ECE Playing a Key Role in the Georgia Tech International Plan

With the opening of fall term 2005, Georgia Tech officially launched a new International Plan for its undergraduate students. This new program offers students opportunities to add an international, multicultural dimension to their undergraduate experience, and in the process, to earn an international degree designation on their diploma, reflecting their acquired global competence.

French Roots: Georgia Tech Lorraine
As is so often the story with Georgia Tech initiatives, ECE has played a significant role in the development of this plan. In fall 2004, Georgia Tech Lorraine (GTL) introduced a new Senior Engineering Program, which served as the early model for how the proposed International Plan would be conceptualized, developed, and administered. Under this model, undergraduate students would attend GTL in their junior year and complete a minimum of two years of college-level French, at least two courses which are taught in French, and a course in international studies, in addition to their core engineering and science classes.

The Georgia Tech strategic plan is explicit about the importance of preparing its students for lifelong engagement in an international setting, and of imparting an awareness and appreciation for cultural and linguistic differences around the world. The plan calls for the establishment of programs that will enable 50 percent of Tech’s undergraduates to have an international education experience before graduation.

Howard Rollins, director of Tech’s Office of International Education commented, “Georgia Tech will achieve this goal by offering a variety of study abroad programs that vary in duration, in cost, and in the degree to which the student is immersed in the cultures of the host country. It is our intent to offer our students cultural immersion experiences that will create the next generation of global leaders. GTL led the way in defining Tech’s international agenda by their early programmatic initiatives.”

Establishing an Asian Connection: Georgia Tech China
ECE continues to lead in advancing the Institute’s international plan. Last summer, ECE Professor G. Tong Zhou initiated an undergraduate summer program in Shanghai, which she co-directed with Professor Haizheng Li of the School of Economics. This activity was conducted in collaboration with Shanghai Jiao Tong University (SJTU), a leading comprehensive university in China, known for its strong engineering program. In its inaugural session, 44 Georgia Tech students and five Georgia Tech professors participated, representing engineering—including ECE—humanities, management, and the sciences. In addition to regular major coursework, students could take complimentary cultural courses arranged by SJTU faculty members, including calligraphy, cooking, painting, and tai chi.

The Shanghai Summer Program is just the beginning of Georgia Tech’s engagement with SJTU. In summer 2006, a Georgia Tech-SJTU dual master’s degree program in ECE will be offered for the first time, thus adding a graduate program component to this new initiative, now known as Georgia Tech China.

Next on the Horizon: Georgia Tech India
The reach of ECE’s international activities continues to expand, with the next focus being India. Under the leadership of Professor Vijay Madisetti, plans are underway to establish a Georgia Tech presence in India within the next two years. The intent is to establish a campus where students would...

continued on page 3
Chair’s Corner
Gary S. May, Steve W. Chaddick School Chair

Education without Borders

Quality and rigor have always been characteristic of the educational program in our school. From research discoveries to teaching excellence to the development of educational technology, ECE has been a leader – both at Georgia Tech and nationally. Today, we find ourselves at a unique historical juncture, shaped by the unprecedented emergence of globalization as a force with which we must reckon.

The world is becoming dramatically more interconnected and competitive. This situation is described in detail in New York Times columnist Thomas Friedman’s book, The World is Flat: A Brief History of the 21st Century. America today is still clearly the world leader in productive innovation. The U.S. also remains the world leader in venture capital and is home to many of the finest research labs and universities. America possesses one of the most open economies for trade and investment, a stable government, a strong technology base, and a culture uniquely supportive of risk-taking.

At the same time, global economic interdependencies are growing. In the 21st century, the pace of these changes will continue to accelerate. To thrive in this new world, it is not enough simply to intensify current strategies. This also holds true for higher education. It is time for a new kind of leadership in higher education that recognizes the implications of these global trends and focuses on agility in delivery and international collaboration. You might think of this as “education without borders.”

Emerging nations like India and China will have economies that compete directly with ours, including their investments in higher education. China, India, and the European Union each already graduate more engineers than the United States.

As ominous as this future might sound, I believe that this scenario presents opportunities for those who are prepared to take advantage of them. Georgia Tech must be among that group. The institutional mission of Georgia Tech is to define the technological research university of the 21st century. This means that we must prepare our students for technical leadership in this evolving world.

ECE is uniquely poised to play a leadership role in the globalization of Georgia Tech. For more than 15 years, Georgia Tech Lorraine (GTL) has been the flagship of Georgia Tech’s international efforts. Last year, over 120 students from GTL received a master’s degree, and ECE has now hired...

continued on page 3

ECE Programs Remain in Top 10 of U.S. News Undergraduate Rankings

ECE’s undergraduate programs remained in the elite top 10 of the 2006 U.S. News & World Report annual rankings of universities and academic programs, with electrical engineering placing sixth and computer engineering placing eighth.

The College of Engineering held steady with a ranking of sixth, and Georgia Tech’s co-op program was also ranked as one of 12 “Academic Programs to Look For” under internships and co-ops.

Technology Treaty Signed by Georgia, Lorraine Region Officials

A 15-member delegation, led by Jean-Pierre Masseret, president of France’s Lorraine region, visited Atlanta in September to ratify a technology agreement which represents a unique collaboration between the State of Georgia, Georgia Tech, Georgia Tech Lorraine, and the region of Lorraine, France. The cooperation agreement, signed by Georgia Governor Sonny Perdue and Jean-Pierre Masseret during a September 27, 2005 ceremony at the State Capitol, is designed to promote and support transatlantic technology transfer between Georgia and the Region of Lorraine.

This transatlantic project is based on a principal of reciprocity between the Georgia Department of Economic Development (GDEcD) and the Agence pour la Développement des Investissements Extérieurs en Lorraine (ADIELOR). Each party agreed to identify technology companies interested in developing their activities on the opposite side of the Atlantic and to help those companies establish their offices in Georgia or the Lorraine region.

“This agreement will elevate Georgia’s technology presence in the global economy and will lead to greater opportunities for businesses in both Georgia and France,” Gov. Perdue said.

In a spirit of cooperation, Georgia Tech will make existing resources available to both the GDEcD and ADIELOR. The Advanced Technology Development Center, Georgia Tech Lorraine, and the Office of Economic Development and Technology Ventures will also provide resources and support to facilitate this endeavor.

The State of Georgia and the Lorraine region have been sister states since 1988. This initiative is expected to strengthen and deepen existing economic relationships between these entities.

continued on page 3
Adibi, Anderson Named as 2004 PECASE Honorees

Top U.S. Science/Engineering Awards Presented at the White House

Ali Adibi and David V. Anderson were presented with the 2004 Presidential Early Career Awards for Scientists and Engineers (PECASE), the nation’s highest honor for promising young researchers within their areas of research, on June 13, 2005 at a White House ceremony. Fifty-eight researchers from the U.S. were honored at the event, presided over by John H. Marburger, III, science advisor to President George W. Bush and director of the White House Office of Science and Technology Policy. It is believed that this is the first time that two PECASE awards have been given to faculty in the same academic unit in the same year.

An associate professor in the optics and photonics and electromagnetics areas, Dr. Adibi was nominated by the U.S. Department of Defense for the PECASE Award. He was recognized for his research contributions to optical storage by exploring two-center holographic recordings and his contributions to chip-scale all-optical information processing modules by exploring wavelength crystals and nanophotonic approaches. Additionally, Dr. Adibi’s PECASE citation also lauds his excellence and dedication in teaching.

Nominated by NSF, Dr. Anderson was recognized for pioneering the design of embedded signal processing and control systems that perform significant processing in both analog and digital circuits. This research in cooperative analog-digital processing is enabling potential advances in low-power embedded systems and smart sensors, such as assistive devices for the hearing-impaired. An associate professor, Dr. Anderson specializes in computer engineering and digital signal processing and is involved with several interdisciplinary research centers.

Ali Adibi is working with an automated setup for the detailed characterization of spatial and spectral properties of photonic crystals with very small feature sizes. Such miniaturized structures are very promising for integrated photonic circuits for applications such as optical communications and sensing.

David V. Anderson holds a prototype board for acoustic array processing. Computer monitors show development tools with code for configuring the array processing hardware.

Its first full-time GTL faculty members–Professors Abdallah Ougazzaden and Paul Voss.

ECE has continued its leadership in international growth through burgeoning research and graduate initiatives in China and India which are discussed in the lead article of this newsletter. In addition to these initiatives, we are in the early stages of investigating opportunities in Singapore, where Georgia Tech has already established a campus. The existing Singapore program focuses on logistics and operates primarily in collaboration with the School of Industrial and Systems Engineering. Professor Chin-Hui Lee is currently acting as our agent to identify opportunities for ECE there.

Overall, many opportunities lay ahead as the School continues its efforts at globalization. These activities will serve as a market differentiator for us in the higher education arena. I anticipate some very exciting developments as we move forward.
Ayanna Howard, Associate Professor

BSCompE ’93, Brown University; MSEE ’94, University of Southern California; MBA ’05, Claremont Graduate University; PhDEE ’99, University of Southern California
Area: Systems and controls

Before joining ECE, Dr. Howard was employed with NASA’s Jet Propulsion Laboratory, where she was most recently a senior robotics researcher and a deputy manager for the Strategic University Research Partnership Office. Dr. Howard’s research is centered on humanized intelligence in robots, safe autonomous rover navigation for planetary surface exploration, and intelligent terrain assessment algorithms for landing on Mars.

To date, Dr. Howard’s accomplishments have been featured in the popular press and technical media, including TIME Magazine and PBS Dragonfly TV. She was also named among the “Top 100 Bold Young Innovators of 2003” by MIT’s Technology Review. Currently, Dr. Howard is an associate editor for the International Journal of Intelligent Automation and Soft Computing and is on program committees for several robotics conferences. She recently received the 2005 IEEE Early Career Award in Robotics and a 2005 Women in Business Award from the California State Assembly.

Abdallah Ougazzaden, Professor

Maîtrise-Solid State Physics ‘85, University Hassan II (Morocco); Diploma-Materials Sciences ’86, University of Paris VII (France); PhD-Materials Science ’90, University of Paris VII; Diploma of Accreditation ’97, University of Paris VII
Areas: Optics and photonics; microsystems

Dr. Ougazzaden is the first ECE faculty member to be based full-time at the Georgia Tech Lorraine, the Institute’s campus in Europe. His research interests include epitaxial growth and design of device structures for telecommunications; fabrication of nanostructures; materials characterizations; epitaxial growth of nitride-based semiconductor materials by MOVPE (metalorganic vapor-phase epitaxial) growth; and semiconductor device physics. Prior to joining ECE, he was a professor at the University of Metz and deputy director of the Materials, Optics, Photonics, and Systems Laboratory, a joint lab of Supélec (a major engineering institute) and Centre National de la Recherche Scientifique in Metz, France.

From 1999 to 2003, Dr. Ougazzaden was a technical manager in the Materials Growth and Characterisations Group at Bell Labs Lucent Technologies and with its integrated circuits/optoelectronics spin-off, Agere Systems. He has also held senior level positions at TriQuint Semiconductor, Alcatel, and Centre National D’Etudes des Télécommunications (CNET) at France Telecom.

Patricio Vela, Assistant Professor

BS-Control and Dynamical Systems ’98, California Institute of Technology; PhD-Control and Dynamical Systems ’03, California Institute of Technology Area: Systems and controls

Prior to his faculty appointment, Dr. Vela was a postdoctoral researcher specializing in computer vision in the School of ECE at Georgia Tech. A specific goal of his work is to develop realtime feedback strategies for autonomous aircraft using onboard cameras. His research also covers robotics, geometric estimation and control, and biologically inspired mechanics and computer vision.

During his undergraduate and graduate career, Dr. Vela was involved with tutoring programs and served as a FIRST Robotics Competition mentor for a high school team. At CalTech, he helped with graduate student recruitment and developed and implemented a program on basic nonlinear dynamics and control for the Freshman Summer Institute Research Program. In October 2005, Dr. Vela received a 2005 Most Promising Engineer Award from the Hispanic Engineer National Achievement Awards Corporation, an organization that promotes careers in science, technology and math.

Monson H. Hayes, III has been appointed associate chair of ECE, with responsibility for the electrical engineering and computer engineering programs at Georgia Tech Savannah. A longtime member of the digital signal processing (DSP) technical interest group in ECE, Dr. Hayes will be based at the Georgia Tech campus in Savannah, effective early 2006.

Dr. Hayes will also lead the development of continuing education courses and the creation of distance learning initiatives and technologies in his new position at Georgia Tech Savannah.

Elliot Moore, II has received an NSF CAREER Award for his research entitled “Extraction and Integration of Voice Source Features into the Acoustical Analysis of Spoken Affect.” An assistant professor in DSP, Dr. Moore is the first Georgia Tech Savannah-based faculty member to receive this honor.

His research will focus on developing new techniques for extracting and integrating features of a voice source into assessing speaker affect and attitude, and plans call for a framework to integrate voice source features into existing databases on various types of spoken affect. Dr. Moore’s work will be helpful in analyzing speech for emotion and stress, detecting deception, improving human-computer interaction in dialogue applications, and clinical applications related to emotional and vocal disorders.
Faculty Awards, Honors, and Accomplishments

Thomas K. Gaylord, Regents’ Professor and Julius Brown Chair Professor, addressed nearly 1,000 graduates and other audience members present for Georgia Tech’s 222nd commencement ceremony on August 5, 2005 at Alexander Memorial Coliseum. Last April, Dr. Gaylord received the Georgia Tech Class of 1934 Distinguished Professor Award, which includes the honor of delivering the summer commencement address. To view Dr. Gaylord’s speech, visit www.ece.gatech.edu/news/videos.html.

James D. Meindl has been named the recipient of the 2006 IEEE Medal of Honor, the Institute’s highest award, for his pioneering contributions to microelectronics, including low power, biomedical, physical limits, and on-chip interconnect networks. The IEEE Medal of Honor is given only to those who attain preeminence in the IEEE fields of interest through outstanding technical contributions.

Deepak Divan is the inaugural recipient of the IEEE William E. Newell Power Electronics Award “for leadership in the development of soft-switching power converters.” This award, sponsored by the IEEE Power Electronics Society, was established by the IEEE Board of Directors in 2005.

Joseph L.A. Hughes, professor and associate chair for Academic Operations in ECE, received the ECE Distinguished Educator Award from the ECE Division of the American Society for Engineering Education (ASEE). He was presented with this honor at the ASEE Annual Conference, held in Portland, Ore., in June 2005. Dedicated to promoting and improving engineering and technology education, ASEE is an organization that covers all branches of engineering and is comprised of more than 12,000 members. He received this honor “for advancing ECE education through development and guidance of computer engineering undergraduate programs, leadership in electrical and computer engineering education, and extraordinary service to accreditation process.”

J. Stevenson Kenney was elected to the office of president elect for the IEEE Microwave Theory and Techniques Society (MTT-S) by the MTT-S Administrative Committee at its recent meeting, held October 1-2, 2005 in Paris, France. Dr. Kenney will serve as president elect in calendar year 2006 and will be elevated to president in 2007. The MTT-S has an active membership of over 12,000 worldwide, and is the seventh largest of the 44 IEEE societies and councils.

Additionally, Dr. Kenney received the 2005 Microwave Application Award from the IEEE MTT-S while attending the IEEE International Microwave Symposium, held June 11-17, 2005 in Long Beach, Calif. Given yearly to engineers who create and apply technologies to commercially viable products, the Microwave Application Award recognizes Dr. Kenney’s 10-year body of work in developing power amplifier linearization techniques and inserting these technologies into cellular/wireless systems.

Gee-Kung Chang and Madhavan Swaminathan received IBM Faculty Awards from the IBM Austin Center for Advanced Studies. Dr. Chang’s award will support his work in “High Speed Optical Interconnects for High Throughput, Low Latency Server Systems,” and Dr. Swaminathan’s award will support his project, “Design, Fabrication, Characterization, and Test of Nano-Materials for Embedded Decoupling in Mid-Frequency Range for Server Applications.”

David S. Citrin received a Friedrich Wilhelm Bessel Research Award from the Alexander von Humboldt Foundation. The Alexander von Humboldt Foundation, which is based in Germany, grants approximately 20 of these awards each year to young, top-flight scientists and scholars from abroad who are already recognized as outstanding researchers in their fields. Dr. Citrin will be invited to work on research of his choice in cooperation with colleagues in Germany.

Bonnie S. Heck received the Women of Distinction Faculty Award at the Georgia Tech Women’s Leadership Conference, held November 11-12, 2005. She was honored for her leadership in education, research, and K-12 outreach and retention initiatives at this annual event.

Ayanna Howard received a Women in Business Award, which was bestowed by California State Assembly Member Carol Liu, State Senator Jack Scott, and Assembly Member Dario Frommer. Dr. Howard was honored for her contributions to science and technology at an awards luncheon on October 19 in Pasadena, Calif.

Four IEEE Fellows Elected

Effective January 1, 2006

Ye (Geoffrey) Li, “for contributions to signal processing for wireless communications.”

Gary S. May, “for contributions to semiconductor manufacturing and engineering education.”

Steven W. McLaughlin, “for contributions to information theory and applications to digital recording technology.”

Madhavan Swaminathan, “for contributions in design tools, design methodologies, and electromagnetic interference (EMI) control for power delivery in digital and mixed signal systems.”

Gabriel Rincón-Mora was named Role Model of the Week by HENAAC for the week of July 5, 2005. The HENAAC Role Model of the Week profile is a weekly feature that highlights world class Hispanic engineers, scientists, and technology professionals.

Gordon L. Stüber has received an Outstanding Service Award from the IEEE Vehicular Technology Society (VTS), where he has served as an elected member of the IEEE VTS Board of Governors since 2001. Beyond regular Board of Governors duties, Dr. Stüber has served as the VTS Fellow Evaluation Committee Chairman, has handled the judging of the VTS Best Propagation Paper Award, and has managed the VTS Distinguished Speaker Program during the last several years.

Emmanouil M. Tentzeris will receive the 2006 IEEE MTT-S Outstanding Young Engineer of the Year Award at the annual IEEE MTT-S International Microwave Symposium, to be held in June 2006 in San Francisco, Calif. Dr. Tentzeris will be recognized for his innovation in the development of multiresolution computer aided design tools and in the design and optimization of 3D RF modules in ceramic and organic substrates up to mm-wave frequency range.

Patricio Vela was honored with a Most Promising Engineer Award from the HENAAC Board of Directors and TECHNICA Magazine at the 17th Annual HENAAC Conference, held in October 2005. The Hispanic Engineer National Achievement Awards Corporation highlights the achievements of Hispanics in engineering, science, technology, and math.
Robert J. Butera, Jr. has been appointed as program chair of the Interdisciplinary Bioengineering Graduate Program, which is administered within the College of Engineering.

Currently, eight units participate in recruiting students to the program: ECE, the Department of Biomedical Engineering, the School of Mechanical Engineering, the School of Chemical and Biomolecular Engineering, the School of Materials Science and Engineering, the School of Aerospace Engineering, the School of Polymer, Textiles, and Fiber Engineering, and the College of Computing, with more schools to be added. Participating faculty are from these units, as well as the School of Biology and the School of Applied Physiology.

The Bioengineering Program offers advanced courses in bioengineering, engineering specialties, and life sciences. Students are also trained in cutting-edge bioengineering research, which focuses on the development of new or improved physical and mathematical concepts and techniques. These may be applied to problems in medicine and biology, including the fundamental study of biological phenomena and development of new medical devices. Approximately 100 students are enrolled in the program.

Dr. Butera remains as a full-time ECE faculty member, where he chairs ECE’s bioengineering technical interest group and serves as the School’s pre-med advisor. In addition, Dr. Butera is on the program faculty of the Department of Biomedical Engineering, and he serves on the Georgia Tech Institute for Bioengineering and Biosciences Faculty Steering Committee. He was also recently elected to a two-year term as a North America representative to the administrative committee of the IEEE Engineering in Medicine and Biology Society.

Bill Rhodes Retires, Moves on to New Challenge

After a 34-year career at Georgia Tech, William T. Rhodes, a professor in ECE’s optics and photonics group, retired on August 1, 2005. Dr. Rhodes was honored at a retirement celebration with his fellow recent retirees, Robert K. Feeney and W. Russell Callen, Jr. on August 31.

Since retiring from ECE, Dr. Rhodes has taken the post of associate director of the Imaging Technology Center at Florida Atlantic University, located in Boca Raton, Fla. Dr. Rhodes retains a part-time appointment as an adjunct professor at Tech’s School of ECE and will continue work on the Army Research Office-sponsored MURI project, “Human Signatures for Personnel Detection.”

After graduating with his Ph.D. from Stanford University, Dr. Rhodes came to Tech in 1971 and helped to develop the Institute’s internationally known research and educational programs in optics. He served ECE and Georgia Tech as the director of the Center for Optical Science and Engineering and as the research director for GTL, and he was a regular collaborator with colleagues at the Georgia Tech Research Institute.

Dr. Rhodes has been very active in professional society activities, serving as a director for the Optical Society of America and a governor for SPIE (the International Society for Optical Engineering). He was editor-in-chief of Applied Optics and co-wrote the highly respected undergraduate-level textbook, An Introduction to Lasers and Their Applications, with Dr. Callen.

“Professor Rhodes has had a long and distinguished Georgia Tech career characterized by phenomenal accomplishments,” said Gary S. May, Steve W. Chaddick School Chair of ECE. “He will be sorely missed, but we wish him well in his new position at Florida Atlantic and in his next phase in life.”
Beating the Heat: Using Microfluidic Channels Integrated onto Backs of Chips

A new technique for fabricating liquid cooling channels onto the backs of high-performance integrated circuits could allow denser packaging of chips while providing better temperature control and improved reliability.

The wafer-level fabrication technique includes polymer pipes that will allow electronic and cooling interconnections to be made simultaneously using automated manufacturing processes. The low-temperature technique, compatible with conventional microelectronics manufacturing processing, allows fabrication of the microfluidic cooling channels without damaging to integrated circuits. Researchers involved in this project are Bing Dang, Paul Joseph, Muhammad Bakir, Todd Spencer, Paul Kohl, and James Meindl—all of Tech’s Microelectronics Research Center.

The on-chip microfluidic technique was described at the eighth annual IEEE International Interconnect Conference and in the Proceedings of ASME InterPACK, both held this past summer in San Francisco, Calif. The research was sponsored by the Microelectronics Advanced Research Corporation and the Defense Advanced Research Projects Agency.

Mr. Dang expects the technology to be used first in high-performance specialty processors that can justify the cost of the cooling system. So far, the researchers have demonstrated continuous liquid flow on a chip for several hours without failure, but additional testing is still needed to confirm long-term reliability.

Georgia Tech Wins Major ONR Award for Photonic, Phononic Research

Georgia Tech has been awarded $4.16 million for photonic and phononic (the photonic crystal’s acoustic equivalent) crystal research by the Office of Naval Research, with the opportunity for a two-year option for an additional $2.75 million. Led by Ali Adibi, an associate professor in ECE, this multidisciplinary group will develop very effective, yet relatively inexpensive tools for manufacturing three-dimensional (3-D) photonic and phononic crystals.

Photonic crystals, with highly periodic structures that can be designed to control light, have the potential to revolutionize everything from computing to communications. But researchers need more effective and affordable methods to create these promising crystals if they are going to be used in personal computers or tiny sensors.

While significant progress has been made in the large-scale fabrication of two-dimensional (2-D) photonic crystals, 3-D crystals are much more difficult to manufacture and the necessary tools are expensive. With extra dimensions of control, 3-D crystals produce effects that are impossible with conventional optics.

But because of the high cost of manufacturing tools, many researchers don’t have the tools they need to experiment with different 3-D crystal structures and uses. The Tech group’s goal is to develop new 3-D crystal fabrication tools affordable enough to make them accessible to a much wider range of researchers, stepping up crystal research and increasing the possibility for innovation.

Why Is the Sky Blue, and Not Violet?

The hues that we see in the sky are not only determined by the laws of physics, but are also colored by the human visual system, shows a recent paper in the American Journal of Physics. On a clear day when the sun is well above the horizon, we perceive the complex spectrum of colors in the sky as a mixture of white light and pure blue.

When sunlight enters the earth’s atmosphere, it scatters mainly from oxygen and nitrogen molecules that comprise most of our air. What scatters the most is the light with the shortest wavelengths, toward the blue end of the spectrum, so more of that light will reach our eyes than other colors. But according to the 19th century physics equations introduced by Lord Rayleigh, as well as actual measurements, our eyes get hit with peak amounts of energy in violet as well as blue.

So what is happening? Combining physics with quantitative data on the sensitivity of the human visual system, Glenn Smith, Regents’ Professor and John Pippin Chair in Electromagnetics, points to the way in which our eye’s three different types of cones detect color. Dr. Smith showed that the sky’s complex multichromatic rainbow of colors tickles our eye’s cones in the same way as does a specific mixture pure blue and white light. Similarly, the human eye will perceive the right mix of pure red and pure green as equivalent to pure yellow.

More detailed stories, among many others, may be found at www.ece.gatech.edu/news. Photos and stories were provided by Institute Communications and Public Affairs and Georgia Tech Research News and Publications.
Samsung, Pirelli Each Make Their North American Headquarters at Georgia Electronic Design Center

Samsung Electro-Mechanics (SEM) Company and Pirelli each opened their North American headquarters at the Georgia Electronic Design Center (GEDC) at Technology Square this fall. Both openings were announced and commemorated at separate events by company executives, State of Georgia officials, and Georgia Tech administrators, faculty and staff.

Samsung Design Center to Develop Next-Generation RFIC Technology

Officials of Samsung, the State of Georgia, and Georgia Tech officially open the new Samsung Design Center at the Georgia Electronic Design Center in Atlanta. Pictured (l-r) are Craig Lesser, commissioner of the Georgia Department of Economic Development; Ho-Moon Kang, CEO of Samsung; Jean-Lou Chameau, provost of Georgia Tech; Byeong-Cheon Koh, chief technical officer of Samsung; and Mike Cassidy, president of the Georgia Research Alliance.

Officials from the Samsung Electro-Mechanics Company (SEM), the State of Georgia, and Georgia Tech held a ribbon-cutting on August 17 for the company’s new North American radio frequency integrated circuit (RFIC) design center.

The Samsung RFIC Design Center will develop technology for next-generation communication systems, expanding to system-on-chip devices for modem, digital, and RF equipment. Innovations developed by researchers at the new center will impact a broad spectrum of Samsung’s worldwide product offerings.

Over the next five years, the new center could employ more than 100 design scientists and engineers. Center researchers are expected to collaborate with Georgia Tech faculty and staff on a broad range of issues, including contributions to the IEEE standard for cognitive radio (IEEE 802.22).

Chang-Ho Lee, formerly with the GEDC and a 2002 Ph.D. graduate of ECE, has been named director of the new design center. Dr. Lee said the collaboration with Georgia Tech will intensify as the company develops new relationships with the campus community and recruits Georgia Tech graduates to the company’s technical staff.

Pirelli Signs R&D Agreement, Establishes Broadband Solutions Unit

On September 22, officials of Italian-based Pirelli and Georgia Tech signed a five-year strategic research and development partnership to develop new optical components and systems and new broadband access technologies for future high-speed telecommunications networks.

Pirelli will also consolidate all of its North American corporate staff activities in the new Atlanta center, including the headquarters of Pirelli Broadband Solutions, a new company that engineers and markets the innovations conceived in Pirelli Labs. This alliance will help position Georgia to become a world-class center of research excellence in photonics and broadband technologies. Under the agreement, visiting researchers from both organizations will work in Georgia Tech laboratories—and in the clean rooms of Pirelli Labs near Milan.

Schlumberger Donates Two Scholarships

Schlumberger donated $10,000 in support of two $2,500 scholarships, both renewable for a second year, to be awarded to one ECE student and one mechanical engineering student. ECE student Amit Patel, who is a junior electrical engineering major, was selected by the School of ECE to receive the scholarship.
Harris Corporation recently committed $250,000 to the Georgia Tech Foundation, Inc. designated for the Georgia Tech Nanotechnology Research Center Building. Over the years, Harris Corporation’s continuous support of Georgia Tech has helped to strengthen many important academic and research programs. This latest flagship commitment continues in that tradition and supports Georgia Tech as it breaks new ground in the emerging nanotechnology field.

The Nanotechnology Research Center is the first of its kind in the southeastern United States, and the research that will be conducted in the Center has the potential to touch nearly every aspect of human life. This commitment is a great demonstration of Harris Corporation’s dedication to finding the new frontier of communications technology. In honor of their support, Georgia Tech will name a laboratory in the facility after Harris Corporation.

Suzy Briggs Takes New Position at Tech

Suzy Briggs, ECE’s director of Development, took a new position as the director of Business and Research Development Initiatives in the Georgia Tech Provost’s Office, effective November 16.

During her nine years of service with ECE, Ms. Briggs built solid relationships with the School’s external constituencies, according to Gary S. May, Steve W. Chaddick School Chair of ECE. She amassed not only an extraordinary amount of financial support for the School, but most importantly, a sense of good will and common purpose among ECE alumni and corporate partners.

“The increased corporate and alumni involvement has brought a new, positive dimension to ECE within the last decade, and the lion’s share of that reality is due to Suzy’s hard work and dedication,” said Gary S. May, Steve W. Chaddick School Chair. “While Suzy’s departure is a loss for us, it is a gain for Georgia Tech in areas where ECE is a proven leader.”

College of Engineering Award Honorees

The College of Engineering held its annual alumni awards induction ceremony on November 4, 2005 at the Grand-Hyatt Atlanta. Seven ECE alumni were inducted into the following groups of honorees.

College of Engineering Council of Young Engineering Alumni

John Ball, MSEE ’92
Founder & CEO, Netonomy

R. Thomas Dyal, BEE ’88
General Partner, Redpoint Ventures

Leslie Rosas Sibert, BEE ’85
Vice President, Transmission, Georgia Power Company

College of Engineering Academy of Distinguished Engineering Alumni

Christopher J. Bowick, BEE ’77
Senior Vice President, Engineering and Chief Technical Officer, Cox Communications, Inc.

William N. Cantrell, BEE ’74
President, Peoples Gas System

Raouf Halim, MSEE ’85
CEO, Mindspeed Technologies

J. Phil Mobley, BEE ’75, MSEE ’77
Senior Vice President, R&D, Alfred Mann Foundation

James R. Carreker Distinguished Lecture

Stan Williams: Electronics Can Operate Perfectly Despite Manufacturing Defects

R. Stanley Williams, HP Senior Fellow and director of the Quantum Science Research (QSR) Group at Hewlett-Packard Laboratories, spoke to a standing room only crowd at the James R. Carreker Distinguished Lecture on November 15, 2005.

Dr. Williams spoke on “Defect Tolerant Nanoelectronics,” where he focused on the tremendous business incentive to invent new, nanoscale electronic devices and circuits and the new fabrication techniques that are needed to inexpensively produce and connect these devices in vast quantities. To address these two challenges, Dr. Williams and the QSR Group have incorporated defect tolerance—the capability to operate perfectly even in the presence of manufacturing mistakes in the circuit—into the design of the system, since it is prohibitively expensive to fabricate a perfect network of billions of nanoscale components.

Dr. Williams was a co-organizer and co-editor of the workshop and book, Vision for Nanotechnology in the 21st Century, which led to the establishment of the U.S. National Nanotechnology Initiative. He was also named to the inaugural Scientific American 50 Top Technology leaders in 2002, and the molecular electronics program that he leads was named the Technology of the Year for 2002 by Industry Week magazine.
Faculty and Upperclassmen Host the First ECE Rush
Introducing Students to the Electrical and Computer Engineering Profession

CE freshmen and undecided engineering majors attended ECE Rush on August 31 to learn more about research, education, student organizations, and career opportunities from the School’s faculty, staff, and upperclassmen.

Douglas B. Williams, associate chair for ECE Undergraduate Affairs, pointed to CNN’s recent program on the Top 25 innovations of the past 25 years, where every product—including the Internet, hybrid cars, modern hearing aids, and cell phones—has improved the quality of everyday life, either by increasing efficiency, enabling faster communications, providing cleaner energy sources, or helping people with disabilities lead fuller lives.

To bring engineering technology to life, ECE faculty and students demonstrated the basics behind power generation, solid state lighting systems, analog vs. digital music synthesis, microprocessor architecture, and binary logic and calculators. Prize drawings were interspersed throughout the event, with giveaways ranging from iPod shuffles to T-shirts. Companies that provided support for the event are among Georgia Tech’s top 20 employment recruiters—Hewlett-Packard, Altera Corporation, Milliken, ADTRAN, Harris Corporation, Sun Microsystems, EchoStar, BellSouth, Advanced Micro Devices, and Analog Devices.

Several students said that past hands-on experiences helped them in deciding to pursue an engineering education. Le Garen Toomer, a freshman electrical engineering major from Dawson, Ga., participated in a “job shadow” program at an EMC and helped an engineer solve a problem with a power generator. Others added that Georgia Tech’s national reputation was a major draw.

Women of ECE Hosts Fall Reception

On October 31, 2005, the Women of ECE (WECE) hosted their fall event—a Halloween and Trivial Pursuit party, sponsored by Harris Corporation. Nearly 100 students and faculty gathered at a festively decorated Student Center Ballroom, where they enjoyed dinner and a game of Trivial Pursuit, tailored for the occasion.

Among the questions asked were:

1. When was the first woman admitted to Tech?
2. How many women enrolled that year?
3. Who was the first female student to receive a PhD in EE from Georgia Tech?
4. Who was the first female ECE professor at Tech?

WECE was formed in fall 2004 to establish a community of and for women at ECE and to increase awareness of career and education opportunities in engineering.
David Parks (BEE ’50) is a retired minister in Black Mountain, N.C. He is hoping to contact some former classmates from the class of 1950 in electrical engineering.

In retirement, Randy Cabell (BEE ’53, MSEE ’54) and his wife, Mary Kay, continue to be the Johnny and Janie Appleseeds of southern brass bands in Virginia and North Carolina. They recently established a fund for their fourth: pre-Civil-War over-the-shoulder saxhorns for the Stonewall Brigade Band in Staunton, Va.

Joe McGrady (BEE ’64) retired in March 2005 after 41 years working for NASA, Tektronix, and Maxim. He recently relocated from Portland, Ore. to Rhode Island to be near family.

Clarence V., “Mac” McMillin, Jr. (BEE ’75) celebrated his 30th anniversary with Square D. Company on April 1. He is a senior application engineer at the Seneca, S.C. plant and an authority on three-phase AC induction motor control. Before transferring to Seneca, he was in the Columbia, S.C. plant for 21 years. Mr. McMillin and his wife of 36 years, Karen, reside near Clemson, S.C., and have two married adult children and two grandchildren. His hobbies include collecting antique toy trains and riding railroad motorcars.

Scott Madigan (BEE ’79) was recently appointed to the Technical Advisory Board of Wave 7 Optics Inc., in Atlanta. He is the president of Tphone.US, an Atlanta-based CLEC and ISP serving multi-tenant residential properties and small-to-medium sized businesses in the Atlanta area, with plans to expand throughout the southeast U.S.

In March 2005, Joseph Mait (MSEE ’80, PhD ’85) was promoted to senior technical researcher (ST) for Electromagnetics at the U.S. Army Research Laboratory. Dr. Mait is one of only 41 STs in the entire Army civilian workforce. Since joining ARL in 1988, Dr. Mait has made contributions to optical imaging, optical signal processing, and diffractive optics. From 2001-04, he was on special assignment to the National Defense University’s Center for Technology and National Security Policy in Washington D.C., where he conducted research on the role of technology on the future Army.

John D. Lanza (BEE ’87, MSEE ’87) has joined the law firm of Choate, Hall, & Stewart as a partner in the firm’s Intellectual Property Department. Mr. Lanza focuses his practice on a variety of technology areas, including computer and computer-related technologies, software, Internet technologies, electronic commerce technologies and business methods, computer security, cryptography, imaging systems, electronic devices, and printed circuit technology. He also serves as an adjunct professor of law at the Boston University School of Law and the Northeastern School of Law.

Thomas Wicinski (BEE ’90) lives in German-town, Tenn.

Dong-Wook Lee (PhD ’92) is a professor at Dongguk University in South Korea.

Mark Doble (MSEE ’94) was promoted to senior solution architect for Hewlett Packard Managed Services, where he is in charge of enterprise solution design for major HP customers in the Americas. He and his wife, Liana, live in Raleigh, N.C. with their children Jack, Nick, Connor, and Jessica.

Scott Belanger (PhD ’96) received certification as a Project Management Professional (PMP) by the Project Management Institute. As a senior program manager for General Dynamics Advanced Information Systems in Ypsilanti, Mich., he oversees technology development, strategic programs, and business pursuits related to the delivery of integrated defense systems.

Krishna Narayanan (PhD ’98) is an associate professor at Texas A&M University. He received the National Science Foundation CAREER Award in 2001 and the Outstanding Professor Award in 2003. Dr. Narayanan recently spent a sabbatical visiting Illinois, France, and India. He is married with two children ages 4 and 2.

Kenneth A. Voss (MSEE ’99) passed away May 23, 2005 after a long battle with cancer. He leaves behind his wife, Robin, and son, Joshua. The entire National Service Delivery leadership team at Cingular Wireless was extremely proud to dedicate the Alpharetta Technology Center to Kenneth A. Voss.

Kathy Harrington (BSEE ’02), a clerk with the patent law and tax law offices of Curt Harrington, graduated from Mercer University Law School with a Juris Doctorate in May 2005. Kathy previously graduated from Georgia College with a bachelor of science degree in nursing in 1987 and received her BSEE with Highest Honors from Georgia Tech in 2002. Ms. Harrington began with the Georgia Bar Examination during summer 2005.

Joseph Hobbs (PhD ’02) is a senior project engineer with Delphi Corporation in Warren, Ohio. He welcomed the birth of his second child, Owen Oscar Jude, in 2005.

Gregory Triana (MSEE ’02) is a manufacturing technology specialist I with Gulfstream Aerospace Corp. in Savannah, Ga. After receiving his master’s degree from Georgia Tech, he completed a one-year master’s program at Penn State in the Quality of Manufacturing Management program.

Chi (Jerry) Shum (MSECE ’03) is a design engineer with VT Silicon, Inc. at the Advanced Technology Development Center, located at Technology Square in Atlanta, Ga.

---

**Want to Know!** Share your news with your ECE classmates and friends. Just complete this form, clip, and mail or visit our web page at www.ece.gatech.edu/alumni and tell us online.

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information for ECE News (recent awards, job changes, papers, patents, etc.)

---

Home Address

Work Address (including company name)

Daytime Phone

Email

Mail to Jackie Nemeth at the School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA 30332-0250
Ali Sonmez Finishes Year of Service in Afghanistan

Ali Sonmez (MSEE ’98) has been engaged in military service since his undergraduate Reserve Officer Training Corps (ROTC) days at Cornell University. In the mid 1990s, Mr. Sonmez moved to Georgia to join Scientific-Atlanta as an RF engineer. Soon after arriving, he decided to pursue his graduate studies at Georgia Tech, where he earned his master’s degree in 1998. Today, he is the hardware design team manager within ARRIS’ broadband division.

Throughout the years, Mr. Sonmez has been an active member of the Army National Guard. When his current unit, the 228th Signal Brigade of the South Carolina Army National Guard, left on a mission in October 2004 to send a contingent to Afghanistan, Mr. Sonmez was selected to serve on a team assigned to Bagram Air Field, working for Combined/Joint Task Force-76 in support of Operation Enduring Freedom. His major assignment was as the Plans Officer for the CJ6 (communications) staff section, where he was responsible for defining and managing $50 million in communications infrastructure projects.

While in Afghanistan, Mr. Sonmez discovered an Egyptian-run hospital within Bagram Air Field serving local Afghans. He volunteered to help distribute donated items to the patients within the facility and was so moved by the experience that he initiated his own charity drive. He asked friends and family to send him children’s clothing and other needed items, and he also approached ARRIS, which sponsored its own donation drive. This past August, he took the donated items on a civil assistance mission to a local orphanage outside of Bagram. In the midst of a country that has been plagued by 25 years of constant warfare, Mr. Sonmez was deeply gratified to “bring some joy into these people’s lives.”

Mr. Sonmez returned to the U.S. last October and is reveling in his homecoming, while preparing to resume his work with ARRIS. Most especially, Mr. Sonmez is excited to be with his seven-month old son, who he has not seen since he was two weeks old.