PATTERNED BY MEANS OF ALTERNATING ELECTRIC FIELDS

Shapiro and Smela are working on microfluidics technology to get the cells where they need to be on the chip, and to keep them alive and healthy once they're in position. Smela is also developing packages that incorporate the kind of wet, life-sustaining environments the biological components need, while keeping the sensitive electronic parts of the sensor dry.

Current research funding for the cell-based sensor technology comes from the National Science Foundation, the Department of Homeland Security and the Defense Intelligence Agency. Potential

applications for their use extend well beyond national security, however.

For example, cell-based sensors could detect the presence of harmful bacteria in ground beef or spinach, or detect the local origin of specialty foods like cheeses or wines. In the pharmaceutical industry they could identify the most promising medicines in advance of animal and human trials, increasing cost-effectiveness and speed in developing new drugs. And they could speed up research in basic science. Imagine tiny biology labs, each one on a chip, in an array of thousands of chips that could fit in the palm of your hand.

Such arrays could advance biologists' fundamental understanding about the sense of smell or help doctors better see how the immune system works. They could be placed on fish as they swim in the ocean to monitor water quality, or set on a skyscraper's roof to evaluate air pollution.

"We bring the capability to monitor many different cells

in parallel on these chips," explains Abshire. "You could say we're applying Moore's Law of exponentially increasing computer processing capability to cell biology."

The research won the University of Maryland's 2004 Invention of the Year Award in the physical science category. A patent application is on file with the U.S. Patent and Trademark Office.

The research has also attracted significant media attention from a variety of news sources, including *New Scientist*, *Popular Mechanics*, Department of Homeland Security's First Responder News, and many others. 



Researchers Win Grants for Innovative Cancer Treatment

Two ECE-related groups recently received large grants for cancer research.

The University of Maryland's biosensors research group, led by Profs. **Mel Gomez**, principal investigator, and **Neil Goldsman** in ECE, and Prof. **Michael Fuhrer** of the Department of Physics, obtained a one-year contract for cancer research worth \$400K with a total three-year award potential of \$1.2 million from the National Cancer Institute–SAIC, part of the National Institutes of Health (NIH). The goal of the research is to develop and optimize

methods for screening large numbers of genes without having to perform the labor-intensive step of labeling the target with reporter molecules and other enzymatic reactions. The group will develop arrays of carbon nanotube transistors to detect the hybridization of nucleic acid molecules for cancer research. The project will be performed in close cooperation with Dr. **Javed Khan**, M.D., a principal investigator at the Pediatric Oncology Branch of the National Cancer Institute and a leading authority on childhood cancer.

Professor **K. J. Ray Liu** is part of a research group that received a \$1.8 million grant from NIH for an innovative technique to treat cancerous tumors in the lungs and upper abdominal region. The group consists of Dr. Liu; Principal Investigator **Warren D'Souza** of the Oregon Health & Science University; and Professor **Tom McAvo**y of the Clark School's Chemical and Biomolecular Engineering Department. The researchers are developing a novel tumor motion compensation system using a treatment couch that will ensure accurate delivery of radiation treatment. 

Faculty Receive Funding from MURI, NIH, NSF for Research

RESEARCHERS WIN NSF GRANT FOR BIOFUNCTIONALIZED DEVICES

Prof. **Reza Ghodssi**, Maryland Nano Center Director and Professor **Gary Rubloff**, and Prof. **William Bentley**, principal investigator and chair of the Fischell Department of Bioengineering, are part of a new, four-year grant worth \$1.9 million from the National Science Foundation (NSF) Emerging Frontiers in Research and Innovation–Cellular and Biomolecular Engineering (EFRI-CBE). EFRI is NSF's newest and most competitive grant; only 12 were awarded in this cycle. The research proposal, titled "Biofunctionalized Devices—On Chip Signaling and 'Rewiring' Bacterial Cell-Cell Communication," seeks to demonstrate signal translation by employing device-based electrical signals to guide the assembly of biosynthetic pathways, cell-based sensors, and cell-based actuators within a microelectromechanical system (MEMS). The researchers also plan to use on-board electrical, magnetic, mechanical, and optical systems to feedback and guide the cell-based

system towards user-specified outcomes. The investigative team also includes **Gregory Payne**, director of the Center for Biosystems Research at the University of Maryland Biotechnology Institute.

MURI AWARDS FOR MULTI-SCALE NETWORKS, MARITIME BIOMETRICS

A research team led by Prof. **Rama Chellappa** won a 2008 Multidisciplinary University Research Initiative (MURI) award for their proposal to develop face, gait, long-distance speech and other motion-based human recognition algorithms tailored to the maritime domain. The grant is for \$1.5 million per year for three years with the potential for two additional option years at 1.5 million per year.

A research team that includes Prof. **John Baras** and Prof. **Anthony Ephremides** has won a 2008 MURI award for their proposal, titled "MAASCOM: Modeling, Analysis, and Algorithms for Stochastic Control of Multi-Scale Networks." This MURI project will be coordinated by Baras and Ephremides from

University of Maryland with partnering teams at Ohio State University, led by Dr. **Ness Shroff**; MIT, led by ECE alumnus Dr. **Eytan Modiano** (Ph.D., '92); University of Illinois; and Purdue University. The \$6 million dollar grant will fund the research project for three years with the potential for two additional years; over \$1 million of the award will go to the University of Maryland. The group's research deals with multiple time scales, traffic characteristics, and control of communication networks.

SIMON RECEIVES NIH GRANT FOR AUDITORY CORTEX RESEARCH

Prof. **Jonathan Z. Simon** was awarded a grant from the National Institutes of Health (NIH) for his research, titled "The Neural Basis of Perceptually-Relevant Auditory Modulations in Humans." The five-year grant is worth approximately \$1.2 million. The goal of Simon's research program is to understand how acoustic modulations, the building blocks of speech and other natural sounds are encoded in the auditory cortex of the brain. 



Significant Honors and Awards for ECE Faculty

CHELLAPPA RECEIVES CLARK SCHOOL FACULTY RESEARCH AWARD, IEEE COMPUTER SOCIETY AWARD

Prof. **Rama Chellappa** was awarded the A. James Clark School of Engineering Outstanding Faculty Research Award at a faculty and staff reception on October 11, 2007. The award was given to Dr. Chellappa in recognition of his innovative research in pattern recognition and signal processing, which has included advances in human gait and face recognition and the development of intelligent surveillance applications.

Chellappa received a 2008 Technical Achievement Award from the Institute of Electrical and Electronics Engineers (IEEE) Computer Society. He was recognized for “fundamental and pioneering contributions to face and human motion modeling and recognition from still images and video sequences.” Dr. Chellappa is the only person to have received this recognition from both the IEEE Computer Society and the IEEE Signal Processing Society (SPS), which presented him with a Meritorious Service Award in 2007. Chellappa was also recently selected as an IEEE SPS 2008 Distinguished Lecturer.

BARBE WINS OLYMPUS LIFETIME OF EDUCATIONAL INNOVATION AWARD

Prof. **David Barbe**, executive director of the Maryland Technology Enterprise Institute (MTECH), won the Olympus Lifetime of Educational Innovation Award. The award recognizes faculty members who have demonstrated a sustained contribution throughout their careers to stimulating and inspiring innovative thinking in students in their own universities and throughout academia. He was also featured in a recent article in the *Maryland Gazette* that described him as a “transformational leader.” The article cited his role in developing entrepreneurial programs at the University of Maryland,

including the Hinman CEO Program, the Technology Startup Boot Camp, and the \$50K Business Plan Competition.

GHODSSI NAMED HERBERT RABIN DISTINGUISHED PROFESSOR

Dr. **Reza Ghodssi** was appointed Herbert Rabin Distinguished Professor in the A. James Clark School of Engineering at the University of Maryland. The four-year appointment, effective July 1, 2008, recognizes his sustained and influential scientific and scholarly work. The professorship will provide discretionary funds to further support Dr. Ghodssi’s research and educational programs.



REZA GHODSSI

VISHKIN RECEIVES INNOVATOR OF THE YEAR AWARD FOR “DESKTOP SUPERCOMPUTING” TECHNOLOGY

Prof. **Uzi Vishkin** was honored by the *Maryland Daily Record* with an Innovator of the Year Award at a reception in Baltimore on October 10 for his recent advances in parallel computing technology. Capable of computing speeds 100 times faster than current desktops, Vishkin’s new technology is based on parallel processing on a single chip, allowing multiple processors to work together and make programming practical and simple for software developers. Vishkin’s supercomputer prototype could help launch a new era of desktop supercomputers.

MURPHY RECEIVES KENT TEACHING AWARD FOR JUNIOR FACULTY

Prof. **Thomas E. Murphy** was presented with the Clark School’s E. Robert Kent Outstanding Teaching Award for Junior Faculty at the

December Commencement ceremony. He was honored for his passion for education, versatility as an instructor and the supportive environment he creates in the classroom.

ABSHIRE, MURPHY, SIMON EARN PROMOTION, TENURE

University of Maryland President **C.D. Mote** has approved the promotion of Assistant Professors **Pamela Abshire**, **Thomas Murphy** and **Jonathan Simon** to the rank of Associate Professor with tenure.

SRIVASTAVA WINS CORCORAN AWARD

Asst. Prof. **Ankur Srivastava** received the ECE Department’s George Corcoran Memorial Award for Faculty, presented annually to a young faculty member who has shown exemplary contributions to teaching and educational leadership.

BHATTACHARYYA PAPER EARNS AWARD AT IEEE WORKSHOP

Prof. **Shuvra Bhattacharyya** was the co-author of a paper that received the Best Student Paper Award at the 2007 IEEE Workshop on Signal Processing Systems. The paper was titled “Low-overhead run-time scheduling for fine-grained acceleration of signal processing systems.” The student who co-authored the paper was **Jani Boutellier** of Oulu University, Finland, who visited Prof. Bhattacharyya’s research group in 2007 to work on research related to the paper.

WAKS RECEIVES ARO YOUNG INVESTIGATOR AWARD

Asst. Prof. **Edo Waks** received an Army Research Office (ARO) Young Investigator Award, a grant worth \$50k per year for three years. Waks’ research focus is on the application of photonic crystals to quantum information processing, as well as the use of photonic crystals for practical tools in optical telecommunication and sensing. 

Fellow Appointments, Editorships, and Invited Talks

O'SHEA ELECTED FELLOW OF AAAS, CO-AUTHORS *PHYSICS TODAY* FEATURE

ECE Department Chair **Patrick O'Shea** was elected Fellow of the American Association for the Advancement of Science (AAAS). The AAAS, the world's largest general scientific society, is an international non-profit organization dedicated to advancing science and serving society around the world. O'Shea is also a fellow of the American Physical Society (APS) and the Institute for Electrical and Electronic Engineers (IEEE).

An article co-authored by Dr. O'Shea was a feature in the February 2008 issue of *Physics Today*, a publication of the American Institute of Physics. The feature, titled "Electron sources for accelerators," was co-written by **Carlos Hernandez-Garcia** and **Marcy Stutzman**, both staff scientists at the Thomas Jefferson National Accelerator Facility in Newport News, Va. The article discusses technological challenges related to the generation of electron beams that are required for free-electron lasers and particle-physics accelerators.

DAGENAIS NAMED OSA FELLOW

Prof. **Mario Dagenais** was recently named a Fellow of the Optical Society of America (OSA). Dagenais was recognized for pioneering contributions in quantum optics and nonlinear optics of gases and semiconductor devices, and for the development and integration of active semiconductor devices.

BARG, FU ELECTED IEEE FELLOWS

Prof. **Alexander Barg** and ECE affiliate Prof. **Michael Fu** were elected as Fellows of the Institute of Electrical and Electronics Engineers (IEEE), the world's leading professional association for the advancement of technology. Dr. Barg was recognized for

his contributions to coding theory, while Dr. Fu was recognized for his contributions to stochastic gradient estimation and simulation optimization.

MARTINS JOINS EDITORIAL BOARD OF *SYSTEMS & CONTROL LETTERS*

Assistant Professor **Nuno Martins** was invited to join the Editorial Board of *Systems & Control Letters*, one of the leading journals in the field of systems and control.

BHATTACHARYYA ELECTED CHAIR OF IEEE SIGNAL PROCESSING COMMITTEE

Prof. **Shuvra Bhattacharyya** was elected the new chair of the IEEE Signal Processing Society technical committee on Design and Implementation of Signal Processing Systems (DISPS). The purpose of the committee is to promote and support activities of the Signal Processing Society in the areas of design, development and implementation of signal processing systems.

YEUNG SELECTED FOR EDITORIAL BOARD FOR ACM JOURNAL

Prof. **Donald Yeung** has been appointed associate editor of the Association for Computing Machinery (ACM) *Transactions on Architecture and Code Optimization* (TACO). The ACM TACO is a journal focusing on hardware, software, and system research spanning the fields of computer architecture and code optimization.

GHODSSI NAMED ASSOCIATE EDITOR OF JOURNAL OF BIOMEDICAL MICRODEVICES

Associate Professor **Reza Ghodssi** was named an associate editor for the *Journal of Biomedical Microdevices*, effective May 1, 2008. *Biomedical Microdevices* is the first journal to focus on biomedical applications of micro- and nanotechnology.

P. S. KRISHNAPRASAD GIVES BODE LECTURE AT IEEE CONFERENCE

Prof. **P. S. Krishnaprasad** gave the Bode Lecture at the 46th IEEE Conference on Decision and Control in New Orleans on



P.S. KRISHNAPRASAD

Dec. 14, 2007. The lecture is part of the honor Krishnaprasad received for winning the 2007 IEEE Control Systems Society Hendrik W. Bode Prize. The prize was developed by the IEEE Control

Systems Society to recognize distinguished contributions to control systems science or engineering. Krishnaprasad spoke on "Pursuit and Cohesion: in Nature and by Design," discussing the geometric patterns in certain pursuit and prey capture phenomena in nature, and suggesting sensorimotor feedback laws that explain such patterns.

CHELLAPPA GIVES PLENARY TALK ON PATTERN RECOGNITION, SERIES OF DISTINGUISHED LECTURES

Prof. **Rama Chellappa** spoke at the 14th International Conference on Image Analysis and Processing (ICIAP 2007) in Modena, Italy. His talk focused on the unique challenges of pattern recognition in video, and the applications in homeland security, healthcare, and anomaly detection. Dr. Chellappa gave an invited talk at the University of Nebraska-Lincoln on Feb. 28, 2008 titled "Looking for Patterns in Video." Dr. Chellappa also spoke at University of Texas, Austin on February 7 on the subject of "Recent Advances in Face Recognition." Finally, he spoke at the IEEE Sponsored Workshop on Motion, in Colorado on Jan. 8 on "Statistical and Structural Inference Methodologies for Pattern Recognition in Videos."

EPHREMIDES DELIVERS SERIES OF DISTINGUISHED LECTURES

Prof. **Anthony Ephremides** gave a series of distinguished lectures. He was invited to speak at Texas A&M University on April 10, 2008. His lecture was titled “Cooperative Methods at the Network Level for Wireless Ad Hoc Networks.”

He also gave an invited distinguished lecture at the University of Minnesota for the Digital Technology Center Innovators Lecture Series on Feb. 29. He spoke on the subject of “Network Coding: A New Paradigm for Networking.”

Dr. Ephremides was invited to speak on March 21 at the T. J. Watson IBM Research Center in Hawthorne, NY. His talk was titled: “New and Exciting ideas in Wireless Networking - The Longer View.”

He was invited to give two talks at Colorado State University on Jan. 28-29, titled “Network Coding: A New Paradigm for Networking?” and “Cooperative Techniques at the Network Level.”

Ephremides, a distinguished lecturer of the IEEE Communication Society, gave three international lectures on “Cross-Layer Design in Wireless Networks” in December, 2007. He traveled to IEEE chapters in Kolkatta, India, Kuala Lumpur, Malaysia, and Jakarta, Indonesia.

Ephremides was also the keynote speaker at a special IEEE International Information Theory Workshop in Porto, Portugal on May 5. The subject of his talk was “Beyond Shannon?” The workshop commemorated the 60th anniversary of the landmark paper by Claude Shannon that founded the field of information theory.

BARAS GIVES PLENARY ADDRESSES

Prof. **John S. Baras** gave a plenary address at the International Federation of Automatic Control (IFAC) Conference on Control Applications in Marine Systems (CAMS), held September 19-21, 2007 in Bol, Croatia. Baras’s talk was titled “Collaborative Control of Underwater Vehicles Under Severely

Limited Communications.” Baras also delivered a plenary address at the European Control Conference (ECC’07), which was held at the Kos International Convention Center on the island of Kos, Greece. The title of Dr. Baras’ plenary lecture was “Security and Trust for Wireless Autonomic Networks: System and Control Methods.” He gave another plenary lecture on Security and Trust for Wireless Autonomic Networks at the Med-Hoc-Net 2007 Conference in Corfu, Greece.

MAYERGOYZ DELIVERS PLENARY LECTURE AT ISEM SYMPOSIUM

Prof. **Isaak Mayergoyz** was a plenary speaker at the 13th International Symposium on Applied Electromagnetics and Mechanics (ISEM), held at the Kellogg Conference Center in East Lansing, Michigan, Sept. 9-12, 2007. Dr. Mayergoyz spoke on the subject of “Electromagnetic Analysis of Plasmon Resonances in Nanoparticles.”

LIU DELIVERS KEYNOTE AT IEEE CONFERENCE ON COMMUNICATIONS

Prof. **K. J. Ray Liu** delivered a keynote on May 23, 2008 at the IEEE International Conference on Communications’ (ICC) Workshop on Cooperative Communications and Networking, in Beijing, China. The title of the talk was “Toward A New Communication Paradigm via Cooperation.”

GHODSSI GIVES PLENARY TALK AT INTERNATIONAL MEMS CONFERENCE

Prof. **Reza Ghodssi** was one of the plenary speakers at the 2008 Symposium on Design, Test, Integration, Packaging of MEMS/MOEMS in Nice, France in April. Dr. Ghodssi spoke on the subject of “Integrative MEMS/NEMS Technology for Micro and Nano Systems,” presenting an overview of the process technologies developed in his research group at the MEMS (Micro-Electro-Mechanical Systems) Sensors and Actuators Lab.

ESPY-WILSON APPOINTED RADCLIFFE FELLOW

Prof. **Carol Espy-Wilson** has been appointed a Fellow of Harvard University’s Radcliffe Institute for Advanced Study for the academic year 2008–2009.



CAROL ESPY-WILSON

She joins a class of 50 international fellows representing 32 different academic, professional and artistic fields in creative arts, humanities, social sciences, natural sciences and mathematics.

MELNGAILIS APPOINTED FULBRIGHT GUEST PROFESSOR AT TECHNICAL UNIVERSITY OF VIENNA

Prof. **John Melngailis** was appointed guest professor at the Technical University of Vienna, Austria, for six weeks beginning April 3, 2008 as part of the Fulbright Senior Specialist Program. During his guest professorship, he taught a course on Nanostructure Fabrication, conducted a seminar, and collaborated on research related to ion beam - solid interaction, and on novel applications of the ion multibeam system being developed at IMS Inc.

ORUC DELIVERS KEYNOTE ON FRONTIERS OF SCIENCE AND TECHNOLOGY IN TURKEY

Prof. **A. Yavuz Oruc** delivered a keynote lecture at Suleyman Demirel University in Isparta, Turkey on November 14, 2007. The title of the talk was “Frontiers of Science and Technology: Which is Driving Which and How Discoveries Are Made.”



A. YAVUZ ORUC

LIU CO-AUTHORS THREE NEW BOOKS

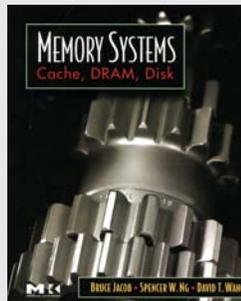
Professor **K. J. Ray Liu** co-authored a new book titled "Network-Aware Security for Group Communications." The book serves as a reference on how to secure group communications in emerging networks and for future applications. Liu's co-authors are two of his former students, Dr. **Yan Sun** (Ph.D., 2004), assistant professor of electrical and computer engineering (ECE) at University of Rhode Island, and Dr. **Wade Trappe** (Ph.D., 2002), associate professor of ECE at Rutgers University.

Prof. Liu co-authored a book with another former student, **W. Pam Siriwongpairat**, titled "Ultra-Wideband Communications Systems: Multiband OFDM Approach." The book provides a comprehensive overview of the fundamental issues related to designing, implementing, and deploying UWB multiband OFDM systems. Siriwongpairat received the B.S. degree in electrical engineering from Chulalongkorn University, Bangkok, Thailand, in 1999, and the M.S. and Ph.D. degrees in electrical engineering from the University of Maryland, in 2001 and 2005, respectively. She is currently a wireless communications specialist with Meteor Communications Corporation, working in the research and development of wireless communications technology.

Professor K. J. Ray Liu also co-authored a new book titled "Resource Allocation for Wireless Networks," published by Cambridge University Press. Liu's co-author is a former student and alumnus, Dr. **Zhu Han** (M.S., E.E., 1999; Ph.D., E.E., 2003), who is now assistant professor of electrical engineering at Boise State University.

JACOB LEAD AUTHOR OF NEW BOOK ON MEMORY SYSTEMS

ECE Associate Professor and Director of Computer Engineering **Bruce Jacob** is the lead author of a new book on computer engineering, titled "Memory Systems: Cache, DRAM, and Disk." The book is the first to comprehensively cover the logical and physical design, operation, performance characteristics and resulting design trade-offs, and the energy consumption of modern memory hierarchies. Memory Systems, which represents over 100 person-years of research and accumulated knowledge, was co-authored by Jacob, **Spencer Ng** of Hitachi Global Storage Technologies, and **David Wang** of MetaRAM, Inc., with additional contributions by **Samuel Rodriguez**.



GRANATSTEIN AUTHORS NEW BOOK ON PHYSICAL PRINCIPLES OF WIRELESS COMMUNICATIONS

Professor **Victor Granatstein** has authored a new book titled "Physical Principles of Wireless Communications." The book offers a rigorous analysis of the devices and mechanisms that constitute the physical layers of wireless systems.

NEW EDITION OF TRETTER BOOK ON DSP RELEASED

A new edition has been released of "Communication System Design Using DSP Algorithms," authored by ECE Professor **Steve Tretter**, who is also a Maryland alumnus of electrical engineering. The book, which was designed for senior electrical engineering students, primarily focuses on communication systems, exploring the theoretical concepts of digital signal processing (DSP) by presenting laboratory experiments using real-time DSP hardware.

REISER PUBLISHES NEW EDITION OF BOOK ON PARTICLE BEAMS

A new edition has been released of a book authored by Professor Emeritus **Martin Reiser**, titled "Theory and Design of Charged Particle Beams," published by Wiley-VCH. The updated edition covers experiments, theory, and simulation in beam physics research since 1993, when the first edition was published. The book also includes information about the University of Maryland Electron Ring, which is being used to study space-charge dominated beams in rings and re-circulators.

STEVEN TRETTER HONORED AT RETIREMENT CELEBRATION

Faculty and staff from the ECE Department gathered with friends and family on May 23 to celebrate the retirement of Professor **Steven Tretter**. University of Maryland Provost **Nariman Farvardin** was on hand to present him with a signed letter of honorary citation from Maryland Governor **Martin O'Malley**.



STEVEN TRETTER

Dr. Tretter completed his B.S. in electrical engineering at the University of Maryland nearly 50 years ago, and served as a faculty member in the ECE Department for 42 years. He also served as Director of the M.S. in Telecommunications program. Along with his wife, **Teresa Tretter**, he established the David Andrew Tretter Memorial Scholarship to honor the memory of their son. The scholarship is awarded to a full-time outstanding junior or senior engineering student with academic merit and financial need.

Prof. Tretter intends to continue to stay active with the ECE Department and the M.S. in Telecommunications program through teaching and advising as an emeritus professor.

ECE FACULTY IN THE NEWS

SUPERLENS RESEARCH FEATURED IN TOP 100 SCIENCE STORIES OF 2007

PROF. CHRISTOPHER DAVIS AND RESEARCH SCIENTIST IGOR SMOLYANINOV WERE FEATURED IN DISCOVER MAGAZINE'S TOP 100 SCIENCE STORIES OF 2007 FOR THEIR INNOVATIVE SUPERLENS MICROSCOPE TECHNOLOGY. THE LENS CAN BE USED TO SEE OBJECTS ON THE SCALE OF SMALL VIRUSES.

QU IN THE NEWS FOR TECHNIQUE TO SAVE POWER IN HANDHELD DEVICES

PROF. GANG QU WAS FEATURED IN MIT TECHNOLOGY REVIEW FOR RESEARCH AIMED AT SAVING PROCESSING POWER IN HANDHELD MULTIMEDIA DEVICES. REMOVING APPROXIMATELY SIX FRAMES OF DIGITAL VIDEO PER SECOND, A SLIGHT REDUCTION THAT IS UNNOTICEABLE FOR HUMAN VIEWERS, RESULTS IN A 54% ENERGY REDUCTION FOR THE MULTIMEDIA DEVICE, ACCORDING TO QU AND HIS FELLOW RESEARCHERS.

ALUMNA ALLEN NAMED TO BLACK ENTERPRISE'S "HOT LIST"

DeAnna D. Allen (B.S. '90, electrical engineering) was recognized by *Black Enterprise* magazine on its "Hot List," published in the December 2007 issue. The "Hot List" is a biennial list of professional and entrepreneurial "powerhouses" that recognizes persons under the age of 40 for their work in a variety of areas, including law, technology, banking, business, professional athletics, literature/print media, and entertainment. Allen was featured among many nationally known celebrities on the list, including Tiger Woods, Venus Williams, Kanye West, Will Smith, Sean Combs, LeBron James and Alicia Keys. DeAnna Allen is partner in the Washington, D.C. office of law firm Dickstein Shapiro LLP. She specializes in patent law and represents a variety of companies seeking to protect and capitalize on their intellectual property assets. She came to the College Park campus in February to deliver a talk to the Women in ECE student organization.



ECE ALUMNI HONORED AT 2008 BLACK ENGINEER OF THE YEAR AWARDS

ECE alumna **Nancy Linton** (B.S. '98, electrical engineering), a systems engineer at the Johns Hopkins University Applied Physics Laboratory in Laurel, Md., was awarded the 2008 Black Engineer of the Year Award for Outstanding Technical Contribution in Government. The award was presented at the 22nd Black Engineer of the Year Awards Conference in Baltimore, on Feb. 16, 2008. Another ECE alum, **Rodney Oddoye** (B.S. '02, electrical engineering), received a Modern Day Technology Leadership Award at the

same ceremony. Oddoye works for BGE as a senior engineer.

ALUMNUS NEWMAN WINS HART PRIZE FOR DEVELOPMENT

ECE alumnus **Andrew Newman** (Ph.D., '99) won the Hart Prize for Excellence in Development from the Johns Hopkins University Applied Physics Laboratory. He received the award for his role as principal investigator on the project, "Development: Tactically Responsive Intelligence, Surveillance, and Reconnaissance Management" (TRIM). Newman's advisor at Maryland was Professor **P. S. Krishnaprasad**.

CUTCHIS NAMED AMONG "MOST INTRIGUING BALTIMOREANS"

Protagoras "Tag" Cutchis (B.S., E.E. & B.S., Physics, '79; M.S., E.E., '90; M.D., '83) was named to *Baltimore* magazine's list of the fifteen "Most Intriguing Baltimoreans" in its December 2007 issue. Cutchis was cited for his scientific accomplishments, including his recent inclusion in *Scientific American's* prestigious "SA 50" list for a biomedical prosthetics device he developed that may enable amputees to communicate reflexive movements simply by thinking about them. He also received the Johns Hopkins Applied Physics Laboratory Invention of the Year award in the Physical Sciences category for this innovation.

ECE ALUMNUS' RESEARCH DISPLAYED IN NEW YORK'S MUSEUM OF MODERN ART

ECE alumnus **Thomas Mason** (B.S., E.E., 1989), professor of physics and chemistry and biochemistry at UCLA, recently had his research exhibited at New York's Museum of Modern Art, or MoMA. "Lithoparticle Dispersions: Colloidal Alphabet Soup," an exhibit of Mason's research of particles in viscous liquid, was featured at the modern art museum. The research was conducted by Mason and graduate student **Carlos Hernandez**. ☐

ECE ENTREPRENEURIAL NEWS

ALUMNI INTRODUCE "SEZMI," NEW BROADCAST TV NETWORK

ECE alumni **Phil Wisner** (B.S. '86) and **Buno Pati** (B.S. '86, M.S. '88, Ph.D. '92) have announced the creation of a new broadcast TV network called "Sezmi." The new network, set to debut later this year, will deliver TV shows to most large U.S. cities for about half of the monthly cost of cable and satellite television. Sezmi offers a user-friendly interface that allows customers to browse programs in a variety of different ways, using a remote and box that is roughly the size of a DVD player. Customers will be able to access a wide variety of channels, such as CNN, FX, and even premium channels like HBO, and can also tune into web video from sites like YouTube. Sezmi also incorporates "TiVo"-style on-demand programming. "Sezmi will change the way people watch TV," explains Wisner.

ALUM AMONG \$50K BUSINESS PLAN COMPETITION WINNERS

Dr. **Mehdi Kalantari** (Ph.D., '05), a faculty researcher and program director of the Master's in Telecommunications program, placed second overall in the Alumni category of the University of Maryland's \$50K Business Competition. His business project, Resensys Inc., is aimed at developing ultra-energy-efficient remote, wireless, distributed sensors that persistently monitor the structural health of bridges, massive commercial and residential buildings, and other civil infrastructures.

HEMMADY, ANLAGE RUNNERS UP FOR INVENTION OF THE YEAR

ECE alumnus **Sameer Hemmady** (Ph.D., 2006) and his advisor Dr. **Steven M. Anlage** recently secured the runner-up position in the Physical Sciences category at the 21st Annual University of Maryland Invention of the Year Awards Reception on April 17, 2008, for their invention entitled "Wave fingerprinting of complicated enclosures." The reception is hosted annually by the Office of Technology Commercialization. ☐



New Faculty Positions and Promotions, Academic Accomplishments and Awards for ECE Alumni

ECE ALUMNUS KHUDANPUR EARNS TENURE AT JOHNS HOPKINS

Sanjeev Khudanpur (Ph.D., '97) has recently been promoted to the position of Associate Professor with tenure in the Department of Electrical and Computer Engineering at the Johns Hopkins University (JHU). During his time as a graduate student at the University of Maryland, Sanjeev was advised by Prof. **Prakash Narayan**. Dr. Khudanpur has served on the faculty of JHU since 1996, first as Associate Research Scientist in the Center for Language and Speech Processing, and later as Assistant Professor in the Department of Electrical and Computer Engineering and the Department of Computer Science. Khudanpur's research interests are focused on the application of information theoretic methods to human language technologies such as automatic speech recognition, machine translation and natural language processing.



SANJEEV KHUDANPUR

ALUMNUS DUAN JOINS FACULTY AT UNIVERSITY OF ALABAMA

ECE alumnus **Lingze Duan** has accepted a position as Assistant Professor with the Physics Department at the University of Alabama in Huntsville this fall. His research will focus on developing compact low-phase noise lasers for optical sensing and studying radiation-pressure cooling of macroscopic objects. Duan's co-advisers were Professors **Julius Goldhar** and **Mario Dagenais**. After

graduation, Duan did post doctorate research at MIT's Research Laboratory of Electronics with Prof. **Franz Kaertner** and then at Penn State's Department of Physics with Prof. **Kurt Gibble**, before accepting the faculty position at Alabama.

ALUMNUS BAKHTIARI JOINS UNIV. OF NEW SOUTH WALES FACULTY

ECE alumnus **Sasan Bakhtiari** has accepted an offer to join the faculty of the University of New South Wales (UNSW) in Sydney, Australia. After receiving a B.S. in Electrical Engineering at the University of Tehran in Iran, Sasan earned his M.S. in Electrical Engineering under the supervision of Professor **Andre Tits** in the summer of 2003. He continued his study at the University of Maryland, earning an M.A. in Economics in 2005 and a Ph.D. in Economics in 2008.

SAINI JOINS FACULTY AT UNIVERSITY OF WATERLOO IN CANADA

ECE alumnus Dr. **Simarjeet Saini** has accepted a position as Associate Professor in the Electrical and Computer Engineering Department at the University of Waterloo in Canada. Dr. Saini received his Ph.D. in August 2001 under the direction of his advisor, Prof. **Mario Dagenais**. Saini's research interests include monolithic and hybrid integration of optoelectronic devices, biophotonics, and design and fabrication of high power semiconductor lasers, amplifiers and SLEDs.

ALUMNUS GEORGE KANTOR PROMOTED AT CARNEGIE-MELLON

George Kantor (Ph.D., '99) was recently promoted to Systems Scientist at Carnegie-Mellon University's Robotics Institute. He

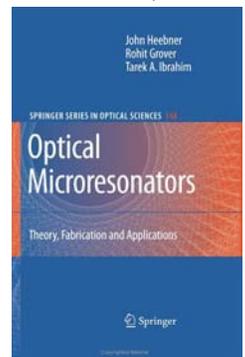
continues to work in the Field Robotics Center. Kantor's advisor at Maryland was Professor **P. S. Krishnaprasad**. At Carnegie-Mellon, Kantor teaches courses in robotic manipulation and controls and conducts research in control, sensing, and navigation for robotic systems.

ECE ALUMNUS WINS BEST PAPER AT IEEE WIRELESS CONFERENCE

ECE alumnus **Onur Kaya** received a best paper award at the IEEE Wireless Communications and Networking Conference in Las Vegas in April 2008. The paper he co-authored with his student, **Cagatay Edemen**, is titled: "Achievable Rates for the Three User Cooperative Multiple Access Channel." Dr. Kaya is currently assistant professor in electronics engineering at Isik University in Turkey. Kaya, who graduated from Maryland in 2005 with a Ph.D. in electrical engineering, was advised by Prof. **Sennur Ulukus**.

ECE ALUMNI CO-AUTHOR NEW BOOK

Two ECE alumni co-authored a book based upon research they began working on as Ph.D. students at the University of Maryland. **Rohit Grover** and **Tarek Ibrahim**, both 2004 Ph.D. graduates in electrical engineering, collaborated with **John Heebner** on a new book titled "Optical Microresonators: Theory, Fabrication, and Applications." While at Maryland, Grover was advised by Prof. **Ping-Tong Ho** and Ibrahim was advised by Prof. **Julius Goldhar**. 



New Scholarship Established in Memory of Alumnus Keith G. Regan '79

A new scholarship endowment has been established in memory of alumnus **Keith G. Regan**. The scholarship will be awarded to students enrolled in electrical and computer engineering at the University of Maryland.

Keith Regan graduated with honors from the University of Maryland with a B.S. in electrical engineering in 1979. He was a member of IEEE and Eta Kappa Nu. He went on to earn his M.S. in electrical engineering from Cornell University in 1980 at the age of 20. He served as software engineer at Bell Labs, manager at Comsat Mobile Communications, VP at Lockheed Martin Global Telecom, and CTO at Telenor. His innovations in satellite technology earned him an international reputation.

Keith married fellow Maryland graduate **Ann Blair** '77 and the couple had two sons together. Keith Regan died in 2005 at the age of 45. Ann created the scholarship in his memory with a pledge to the University in spring 2008.

To learn more about the scholarship, and how to make a contribution, please visit advancement.umd.edu.

ECE ALUMNI UPDATE

Alumnus **Gautam Roy** (B.S., E.E., '92) is the Vice President and Officer of Chicago Board Options Exchange.

In this capacity, Gautam is responsible for infrastructure and business application. His core competency is building the fastest, low latency electronic trading system.

He holds a Bachelor of Science degree in electrical engineering from the University of Maryland and an MBA from Kellogg Graduate School of Management, Northwestern University. He has served on the board of the Red Cross and Habitat for Humanity Chicago.

ECE ALUMNI ADVANCE IN INDUSTRY

ECE alumnus **Wen-Hsien Chuang**, Ph.D. '05, received an Intel Achievement Award, the greatest honor an employee can achieve at Intel. Wen-Hsien, a former advisee of Prof. **Reza Ghodssi**, received the award in recognition as part of the Technology and Manufacturing Group for the development of innovative silicon diagnostic solutions.

Dr. **Reza Ghanadan** was named Engineering Fellow at BAE Systems, an honor conferred upon only 1% of engineers and scientists at BAE. His expertise at the company is in the area of Electronics and Integrated Solutions. Ghanadan received a Ph.D. ('93) and M.S. ('90) in Electrical Engineering, and two B.S. degrees in E.E. & Physics (1988) both Summa Cum Laude, all from University of Maryland. During his time at Maryland, he was advised by Prof. **Gilmer Blankenship**.

Alumnus **Philip Cory** (B.S., E.E., '82) was appointed Senior Director and VP of General Dynamics Robotic Systems. He holds a B.S. in E.E. from the University of Maryland and a master's degree in computer engineering from Johns Hopkins University.

Northrop Grumman Corporation appointed **William J. Schaefer** VP of Business Development for its Integrated Systems sector. Schaefer graduated from the University of Maryland, where he earned a B.S. ('70) and an M.S. ('72) in electrical engineering. During his career, he has received several prestigious awards, including multiple Senior Executive Service Presidential Rank Awards, the Department of the Navy's Distinguished Public Service Award and Distinguished Civil Service Award, and the Naval Research Laboratory Innovation Award.

Dan Tuchler (B.S., E.E., '79) joined BLADE Network Technologies, Inc. as VP of Strategy and Product Management. He has over 25 years experience in technical and marketing roles in the networking industry. Most recently, he led product management at Mellanox Technologies. He holds a degree in E.E. from the University of Maryland and an MBA from Boston University.

IN MEMORIAM

Robert R. Brannan (B.S., E.E., '50), 81, died Dec. 12, 2007. He worked for over 40 years at Anchor Post Products, Inc. in Baltimore. During his last 10 years with the company, he served as President and CEO.

Robert W. "Bob" Cotton Jr. (B.S., E.E., '73), 66, died Nov. 14, 2007. A D.C. native, he retired from E-Systems where he was an engineer.

John K. "Jack" Cullen, Jr. (B.S., E.E., '60; M.S., E.E., '69) died Sept. 12, 2007. He was a scientist, inventor, and professor at Louisiana State University. He earned a B.S. and M.S. in electrical engineering from the University of Maryland. He worked at LSU Medical Center, where he contributed to the science of hearing for over 30 years.

John A. Dean (B.S., E.E., '73), 61, died Dec. 17, 2007. He earned three engineering degrees at University of Maryland. He began his engineering career at Atlantic Research Company. He also worked for Wang Labs, and most recently for Degree Controls in Milford, N.H.

Andrew S. Deming (B.S., E.E., '41), 87, died April 12, 2008. Born in Washington, DC, he attended the University of Maryland and Georgetown University's law school. Deming was an engineer at Bradley Electro Sales from 1947 until he retired in 1980.

John W. "Jack" Garner (B.S., E.E., '68), 62, died suddenly Oct. 18, 2007. He was employed by the Department of the Navy from 1964 to 1984 and at Booz Allen Hamilton from 1984 to the present.

Michael Sucher (B.S., E.E., '81), 49, a composer, musician, and teacher, died March 8, 2008 in Montpelier, Vt. He played in several East Coast bands, including the D.C. jazz group Rush Hour. A native Washingtonian, Sucher worked as a software engineer at NASA's Goddard Space Flight Center for several years starting in 1980.

Clifford F. Thompson (B.S., E.E., '60), 80, died Jan. 7, 2008. He earned a B.S.E.E. degree from Maryland, was inducted into Eta Kappa Nu Honor Society, and earned his Professional Engineering designation. He retired from the Naval Surface Warfare Center in White Oak after 35 years of service.

William T. Walker (B.S., E.E., '66), 71, died May 5, 2008. He worked as an electrical engineer in conjunction with the U.S. Navy, specializing in lightning protection, and retired after 50 years of service.

Maryland Team Places 2nd in Solar Decathlon Competition

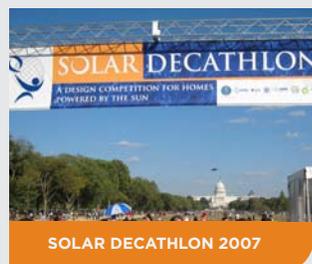
The University of Maryland team took 2nd place overall and 1st place among U.S. teams in the 2007 Solar Decathlon competition, held on the National Mall in Washington, D.C. The Maryland team finished behind Germany's Technische Universität Darmstadt, and won the BP Solar People's Choice Award.

The team's entry, LEAFHouse, used the Chesapeake Bay watershed as the inspiration for a smart, adaptable, resource-efficient home powered by renewable energy. Team members explain that the leaf is a perfect natural machine for converting sunlight into energy.

The Maryland team was made up of students from several schools on campus, including architecture and engineering. ECE students **Anthony DeMartini**, **Aditya Gaddam**, **David Lemus**, **Nirmal Mehta**, and **Darrell Smith** were part of the team.

The LEAFHouse entry won the subjective lighting, energy balance and communications

contests during the competition and took second place in the architecture, lighting, and market viability portions of the decathlon. Maryland was



one of seven teams to have a perfect score in the "energy balance" segment of the competition. The 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."

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

DEPARTMENT WINS NEW NSF GRANT FOR SUMMER RESEARCH PROGRAM

The ECE Department has received a new three-year grant from the National Science Foundation (NSF) for a Research Experiences for Undergraduates (REU) program on the College Park campus. The new program, titled Biosystems Internships for ENgineers (BIEN), provides research opportunities for undergraduates in the applications of electrical engineering to biosystems, covering a cross-disciplinary range of topics from nanotechnology and devices to information processing and computing.

Since 1998, the ECE Department has offered team-based research opportunities to talented undergraduates from across the country through the Maryland Engineering Research Internship Teams (MERIT) program. Over 267 students from Maryland and other institutions from across the country have participated. The BIEN REU program will run through 2011.

To learn more about BIEN and MERIT, visit www.ece.umd.edu/bien. ☑

Engineers Without Borders Installs Solar Systems in Burkina Faso

The University of Maryland chapter of Engineers Without Borders (EWB) recently made two visits to the west African country of Burkina Faso to install solar energy systems..

The goal of the first EWB Burkina Faso project in January 2008 was to install solar panels and lighting systems for twelve village schools surrounding the town of Dissin. The schools, which previously had no electricity and relied on lighting from lanterns, now host evening community meetings, and classroom activities and evening study. That project, developed by Prof. **Jungho Kim** (Mechanical Engineering) with student project leader **Jason West**, included Electrical Engineering (EE) students **Maria Stoica** and **Tammy Perrin** among the eleven students who completed the project. The project took a year



EWB STUDENTS WITH RESIDENTS IN BURKINA FASO. PHOTO BY DAVID LOVELL.

to plan and design. Prof. Kim will be returning in August to develop a third project in Dissin.

The second project was led by Prof. **David Lovell** (Civil Engineering) and student leader **Phil Hannam** (Mechanical Engineering). Their project, which also took a year to design, brought a team of twelve back to the same area in June 2008 to retrofit hand water pumps with solar powered systems in two villages and to build

two water storage tanks. These new systems shorten the daily wait for water for women and children at the pumps, and also allow villagers to irrigate small subsistence gardens around the wells. Their design, which emphasized simplicity and sustainability, included the use of a bicycle sprocket and freewheel system, parts that can easily be replaced and improvised in other villages. EE student

Noam Fine was part of that design and travel team.

EWB is a national nonprofit organization dedicated to sustainable development through engineering assistance and training internationally responsible engineering students. For information, visit www.eng.umd.edu/ewb or contact Chapter Advisor Prof. **Deborah Goodings** at goodings@umd.edu. ☑

MARYLAND TO HOST NEW ROBOTICS COMPETITION SEPT. 6

ROBOTICS @ MARYLAND (RAM) WILL PARTICIPATE IN A NEW IEEE AUTONOMOUS ROBOT SPEEDWAY COMPETITION THAT WILL TAKE PLACE ON THE UNIVERSITY OF MARYLAND COLLEGE PARK CAMPUS ON SEPTEMBER 6, 2008. THE COMPETITION IS CO-SPONSORED BY THE ECE DEPARTMENT, AND WILL FEATURE TEAMS FROM OTHER COLLEGES & UNIVERSITIES.

STUDENTS FROM RAM WILL ALSO COMPETE ONCE AGAIN IN THE 12TH ANNUAL ASSOCIATION FOR UNMANNED VEHICLE SYSTEMS INTERNATIONAL (AUVSI) UNDERWATER VEHICLE COMPETITION IN SAN DIEGO THIS SUMMER. LEARN MORE AT WWW.RAM.UMD.EDU.



ROSE FAGHIH AWARDED NSF GRADUATE FELLOWSHIP, PROFILED ON NAE'S "ENGINEER GIRL" WEBSITE

ECE undergraduate student **Rose Faghih** was awarded a National Science Foundation (NSF) Graduate Fellowship. The NSF

Graduate Fellowship was offered to 914 seniors and first year graduate students in different majors across the nation. Only 36 of the recipients were electrical engineering students. The NSF



ROSE FAGHIH

Fellowship provides 3 years of support, including tuition and a stipend, during graduate studies.

Rose, who graduated with a B.S. electrical engineering in May, was also featured as a student profile on "Engineer Girl," a website of the National Academy of Engineering aimed at encouraging young women to pursue career fields related to engineering. Rose will attend graduate school at MIT this fall.

SCOTT WATSON NAMED MERRILL PRESIDENTIAL SCHOLAR

ECE undergraduate **Scott Watson** was honored at a ceremony for the Philip Merrill Presidential Scholars Program held at the University of Maryland Riggs Alumni Center. Watson, a computer engineering major and member of the Maryland Robotics Club, was selected as one of two students from the Clark School of Engineering, and one of only 24 undergraduates campus-wide to be named to the 2007-2008 Merrill Presidential Scholars list.

DANDIN NAMED FISHELL FELLOW

Bioengineering graduate student and ECE alumnus **Marc Dandin** (B.S. '04, electrical engineering) was named the 2008 recipient

of the Fischell Fellowship in Biomedical Engineering. Dandin is co-advised by Mechanical Engineering Associate Professor **Elisabeth Smela** and ECE Associate Professor **Pamela Abshire**.

TJOA HONORED BY DEPARTMENT

The George Corcoran Memorial Award for a Graduate Student, presented each year to a graduate teaching assistant in recognition of excellence in teaching, was awarded to **Steve Tjoa**, president of the ECE Graduate Student Association (ECEGSA). ECE Chair Dr. **Patrick O'Shea** was on hand to present the award at a ceremony held on Sept. 19, 2007.

STUDENT INVITED TO IBM EMERGING LEADERS IN MULTIMEDIA WORKSHOP

ECE Ph.D. student **Aswin Sankaranarayanan**, advised by Prof. **Rama Chellappa**, was chosen to participate in IBM's 2007 Watson Emerging Leaders in Multimedia Workshop on October 11-12 at IBM's T. J. Watson Research Center in Hawthorne, NY. IBM selected only eight students for the event from a large group of nominations. The event featured research presentations, an interactive group discussion, and one-on-one meetings between students and IBM researchers. Sankaranarayanan's research is primarily aimed at problems in computer vision and pattern recognition, including visual tracking and particle filtering.

STUDENT WINS BEST PAPER AWARD AT IEEE AUTOTESTCON

Ph.D. student **Seokjin Kim** won the best student paper award at IEEE AUTOTESTCON 2007, a conference focused primarily on automated test for integrated systems technology aimed at military, government and aerospace applications. Seokjin won the award for a paper he co-authored with his advisor, Prof. **Martin Peckerar**, and **Radmil Elks** of Hughes Network Systems, titled "Device verification testing of high-speed analog-to-digital converters used in satellite communications systems."

TOBIN WINS INTERNATIONAL LINEAR COLLIDER AWARD

J. Charles Tobin, a graduate student co-advised by ECE Chair Dr. **Patrick O'Shea** and Prof. **Rami Kishek**, was awarded the Distinguished Performance Award at the International Accelerator School for Linear Colliders. The International Linear Collider is a research project aimed at helping physicists unlock some of the deepest mysteries in the universe about matter and energy. The International School for Linear Colliders selected 57 graduate students from around the world to work toward the research and development of linear colliders. Tobin, representing University of Maryland, was ranked 1st in North America and 3rd overall.

BALLARD AMONG \$50K BUSINESS PLAN COMPETITION WINNERS

ECE student **Randolph Ballard** was part of the winning team in the Undergraduate Student category of the University of Maryland's \$50K Business Plan Competition. His team, LDTech, is developing a Liquid Desiccant Waterfall, a visually appealing, low-energy dehumidifier that pulls moisture from the interior of a house and releases it outside. The technology provides comfort, energy savings, as well as a reduction in mold, mildew, bacteria, and dust mites. 

ECE Centennial Program Schedule: September 26-27, 2008

FRIDAY, SEPTEMBER 26, 2008

Reception, Univ. of Md. Golf Course Clubhouse
6:00 - 9:30 p.m.

Reconnect with classmates and professors!
Free for Alumni & Friends

SATURDAY, SEPTEMBER 27, 2008

ECE Centennial Forum Events & Luncheon

Jeong H. Kim Building, 10:00 a.m. - 3:30 p.m.

Interact with leading experts in Energy,
Information Systems, and Communications!
\$20/person

**Centennial Forum: "The Future of
Information Systems & Communications,"**

10:00 a.m.

Moderator: Dr. **Nariman Farvardin**,

Senior VP for Academic Affairs & Provost,
University of Maryland



Panelists:

Victor Bahl, Principal Researcher, Microsoft Corp.

Michael Brown (B.S., '92), Executive VP, comScore

Douglas Humberger, VP, Booz Allen Hamilton

Rajiv Laroia, (Ph.D., EE, '92), CTO,

Qualcomm Flarion Technologies

Centennial Luncheon, 12:00 - 1:30 p.m.

Centennial Forum: "The Future of Energy,"

1:45 p.m.

Moderator: Dr. **Mel Bernstein**, Vice President
for Research, University of Maryland

Panelists:

David Goodstein, Professor & Former
Vice-Provost, Cal. Tech.

Larry Kazmerski, Director, Photovoltaics,
Natl. Renewable Energy Lab (NREL)

Joseph Turnage, Senior VP, Constellation Energy

Steven Cowley, Director, Culham Science
Center, UK, Professor, UCLA

Gala and Dinner, Riggs Alumni Center
6:00 p.m. - 9:30 p.m.

Keynote Speaker: **Dean Kamen**, Inventor
Get inspired by the visionary inventor
of the Segway Transport and other
fascinating technologies!
\$50/person

Register online and find more information
at: www.ece.umd.edu/centennial or contact

Ted Knight at 301-405-3596. ☐

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CONNECTIONS is published for alumni and friends of the Department of Electrical and Computer Engineering at the A. James Clark School of Engineering, University of Maryland.

Your alumni news and comments are welcome. Please send them to: Ted Knight, ECE Department, 2457 A.V. Williams Building, College Park, MD, 20742. Visit our web site at:

www.ece.umd.edu

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