

DEPARTMENT OF

Electrical & Computer Engineering

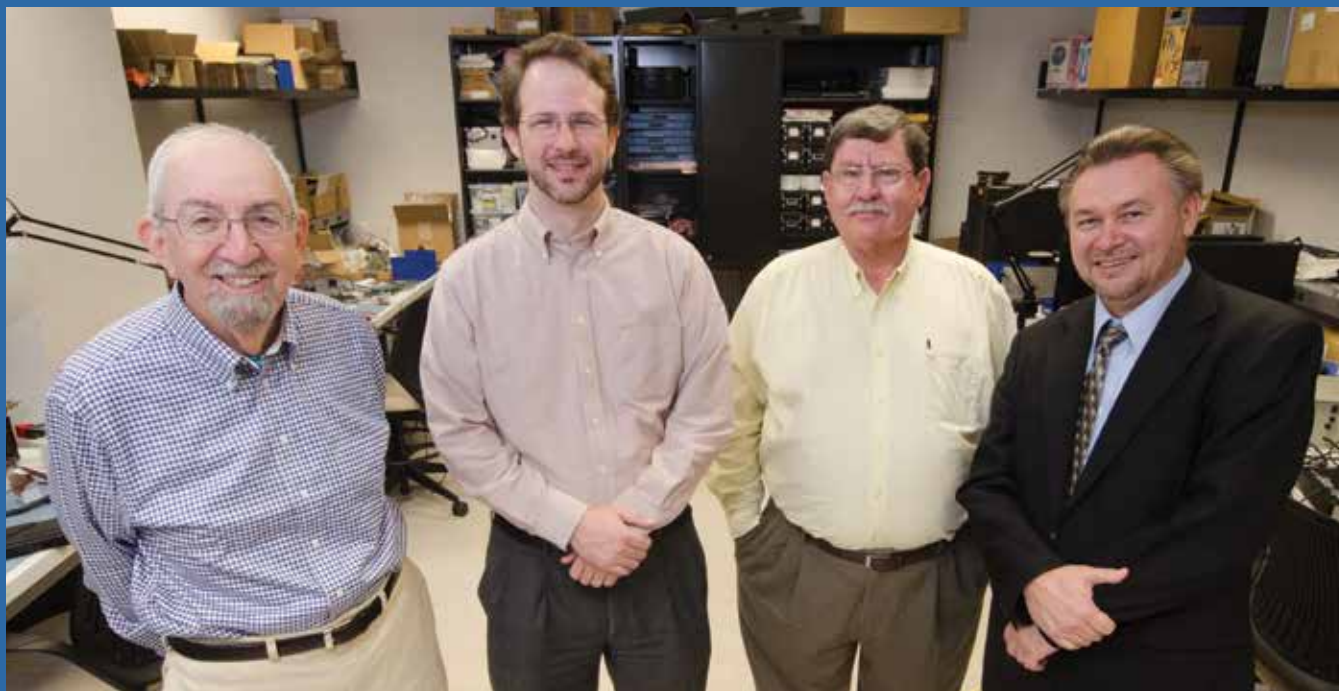
UNIVERSITY OF FLORIDA

SPRING 2013

SEE PAGE 4

**CREATING
LIGHTNING:
A LOOK
INSIDE THE UF
LIGHTNING
LAB**

Electrical & Computer Engineering



Meet the Lightning Lab Experts: from left to right: Martin Uman, Robb Moore, Doug Jordan, and Vladimir Rakov. (Photo by Eric Zamora).

In This Issue

3

MESSAGE FROM THE
DEPARTMENT CHAIR
John Harris

4-5

RESEARCH PROFILE:
Creating Lightning

6-7

FACULTY FOCUS:
Meet the Experts Inside the
Lightning Lab

8

LAB NEWS:
IMG Lab Renovations

9

FACULTY
NEWS

10-11

STUDENT
NEWS

12

STAFF SPOTLIGHT:
Grants, the Lifeblood of ECE

13-14

ALUMNI:
Engineering Leadership Summit

15

IN MEMORIAM:
Remembering ECE alumni
& faculty

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On the Cover: Triggered lightning at the ICLRT during Tropical Storm Debby 2012.
Photo by Dustin Hill



Message from the Department Chair



Welcome to the Electrical and Computer Engineering Department at the University of Florida. I am now halfway through my second year as department chair, and it is still a humbling experience for me to run the ECE department with our top-notch faculty and staff. It is a pleasure to help inspire a new generation of eager, enthusiastic students. In Fall 2012, ECE graduated another crop of outstanding engineers: 44 Bachelors, 36 Masters, and 12 Doctoral degrees. Congratulations to our students and faculty for their hard work.

As you will read in this newsletter, it certainly has been exciting times in our department. Our ABET accreditation visit was October 1-2, 2012 and our EE and Computer Engineering degrees were re-accredited for another six years. Special accolades to Dr.

Henry Zmuda and Laurie Edvarsson for all of their work. Our EE students were especially enthusiastic about our program and were not shy in bragging about us to the evaluator. Our advisory board chair, Gator Handley (BSEE '62), was a tremendous help. Finally, much thanks to Associate Dean and former ECE chair Mark Law who oversaw the entire process, not just for our EE degree, but for every degree in the college.

One of the pleasures of my job is interacting with our huge network of passionate alumni. You can read in this newsletter about the college's Leadership Summit on Oct 19, 2012. We had two of our notable department alums participating: Lesa Benton Roe (BSEE '86, Director of Langley Research Center, NASA) and Linda Rae (BSEE '87, President of Keithley Instruments). I am very pleased that Power Grid Engineering, LLC has supported speakers for our department seminar to discuss power systems. Power Grid Engineering President Michael Wright (BSEE '98) has been instrumental in renewing the interest of our students and faculty in this vital area. We are also grateful for Carole T. and Harlan Y. Harrell, Jr. (BSEE '61) for supporting an endowed fund for engineering ethics in our department. Chris Malachowsky (BSEE '83, Co-Founder of nVIDIA) will be the commencement speaker at our spring commencement ceremony. These are just a few of the many alumni that care and are giving back to our department, college and the university. It is wonderful to have such successful alumni and fantastic that they continue to help us further our mission.

Whether you are an alumnus, current or prospective student, faculty member, staff, friend or a curious member of the public, we welcome you to become a part of the University of Florida ECE family. Please keep in touch, and we welcome a visit when you are in Gainesville.

Best Regards,
John Harris
Professor and Chair

CREATING LIGHTNING

Each year approximately 25 million cloud-to-ground lightning flashes strike the United States. Between 5 and 10% of those flashes occur in Florida, parts of which suffer 40 ground strikes per square mile annually. In addition to killing and injuring humans, the annual cost of North American insurance payouts from lightning-related damage has been estimated to be as high as \$1 billion; the airline industry estimates that lightning accounts for \$2 billion annually in operating expense and passenger delay; lightning-induced fires in the Western United States lately cost \$1 billion per summer to fight, and lightning induced power-outages and blackouts cost nearly \$1 billion annually.

The University of Florida ECE Lightning Research Laboratory, the premier lightning research and testing facility in the world, studies not only naturally-occurring lightning, but remarkably, creates approximately 30 additional lightning flashes to ground each summer that otherwise would not have occurred and that can be studied at very close range. An example of one of these events is shown on the cover. The Lightning Lab is funded by several NSF grants (Vladimir Rakov and Robb Moore are the principal investigators on these), a NASA grant (Martin Uman, principal investigator), and a DARPA grant (Martin Uman, principal investigator). The \$10 Million four-year DARPA program involves eight other university teams as UF sub-contractors, many of whom assemble for collaborative research at the Lightning Lab's outdoor research facility known as the International Center for Lightning Research and Testing (ICLRT) during the summer, lightning season. As Martin Uman points out, "in terms of research expenditures, the Lightning Lab is the top program in the UF College of Engineering."

Located on 100 acres of flat land at the Camp Blanding Army National Guard base near Starke, Florida, the ICLRT, with Camp Blanding air traffic control, launches rockets with trailing grounded wires toward the thunderclouds, "triggering" lightning from natural thun-

derstorms. Generally, these thunderstorms are already producing lightning, but sometimes the ICLRT triggers lightning when lightning has yet to occur (see cover photo). The 1-meter long rockets used at Camp Blanding are fitted with a special spool carrying 700 meters of Kevlar-reinforced copper wire. The triggering wire, connected to a designated strike point on the ground, unspools from the rocket as the rocket rises toward the thundercloud. Triggering usually occurs when the wire top is about 300 meters in the air, approximately the height of the Empire State Building.



Figure 1: Triggered lightning from the tower launcher at the ICLRT. The copper triggering wire explodes at the right (straight vertical green line) with the wind blowing its remains to the left. Several downward leader/upward return stroke sequences (tortuous white channels) follow at hundredths of a second intervals, also blown by the wind to the left in this time exposure. (Photo by Dustin Hill).

Triggered-lightning experiments have provided considerable insight into natural lightning processes and have enabled the practical testing of various systems such as overhead power distribution lines (visible behind the tower launcher in Figure 2), underground cables, airport runway lightning systems, lightning arresters, a residential structure at the ICLRT (it can be seen just to the left of the launch tower in Figure 2), a gas pipeline,

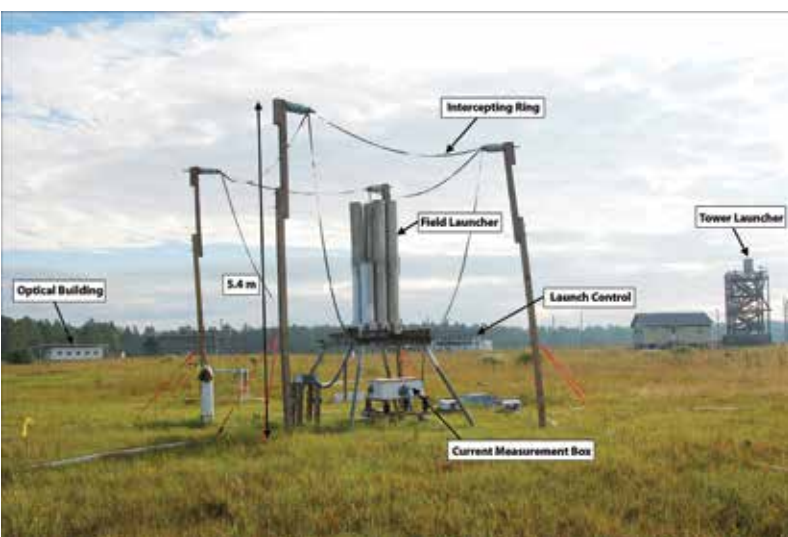


Figure 2: ICLRT Ground-based and Tower rocket launchers, Launch Control, and the Optical Building at Camp Blanding near Starke, Florida. About 100 electromagnetic and optical measurements are arrayed around the research area of the ICLRT.

and explosive material used in nuclear weapons. According to Vladimir Rakov, “As our society becomes more technological with computers and sensitive electronics, it becomes increasingly vulnerable to lightning strikes. Our goal is to understand how lightning works so we can figure out new ways to protect ourselves.” Below are a few of the many new published scientific results previously obtained at the Lightning Lab:

- the thorough characterization of the electromagnetic environment (electric and magnetic fields and their derivatives) within tens to hundreds of meters of lightning, leading to new lightning testing standards;
- the discovery and characterization of x-rays produced by lightning leaders and 3D location of pulses of x-rays relative to the lightning channel;
- new insights into the lightning leader stepping mechanism;
- the first coherent picture of the mechanism of electromagnetic radiation produced by Compact Intracloud Discharges (CIDs)
- the direct measurements of the level of NO_x (nitrogen oxides) production by an isolated lightning channel section.

For more information about the UF Lightning Research Lab and to see a list of reviewed journal articles related to the DARPA program, visit its website: www.lightning.ece.ufl.edu. To meet the faculty experts of the Lightning Lab, see the companion article on page 6.

TOP TEN QUESTIONS ABOUT LIGHTNING

According to Martin Uman, the research goal of the present DARPA grant is to answer the following “top ten” questions about lightning, using a combination of experimental techniques and mathematical modeling:

1. What physical mechanisms cause lightning to be initiated in the thundercloud? Are high energy processes (e.g., cosmic rays, in-cloud-generated x-rays) involved?
2. What physical mechanisms govern the propagation of the different types of lightning leaders (the lightning process following initiation) inside the cloud and between the cloud and ground?
3. What is the physical mechanism of lightning leader attachment to elevated objects on the ground and to the flat ground?
4. What is the physics of compact intracloud discharges (CIDs) that produce narrow bipolar wideband electric field pulses from apparently repeatedly-reflected (within about 1 km length) propagating current waves, accompanied by copious HF and VHF radiation?
5. By what physical mechanisms do lightning leaders emit pulses of x-rays? By what mechanism do thunderclouds generate relatively-steady gamma-radiation glows? Do x-rays and other high energy radiation play a role in cloud electrification or lightning initiation?
6. By what physical mechanisms are Terrestrial Gamma-Ray Flashes (TGFs) produced? (TGFs are primarily observed on orbiting satellites above thunderstorms, but they have been recorded twice on ground at the ICLRT). Do TGFs pose a hazard to individuals in aircraft?
7. How do cloud-to-ground and intracloud lightning affect the upper atmosphere, ionosphere, and magnetosphere? What are the physics of the lightning-associated Transient Luminous Events (TLEs) such as “sprites”, “jets”, and “elves” observed above cloud tops? Is lightning the primary natural driver of energetic electron precipitation from the Earth’s radiation belts?
8. How exactly does the rocket-and-wire triggering of lightning work?
9. What are the power and energy of the component processes of lightning flashes and how are they distributed among electromagnetic, thermal, mechanical, and relativistic (high energy) processes?
10. What is the physics of ball lightning? Is there more than one type of ball lightning?

INSIDE THE LIGHTNING LAB

Over the past 15 years, the UF Lightning Research Laboratory has been featured in some 20 TV documentaries, including ABC's Nightline, PBS's Nova, National Geographic Channel, Discovery Channel, NBC Dateline, The Learning Channel, and a Weather Channel Special. In 2012, *Popular Science* magazine named it one of its feature "Labs that Go Boom" and included it on its list of "Awesome College Labs" of 2011; it has been featured in numerous articles including those in *The New York Times* and the *Financial Times of London*.

The Lightning Research Laboratory was founded in 1971 by Distinguished Professor Martin Uman soon after he arrived at UF from the Westinghouse Research Laboratories in Pittsburgh.

Meet the Lightning Lab Experts

The 2012 Lightning Lab faculty has a wide range of lightning expertise. The four faculty experts have published hundreds of journal articles, seven monographs on lightning, and hold thirty-nine patents regarding lightning. They have received numerous scientific awards for significant contributions to their respective specialties as well as academic accolades for research and teaching.

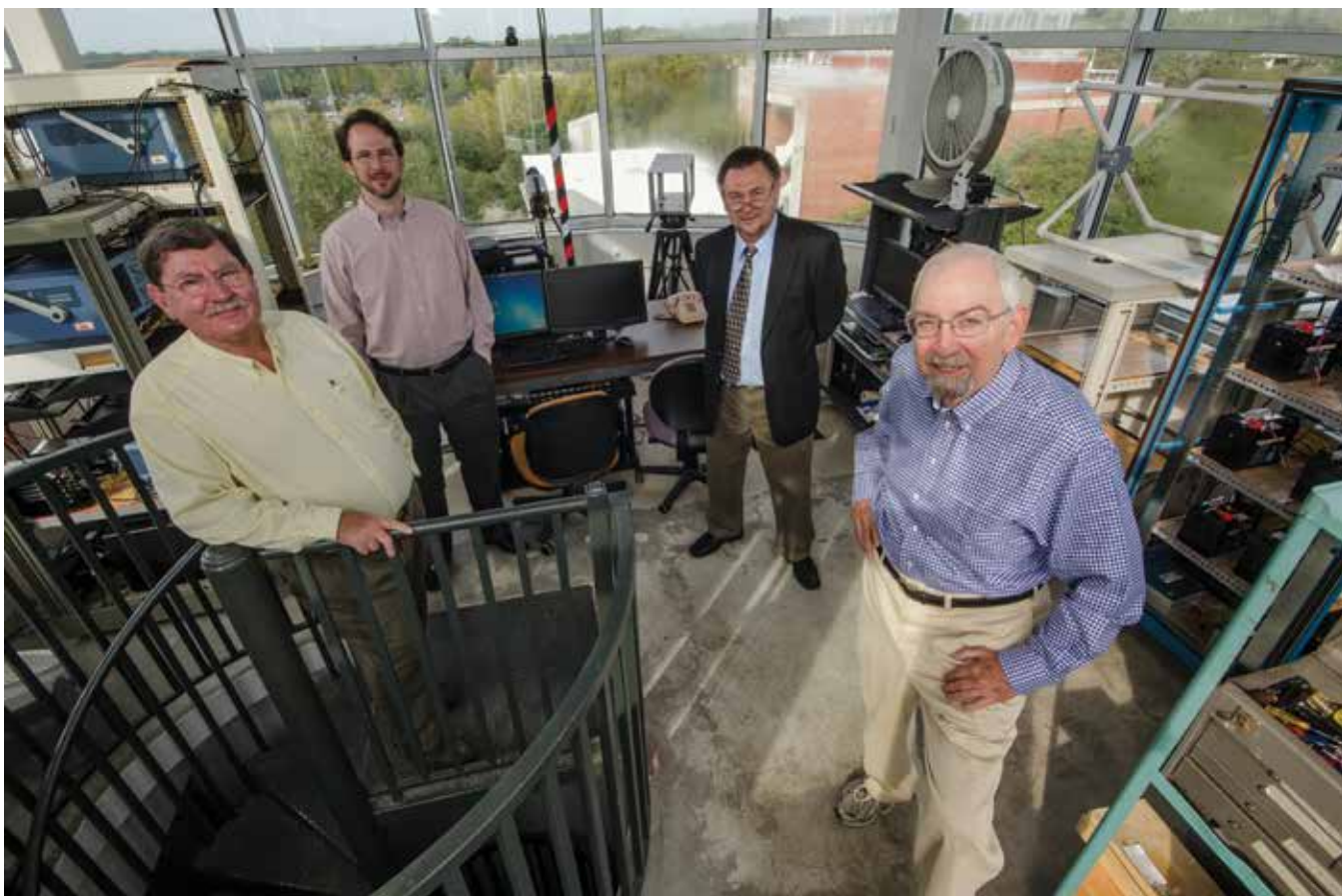
Professor Martin Uman founded the Lightning Lab in 1971, as noted above, and with Vladimir Rakov, co-founded the ICLRT in 1994 as part of the lab. Uman, who earned his PhD from Princeton University, is Distinguished Professor of ECE and was ECE department chair from 1990-2002. Uman, along with Rakov, are generally acknowledged to be among the world's top few authorities on lightning physics and protection. Uman is probably best known for his work in lightning modeling: the application of electromagnetic field theory to the de-

scription of various lightning processes. He first became interested in lightning as an associate professor at the University of Arizona; after which, he studied the physical and electromagnetic aspects of lightning and long laboratory sparks for seven years at the Westinghouse Research Labs in Pittsburgh. Uman primarily works on experiments related to the triggering of lightning at the ICLRT.

Professor Vladimir Rakov came to UF in 1988 from renowned Tomsk Polytechnic University as Russia's leading lightning expert. Rakov's areas of interest and publications span the spectrum of lightning related topics from classical atmospheric electricity to lightning physics to lightning protection problems. Presently, Rakov and his students operate the on-campus Lightning Observatory in Gainesville (LOG) located on the roof of the New Engineering Building. The LOG includes a glass cupola providing more than 180 degrees of unobstructed viewing of the horizon. They also coordinate via dedicated communication lines and analyze simultaneous measurements at the ICLRT, LOG, and a separate Starke station.

Dr. Douglas Jordan earned his PhD from UF in 1990 under Uman and is now the Operations Director of the ICLRT. He supervises all triggering operations, coordinates the activities of visiting researchers and is responsible for the equipment and facilities at the Camp Blanding research site. Prior to his position at the ICLRT, he was undergraduate coordinator for ECE and taught several core undergraduate ECE courses.

Assistant Professor Robert Moore, who received his PhD from Stanford in 2007, is the latest addition to the team. He installed and operates a year-round network of ELF/VLF radio receivers that spans the globe. The receivers are capable of detecting the electromagnetic fields generated by lightning occurring more than 10,000 km away. The ELF receiving array presently



From left to right: Doug Jordan, Robb Moore, Vladimir Rakov, & Martin Uman in the LOG cupola on the roof of the New Engineering Building. (Photo by Eric Zamora)

consists of six receivers, with three in Alaska, one in California, one in Greenland, and one in Antarctica. The VLF receiving array consists of eleven receivers, with three in Alaska, three in Antarctica, and one in each of Florida, Alabama, Texas, California, and Greenland. The VLF/ELF receiving network is primarily used to study the effects of natural and triggered lightning on the lower ionosphere and hence to determine the properties of the lower ionosphere.

The ICLRT is presently collaboratively operated by UF's primary DARPA subcontractor, the Florida Institute of Technology, led by Professor Joseph Dwyer, the world expert in high energy lightning processes (x-rays, gamma rays, runaway electrons and positrons).

In addition to the four primary researchers noted above, over the years UF has hosted about 50 international lightning researchers from 15 countries on 4 continents who participated in collaborative lightning experiments at Camp Blanding and associated data analysis. One of the Lightning Lab's important functions is training students to conduct research as part of their graduate degree requirements. In the past few years, the Lab has graduated four PhDs with nine more graduate students scheduled to be awarded PhDs before the end of the DARPA grant. In addition to the graduate students, a number of undergraduates gain practical working experience at the Lab and are essential to its successful operation.

Breaking Down Barriers: IMG Lab Renovations

According to the National Institute of Building Sciences, modern laboratory design focuses on functionality and adaptability in both current uses and future needs. One new design trend is the creation of buildings that facilitate formal and informal social interaction with an emphasis on shared resources and flexibility. One recently renovated engineering lab serves as a model for this new trend toward shared space.

The Interdisciplinary Microsystems Group (IMG) is a multi-departmental education and research program of the College of Engineering at the University of Florida. IMG operates under the direction of Drs. Toshikazu Nishida, Huikai Xie, David Arnold, and Y.K. Yoon of the Department of Electrical and Computer Engineering and Drs. Mark Sheplak, Hugh Fan, Henry Sodano, and Saeed Moghaddam of the Department of Mechanical and Aerospace Engineering.

Begun as a collaboration between the ECE and MAE departments, IMG has grown from 2 faculty members and 2 students in 1998 to 8 faculty members and 70 graduate students. To accommodate this growth, after the completion of the Nanoscale Research Facility, the former clean room in Benton Hall was renovated to develop shared labs. According to Dr. Toshi Nishida, one of the founding members of IMG, this environment “facilitates collaboration and efficiency by sharing equipment, which in turn minimizes redundancy. The labs are organized by functionality rather than ownership.” To further enhance student collaboration, faculty offices were swapped to create open student space. The IMG faculty offices are now housed in nearby Larsen Hall while the students in Benton Hall are adjacent to the shared labs in an open space with cubicles, a shared computer work station, and an informal gathering place for students to interact. Gone are the traditional offices, wall space, and closed in feel of more traditional labs.

With the strong support of the department and the

college, IMG has been transformed into a truly collaborative lab. Not only do the labs encourage open communication, but also they emulate the type of corporate lab space that students will encounter when they enter industry jobs.



Figure 1: Shared lab space on the 2nd floor of Benton Hall; to the left are the labs arranged by functionality such as prototyping, packaging, electrical and mechanical characterization, and optical testing. To the right are the student workspaces within the open plan. The old faculty office walls were torn down to facilitate communication among students.



Figure 2: View of a lab from within the student workspaces. This combination of shared labs and open space accommodates functionality and collaboration.

FACULTY NEWS



DR. PRAMOD KHARGONEKAR has been selected by the National Science Foundation to serve as its assistant director for the Directorate of Engineering, known as the ENG. Khargonekar, who will retain his position at UF, will lead the ENG directorate with an annual budget of more than

\$800 million. ENG invests in frontier engineering research and education, cultivates an innovation ecosystem and develops the next-generation engineer.

“Dr. Khargonekar brings to NSF extensive leadership, creativity and initiative in engineering research,” said NSF Director Subra Suresh. “He has helped pioneer interdisciplinary efforts between the biological and engineering research communities and demonstrated a deep appreciation for developing the STEM workforce, which is an NSF priority.”

Khargonekar’s engineering research encompasses control systems theory and applications, smart grid and renewable energy, semiconductor manufacturing, and modeling and control of neural systems, among other areas. He has received many awards and honors and is a Fellow of IEEE.



DR. DAPENG OLIVER WU has been named an IEEE Fellow “for contributions to video communication and processing and wireless networking,” on November 26, 2012. Dr. Wu earned his PhD from Carnegie Mellon University. His research interests are in the areas of

networking, communications, signal processing, computer vision, and machine learning. He serves as director of the Wireless Information Network Group (WING) at UF.



DR. ALAN GEORGE has been named an IEEE fellow “for contributions to reconfigurable and high-performance computing,” on November 26, 2012. Dr. George earned his PhD from Florida State University. Dr. George’s interests focus upon high-perfor-

mance architectures, networks, systems, services, and

applications for reconfigurable, parallel, distributed, and fault-tolerant computing, from satellites to supercomputers. He is the founder and director of the NSF Center of High Performance Reconfigurable Computing (CHREC) at UF.



DR. JOSE FORTES has been elected to the rank of American Association for the Advancement of Science (AAAS) Fellow for his innovative contributions to cyberinfrastructure for science and education, particularly for the use of virtualization and distributed computing to enable computational science as a service, November 10, 2011. The award ceremony took place during the Association’s Annual Meeting in February 2012.



DR. SEAN MEYN hosted the first “Interdisciplinary Workshop on Smart Grid Design and Implementation” on December 7-8, 2012 at UF. The event was a great success. Speakers and attendees came from around the world to discuss the promise of renewable energy and how to best achieve a sustainable energy future. Work has already begun on a second workshop for 2013. For those unable to attend, go to ccc.centers.ufl.edu for a link to videos and slides from the 2012 workshop.



DR. ANDY LI was awarded \$1.2 million from the NSF to create a campuswide cyber network called GatorCloud. The network, the first of its kind, will be one of the fastest university networks in the USA. Dr. Li, principal investigator, along with co-principal investigators Dr. Erik Deumens and

Dr. Paul Avery (physics), Sanjay Ranka (CISE) and Alan George (ECE), plan to build the infrastructure that will enable UF researchers to collaborate with global organizations such as NASA and will offer a unique interdisciplinary resource for UF and its partners to train and educate graduate and undergraduate students in courses and research projects.

STUDENT NEWS



ECE Department Chair John Harris and WECE members at the 2012 Leadership Summit.

WECE Helps Women Make Strides in Engineering

According to the National Science Foundation, in 2001, 197 women earned PhD's in electrical engineering while in 2011, 382 women earned PhD's in electrical engineering. Looks like a promising trend, but when compared to men who earned 1,787 PhD's in electrical engineering, the disparity is clear. No one is surprised that men outpace women in STEM fields by a large margin. Since more men than women earn advanced engineering degrees, more male engineers enter the workplace, but women excel at the skills employers look for – collaboration, innovation, and communication. At UF, the ECE department is making strides to encourage women to enter engineering through its UF Chapter of Women in Electrical and Computer Engineering (WECE).

WECE was established in 2006 with the mission “to create, encourage, and support academic, professional, and social opportunities for women in Electrical and Computer Engineering at UF.” WECE accomplishes this mission of academic and professional development through peer mentoring, role modeling, providing career services, and offering ECE lab tours and presentations to technical interest groups. Recently, WECE hosted career information sessions with Harris Corporation, GE, and Georgia Pacific and has had past events with Texas

Instruments. Since girls must be exposed to the engineering field at a young age, WECE members, in conjunction with HKN members, visited a local elementary school to educate children about engineering careers and to get kids interested in science. At its “Fall Research Symposium” WECE brought students and professors together to discuss research in ECE. In addition to academic and career events, WECE holds several social events throughout the year such as bowling, celebrating Halloween, barbecuing at Lake Wauberg, and honoring ECE employees.

STEM fields are at the forefront of academic concerns both at UF and nationally, and WECE is helping women excel at these important fields through its education, support, and outreach. To learn more about WECE, visit its web site: www.wece.ece.ufl.edu or “like” it on facebook.

FALL 2012 GRADUATION

The Department of Computer and Electrical Engineering wishes to extend congratulations to all the ECE graduates for Fall 2012. Special recognition goes to the following PhD graduates.

- ▶ Oluwatosin Adeladan
- ▶ Tai-An Chen
- ▶ David Cheney, UF post-doc
- ▶ Lin Li, Research Staff, Philips Research North America
- ▶ Zhongqi Li, Sr. Systems Engineer, Qualcomm
- ▶ Jessica Meloy
- ▶ Luis Sanchez-Giraldo
- ▶ David Senior, Associate Professor, Universidad Tecnologica de Bolivar
- ▶ Sankrith Subramanian
- ▶ Qiang Wang
- ▶ John Wernsing, Software Development Engineer 2, Microsoft
- ▶ Songlin Zhao

ECE Student Builds Robot “Bird Buggy” and Earns National Attention

When students in ECE Professor Eric Schwartz’s course Intelligent Machines Design Laboratory were instructed to create autonomous robots that need neither continuous human guidance nor remote controls to perform tasks, ECE master’s student Andrew Gray thought of his pet bird, Pepper.

Andrew’s African grey parrot “Pepper” inspired him to create a “buggy” that allows Pepper to roam around the house. Initially, Andrew invented a sound activated squirt gun to silence the shrieks of Pepper whenever the bird was left alone, but Pepper proved too smart and began using the water gun for bathing. According to Andrew’s “Bird Buggy” website, “Instead of startling the bird into muteness, allowing the bird to roam around the house may be a better option. However, because of the messes the bird leaves behind and the possibility of the bird getting stepped on, roaming the house un-attended is not an option. If he could be placed on a mobile platform that could move about the house, hopefully he would stop screaming. Thus the idea for the “Bird Buggy” was born.”

Ultimately, Andrew created a square-shaped, four-wheeled metal vehicle that Pepper could drive around the house; a joystick sits at the front, which Pepper controls with his beak; behind is a perch with newspapers to catch Pepper’s droppings. The buggy allows Pepper to move freely about the house with front sensors that prevent the buggy from bumping into objects. When not navigated by the parrot, the buggy will revert to autonomous mode and dock itself.



Pepper and his “Bird Buggy,” an autonomous parrot driven vehicle created by ECE graduate student Andrew Gray

Andrew presented his invention at the College of Engineering’s regular semester robot demonstrations and his video posted on YouTube became a media sensation. As of late December, the video has over 750,000 views and various local, national, and international news outlets have expressed enthusiasm for the project. In addition to stories in The Independent Florida Alligator, The Huffington Post, Wired Magazine, CNET, and even the UK’s The Guardian, Andrew’s Bird Buggy was featured on ABC’s Good Morning America, NBC’s The Today Show, and National Geographic asked for permission to use the footage. To view Pepper operating Andrew’s Bird Buggy, visit www.youtube.com/watch?v=rO2TR_8jXPc. You can also see Andrew’s full invention process at his website: <https://sites.google.com/site/birdbuggy109/>.

AWARDS

CONGRATULATIONS TO VICTORIA STEELE

the Fall 2012 Electric-E Award recipient. The Electric-E Award is the most prestigious award granted by the department. To receive this award,

an undergraduate student must have a minimum undergraduate upper division grade point average of 3.90 as well as a 3.90 or higher grade point average in all undergraduate electrical engineering courses.

CONGRATULATIONS TO ECE STUDENTS ROBERT KIRCHGESSNER AND INGRID LLAVESHI

as the first recipients of the Charles A. Poekel, Sr. Endowed Scholarship in Electrical and Computer Engineering. Charles Poekel created this scholarship to help hardworking students complete their undergraduate education and/or pursue a graduate degree.



Department Chair John Harris presents Victoria Steele with the Electric-E plaque.

Staff Spotlight

RESEARCH PROGRAMS

Angela Ventura Medyk

ECE Grants Office: The Lifeblood of the Department

Grants are the foundation of academic research; they enable departments to expand academic and educational opportunities, upgrade equipment and facilities, and benefit society and industry. In essence, grants are the lifeblood of research based academia. The ECE department recognizes the outstanding contributions of Maria Angela Ventura Medyk, Research Programs Services Coordinator II.

Angela has been working in the department's grants office since 1986. When she started in ECE, the department had about \$1.5 million in research; now the department runs more than 150 accounts with over \$14 million in research funding annually.

The creative research and the faculty's commitment to educating and training the next generation of engineers continue to motivate Angela. She enjoys helping the faculty find sponsors for their research and support for their graduate assistants. Angela also enjoys interacting with the diverse cultures that make up the electrical engineering community at the University of Florida. Faculty, students, and staff from all around the world are represented within the department.

When asked what she likes most about her position, Angela responds, "it's the satisfaction I receive when young assistant professors are awarded their first prestigious research grant, such as the National Science Foundation's (NSF) CAREER award. Their feeling of pride and their excitement are palpable." During Angela's tenure, the department has had fourteen CAREER award recipients.

Angela readily admits that "the success of the department's research program is due in no small measure to Norm Green, the department's Accounting Coordinator



"It's the satisfaction I receive when young assistant professors are awarded their first prestigious research grant ... Their feeling of pride and their excitement are palpable."

— Angela Ventura Medyk

II, who provides accounting services for ECE's contracts and grants and Marcia Hensley, the department's Grants Specialist." Angela has been working with Norm for 26 years and with Marcia for 12 years; Angela feels fortunate to collaborate with such talented professionals.

Angela Ventura Medyk received a Bachelor of Arts from Stetson University in 1980 with a double major in English and History. In 1982, she received her Master of Arts in History from the Catholic University of America in Washington, D.C. Angela has held a number of positions in conjunction with departmental research, including editorial assistant, information specialist, grants specialist, and senior grants specialist. In 1989, the department honored Angela with an Outstanding Staff Member of the Year Award. The university community also recognized Angela's hard work and dedication to her job by awarding her a Division 3 Administrative/Professional Accomplishment Award in 1992 and then a second one in 2006. Angela is a member of the National Council of University Researchers (NCURA).

ALUMNI

DISTINGUISHED ECE ALUMNAE FEATURED AT 2012 ENGINEERING LEADERSHIP SUMMIT

On October 19, 2012 The University of Florida Engineering Leadership Institute presented “Leading Innovation through Inclusion,” a day-long summit with Gator Engineering alumni and global companies such as Sandia National Laboratories, BAE Systems, Inc., Media Platform Technology, The Progressive Insurance Corporation, Harris Corporation, and Lockheed Martin. Experts discussed the active roles that leaders can play in creating workplaces and workforces that consist of cultural, gender, & ethnic diversity in disciplines and life experiences.

Among the keynote speakers was ECE alumna Linda Rae (BSEE '87) who led a discussion of “improving the work environment.” Linda is President of Keithley Instruments, responsible for managing ongoing operations of the company. Linda has received several professional awards, including recognition in Crain’s Cleveland Business “40 under 40” and as the 2003 Rainmaker in Manufacturing as part of Northern Ohio Live’s Rainmaker awards program. She has received two NorTech Innovation Awards for her role in the development of innovative new products at Keithley. Linda was inducted into the University of Florida’s Electrical and Computer Engineering Academy. Linda holds a Bachelor of Science degree in Electrical Engineering from the University of Florida, and Masters of Science in Electrical Engineering and Masters of Business Administration degrees from Case Western Reserve University.



Left to Right, CoE Dean Cammy Abernathy, Lesa Roe, and Tom Hunter, Advisory Committee Chair UF CoE Leadership Institute



Linda Rae speaking at the 2012 College of Engineering Leadership Summit

ECE alumna Lesa Roe (BSEE '86) was the recipient of the Dr. Maryly Van Leer Peck Award for “Exemplary Service in Research.” Lesa was appointed Director of NASA’s Langley Research Center in 2005, the place where NASA researches solutions to problems from global climate change and access to space, to air travel and future aviation vehicles. Lesa is the senior management official of the Center and is responsible for the Center’s technical implementation of aeronautical, space and science programs, as well as the overall management of the Center’s facilities, personnel and administration.

Lesla spent over 15 years at the Kennedy Space Center in program and project management, developing systems and flight tests for flight elements that are now in orbit as part of the International Space Station. Lesa has served as a systems engineer for over 20 Space Shuttle flights. Her honors include the Senior Executive Service Presidential Rank Award, NASA Exceptional Service Medal and Distinguished Career Achievement Award, from the University of Florida and she was also inducted to the Electrical and Computer Engineering Academy at the University of Florida in 2009. Lesa won the 2010 YWCA Women of Distinction Award in Science and Technology and was also selected as co-recipient, the 2010 Women in Aerospace Leadership Award. She holds a B.S. in Electrical Engineering from the University of Florida and an M.S. in Electrical Engineering from the University of Central Florida.

ECE Alumni Don McKinney - 2012 Gator Engineering Innovation Awardee

The Gator Engineering community is proud to honor ECE Alumni Mr. Don McKinney as the winner of the 2012 Gator Engineering Innovation Award. Don's innovative spirit is exemplified in his relentless reinvention of himself – from an electrical engineer who quickly rose to the ranks of corporate leadership, to a successful entrepreneur, a venture capitalist, an investor and a mentor. Don's fearlessness in seeking new ventures will continue to inspire and influence Gator Engineers around the world. Don is a private investor focused on IT-Services, Internet and networking, software and related software-enabled services. He was the founder of International Network Services (INS, NASDAQ: "INSS") and served as its Chairman until its sale to Lucent Technologies in 1999 for \$3.7 billion. Don has a B.S. in Electrical Engineering and an MBA from the University of Florida. On Thursday, Sept. 13, the UF Engineering Innovation Institute featured a lecture from Don McKinney entitled "Technology Entrepreneurship – Engineering The Future."



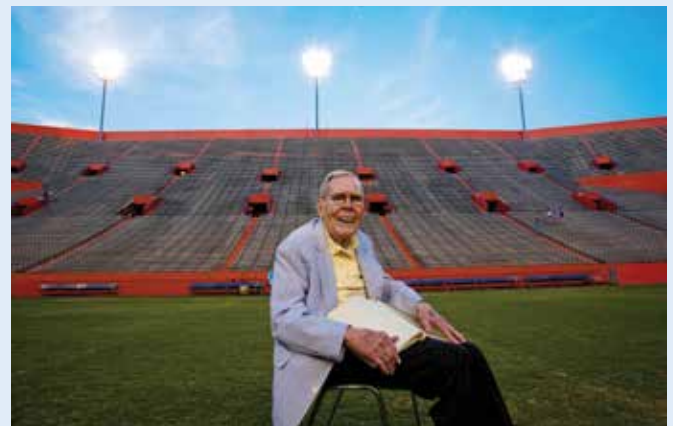
Don McKinney and his wife with COE Dean Cammy Abernathy (far right).

IN MEMORIAM

CHARLES POEKEL: 1915-2012

ECE alumni Charles Poekel passed away on November 7, 2012 at age 97. He left behind a significant legacy for his contributions to academia, industry, and to future generations of Gator engineering students. In 1938, Charles Poekel, Sr., then a UF electrical engineering graduate student, was looking for a thesis topic. At the same time, Assistant Athletic Director, Percy Beard was looking for a way to light Florida field so athletes could practice at night. With the guidance of Engineering Dean Joseph Weil, Poekel's thesis "Design of Flood-lighting For Football Stadia" brought the lights to the field. Upon earning his Master's degree with honors, Poekel embarked on his life with wife Alice and a career as an engineer. While working at Curtiss-Wright Aeronautics five years after turning in his master's thesis, Poekel invented an anti-icing method to prevent propeller blades from icing on an airplane. He eventually earned a U.S. patent for his work and the invention became the industry standard for de-icing airplane propellers.

For his 97th birthday, Poekel was scheduled to return to campus in November to attend the Florida-Missouri football game, see the plaque from the College of Engineering honoring him and meet the first two recipients of a scholarship named in his honor. "We were really looking forward to it," said Charles Poekel Jr., his son and a New York City attorney. "One of the greatest things in his 90s was the reconnection with Florida. That really inspired him." Instead of celebrating his birthday at The Swamp, Poekel was in the hospital. Charles Jr. said, "This would have been the highlight of his life if he had made it down there for that Missouri game weekend. We want to continue on with his legacy and come down there in future years." To continue Poekel's legacy, donations can be made to the "U.F. Foundation" to support the Charles A. Poekel Sr. Endowed Scholarship Fund, c/o College of Engineering Development Office, P.O. Box 116575, Gainesville, Fla. 32611. (Additional reporting by Scott Carter @ gatorzone.com).



Charles Poekel, Sr. at Florida Field, 2010. (Photo by Shannon Kalahar)

JOHN O'MALLEY: 1928 - 2012

ECE alumni and past professor John R. O'Malley passed away on December 2nd, 2012.

John earned a Bachelor's degree in Physics, a Master's degree in Engineering from Purdue University and a law degree from Georgetown University. He was a patent lawyer for General Electric but left the law to enroll in the PhD program at UF. After completing his PhD, John began his tenure as an ECE faculty member where he remained for 38 years. Former ECE department chair Martin Uman remembers John as a professor who was greatly respected by his students because "they always knew where they stood with him." He taught with firm resolve and fairness. ECE department chair John Harris states that John, "served the department for many years ... and will be missed by his former colleagues and by literally generations of students."

John is remembered by his family as a supportive, generous and exceedingly thoughtful and spiritual father and man. He leaves behind his wife of 59 years, Lois Anne O'Malley, seven children: Martin and wife Karen; Elaine Cowan and husband, Davis; John and wife Chris; Timothy and wife Siobhan; Margaret Lanier and husband Sidney; Cecilia Carey and husband John; Matthew and wife, Leota; and 18 grandchildren. (Additional information from *The Gainesville Sun*)



eral industry jobs but eventually returned to academia at the EE department at the University of Texas Dallas. Dottie was a talented electrical engineer and committed educator who will be missed by her friends and colleagues.

PEYTON PEEBLES, 1934 - 2012

Dr. Peyton Z. Peebles, Jr. 77, of Gainesville, passed away September 3, 2012. Born September 10, 1934 in Columbus, GA, Peyton spent his childhood in the southeast before attending the University of Evansville. In 1967, he earned a Ph.D. in electrical engineering from the University of Pennsylvania where he held a David Sarnoff Fellowship from RCA. Shortly thereafter, Peyton began a distinguished 30 year career in education.



Peebles was professor in the ECE department for nearly 30 years and served as associate department chair; he remained professor emeritus at UF after his retirement. He is a Life Fellow of the IEEE and a prolific scholar. Among his many accomplishments, Peyton authored 5 engineering textbooks including the highly successful *Probability, Random Variables and Random Signal Principals* (McGraw-Hill, 1980), of which the 4th edition was published in 2000. According to ECE professor Leon Crouch, "He was a very good author ... his books were appreciated by many people, and many schools used it." He is survived by Barbara, his beloved wife of 43 years, sons Peyton Z. Peebles, III of Houston, TX and Edward Peebles of Fleming Island. (Additional reporting from *The Gainesville Sun*).

DOROTHEA "DOTTIE" ELIZABETH BURK, 1948-2012

Former ECE professor Dr. Dorothea "Dottie" Elizabeth Burk passed away in a car accident in Dallas, TX on October 31, 2012. In recognition of her outstanding service to the University, the Department of Electrical and Computer Engineering, remembers her accomplishments.

Dottie received her PhD in Electrical Engineering from Brown University in Providence, RI.

Dottie joined the Electrical Engineering Department at the University of Florida in 1980 as an assistant professor and eventually became a full professor. During her tenure at UF, Dottie was principal investigator on over \$1M and co-principal investigator on \$1.5M in research. In addition to her scientific accomplishments, Dottie had a passion for helping women and minority engineers. Dottie left UF in 1995 and worked at sev-

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If so, please send photos and/or news via email to Kathie Russell, managing editor, at krussell@ece.ufl.edu or via mail at:

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