

# RES NANCE

NEWS FOR ECE ILLINOIS ALUMNI AND FRIENDS  
SUMMER 2011

## ECE faculty in the business of science

### Also in this issue:

New semiconductor  
manufacturing technique holds  
promise for solar energy

Alumna works on chip for  
Blue Waters supercomputer

Architects present  
100 percent drawings

 ILLINOIS

Department of Electrical  
and Computer Engineering



## ECE ILLINOIS: Innovating a sustainable future

Dear alumni,

“Public academic research institutions are the greatest renewable resource this country ever had. Let’s protect the one we have here in Illinois.”

With these words, University of Illinois Board of Trustees Chairman Christopher G. Kennedy concluded an inspirational address to the University of Illinois community on March 14, 2011, on “The Research University and Our Future.” Chairman Kennedy called upon the State of Illinois to empower its research universities with the urgency that our nation’s fiscal challenges demand.

For me, the most exciting moment came when Chairman Kennedy seemed to be thinking of ECE Illinois as he proclaimed, “The academic research institution has a special mantle of leadership, a certain burden ... to spawn entire industries which can contribute to the economic growth of our state.”

I can think of no other words that capture more faithfully the legacy of our department.

ECE Illinois’ claim to fame is enviable: both its faculty and its graduates have pioneered, and continue to inspire, the major technological innovations that are enabling a sustainable future for all humanity. *No other academic unit in the world can make such a bold claim.*

The transformational impact of today’s computing and communications infrastructure would not have been possible without the Nobel Prize-winning invention of the transistor by the late ECE Professor John Bardeen and his Bell Labs colleagues; without the Nobel Prize-winning invention of the integrated circuit by the late ECE alumnus Jack Kilby; without the invention of the complementary MOS transistor by ECE Professor Emeritus C.T. Sah and his Fairchild R&D Lab colleague Frank Wanlass.

And now, a new economy is taking shape through the development of a sophisticated cyber-physical infrastructure, the sixth sense of IBM’s “smarter planet.”

A “smarter planet” is a sustainable planet. Smart agriculture, clean water, food safety, a smart power grid, clean energy, improved and affordable health care, efficient and safe transportation, and Internet security are now within reach thanks in large part to advances that continue to be contributed by ECE Illinois faculty and alumni.

Chairman Kennedy is right in saying that “the only perpetual job creation activity that a government can engage in is funding academic research institutions in higher education like the University of Illinois.” And he called upon the alumni association to “become the [research university’s] most potent lobbying force.”

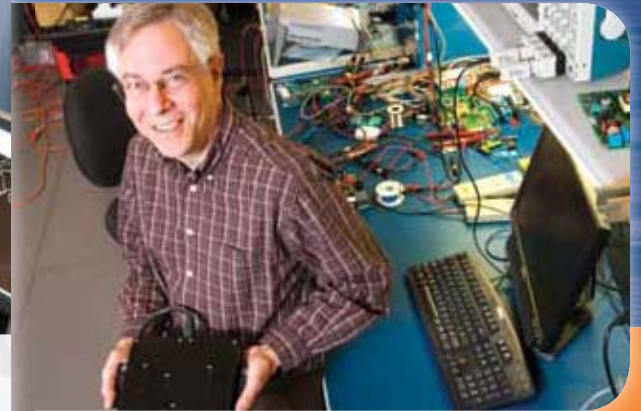
Dear alumni, the time is now for all of you to respond to Chairman Kennedy’s call to action. By being our “potent lobbying force,” you contribute to the future of ECE ILLINOIS and to our pursuit of enabling a vibrant, sustainable future for the State of Illinois, the nation, and the world.

Thank you!

Andreas C. Cangellaris  
Department Head  
M.E. Van Valkenburg Professor in Electrical and Computer Engineering

# ECE ILLINOIS

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**RESONANCE** is published twice a year by the Department of Electrical and Computer Engineering (ECE) at the University of Illinois at Urbana-Champaign. Comments and suggestions are welcome. Contact Tom Moone, editor, at [moone@illinois.edu](mailto:moone@illinois.edu) or mail to the address at left.

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## ECE undergraduate programs ranked third in the nation

ECE ILLINOIS is again one of the top-ranked engineering departments in the country, according to the 2011 annual survey by *U.S. News & World Report*. ECE is ranked third for undergraduate computer engineering, tied with Stanford. MIT and Carnegie Mellon are ranked first and second, respectively. For undergraduate electrical engineering, ECE is also ranked third behind MIT and Stanford, respectively.



### ENG 100 gives new students a taste of their major

ENG 100 is an eight-week orientation course that focuses heavily on helping incoming students transition into college and their engineering studies. ECE students worked on a MintyBoost kit that introduces them to soldering and other basic skills useful for ECE majors. MintyBoost is a small battery-powered USB charger that can be used to charge iPods, MP3 players, cell phones, or any other USB devices.

Student Chapter was awarded the IEEE Power Electronics Society Best Chapter Award at the 2010 Energy Conversion Congress and Expo in Atlanta last September. The award recognizes excellent service by a PELS chapter to its members and to the power electronics community.

### GLEE introduces high school girls to ECE

The GLEE, or Girls Learning Electrical Engineering, camp may have lasted only one week, but the knowledge and memories the campers took home might have inspired future careers in ECE. This year's inaugural camp, led by ECE Assistant Professor Lynford Goddard, gave 17 high school girls a glimpse of what it's like to live on a college campus as an ECE major. Dr. Goddard received the Early Career Award for Public Engagement from AAAS for his work with GLEE. [u](#)



Lynford Goddard



Tamer Başar

### Illinois researchers receive grant to study human-machine interactions

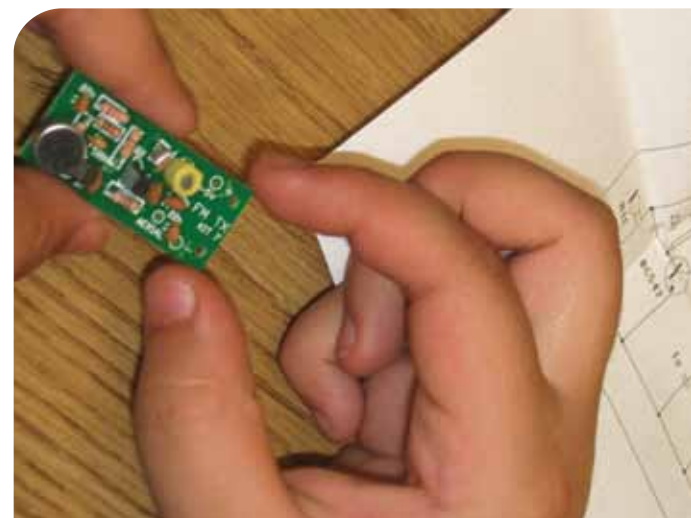
ECE Professor Tamer Başar and R. Srikant are part of a team that has a \$7.5 million Department of Defense Multidisciplinary University Research Initiative (MURI) award to form a better understanding of how teams of humans and machines make decisions and develop more reliable and secure multilayer networks where team interactions take place. The project emphasizes the study of communication and information acquisition and exchange.



R. Srikant

### IEEE PES/PELS Joint Student Chapter wins Best Chapter Award

The Illinois IEEE Power Engineering Society and Power Electronics Society (IEEE PES/PELS) Joint



# Pop receives Presidential Early Career Award

BY RICK KUBETZ, COLLEGE OF ENGINEERING, AND SHAWN ADDERLY

**E**CE Assistant Professor Eric Pop was one of 85 researchers named by President Obama as recipients of the Presidential Early Career Awards for Scientists and Engineers (PECASE).

“Science and technology have long been at the core of America’s economic strength and global leadership,” President Obama said. “I am confident that these individuals, who have shown such tremendous promise so early in their careers, will go on to make breakthroughs and discoveries that will continue to move our nation forward in the years ahead.”



Eric Pop

“In the past two decades, the complexity of silicon integrated circuits has gone up a thousand-fold, but the energy use of individual transistors has not been proportionally reduced. ... This is why we are focusing on carbon electronics, which have higher electrical and thermal conductivity than silicon and could lead to more energy-efficient circuits, longer battery life, and so on.”

—Assistant Professor Eric Pop

The PECASE award is the highest honor bestowed by the United States government on science and engineering professionals in the early stages of their independent research careers. Ten federal departments and agencies join together annually to nominate the most meritorious scientists and engineers whose early accomplishments show the greatest promise for assuring America’s preeminence in science and engineering and contributing to the awarding agencies’ missions.

Since joining the ECE faculty in 2006, Pop has assembled a team of 20 graduate, undergraduate, and postdoctoral researchers, and has become a favorite instructor among students. His research focuses on nanoscale transistors and memory elements utilizing graphene, carbon nanotubes, and phase-change materials, with the goal of making them significantly more energy-efficient than their silicon counterparts.

“In the past two decades, the complexity of silicon integrated circuits has gone up a thousand-fold, but the energy use of individual transistors has not been proportionally reduced,” he said, noting that the next big challenge beyond Moore’s law is in power dissipation.

“This is why we are focusing on carbon electronics, which have higher electrical and thermal conductivity than silicon and could lead to more energy-efficient circuits, longer battery life, and so on.” Like silicon, carbon is an abundant element, whose unique properties could allow devices to operate at lower voltages and dissipate less heat.

“We have been able to demonstrate much lower power consumption in memory elements using carbon nanotube electrodes,” Pop said.


In late 2008, Pop and ECE graduate student Albert Liao also discovered a technique to double the current that

could flow through a carbon nanotube to 40 microamps while keeping the electric field and voltage relatively low. Higher current can mean higher operating speed, while low voltage would keep power dissipation under control.

“Albert, as part of his dissertation, is still trying to find the maximum amount of current able to flow through a single carbon nanotube molecule. We have reason to believe that 40 microamps is not a fundamental limit,” Pop said.

Since coming to Illinois, Pop’s work has been recognized with several major awards, including an NSF CAREER Award, the Office of Naval Research Young Investigator Award, the Air Force Young Investigator Award, the DARPA Young Faculty Award, and two campus awards for advising and research.

He also really enjoys the campus environment and the research facilities at the Micro and Nanotechnology Lab and the Materials Research Lab. In the classroom, Pop has been very active, teaching ECE 440: Solid State Electronic Devices, a required course for all undergraduate ECE students, and a new graduate course, ECE 598EP: Hot Chips.

The PECASE awards, established by President Bill Clinton in 1996, are coordinated by the Office of Science and Technology Policy within the Executive Office of the President. Last year ECE Assistant Professor Lynford Goddard received this same recognition. Awardees are selected for their pursuit of innovative research at the frontiers of science and technology and their commitment to community service as demonstrated through scientific leadership, public education, or community outreach. Winning scientists and engineers have received research grants for up to five years to further their studies in support of critical government missions. 

# University of Illinois and Mayo Clinic create research alliance

BY DIANA YATES, U OF I NEWS BUREAU, AND ROBERT NELLIS, MAYO CLINIC



Ilesanmi Adesida



Rashid Bashir

The University of Illinois and Mayo Clinic are forming a strategic alliance designed to promote a broad spectrum of collaborative research, the development of new technologies and clinical tools, and the design and implementation of novel education programs. Officials from the university and the clinic recently signed an agreement establishing the formal relationship.

The alliance provides a framework for broad cooperation in individualized medicine by integrating efforts in three areas: basic, translational, and clinical research; bioengineering, especially for point-of-care diagnostics; and the development of tools and methods in computational biology and medicine.

“We are very excited about the Illinois-Mayo alliance for several reasons,” stated ECE Professor Ilesanmi Adesida, dean of the College of Engineering. “Together, we have the intellectual resources to explore new opportunities for combining medical imaging, point-of-care sensing, bioinformatics, genomics, and computational biology to create realistic and affordable solutions to individualized medicine. The alliance also expands greatly our joint educational program capabilities for training the next generation of systems engineers and physicians who will put these exciting new technologies quickly into clinical practice.”

“We are utterly delighted to be working with Illinois,” said Dr. Franklyn Prendergast, the director of the Mayo Clinic Center for Individualized Medicine. “We have worked diligently over the past 18 months to get to this point.”

“Since our initial meeting in fall 2008, the idea was to (broadly speaking) collaborate in research and educational efforts that address the grand challenges for the future of individualized medicine and health care,” explained ECE Professor Rashid Bashir, who is also a professor of bioengineering and the director of the Micro and Nanotechnology Laboratory. “Dr. Prendergast and the Mayo Clinic were interested because Illinois excels in computational medicine, bioengineering, and genomic technologies, as well as joint educational initiatives that would benefit both sides.”

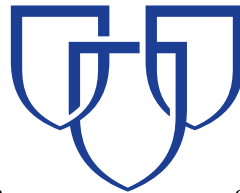
“What now emerges is a plan that builds on complementary capabilities of the two institutions in science and

medicine honed and strengthened by the similarities in our midwestern cultures and values,” added Prendergast, who is also a member of the College of Engineering Board of Visitors.



## College of Engineering

# MAYO CLINIC



Initial areas of scientific focus for the alliance will include projects in genomics, the microbiome, bioinformatics, and other computational science, including the use of petascale computing, imaging, nanotechnology, and tissue engineering. Planning is also under way for bilateral educational programs in bioengineering, computational medicine nanotechnology, genomics innovation, and entrepreneurship. The number of collaborative projects is expected to grow even faster in response to the announcement of a request for applications for a planning grant for joint programs.

“In a way, this is a formal acknowledgement of a relationship we have been developing for a while now,” explained Michael Insana, head of the

Department of Bioengineering at Illinois. “For example, one of our faculty members, Jian Ma, who is a computational biologist, uses next-generation sequencing technologies to describe the complexity of cancer genomes. He has been working with David I. Smith at Mayo Clinic to develop computational tools to handle massive amounts of sequence data in order to identify genomic aberration patterns associated with carcinogenesis.”

The alliance intends eventually to co-sponsor a variety of symposia and seminars, the first of which was held earlier this spring. The alliance expects to be sustained long term by funding from federal grants and philanthropy and from a variety of entrepreneurial projects involving commercialization of collaboratively generated intellectual property and agreements with corporate partners.

### About Mayo Clinic

Mayo Clinic is the first and largest integrated, not-for-profit group practice in the world. More than 3,700 physicians and scientists and 50,100 allied staff work at Mayo Clinic’s campuses in Minnesota, Florida, and Arizona; and community-based providers work in more than 70 locations in southern Minnesota, western Wisconsin, and northeast Iowa. These locations treat more than half a million people each year. [↪](#)

# New semiconductor manufacturing technique holds promise for solar energy

BY LIZ AHLBERG, U OF I NEWS BUREAU

**T**hanks to a new semiconductor manufacturing method pioneered at Illinois, the future of solar energy just got brighter.

Although silicon is the industry standard semiconductor in most electronic devices, including the photovoltaic cells that solar panels use to convert sunlight into energy, it is hardly the most efficient material available. For example, the semiconductor gallium arsenide and related compound semiconductors offer nearly twice the efficiency as silicon in solar devices, yet they are rarely used in utility-scale applications because of their high manufacturing cost.



John Rogers

John Rogers, the Lee J. Flory Founder Chair in Engineering Innovation, a professor of materials science and engineering and of chemistry, as well as an ECE affiliate, and ECE Assistant Professor Xiuling Li explored lower-cost ways to manufacture thin films of gallium arsenide that also allowed versatility in the types of devices into which they could be incorporated. “If you can reduce substantially the cost of gallium arsenide and other compound semiconductors, then you could expand their range of applications,” said Rogers.



Xiuling Li

Typically, gallium arsenide is deposited in a single thin layer on a small wafer. Either the desired device is made directly on the wafer, or the semiconductor-coated wafer is cut up into chips of the desired size. The Illinois group decided to deposit multiple layers of the material on a single wafer, creating a layered “pancake” stack of gallium arsenide thin films.

“If you grow 10 layers in one growth, you only have to load the wafer one time,” said Li. “If you do this in 10 growths, loading and unloading with temperature ramp-up and ramp-down takes a lot of time. If you consider what is required for each growth—the machine, the preparation, the time, the people—the overhead saving our approach offers is a significant cost reduction.”

Next the researchers individually peel off the layers and transfer them. To accomplish this, the stacks alternate layers of aluminum arsenide with the gallium arsenide. Bathing the stacks in a solution of acid and an oxidizing

agent dissolves the layers of aluminum arsenide, freeing the individual thin sheets of gallium arsenide. A soft stamp-like device picks up the layers, one at a time from the top down, for transfer to another substrate—glass, plastic, or silicon, depending on the application. Then the wafer can be reused for another growth.

“By doing this we can generate much more material more rapidly and more cost effectively,” Rogers said.

Freeing the material from the wafer also opens the possibility of flexible, thin-film electronics made with gallium arsenide or other high-speed semiconductors.

In a paper published in the journal *Nature*, the group described its methods and demonstrated three types of devices using gallium arsenide chips manufactured in multilayer stacks: light sensors, high-speed transistors, and solar cells.

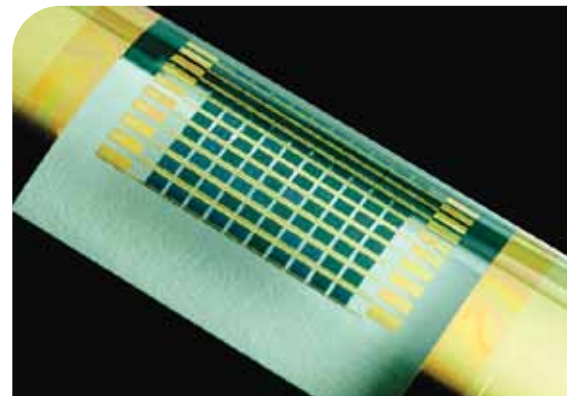
Another advantage of the multilayer technique is the release from area constraints, especially important for solar cells. As the layers are removed from the stack, they can be laid out side by side on another substrate to produce a much larger surface area.

“For photovoltaics, you want large area coverage to catch as much sunlight as possible. In an extreme case, we might grow enough layers to have 10 times the area of the conventional route,” Rogers said.

The Department of Energy and National Science Foundation-funded team also includes Illinois post-doctoral researchers Jongseung Yoon, Sungjin Jo, and Inhwa Jung; students Ik Su Chun and Hoon-Sik Kim; and ECE Professor James Coleman, along with Ungyu Paik of Hanyang University in Seoul, and Sempruis scientists Matthew Meitl and Etienne Menard. [🔗](#)



**A pile of gallium arsenide solar cells** manufactured in stacks and then peeled apart layer by layer. They can be integrated into a number of electronic devices. *Photo courtesy John Rogers*



**A flexible array of gallium arsenide solar cells.** Gallium arsenide and other compound semiconductors are more efficient than the more commonly used silicon. *Photo courtesy John Rogers*

# Jin and Bashir invested in endowed chairs

By Tom Moone

**T**he year 2010 saw the investiture of two of ECE's distinguished faculty members.



Jianming Jin

## Jianming Jin

On April 7, 2010, ECE Professor Jianming Jin was invested as the Y.T. Lo Chair in Electrical and Computer Engineering.

"I am proud to have a title attached to a name I have admired for many years," said Jin during the investiture. His remarks came toward the end of a ceremony in which his accomplishments and those of the late Professor Lo were celebrated by a number of speakers.

Jin joined ECE in 1993. An expert in electromagnetics and optics, he has made contributions to the areas of computational electromagnetics, scattering and antenna analysis, electromagnetic compatibility, high-frequency circuit modeling and analysis, bioelectromagnetics, and magnetic resonance imaging. He currently serves as director for the Center for Computational Electromagnetics and the Electromagnetics Laboratory.

Jin has authored and co-authored more than 200 papers in refereed journals and 20 book chapters. He has also authored or co-authored five books. He is the recipient of many awards, including the 1994 National Science Foundation Young Investigator Award, the 1995 Office of Naval Research Young Investigator Award, and the 1999 Applied Computational Electromagnetics Society Valued Service Award.

He also received the 1997 Xerox Junior Research Award and the 2000 Xerox Senior Research Award presented by the College of Engineering at Illinois, and he was

appointed as the first Henry Magnuski Outstanding Young Scholar in 1998 and later as a Sony Scholar in 2005. He regularly appears on the List of Teachers Ranked as Excellent by Their Students.

The chair is named in honor of ECE alumnus and faculty member Yuen Tze Lo (MSEE '49, PhD '52), who joined the department faculty in 1956. A prominent researcher in the Antenna Lab, Lo was also an innovative teacher who first introduced the theory of moments in courses during the 1958–1959 academic year.

## Rashid Bashir

On October 18, 2010, ECE Professor Rashid Bashir was invested as an Abel Bliss Professor in the College of Engineering.

"This is indeed a great honor and a privilege to be here today," said Bashir. He expressed his appreciation of his colleagues at Illinois as well as of the students he's worked with. "That's really the biggest pleasure and the greatest reward of this job—to work with all these students," he said.

In 2007, Bashir joined the Illinois faculty in the Department of Electrical and Computer Engineering and the Department of Bioengineering. As director of the Micro and Nanotechnology Laboratory, he focuses on developing micro- and nanotechnology-based solutions to solve biomedical problems for diagnostics, therapeutics, and tissue engineering. His work has been the basis for and licensed to two startups, BioVitesse, Inc., and Daktari Diagnostics.

A leader in his field, Bashir has authored or co-authored more than 110 journal papers and more than 140 conference papers and abstracts. He holds 34 patents. He is a fellow of the American Institute for Medical and Biological Engineering (AIMBE) and IEEE, and was named an IEEE Distinguished Lecturer for 2010–2011.

The Bliss Professor of Engineering is the result of a bequest from the late Helen Eva Bliss in memory of her father, Abel Bliss Jr., who entered the University in 1872 to study civil engineering but was forced to leave the University before completing his degree. In June of 1874, the University granted him a partial certificate in civil engineering. Mr. Bliss died in the mid-1930s. [u](#)



Rashid Bashir



# Five ECE faculty members receive NSF CAREER awards

BY SUSAN KANTOR

Having one faculty member receive an Early Career Development (CAREER) Award from the National Science Foundation (NSF) is a great honor for any department. These awards are among the most prestigious given to young faculty. In 2010, however, five ECE ILLINOIS faculty members received this distinction. This is clearly an excellent indication of the quality of our assistant professors.

## Nikita Borisov

Nikita Borisov will work to address anonymous communication in Internet privacy. Anonymous communication can be used to avoid some Internet privacy problems. It forwards a user's information among several computers so that it is not possible to see the traffic's complete path. This makes it impossible to link the source and destination of the communication.



Nikita Borisov

"My proposal is to build technologies that can make this kind of approach scale to very large systems and very large user bases," Borisov said. He hopes to increase the size of current Internet anonymity networks so that a larger population can use them.

## Alejandro Dominguez-Garcia

Alejandro Dominguez-Garcia's proposal focuses on creating reliability analysis tools for planning and operation of the next generation of electrical energy systems. "These systems are undergoing radical transformations due to the integration of new technologies like wind-based generation, plug-in hybrid electric vehicles, more power electronics," he said. "As the system evolves, it's important to understand what the effect of integrating those new technologies could be."



Alejandro Dominguez-Garcia

He will also research what happens when the actual power system is pushed closer to its physical limits. By the end of this project, he hopes to create better modeling techniques that could help predict and prevent massive failures, such as the 2003 blackout.

## Yih-Chun Hu

Yih-Chun Hu's proposal focuses on the problem of layer-violating attacks in computer security. Networks were not designed to be secure. The functionality of networks is divided into several layers. For example, wireless networks consist of a physical layer, a data link or MAC layer, a networking layer, a transport layer, and the applications.



Yih-Chun Hu

"Since the problem of security has started to become an issue in wireless networks, people have tried to secure these layers individually," Hu said. "The problem is that they have to rely on everything below a layer being secure."

## Eric Pop

Today's electronics, from iPods to massive data centers, use 5–10 percent of the United States' electricity. This use has doubled in the past five years and will continue to rise. Eric Pop's proposal addresses this by looking at fundamental issues of energy dissipation in nanoscale materials, transistors, and circuits. Particular attention will be paid to carbon nanoelectronics, which have both thermal and electrical advantages over silicon.



Eric Pop


Pop's work is environmentally relevant. "If you're talking about electronics consuming 10 percent of nationwide power, and that number possibly tripling in the next 20 years, that's a significant chunk of carbon emissions, coal, and other types of fuels," Pop said.

## Shobha Vasudevan

Shobha Vasudevan's proposal addresses the automatic generation of system verification artifacts called *assertions*. Assertions are widely used throughout the semiconductor design cycle, which applies them at multiple stages in the design. Because design and verification engineers manually code and write these assertions, design verification is a serious bottleneck that consumes disproportionately high time and resources.



Shobha Vasudevan

"Just the fact that there are so many man hours that are lost in assertion-based verification is a good reason to automate this process," Vasudevan said. 

# Sanders named director of the Coordinated Science Laboratory

By Tom Moone

**E**CE Professor William H. Sanders has been named the director of the Coordinated Science Laboratory (CSL), an interdisciplinary research facility that focuses on advancements in information technology, computing, control, and communications.



William H. Sanders

Sanders, an expert in secure and dependable computing as well as security and dependability metrics and evaluation, has been acting director since 2008. He replaces Ravi K. Iyer, now interim vice chancellor of research at Illinois.

“One of the strengths of CSL is the spectrum of research we conduct,” said Sanders, a Donald Bigger Willett Professor of Engineering. “Our researchers, who are top in their respective fields, use an interdisciplinary approach to tackle problems from a systems

perspective. Energy systems are one such area. With their various areas of expertise, CSL researchers are working to create energy systems that are reliable, efficient, and clean.”

Founded 60 years ago, CSL has a rich history of innovation and achievement. Nevertheless, Sanders is cognizant of the current challenges that face CSL—and, indeed, all areas of the University.

“We’re well aware of the financial issues that face the University,” said Sanders. “At the same time, there are more research opportunities than we’ve seen in a long, long time. And with its strong interdisciplinary focus, CSL is well poised to be responsive to these opportunities nationally and internationally.”

In fact, there have been a number of recent successes for CSL. The Department of Defense awarded CSL, under the direction of Tamer Başar, a new \$7.5 million Multidisciplinary University Research Initiative award. In addition, the National Science Foundation recently announced a \$5 million grant to establish a national ethics center at CSL that would develop an online resource center for ethics in science, mathematics, and engineering. CSL faculty members C.K. Gunsalus,

principal investigator, and ECE Professor Michael Loui, co-principal investigator, are leading that effort.

The 101 faculty members in CSL come from nearly a dozen different departments on campus, and nearly a quarter of them are chaired professors. CSL faculty are participating in research projects across campus that have grants totaling almost \$300 million and involve collaborations with more than 30 University departments.

For the past two years, Sanders has been pulling double duty as the director of the Information Trust Institute (ITI) and acting director for CSL. Now that he has been named director of CSL, he will be stepping down as the ITI director. “That will allow me to focus 100 percent of my time on CSL,” he said.

During the time that he has served as director of ITI and CSL, Sanders has been able to keep up his research, particularly his leadership as director of the \$7.5 million NSF/DOE/DHS Trustworthy Cyber Infrastructure for Power (TCIP) Center and its successor, the \$18.8 million DOE/DHS TCIPG Center, which are at the forefront of national efforts to make the U.S. power grid smart and resilient.

Sanders has published more than 200 technical papers. He is a co-developer of three tools for assessing system performance, dependability, and security: METASAN, UltraSAN, and Möbius. He is also a co-developer of the Loki distributed system fault injector, the AQUA/ITUA middlewares for providing dependability/security to distributed and networked applications, and the NetAPT (Network Access Policy Tool) for assessing the security of networked systems. He is a Fellow of IEEE and the Association for Computing Machinery, and has received the Engineering Council Award for Excellence in Advising for 1998, 2000, and 2002.

In September 2010, Sanders was appointed as a member of the newly formed Smart Grid Advisory Committee of the National Institute of Standards and Technology (NIST). [🔗](#)

# ECE welcomes two new faculty members

BY JENNIFER LAMONTAGNE, CS@ILLINOIS, AND DARLENE NAOLHU

In fall 2010, ECE welcomed two new faculty members: Yi Lu and Paris Smaragdis.

## Yi Lu

ECE Assistant Professor Yi Lu joined ECE after completing her PhD in electrical engineering at Stanford University, where she had also received her bachelor's and master's degrees. She then spent 10 months as a postdoc with Microsoft Research in the eXtreme Computing Group (XCG) before joining Illinois.

The strength of the ECE ILLINOIS program was one of the things that drew Lu to Illinois. "The U of I has an excellent engineering school, especially in my area, which is communications and networks," she said. "I wanted to be in a world-class research environment where I could learn and collaborate with brilliant people."

Lu's research focuses on performance of high-speed networks such as the Internet and cloud service data centers. She is working on developing efficient architectures and algorithms for large and complex networks. With the growing dependence on information networks and data centers, it is becoming increasingly important to develop ways to process large amounts of data—especially in the scale of terabytes and petabytes.

"Cloud services coupled with mobile devices is envisioned to be the next paradigm in computing. We have very large amounts of data, and data is still not as moveable as we want it to be because we still don't have networks with that high speed," said Lu.

In addition to her research in communications and networking, Lu is also interested in complex networks, particularly those used in medical imaging. She hopes to continue her research in that area as well while at Illinois.

"It's a very friendly and very congenial environment at the U of I. The people here are very supportive, and it's very easy to find very like-minded people when you have a department of considerable size," said Lu. "I'm very glad to be here."



Yi Lu

## Paris Smaragdis

ECE Professor Paris Smaragdis has a joint appointment with the Department of Computer Science. His work on signal processing, machine learning and statistics as they relate to artificial perception, and computational audition promises to open up exciting new avenues for collaboration at Illinois.



Paris Smaragdis

Named one of *MIT Technology Review's* Top Young Technology Innovators in 2006, Smaragdis's primary research interests lie at the intersection of machine learning and signal processing. His current work to create machines that can listen is pioneering new devices to improve music recordings, safety, and even televised broadcasts.

Dealing with superimposed signals is one of the most challenging problems in audio and speech processing today. Smaragdis has discovered a new way to approach this problem, and he's created state-of-the-art methods for working with mixed signals. His research explores the computational foundations for constructing systems that can understand sound the same way that humans do.

"Making computers that understand their world around them is an incredibly hard problem. Fortunately it is also fascinating," said Smaragdis. "On the theoretical side, my work involves creating new tools for processing and analyzing time-series. On the practical side, this results in constructing actual machines with hearing abilities, such as TVs that can find when the football game gets interesting, stethoscopes that detect and analyze heartbeats, music players that automatically DJ for you, and smart traffic lights that can hear accidents that happen in their intersection." 🔗

**TAMER BAŞAR** recently co-authored the book *Network Security*, which is published by Cambridge University Press.

**TANGÜL BAŞAR** has been named the recipient of the ECE Ronald W. Pratt Faculty Outstanding Teaching Award.

**STEPHEN BOPPART's** proposal "Investigating Tumor Growth Dynamics Using Multimodal Contrast Agents and Optical Coherence Elastography" was chosen to receive \$1 million under the NIH Research Challenge grant program. Boppart is also the 2009 recipient of the Paul F. Forman Engineering Excellence Award.

**DEMING CHEN** and **WEN-MEI HWU** received the best paper award at the IEEE Symposium on Application Specific Processors 2009.

The Defense Advanced Research Projects Agency (DARPA) invited **TODD COLEMAN** to join its Information Science and Technology (ISAT) study group for a three-year term beginning this fall. The group carries about 30 people and only invites the brightest new scientists and engineers to be members.

**BRIAN CUNNINGHAM** received the 2010 IEEE Sensors Council Technical Achievement Award for his role in the invention, development, and commercialization of photonic crystal biosensors.

**GEORGE GROSS** was awarded the IEEE Power Engineering Society Technical Committee Prize Paper Award for his paper titled "A General Formulation for LMP Evaluation."

**WEN-MEI HWU** has co-authored a new textbook titled *Programming Massively Parallel Processors: A Hands-on Approach*. This text is co-authored by David Kirk, an NVIDIA Fellow and former chief scientist.



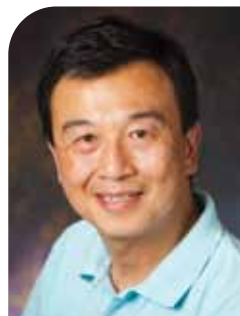
Tangül Başar



George Gross



Deming Chen



Wen-mei Hwu



Todd Coleman



Douglas Jones

**DOUGLAS JONES** is part of a research team that has received an NSF grant to create an artificial skin with whiskers attached that could be used as sensors to obtain information.

**P.R. KUMAR** was elected as an Associate Fellow in The Academy of Sciences for the Developing World (TWAS).

**JEAN-PIERRE LEBURTON** was selected to serve as an IEEE Nanotechnology Council Distinguished Lecturer through the end of 2011.

**JOSEPH LYDING** is one of the leaders of a research group that has discovered a practical method for direct writing of metal lines less than five nanometers (5 nm) wide. This method is a big step in creating contacts to and interconnects between nanoscale device structures like carbon nanotubes and graphene that have potential uses in electronics applications.

**YI MA**, graduate students Shankar Rao and Hossein Mobahi, and 2006 PhD ECE alumnus Allen Yang won the 2009 Best Student Paper Award (Sang Uk Lee Award) at the Asian Conference on Computer Vision.

**ERIC POP** is a 2010 recipient of the Air Force Young Investigator Research Award, chosen from among more than 200 applicants for his ideas and their research potential.

**GABRIEL POPESCU** has been elected by the Optical Society of America's Editorial Board as associate editor for *Optics Express*, an all-electronic journal.

**JOHN ROGERS**, the Lee J. Flory-Founder Chair in Engineering Innovation in the Department of Materials Science and Engineering and an affiliate of ECE, was elected to the National Academy of Engineering.

**NARESH SHANBHAG** received the Richard A. Newton GRSC Industrial Impact Award from the Gigascale Systems Research Center.




Naresh Shanbhag

**VENUGOPAL VEERAVALLI** has been selected as a 2010 Distinguished Lecturer from the IEEE Signal Processing Society. Veeravalli will serve from January 1, 2010, until December 31, 2011.



Venugopal Veeravalli

**MARTIN D.F. WONG** and graduate students Lijuan Luo, Tan Yan, and Qiang Ma received the Best Paper Award at the 2010 ACM International Symposium on Physical Design (ISPD). 

## ECE retiring faculty

A number of long-time ECE ILLINOIS faculty retired in 2010



Keh-Yung (Norman) Cheng



Chester Gardner



Kuang-Chen Hsieh



Dilip Sarwate



Gary Swenson

### Keh-Yung (Norman) Cheng

After 23 years at ECE ILLINOIS, Keh-Yung (Norman) Cheng retired and is now serving as dean of the College of Electrical Engineering and Computer Science (EECS) at National Tsing Hua University in Hsinchu, Taiwan. While at Illinois, Cheng was an active researcher in the areas of molecular beam epitaxy, high-speed and optoelectronic devices, and nanostructure materials and devices.

### Chester Gardner

Chester Gardner retired after 37 years with ECE. He concentrated on atmospheric physics, optical communications, adaptive imaging, and lidar. He also served in a variety of academic and administrative roles at the University, including vice president for academic affairs, vice president for technology and economic development, and chair for the board of managers at IllinoisVentures, LLC.

### Kuang-Chien Hsieh


Kuang-Chien Hsieh retired after 23 years with ECE. During his time at Illinois, Hsieh researched semiconductor materials and devices, mostly on compound semiconductors. His research goals have

largely focused in correlating the microstructures of materials to their electrical and optical properties and their ultimate optoelectronic device performance.

### Dilip Sarwate

Dilip Sarwate joined the ECE Department in January 1973. Sarwate was one of the developers of a course in computer communication networks that eventually became ECE/CS 438. He also taught probability theory and helped develop ECE 313, now a required course for both EE and CompE students.

### Gary Swenson

Gary Swenson had been an active research faculty member in the remote sensing and space sciences group. He said he is most proud of the work his group has done in upper atmospheric chemistry and dynamics. Swenson said he most enjoyed teaching the Senior Design course, for which he served as the course director. 

# Nicol named new director of Information Trust Institute

BY JENNY APPLEQUIST, INFORMATION TRUST INSTITUTE

**E**CE Professor David M. Nicol has been named the new director of the Information Trust Institute ([www.iti.illinois.edu](http://www.iti.illinois.edu)) at the University of Illinois at Urbana-Champaign. Effective January 16, he succeeded ITI's inaugural director, ECE Professor William H. Sanders, who became director of the Coordinated Science Laboratory at Illinois.

"I couldn't be more pleased that Professor Nicol has accepted the directorship of ITI," said Ilesanmi Adesida, dean of the College of Engineering, which houses ITI. "ITI has been a tremendous success, but the potential for future growth is limitless. David has earned the admiration and respect of his colleagues at the University and throughout the research community. We are very fortunate to welcome someone of his caliber to lead ITI into its next era."



David M. Nicol

"I'm honored to be entrusted with the leadership of ITI. ... The research fostered by ITI is absolutely critical in helping to design systems that are trustworthy—that they work as expected in all contexts, even in the presence of malicious cyber-attacks upon them."

—ECE Professor David M. Nicol

Ravi Iyer, the interim vice chancellor for research, echoed Adesida's sentiments: "David Nicol is a world leader in the security and trust field, and an educator of outstanding merit with the ability to take ITI to the next level in its evolution. I am delighted that he has agreed to be its next director. I am confident he will enhance ITI's already strong national and international stature."

Nicol's own research areas include analysis of computer and communication systems, particularly with respect to security (attacks and defensive measures); quantitative methods for security evaluation; high-performance computing; parallel algorithms; and modeling and simulation methodologies. His many technical publications include the textbook *Discrete-Event System Simulation* (Prentice-Hall). His numerous honors include designation as a Fellow of the IEEE and the ACM as well as the first ACM SIGSIM Distinguished Contributions Award, given in 2007 for his contributions to the area of computer-based simulation.

Nicol has been on the faculty of the ECE Department since 2003 and has participated in ITI since its founding in 2004. Prior to joining Illinois, he held positions at the Institute for Computer Applications in Science and Engineering, the College of William and Mary, and Dartmouth College, where he served as chair of the Department of Computer Science and helped to establish the Institute for Security Technology Studies. He earned his PhD in Computer Science from the University of Virginia in 1985.

"I'm honored to be entrusted with the leadership of ITI," said Nicol. "Our society depends enormously on complex cyber-enabled systems like the electric power grid, finance, health care, and transportation; the trend is towards more automation in most technical domains. The research fostered by ITI is absolutely critical in helping to design systems that are trustworthy—that they work as expected in all contexts, even in the presence of malicious cyber-attacks upon them."

Nicol also commented on ITI's unique philosophy: "ITI's approach is exceptional in developing industry partnerships and emphasizing interdisciplinary work. It brings together people who are doing basic science and people who are creating practical, real-world applications for that science. It's an exciting place, and I'm looking forward to bringing my perspectives to the difficult challenges that ITI is addressing."

## About the Information Trust Institute (ITI)

The Information Trust Institute is a multidisciplinary cross-campus research unit housed in the College of Engineering at the University of Illinois at Urbana-Champaign. It is an international leader, combining research and education with industrial outreach in trustworthy and secure information systems. ITI brings together more than 100 faculty, many senior and graduate student researchers, and industry partners to conduct foundational and applied research to enable the creation of critical applications and cyber infrastructures. In doing so, ITI is creating computer systems, software, and networks that society can depend on to be trustworthy, that is, secure, dependable (reliable and available), correct, safe, private, and survivable. Instead of concentrating on narrow and focused technical solutions, ITI aims to create a new paradigm for designing trustworthy systems from the ground up and validating systems that are intended to be trustworthy. 🔗

# ECE grad student Katherine Kim finds Korea a good place for research and singing

BY DARLENE NAOLHU

**E**CE graduate student Katherine Kim spent last summer doing two things she absolutely loves: research in her field of renewable energy in power electronics and singing in the karaoke rooms of Seoul, South Korea.

Kim was a recipient of the National Science Foundation (NSF) East Asia and Pacific Summer Institutes (EAPSI) Fellowship award and spent nine weeks during the summer researching at Seoul National University under Professor Bo-Hyung Cho.

The EAPSI program provides U.S. graduate students with the opportunity to travel to other countries and gain first-hand experience with research from different perspectives.

“I’ve always been interested in going to Korea. I’m half Korean, but I wasn’t able to learn much about the culture when I was little. So I’ve been trying to take opportunities to go back there and learn the language. This was the perfect opportunity for my research and cultural experiences,” said Kim.

Kim, who is currently pursuing her master’s degree under ECE Professor Philip Krein, first heard of the program from a previous recipient. She had to initiate contact with Cho and develop a research proposal to submit as part of the application to the program.

Kim’s research in Korea focused primarily on low transient-sensitivity photovoltaic control schemes. She looked at a control scheme that uses the natural characteristics of the photovoltaic cell to provide near-maximum power under changes in temperature and light. Her goal is to create a simple control that will make solar cell power systems more efficient and more stable for transients, and she has already identified a couple of control types suitable for this purpose. This is important because transients can disrupt optimal operation of solar cell power systems or even temporarily shut down entire systems.

Doing research in a different country has definitely been an eye-opener for Kim.

“Culturally, there are some things that are different from how you would do things in the U.S. There is a really clear hierarchy and respect for people who have more seniority or experience, so the relationship with a professor

is very respectful,” said Kim. “However, I was very surprised at how close a lab group becomes. They really are like brothers and sisters, so it’s like a family.”

“My favorite memory was a field trip they took us on to a Korean wind farm. It was very hilly and beautiful. It was great to be with members of my lab and see the beautiful scenery in Korea.”

—ECE graduate student Katherine Kim

Kim also got to do some sightseeing in Korea. During an NSF EAPSI weeklong orientation, she had the opportunity to travel and visit the city of Gyeongju, the Pohang Iron and Steel Company (POSCO) facilities, and other historical and modern places in Korea.

“My favorite memory was a field trip they took us on to a Korean wind farm,” said Kim. “It was very hilly and beautiful. It was great to be with members of my lab and see the beautiful scenery in Korea.”

Kim also spent a good amount of her time at the Korean karaoke rooms (*nore-bangs* in Korean), which are very popular.

“It was really fun! I ended up learning and memorizing a lot of Korean songs while I was there,” said Kim.

Overall, her experience in Korea has definitely made an impact on her future aspirations.

“I know that I enjoy teaching and want to eventually become a professor, but I always thought that I was going to stay in the U.S.,” said Kim. “But after going to Korea, I’m seriously considering teaching or doing my postdoctorate there. It has definitely changed and expanded my prospects.” 🔗



# IEEE PES/PELS Joint Student Chapter wins Best Chapter Award

By DARLENE NAOLHU, ECE ILLINOIS

The Illinois IEEE Power Engineering Society and Power Electronics Society (IEEE PES/PELS) Joint Student Chapter was awarded the IEEE Power Electronics Society Best Chapter Award at the 2010 Energy Conversion Congress and Expo in Atlanta last September.

“When I found out that we had won, it was pretty overwhelming,” said ECE graduate student Ali Bazzi, former chair of Illinois IEEE PES/PELS during the 2009–2010 academic school year. “Our chapter had worked really hard last year, so it was definitely a great feeling to have received this award. It is a great honor and recognition to the Chapter, ECE Department, and College of Engineering as a whole.”



Ali Bazzi

The award recognizes excellent service by a PELS chapter to its members and to the power electronics community. The award is given each year to the chapter that best uses PELS supporting capabilities while organizing and managing distinguished chapter activities throughout the year. The winning chapter receives a certificate and a \$1,500 award.

This year marks the first time that a student chapter has ever received the IEEE Power Electronics Society Best Chapter Award.



Pradeep Shenoy

“It was a very nice surprise because we weren’t expecting to win the award when we had applied—not because we didn’t deserve it, but because most of the awards given out in the past had mostly been regional. We thought it would be very hard to get the award with the competition we had,” said Bazzi.

The Illinois IEEE PES/PELS student chapter was formed in 2005 and is made up of students and faculty members in the power and energy systems field. The chapter aims to involve students and faculty in power and energy activities at Illinois by sponsoring weekly seminars, facilitating collaborations between students and alumni, initiating interactions between group members and undergraduates, and educating students on topics within the power and energy systems area.

“We really try to encourage research and an understanding of power and energy,” said ECE graduate student Pradeep Shenoy, former vice-chair of the Illinois IEEE PES/PELS student chapter. “We do this by coming up with fun and educational events that would benefit our members.”



The IEEE Power Electronics Society Best Chapter Award went to the IEEE PES/PELS Joint Student Chapter at Illinois.

Although there were a number of things that helped the Illinois IEEE PES/PELS student chapter gain recognition, Bazzi and Shenoy mostly credit their achievement to the first 2010 Power and Energy Conference at Illinois, held during the spring 2010 semester. The entire conference had been planned and organized by the Illinois IEEE PES/PELS student chapter and had more than 100 participants from 10 universities, along with industry support from companies such as SolarBridge Technologies, ComEd Exelon, and John Deere. With more than 100 participants and 40 paper submissions, the conference was a big success.

ECE Professor Philip T. Krein has advised the Illinois IEEE PES/PELS student chapter since its establishment.

“The group has been extremely ambitious and active, and the leadership for the chapter has been exemplary,” said Krein. “I am very proud of everyone.”

To Bazzi and Shenoy, winning this award will help the Illinois IEEE PES/PELS student chapter gain more recognition and grow, as well as support its participation in conferences.

“We really have a great base to work with, and we really hope to grow in collaboration with people in the industry,” said Shenoy. “There’s always room for growth, and it will be interesting to see how things progress from here on out.”



# Lu and Matsudaira win best poster awards at International Nano-Optoelectronics Workshop

BY SHAWN ADDERLY

Last September, ECE graduate students Chien-Yao Lu and Akira Matsudaira came back to Champaign from a long transcontinental flight with awards after they were both recognized for the posters they presented at the International Nano-Optoelectronic Workshop held in Beijing and Changchun, China. The workshop was supported by the National Science Foundations of USA and China, Berkeley Nanosciences, and Nanoengineering Institute, among others.

The invitation-only workshop for academics and industry participants focused on highlighting advances in nanoscale semiconductor processing, characterization, and new devices. Lu and Matsudaira won the first and third place Best Poster Awards, respectively, out of about 130 posters entered in the competition.

Lu's poster, titled "Substrate-Free Metal Cavity Surface Emitting Microlaser at Room Temperature," detailed the fabrication process of a microlaser that is substrate-free, smaller than previous metal cavity devices with bulky substrates, and easily integratable to silicon substrate or another device.

Matsudaira's poster, titled "Metal-Coated Quantum-Dot Lasers," showed that a metal coating on lasers enables improved performance at higher temperatures.

Their projects are very applicable as copper wires reach their physical limits and optical interconnects are recognized as the emerging alternative.

Lu fabricated his microlaser using a sample designed with ECE Professor Shun Lien Chuang. The sample was grown by their collaborator Tim Germann in Professor Dieter Bimberg's group at the Technical University of Berlin. The device consists of an active region with GaAs/AlGaAs multiple quantum wells that are sandwiched between silver (Ag) and a distributed Bragg reflector. The wells are then sandwiched between silicon nitride and silver to form an optical cavity. After flip bonding the device directly to a silicon substrate, the GaAs substrate was etched and removed, resulting in physical dimensions of only 2 micrometers in diameter and 2.5 micrometers in total thickness.

"People always think of metal as being a lossy material, and that lasers using lossy material won't work at room temperature," Lu said. "However, we made it work because of the substrate-free and top-emission configuration of our device, and produced a continuous output beam."


Lu's fabrication method could have potential use in preventing crosstalk in parallel dense optical interconnects.

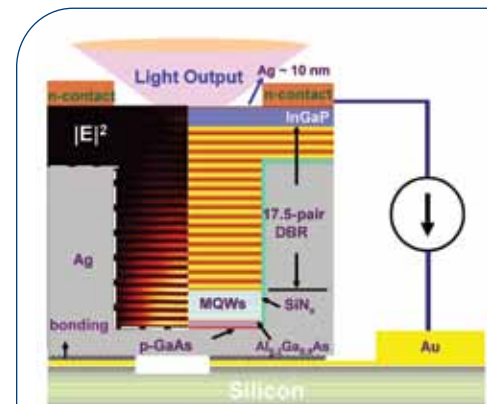
Matsudaira discovered that metal coating adjacent to a laser's active region increased the group refractive index and operational temperature limit of the laser. His metal-coated laser consisted of 10 layers of InAs/GaAs quantum dots (QDs). Gold and silver were chosen for the coatings because they have much smaller optical absorption than other metals in the infrared wavelength. Lasers with high characteristic temperatures are ideal because heating can affect some static and dynamic features of the device once it surpasses the threshold.

"Potentially, this may reduce the cost of installing the device, since most lasers used in the field have an active cooling device," Matsudaira said. "This could remove the need for external hardware."

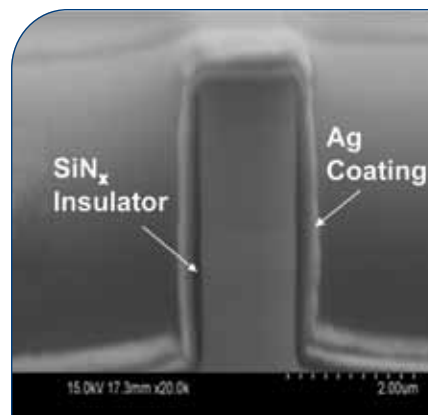
Lu said that because metal-coated lasers are less sensitive to changes in temperature, they can be used in more harsh environments, such as in instruments used to monitor chemicals during processing.

Chuang, doctoral adviser for both students, said he was very proud that his students managed to claim the top awards at the workshop.

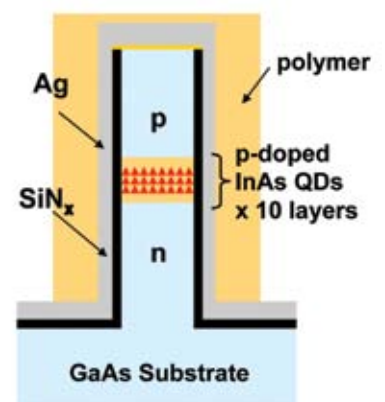
"It's because of their hard work. They are both very intelligent and well-prepared students," Chuang said. 



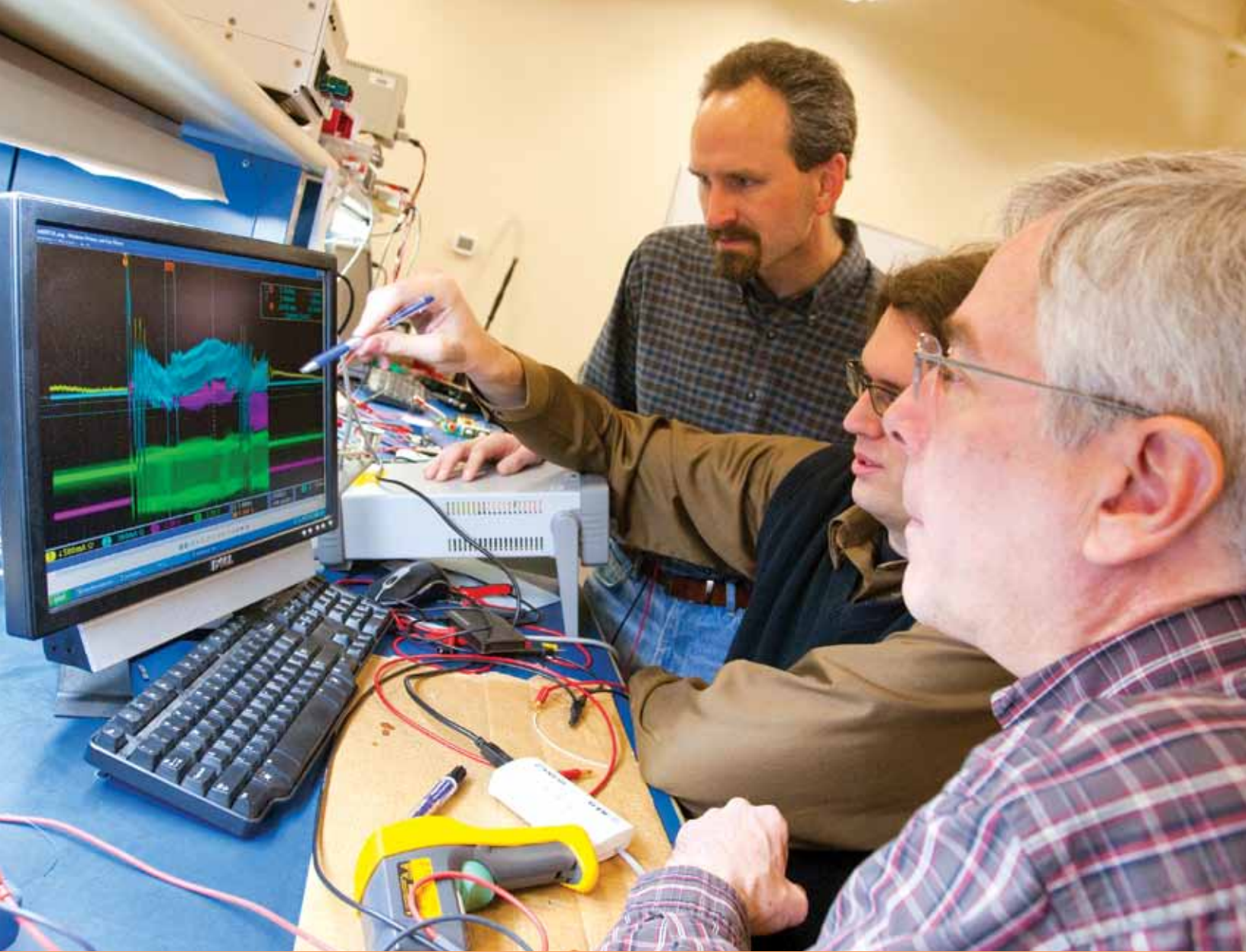
A layout of Lu's device which is flip bonded directly to a silicon substrate.



A scanning electron microscope image of Matsudaira's metal-coated laser.



The layout of Matsudaira's metal-coated laser showing the 10 layers of InAs/GaAs quantum dots.



# ECE faculty in the business of science

BY SHAWN ADDERLY AND DARLENE NAOLHU

**E**CE ILLINOIS has a long history of innovation in the laboratory. Our faculty and students have created cutting-edge technology that has had significant impact on the lives of countless people around the globe. Industry has also benefited from their innovations.

More recently, ECE faculty members have been leveraging their own innovations to create businesses that can have real impact, both technological and financial. Take a look at a few of the innovative companies our faculty have been developing.



**The PowerWorld team stands outside its headquarters.**  
 Front (from left): Mark Laufenberg and ECE Professor Thomas Overbye.  
 Back: Matt Davis, Jamie Weber, Angel Aquino, Kelley Eichelberger,  
 Caroline Marzinik, and Prosper Panumpabi.

### PowerWorld Corporation

One of the more established companies started by ECE faculty, PowerWorld was co-founded by ECE Professor Thomas Overbye in 1996.

PowerWorld first began when Overbye was a graduate student at the University of Wisconsin at Madison. At Madison, Overbye developed a power flow software that solved equations needed to simulate the operation of a high-voltage power grid. The software formed the genesis of PowerWorld.

After joining ECE in 1991, Overbye signed a contract with the Electrical Power Research Institute (EPRI) in 1993 to develop a short course teaching power dynamic coupled with visual software. Overbye's success in developing this course led to a signed contract with Edison Electric Institute (EEI) in 1994 to create a course that would teach non-technical people in the power industry how the power grid operated.

PowerWorld was based on the visualization from Overbye's EPRI work combined with the software that he developed in graduate school. PowerWorld Corporation debuted in the summer of 1996 and was co-founded by Overbye, Mark Laufenberg (BSCoPE '92, MSEE '93, PhD '97), and ECE Professors Pete Sauer and George Gross.

"What's unique about PowerWorld compared to most companies is that we started the company with very little capital. Luckily, we got customers early on and have been able to be profitable ever since," said Overbye.

PowerWorld Corporation is an industry leader offering products and services for power systems analysis and visualization. Its flagship product, the PowerWorld Simulator, is used for simulation of the electric power grid.

Looking toward the future, Overbye is optimistic about the opportunities to come. "You never know what might be over the horizon," he said. "We're in the electric power industry, which right now is a very dynamic place to be. There are a lot of changes going on and we're taking every part in that."

### SolarBridge Technologies

A company co-founded by ECE Professor Philip Krein and former ECE faculty member Patrick Chapman, who now serves as chief technology officer, is ready to start rolling out products. The company, which has its administrative headquarters in Austin and does most of its research and development in Champaign, was founded in 2004.

"We have about 40 people working at the company right now," said Krein. "Our primary focus is building power electronics for solar panels, specifically small inverters for self-contained solar power."

Krein said he and Chapman decided to start a company when they realized that the best way to get new alternative energy developments out to the marketplace was through direct commercialization rather than licensing. "It wasn't possible to license our technology into the current industry," Krein said.

The road for SolarBridge hasn't been exactly smooth. "There have been some really positive times and negative times and everything in between," he said. "But that's the nature of this business. We weren't sure when everything would work out, but it's beginning to."

SolarBridge has been backed by venture capital funding. It recently announced its AC photovoltaic module system, which allows customers to install solar panels on a roof with minimum complexity. The company's inverter has a 25-year warranty that reflects the robustness of the system. The module system involves partnerships with some of the world's leading solar manufacturers.

"Our real goal is to make solar power practical for individual users, and I think we're going to succeed in doing that," Krein said.

### Diagnostic Photonics, Inc.

One of the newer faculty-started companies is Diagnostic Photonics (DxP), which was founded by ECE professors Scott Carney and Stephen Boppert in September 2008.



**ECE Professor Philip Krein demonstrates how one of SolarBridge's devices attaches to a photovoltaic board.**



**ECE Associate Professor Scott Carney (left) and ECE Professor Stephen Boppert** are the co-founders of Diagnostic Photonics, one of the newest start-ups founded by ECE faculty.

DxP was created using technology developed by Carney and Boppert known as interferometric synthetic aperture microscopy (ISAM). ISAM is a new form of optical microscopy that provides cellular-level resolution of tissue in three dimensions. It uses reflected light and a novel method of image construction to create a view of cellular tissue structures.

“There’s important novelty in just the principle behind this technology. The physics, the optics, the theory is novel by itself. But of course, you can’t build a company based on that alone,” said Boppert. “The application area that we identified for this is optical imaging for medical diagnostics.”

With this technology, Boppert and Carney are developing a hand-held surgical and imaging probe that can reveal cancer in vivo and provide a real-time scan of margins and nearby lymph nodes in seconds during a surgical procedure. Given immediate feedback to optimize surgical efficacy, this will in turn reduce the number of repeat surgeries and the time it would have taken to test samples instead.

“A lot of this was founded because we complement each other,” said Boppert. “I’m more of an experimentalist and hardware guy, and Scott is more of a theorist and math guy.”

Carney’s ability to use vigorous mathematical descriptions and Boppert’s medical experience allowed the two to collaborate and develop the ISAM technology. With help from numerous colleagues and institutions, such as the National Institutes of Health (NIH), the University of Illinois Office of Technology Management (OTM), and the Grainger Foundation, DxP was founded in the fall of 2008.

“It’s our first company, so it’s a little difficult to judge if everything has been running perfectly smoothly. But it’s much better than I expected,” said Carney. “Of course, there are still hurdles we face going forward with FDA regulatory restrictions and putting together trials. But we’ve gotten an enormous amount of support, and so it’s going surprisingly well.”

Boppert and Carney are looking forward to continuing their work with DxP. They hope that the message and technology resonating through their research will attract future investors and eventually expand the company. ☺

## Other ECE start-ups

### Anvik Corporation

Founded by ECE Professor Kanti Jain (MSEE ’70, PhD ’75), Anvik is an emerging growth company engaged in the design, development, and manufacturing of advanced excimer-laser-based microlithography and photoablation systems.

### Armored Computing

Co-founded by ECE Professor Ravi Iyer, Armored Computing aims to bring low cost, transparent to the application and scalable software-only solutions for providing high availability and security monitoring to benchmark high availability characteristics of systems and applications.

### BiVitesse

Co-founded by ECE Professor Rashid Bashir, BiVitesse develops, manufactures, and markets automated in-process quality control monitoring systems and solutions for bacterial detection and identification.

### Bytemobile

Founded by ECE Professor Constantine Polychronopoulos, Bytemobile’s Smart Capacity platform enables mobile network operators to improve utilization of their existing network capacity by 50 percent.

### Eden Park Illumination

Co-founded by ECE Professor J. Gary Eden (MSEE ’73, PhD ’76), Eden Park Illumination is a leader in the areas of research, development, and commercialization of microplasma.

### InstaRecon

Co-founded by ECE Professor Yoram Bresler, InstaRecon is a supplier of technology and services to imaging scanner equipment makers and supply chain partners.

### MulticoreWare

Founded by ECE Professor Wen-mei Hwu, MulticoreWare provides heterogeneous multicore solutions for high-performance computing applications using multicore and many core processors.

### Nuvixa

Co-founded by ECE Professors Sanjay Patel and Minh Do, Nuvixa delivers a radically improved video communication experience that is more immersive, compelling, and intuitive than existing video technology.

### SRU Biosystems

Co-founded by ECE Professor Brian Cunningham (BSEE ’86, MSEE ’87, PhD ’90), SRU Biosystems is a global provider of novel, label-free detection tools used in drug discovery and life sciences research.

### Vision Technology

Founded by ECE Professor Narendra Ahuja, Vision Technology provides imaging professionals advanced imaging products and image manipulation software for capturing and viewing panoramic and hemispherical images with clarity and precision.

# ECE ILLINOIS congratulates its PhD recipients

STUDENT	ADVISER	THESIS TITLE
<b>OCTOBER 2009</b>		
Aksamija, Zlatan	Ravaoli, Umberto	Simulation of Thermal Effects in Semiconductor Materials and Devices
Block, Ian	Cunningham, Brian	Photonic Crystal Enhanced-Fluorescence and Label-Free Bioimaging
Dimitrov, Valentin	Timp, Gregory	Using Synthetic Nanopores for Single-Molecule Analyses: Detecting SNPS, Trapping DNA Molecules, and the Prospects for Sequencing DNA
Grier, Christopher	Nicol, David	Designing, Implementing, and Evaluating Secure Web Browsers
Guler, Teoman	Gross, George	Multiarea System Reliability: The Economic Evaluation of System Security Criteria
Kim, Jihan	Leburton, Jean-Pierre	Tunable Exchange Interaction in Coupled Quantum Dots
Lavarello Montero, Roberto	Oelze, Michael	New Developments on Quantitative Imaging Using Ultrasonic Waves
Manetas, George	Cangellaris, Andreas	Methodologies for Broadband Electromagnetic Modeling of On-Chip Semiconductor Substrate Noise
Miller, Ethan	Makela, Jonathan	Radio and Optical Techniques for Locating Equatorial Plasma Irregularities
Petschke, Adam	Chuang, Shun-Lien	Design, Fabrication, and Characterization of Terahertz Quantum Cascade Lasers
Rao, Shankar	Ma, Yi	Harnessing Sparse and Low-Dimensional Structures for Robust Clustering of Imagery Data
Snodgrass, William	Feng, Milton	Design, Fabrication, and Modeling of Indium Phosphide Double-Heterojunction Bipolar Transistors with Sub-Millimeter Wave Cutoff Frequency
Wright, John	Ma, Yi	Error Correction for High-Dimensional Data via Convex Programming
Xu, Yang	Aluru, Narayana	Electrostatic Analysis of Nanoelectromechanical Systems
Zhou, Chunxiao	Wang, Yongmei	Efficient Moments-Based Permutation Tests: A Framework, Methods, and Applications
<b>DECEMBER 2009</b>		
Di Sarro, James	Rosenbaum, Elyse	Modeling, Characterization, and Design of Silicon Controlled Rectifiers for Electrostatic Discharge Protection Circuits
Li, Feipeng	Allen, Jont	Perceptual Cues of Consonant Sounds and Impact of Sensorineural Hearing Loss on Speech Perception
Loeff, Nicolas	Forsyth, David	A New Framework for Semisupervised, Multitask Learning
Malik, Kshitiz	Frank, Matthew	Critical Branches and Lucky Loads in Control-Independence Architectures
Nguyen, Giang	Feng, Milton	Drifting-Dipole Noise Model of Nanometer MOSFETS for Radio Frequency Integrated Circuit Design
Ofoonye, Benedict	Adesida, Ilesanmi	Advanced Process Development for Contacts to AlGaIn/GaN High Electron Mobility Transistors (HEMTs)
Then, Han Wui	Feng, Milton	Characteristics, Theory, and Modeling of the Transistor Laser
Verma, Varun	Coleman, James	Patterned Quantum Dot and Inverse Quantum Dot Active Layers for Optoelectronics Applications
<b>MAY 2010</b>		
Bhat, Suma	Sproat, Richard	Estimation Problems in Speech and Natural Language
Choi, Jun Won	Singer, Andrew	Digital Communication Receiver Algorithms and Architectures for Reduced Complexity and High Throughput
Davoudi, Ali	Chapman, Patrick	Reduced-Order Modeling of Power Electronics Components and Systems
Esram, Trishan	Chapman, Patrick	Modeling and Control of an Alternating-Current Photovoltaic Module
Farbiz, Farzan	Rosenbaum, Elyse	Modeling and Suppression of Latchup
Ghanem, Bernard	Ahuja, Narendra	Dynamic Textures: Models and Applications
Giannopoulos, Antonios	Choquette, Kent	Micro- and Nano-Cavity Lasers for Sensing Applications
Jaramillo Jimenez, Juan	Srikant, Rayadurgam	Enforcing Cooperation and Providing Quality of Service in Wireless Networks
Kwon, Dae Hyun	Chiu, Yun	Digitally Enhanced CMOS RF Transmitter with Integrated Power Amplifier
Meneou, Kevin	Cheng, Keh-Yung	Pathways for Quantum Dot Optoelectronics Fabrication Using Soft Nanoimprint Lithography
Narayanan, Sriram	Jones, Douglas	Estimation-Theoretic Framework for Robust and Energy-Efficient System Design
Okhravi, Hamed	Nicol, David	Trusted and High Assurance Systems
Roach, Tyrone	Bernhard, Jennifer	Antenna Element Pattern Reconfigurability in Adaptive Arrays
Russer, Johannes	Cangellaris, Andreas	Methodologies for Electromagnetic Field Modeling for Computer Aided Analysis of Multi-Domain Physical Interactions
Sanchez, Jose	Oelze, Michael	Improving Ultrasonic Imaging Using Novel Coded Excitation Techniques
Schoonover, Robert	Carney, P. Scott	Cyclostationary Statistical Optics
Srinivasan, Sundhar Ram	Nedich, Angelia	Distributed Optimization in Multi-Agent Systems: Applications to Distributed Regression
Sun, Lin	Chew, Weng	An Enhanced Volume Integral Equation Method and Augmented Equivalence Principle Algorithm for Low Frequency Problems
Toghraee, Reza	Ravaoli, Umberto	Nanoscale Transport Simulation of Ion Channels
Tseng, Richard	Chiu, Yun	Vector Modulators for Analog-Beamforming Receivers
Wang, Rui	Jin, Jianming	Incorporation of Feed-Network and Circuit Modeling into the Time-Domain Finite Element Analysis of Antenna Arrays and Microwave Circuits
Xiong, Jie	Chew, Weng	Computational Electromagnetics for Microstrip and MEMS Structures
Xu, Xun	Huang, Thomas	Appearance Based Modeling and Learning of the Human Face with Application to Biometrics
<b>AUGUST 2010</b>		
Bhattacharya, Sourabh	Hutchinson, Seth	Pursuit-Evasion Games in Mobile Networks
Bray, Nicholas	Hwu, Wen-mei	Pystream: Python Shaders Running on the GPU
Dixon, Forest	Feng, Milton	Design and Development of Distributed Feedback Transistor Lasers
Freris, Nikolaos	Kumar, P.R.	Wireless Networks: Model and Optimization Based Approaches to Clock Synchronization, Random Access MAC and Video Streaming
Haas, Jason	Hu, Yih-Chun	Security and Privacy of Vehicular Ad Hoc Networks Supporting Revocation
Hernando, Diego	Liang, Zhi-Pei	Joint Estimation of Water and Fat Images from Magnetic Resonance Signals
Kim, Lae-Hoon	Hasegawa-Johnson, Mark	Statistical Model Based Multi-Microphone Speech Processing: Toward Overcoming Mismatch Problem
Liang, Xing	Boppart, Stephen	Coherence Imaging Technologies for the Measurement of Tissue and Cell Biomechanics
Milla, Marco	Kudeki, Erhan	Study of Coulomb Collisions and Magneto-Ionic Propagation Effects on Incoherent Scatter Radar Measurements at Jicamarca
Nikoukar, Romina	Kamalabadi, Farzad	Near-Optimal Inversion of Incoherent Scatter Radar Measurements: Coding Schemes, Processing Techniques, and Experiments
Readle, Jason	Eden, J. Gary	Atomic Alkali Lasers Pumped by the Dissociation of Photoexcited Alkali-Rare Gas Collision Pairs
Ru, Yu	Hadjicostis, Christoforos	State Estimation and Sensor Selection in Discrete Event Systems Modeled by Petri Nets
Sat, Batu	Wah, Benjamin	Design and Evaluation of Real-Time Voice-over-IP (VOIP) Systems with High Perceptual Conversational Quality
Sharif, Behzad	Bresler, Yoram	Distortion-Optimal Parallel MRI with Sparse Sampling: From Adaptive Spatio-Temporal Acquisition to Self-Calibrating Reconstruction
Spinka, Thomas	Eden, J. Gary	Nonlinear Optical Processes and the Nearest Neighbor Distribution in Rubidium Vapor
Tchertchian, Paul	Eden, J. Gary	Hybrid Plasma-Semiconductor Devices
Unnikrishnan, Jayakrishnan	Veeravalli, Venugopal	Decision-Making under Statistical Uncertainty
Velivelli, Atulya	Huang, Thomas	Generative Models for Retrieval of Video, Audio, and Text Data
Yeu, Rodney	Sauer, Peter	Small Signal Analysis of Power Systems: Eigenvalue Tracking Method and Eigenvalue Estimation Contingency Screening for DSA
Zhou, Xi	Huang, Thomas	Joint Appearance and Locality Image Representation by Gaussianization

# ECE experience helps forge a long-lasting friendship

By Tom Moone

To rephrase the opening to “The Odd Couple” sitcom from the 1970s: Can two ECE graduates work together without driving each other crazy? In the case of Jeffrey Konicek (BSEE ’81, MSEE ’83) and Steven Lisa (BSEE ’81), the answer is definitely yes. For more than two decades the two classmates have combined their talents to protect the intellectual property of numerous individuals.

Konicek and Lisa first met as ECE students in a course in which they designed a digital capacitance meter together. “Steve joked after we finished it that he was going to patent the device,” said Konicek, though they never did. Nevertheless, the two quickly became friends.

Upon completion of their undergraduate degrees, Konicek continued his studies as a graduate student in ECE, while Lisa went on to law school. But they stayed in touch. “We’ve stayed good friends for more than 30 years,” said Lisa.

Lisa’s comment about patenting their student project pointed to his future career: He became a patent attorney. It was a need for technical expertise in some of his cases that caused him to turn to his college friend Konicek for assistance. A successful collaboration led to more such collaborations, and after several such interactions, they decided to pool their professional efforts. They have been working together for more than 25 years, with Konicek providing technical expertise for Lisa’s patent law office. The Law Offices of Steven G. Lisa can be found online at [PatentIt.com](http://PatentIt.com).

Jeffrey Konicek now works as a technical consulting expert to the patent bar and industry with several decades worth of experience in such diverse areas as computers, control systems, power systems, speech recognition, aerospace, telecommunications, digital signal processing (DSP), the Internet and other networking structures, and VLSI circuit design and testing. He has held several technical positions in industry and research. He is a member of IEEE and several engineering honor societies.



Jeffrey Konicek



Steven Lisa

Steven Lisa is a patent attorney and member of the Illinois State Bar, Patent Bar, and Trial Bar. He is admitted to practice before numerous Federal District and Appellate Courts. His firm, Steven G. Lisa, Ltd., is based in Chicago. Since 1984, Lisa has successfully served as lead counsel on


a number of high-profile patent licensing and litigation programs, and has developed an international reputation in the field. A large part of his practice involves representing major research universities, small companies, and individuals on patent licensing and litigation matters.

As a way of showing appreciation to the University that was the basis for a successful working relationship, the

two friends recently endowed the The Konicek Family and Lisa Foundation Scholarships for Engineering Excellence in Innovation. These scholarships will recognize innovation, creativity, novelty, and inventiveness in the fields of electrical and computer engineering.

Their scholarship celebrates this innovative spirit. “We’re trying to reward those who have a project that stands out for innovation,” said Lisa. “Not just doing something that is hard and complex, but using a very innovative and novel process to do it.”

Recipients of the scholarship must have demonstrated a unique application and strong understanding of engineering principles in order to create an innovative solution to an existing problem. Teams of students can also receive the scholarship, but they would split the scholarship funds equally. Each year, two scholarships will be given out: One will go to a student or team in focusing on electrical engineering, and the other to a student or team studying computer engineering.

This year, the first recipients of this scholarship were named, and three students will receive this honor: Andres Guzman-Ballen, Harihar Nandagopal, and Bharat Poddar. Guzman-Ballen created a motorized mountain-board. Nandagopal and Poddar worked together on a project designing an image processing application. 

# Alumnus Wayne Lichtenberger donates a piece of computing history to the University

By SHAWN ADDERLY

Last summer ECE alumnus Wayne Lichtenberger (BSEE '55, MSEE '56, PhD '61) returned to campus to leave behind a piece of computing history. Traveling from his home in Washington state, he brought with him four manuals detailing the contents of the ILLIAC I computer library routines as they existed in 1959.

On July 30 he turned the manuals over to the University Archives for safekeeping and perhaps for computer historians to examine.

"I kept them for over 50 years. I didn't know what to do with them," he said. "I thought maybe they would be of interest to someone," he said.

Lichtenberger had been an exceptional student during his time at ECE. So it's no wonder that during his visit to the library, he found his name on the Bronze Tablet for the Class of 1955. The Bronze Tablet remains one of the highest honors the University bestows on undergraduates.

Lichtenberger didn't become involved in computing until he was already a graduate student. His involvement began in the fall of 1957, and he was joined by his friend since freshman year, Donald Bitzer (BSEE '55, MSEE '56, PhD '60). Bitzer later became an ECE faculty member and was the co-inventor of the plasma display.

ILLIAC I was truly at the infancy of computing. Invented before the integrated circuit, it used more than 2,800 vacuum tubes and had dimensions of 10 feet wide, 2 feet deep, and 8.5 feet high. Compared to modern computers, ILLIAC I was quite primitive.

"It had no interrupts whatsoever. You had to be very, very careful how you wrote the code so that ILLIAC could respond suitably," he said. "I remember fooling around with that for quite a while until we worked out appropriate techniques." He was speaking of his efforts at writing, along with Bitzer, the first version of the PLATO system, Illinois' first effort at machine-aided instruction.

Many programmers today neglect to comment their code. However, they wouldn't have been able to neglect this under the supervision of Jim Snyder, a physicist who was in charge of running the ILLIAC I at the time. According to Lichtenberger, any routine written for ILLIAC I had to be thoroughly documented. He also joked that being on Snyder's good side was also key to getting your routine included in the ILLIAC library.

"It had to be completely documented, and then it had to be checked out to the point that it was really bulletproof," he said. "Then if it passed all the standards and he liked the way you looked, it would be put into the ILLIAC library."

After accepting a faculty position at the University of California at Berkeley, Lichtenberger became involved in "Project Genie," another groundbreaking computing project that allowed multiple users to connect to one computer simultaneously.

After leaving academia, Lichtenberger went to work in industry. He was hired as employee number 85 at Cisco Systems by company founder Leonard Bosack and has also worked for Hewlett-Packard Laboratories. He still works for Bosack at XKL, a small company in Kirkland, Washington.

There were originally five manuals from ILLIAC I, but one was temporarily lost after being loaned to the Computer History Museum in Mountain View, California. Recently, the misplaced manual was found by the museum and is being sent to the University Archives.

"I'll see to it that it finds its way with its brothers that are sitting there now," Lichtenberger said. 🍷



Wayne Lichtenberger



ILLIAC, the first computer in the U.S. owned by an educational institution, was constructed at Illinois. At right is Logan Huffman, a technician on the project. Photo courtesy of the Department of Computer Science.

# From ECE to IBM and back: Alumna works on chip for Blue Waters supercomputer

By SUSAN KANTOR

Sara Lestage (BSEE '99) knew she wanted to work for IBM when she was in high school. To her, it seemed like a company with a good reputation and amazing technological breakthroughs.

She never thought she would get her dream job and be working on a chip to go into one of the fastest supercomputers in the world. And that supercomputer is being built by her alma mater, no less.

every job fair she could, paying special attention to the representatives and events from IBM.

"I made as many contacts as I could," said Lestage, "and I got a few interviews. In November, I got a plant visit to Burlington, Vermont. I came out for a couple of days, did the interview, and I had a nice host who drove me all around Vermont. Even though it was November and it was gray and brown and cold, it was still beautiful, and I thought it would be a really nice place to live."

Lestage accepted an offer from IBM and began working as a wafer test engineer with server products. It was exactly the area she wanted to get into. She learned a lot about IBM, including different types of programming and the manufacturing process. After working as a test engineer for about five years, Lestage switched to working with characterization.


Lestage now analyzes test data. She and her group generate gigabytes of data off the chips when they do wafer and module testing.

"It's almost too much to look at, so we have to come up with ways to pick out the right data, pick out the most important data, and decipher it into a way that's man-readable," said Lestage. "It's kind of like looking at the matrix when you're first looking at the data."

They then use the deciphered data to create direction for the test engineers.

"We bring in all the data, and we decide what message it's telling us about the technology," she said. "We use that to improve things across the board for test time reduction, for performance, for quality—just basically everything we need to get the parts out the door."

Although Lestage works on a small part of a chip that will be used in Blue Waters, she was very excited to find out that she would be working on a project that was so important to Illinois.

"I was really happy to see that my school, my alma mater, was working with the company that I work for, with the chip that I work on," she said. "It was just really neat that it all came together at once. I was pretty proud, and I called up my family about it. I'm really proud and happy that this all came together." 

"I was really happy to see that my school, my alma mater, was working with the company that I work for, with the chip that I work on."

— ECE alumna and IBM test engineer Sara Lestage

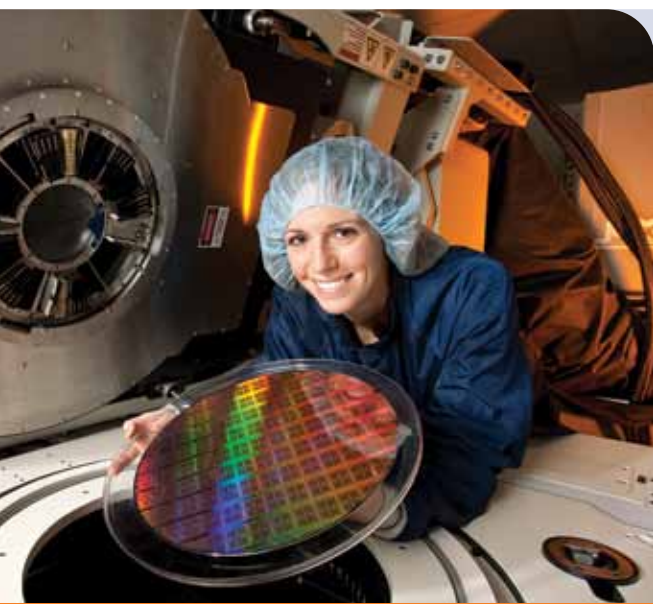
When the supercomputer Blue Waters comes online in 2011, it will be one of the most powerful supercomputers in the

world—and that's thanks in part to IBM's multi-core POWER7 processor.

Lestage is an IBM test engineer. Her group is responsible for working on server group products, including POWER7, which has eight separate processors that can work together or independently. Lestage works specifically with the DRAM, a type of memory on the POWER7 chip. Putting DRAM on the POWER7 chip was an important innovation for IBM.

"It was a huge step technologically forward compared to our competitors. It's one of the top server processors in the world right now as far as speed, the DRAM it has, the different modes it can run in for power save, and the different ways the eight cores can work together," Lestage said.

Lestage has been with IBM since she graduated from ECE ILLINOIS. During her senior year, she went to



ECE alumna and IBM test engineer Sara Lestage (BSEE '99) holds a 300-mm POWER7 processor wafer next to a wafer test tool.





As alumni, we are proud of our school, and its reputation forms a part of our reputations. Last fall, we honored distinguished alumni and students at the department's annual Distinguished Alumni Awards banquet. It was a wonderful evening of stories and accomplishments that highlight the tremendous gifts that the students, faculty, staff, and alumni of our department give to the world. The alumni remarked on how their training at ECE ILLINOIS prepared them for an exciting array of career opportunities, and, from the student award winners, it was clear that the department's tradition of excellence continues.

As we look to the future, the ECE Department has embarked on a campaign for a new building that will continue to set the standard in design, efficiency, and facilities for teaching, research, and collaboration. This campaign is well under way and continues to grow through individual, corporate, and state support.

To assist in the new ECE building effort, we have launched an alumni fundraising campaign. The funds raised will go to support the new building, including an alumni conference room to host alumni meetings, as well as other student, alumni, and corporate events.

In this tough fundraising climate, we encourage our fellow alumni to pitch in and help demonstrate the commitment to excellence, innovation, and leadership that we all share. Information, updates, and donation information for the ECE Building Campaign can be found at [www.ece.illinois.edu/buildingcampaign](http://www.ece.illinois.edu/buildingcampaign).

More than 60 years after the doors to Everitt Lab were opened, let's help to ensure, as alumni, that the University is providing the world-class facilities required for the next generation to imagine, to build, and to lead. Soon, the next Bardeen, Tykociner, Holonyak, or Kilby will be walking through those halls. Let's do our bit to help make that happen!

Sincerely,

Christopher N. George (BS CompE '97, MSEE '99, JD '02)  
ECE Alumni Association  
Board of Directors President

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# Distinguished alumni honored at annual awards banquet

BY DARLENE NAOLHU

**O**n September 17, ECE ILLINOIS honored nine alumni at the annual Distinguished Alumni Awards Banquet.

## Distinguished Alumni Award

The Distinguished Alumni Award recognizes ECE alumni who have made professional and technical contributions that have brought distinction to themselves, the department, and the University. Six individuals received the award this year.

packaging technology development, multichip module technology, and product development.

Major General **DAVID J. EICHHORN** (BSEE '76) was honored for "leadership in the technological enterprise in support of the mission of the U.S. Air Force." He is currently the commander of the Air Force Flight Test Center at the Edwards Air Force Base in California. His responsibilities include the development, testing, and evaluation of manned and unmanned aircraft systems in both experimental and proven aerospace vehicles.

"Because of the University of Illinois, I had the technical competence to succeed," said Eichhorn as he received his award. "I am deeply honored by this."

**JOHN ORR** (BSEE '69, PhD '77) was honored for his "contribution to engineering education and the safety of first responders."

While obtaining his PhD at Illinois, Orr performed some of the earliest research on fading effects on CDMA systems.

Orr joined Worcester Polytechnic Institute (WPI) in 1977 and is currently a professor of electrical and computer engineering. "Most of what I learned that guided my career has come from

Illinois, and I am very appreciative," said Orr at the banquet.

**DANIEL SCHAUBERT** (BSEE '69, MSEE '70, PhD '74) was honored for "pioneering research activities in the field of printed antennas, exemplary service to the IEEE, and outstanding teaching." He recently retired from the University of Massachusetts at Amherst, where he had served as an engineer, researcher, educator, administrator, and center director. Before joining the University of Massachusetts, Schaubert worked for the U.S. Department of Health and Human Services, where he



Receiving recognition at the ECE Distinguished Alumni Awards Banquet were (from left): Major General David J. Eichhorn, Philip Ching Ho Chan, John Orr, Jack Yuan-Chen Sun, Todd Beanblossom, Joseph Barich, Andrew Yang, Daniel Schaubert, and Voon-Yew Aaron Thean. Photo by Thompson-McClellan.

"I'm very happy to receive this award and see these old friends," said **PHILIP CHING HO CHAN** (MSEE '75, PhD '78) at the banquet. He was recognized for his significant contribution "to engineering education and as a technology leader in CAD system for multi-chip module products."

Currently, Chan is the deputy president and provost at the Hong Kong Polytechnic University. Before joining academia, he spent 10 years working with Intel Corporation in Santa Clara, California, where he worked on technology development, design technology (CAD),

played a significant role in establishing new procedures for testing microwave oven leakage.

“I got the best education I could have received anywhere in the world here at Illinois,” said Schaubert during his remarks.

“I am deeply honored and humbled to have received this award,” said **JACK YUAN-CHEN SUN** (MSEE ’79, PhD ’83), who was honored for “pioneering contributions and visionary leadership in CMOS semiconductor fabrication technology.”

Sun is currently the vice president of research and development at the Taiwan Semiconductor Manufacturing Company (TSMC) in Hsinchu, Taiwan. Sun joined TSMC in 1991 as the director of the Advanced Module Technology Division and played a significant role in the development of many generations of cutting-edge, energy-efficient, high-performance, and high-density ASIC technologies.

**ANDREW YANG** (MSEE ’86, PhD ’89) was honored for “leadership in electronic design automation industry.” After receiving his award, he said, “It’s truly a humbling experience to be here.”

In 2001, Yang co-founded Apache Design Solutions, a leader in power and noise EDA solutions for chip, package, and systems designs, and currently serves as chief executive officer. In 2008, Apache was ranked as one of the 15 fastest growing software/IT companies in the Silicon Valley. The company currently operates 16 branch offices worldwide with more than 250 full-time employees.

Yang was a professor at the University of Washington from 1989 to 1996. He was a recipient of the Robert T. Chien Memorial Research Award from ECE ILLINOIS in 1989, the National Science Foundation Young Investigator Award in 2001, the Professor of the Year award in 1992, and the Chair’s Circle of Excellence in 1998.

### Young Alumni Achievement Award

The Young Alumni Achievement Award recognizes young alumni (less than 40 years old) who have made outstanding professional contributions to their fields since graduating from ECE. Two individuals received an award this year.

“What a pleasure it is to be here tonight to receive this award from the alumni and from the best ECE department in the world,” said **JOSEPH BARICH** (BSEE ’94, MSEE ’96) after he was honored for his “significant contributions to the University of Illinois, the development of its students, and the field of intellectual property law.”

Barich has been an attorney in practice since 1998 with McAndrews, Held & Malloy, one of Chicago’s largest intellectual property (IP) specialty firms. He is also an adjunct professor at the University of Illinois College of Law and teaches patent prosecution. He founded and directs a patent clinic where law students draft full patent applications for student inventors. In 2008, he also established the Barich Excellence in Patent Law Award at the College of Law.

**VOON-YEW AARON THEAN** (BSEE’96, MSEE ’97, PhD ’01) was honored for his “leadership in the development of industry-first 32nm metal-gate-first-high-k-low-power CMOS platform.” He is currently an engineering manager at Qualcomm, Inc., in San Diego, California.


During a previous position with IBM, he led an international device team of engineers to develop the Technology Alliance’s first-generation low-power CMOS technology with high-k and metal gate technology.

“I am very grateful and honored to be receiving this award,” said Thean at the awards banquet.

### Marcia Peterman Award

The Marcia Peterman Award was established by the ECE Alumni Association to honor the memory of Marcia Peterman. This award is presented annually to a former ECE Alumni Board member for dedicated service as a member of the board.

**TODD BEANBLOSSOM** (BSEE ’80, MSEE ’82) was honored “in recognition of devoted and loyal service to the University of Illinois and the Alumni Association.”

Beanblossom is the chief engineer for Boeing Weapons and directs the engineering efforts of an integrated weapons organization that includes programs for missile defense, direct attack, and naval weapon systems. He is responsible for leading the engineering activities associated with an array of weapons programs. 

# Michael L. VanBlaricum joins ECE Alumni Board

By DARLENE NAOLHU

The ECE Alumni Board welcomed Michael L. VanBlaricum (BSEE '72, MSEE '74, PhD '76) as its newest member this fall. As a successful alumnus and huge supporter of ECE ILLINOIS, VanBlaricum is happy to join the ECE Alumni Board.



Michael L. VanBlaricum

"I really enjoyed my time at Illinois as a student, so when I was invited to join the board, I jumped at the chance. I want today's students to have the kind of experience that I had when I was here. I want to help keep that kind of experience alive," said VanBlaricum.

Although he currently resides in Santa Barbara, California, VanBlaricum has made numerous trips to the Champaign-Urbana area—to the point where his family has purchased a house near campus to accommodate their frequent visits.

Corporation and remained with the company for 10 years before joining Toyon Research Corporation in Goleta, California. VanBlaricum served as president of the company for five years before settling in his current position as chief scientist.


As a student, VanBlaricum studied numerical methods and signal processing in electromagnetics, was actively involved in the Engineering Council, and co-chaired the Engineering Open House in 1972 along with his soon-to-be wife, Pam. During his last year as an undergraduate, he received the Outstanding Senior in Electrical Engineering Award. He credits mentor and friend Professor Paul Klock and Associate Dean Howard Wakeland as two people at Illinois who made an impact on him while an engineering student.

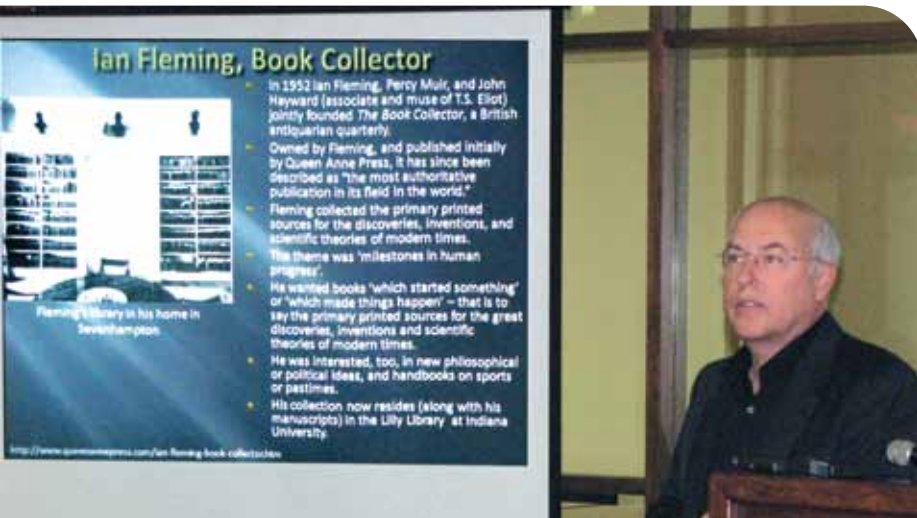
"They took me under their wings," said VanBlaricum. "I hope I have the opportunity to help students the way they helped me."

VanBlaricum has always been an active alumnus. He has served on the College of Engineering Knights of St. Patrick selection committee several times and is a member of the President's Council. For VanBlaricum, joining the ECE Alumni Board will give him not only a chance to give back to the University, but also the opportunity to advise and help support ECE projects, such as ECE's new building campaign.

"Of course, my goal is to make sure that this department remains one of the best in the world," said VanBlaricum. "The people and the environment here are so genuine. The talent here is excellent. It's diverse and everything is just outstanding. It's very rare to find a place like this."

In his free time, VanBlaricum has developed a world-renowned collection of the literary works of Ian Fleming and associated James Bond materials, including manuscripts, letters, books, art, recordings, videos, ephemera, and toys associated with this cultural phenomenon. He is a founder of the Ian Fleming Foundation, a nonprofit corporation dedicated to preserving the legacy of Fleming and his impact on culture.

VanBlaricum and Pam, who is an Illinois alumna and the first woman to graduate with a PhD from Illinois' aerospace engineering program, look forward to continued interactions with the University and ECE ILLINOIS. 



On November 10, Michael VanBlaricum gave a talk to the No. 44 Society of the University of Illinois on his collection of Ian Fleming and James Bond material. The No. 44 Society is a book collector's club established by the Rare Book and Manuscript Library. The society takes its name from Mark Twain's last novel *No. 44, The Mysterious Stranger*.

"I just love it here. There's something in the air. I was born and bred in Illinois, and coming back is always invigorating. Ultimately, we want to retire here in Urbana. Well, maybe not in the winter; we don't need to be that invigorated," said VanBlaricum.

After obtaining all of his degrees in electrical engineering from Illinois, VanBlaricum moved to California, where he began his career in research at Mission Research Corporation. He then joined General Research

# Heier hired: ECE welcomes new alumni and student relations coordinator

BY SHAWN ADDERLY

In August, ECE ILLINOIS welcomed Sarah Heier as its new alumni and student relations coordinator. Heier hit the ground running during her first semester on the job. She already planned and facilitated two alumni events in Chicago and Denver. She also coordinated two ECE Alumni Board meetings and the Distinguished Alumni Awards Banquet this past September.

“I enjoy helping our alumni reconnect with each other and the department,” Heier said. “I’ve also met a lot of our successful alumni and have been able to hear them speak about their experiences as a student at Illinois.”

Heier added that she has learned a lot about the ECE profession from the alumni she has met.

Originally from Kansas, Heier attended Washburn University, where she majored in English and minored in theatre. After graduation, she taught humanities at Changzhou International School in China. Prior to joining ECE, she was an international admissions counselor in the Office of Undergraduate Admissions at Illinois.

Heier said that she hopes to help strengthen the department and really enjoys working for ECE.

“It is an exciting role, and it’s a new challenge for me,” she said. “I think it is great to be a part of an academic department on campus, especially an academic department that is so well-regarded on campus and around the world.”

In addition to her work with ECE alumni, Heier plans events for current students, such as the December Graduation Reception, May Graduation Brunch, and Freshman Fusion orientation event. She also works with the ECE Student Advisory Committee (ECESAC) to facilitate communication between students and the department.

When Heier isn’t busy planning student or alumni events, she is an active member of the Champaign-Urbana community. She is involved with the Station Theatre and part of the Junior League of Champaign-Urbana, an organization of women committed to

promoting volunteerism. She also enjoys staying healthy and has run two half-marathons in the past two years.

“I like to run, but I really just do it to stay healthy and to be able to not feel guilty about eating nachos,” she said.

Heier organized a number of alumni receptions and student events for the spring semester.

“It was a busy semester, but I enjoy planning these events,” she said. “I love meeting with alumni and students and connecting them with the department and campus.”



Sarah Heier

“It is an exciting role, and it’s a new challenge for me. I think it is great to be a part of an academic department on campus, especially an academic department that is so well-regarded on campus and around the world.”

– Alumni and student relations coordinator  
Sarah Heier




Sarah Heier (center) calls out the door-prize winning number during a recent student-alumni reception during the Engineering Open House. ECE Alumni Board member Phillip Lachman (BSEE '04) displays the T-shirt prize.

# Architects present 100 percent drawings

**S**mithGroup, the architectural firm designing the new ECE building, presented the 100 percent drawings to the department in September. This marked the point where every aspect of the exterior and interior of the building had been put to paper. Four large 48"× 36" books ranging in size from 107 to nearly 200 pages provide a view into the details that will be the future home of ECE.

On September 24, a meeting was held to carefully review these drawings. Some alterations to these plans may still be made as faculty and staff members review these final plans to ensure that such things as the number and position of electrical and computer outlets are sufficient for our current and anticipated future needs.

A small celebration was held following this meeting. Members of the University community gathered together to mingle and express their hopes and expectations for this new ECE building.

Though the celebration was enjoyable, the building still needs all of ECE's alumni and friends to do their bit to bring these plans to life. We urge you to be a part of creating the next stage of the legacy of ECE. To contribute to the Building Campaign for ECE ILLINOIS, you can donate online at [www.ece.illinois.edu/buildingcampaign](http://www.ece.illinois.edu/buildingcampaign). If you are interested in making a pledge over five years, contact Beth Katsinas, director of advancement, at [Katsinas@illinois.edu](mailto:Katsinas@illinois.edu) or (217) 265-6285. 

do your bit

**A new vision of our future is taking shape. An exceptional building will soon take its rightful place among the great engineering centers at the University of Illinois. Bold and magnificent, the new ECE ILLINOIS building will honor our past, energize our future, and provide coming generations with the tools they need to imagine, to build, and to lead. The only question is—how will you be involved?**

If you believe an exceptional department requires an exceptional home, join the students, staff, faculty, and alumni around the world who are doing their bit to help us build the future—one brick at a time. To contribute to the Building Campaign for ECE ILLINOIS, mail your contribution along with the enclosed reply card today or donate online now at [www.ece.illinois.edu/buildingcampaign](http://www.ece.illinois.edu/buildingcampaign).



ECE Department Head **Andreas Cangellaris** (right) was one of several representatives of the department who met with SmithGroup and University facilities personnel to go over the 100 percent drawings in September.



**Show off a bit.** Enjoy a lapel pin illustrating your support for this project. See our website for more information.



# Larry Weber inducted to CEA's CE Hall of Fame

BY DARLENE NAOLHU

**E**CE alumnus Larry Weber's (BSEE '69, MSEE '71, PhD '75) work continues to be honored among professionals, researchers, and institutions across the globe. His contribution to the plasma display since its inception at Illinois has made him a noted figure within the consumer electronics industry.

Last fall, Weber was one of 13 individuals inducted by the Consumer Electronics Association (CEA) into its Consumer Electronics (CE) Hall of Fame for his "pioneering contributions to the plasma display panel technology and its commercialization."

The CE Hall of Fame honors visionaries who have made a significant impact on the way products and services are changing people's lives. Individuals are honored within specific categories for the contributions they have made to the consumer electronics industry. Weber was inducted under the "Founders and Inventors" category. Other categories include sales, marketing and corporate executives, retailers, and miscellaneous.

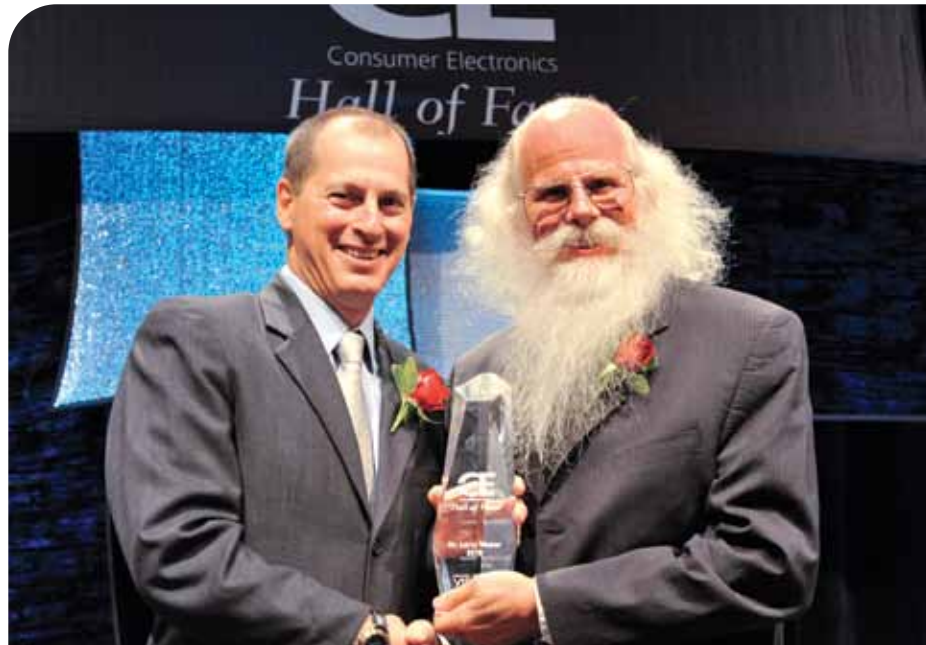
"I was very pleased to have been inducted to the CE Hall of Fame, especially because a number of other key Illinois alumni and faculty have also been inducted into it prior to me," said Weber. "Foremost, my professors Donald Bitzer and Gene Slottow had been inducted in the CE Hall of Fame, but others include Nick Holonyak, Jack Kilby, and John Bardeen. It's a very prestigious award, and very important people have received it over the years."

Retired since 2004, Weber continues to work and conduct research on plasma displays at his home in New Paltz, New York. With an active research program under way, Weber is working to find a method to improve plasma displays and reduce energy usage overall.

"Being inducted to the CE Hall of Fame will hopefully help me continue and gain support for my research," said Weber. "I want to keep developing better and more efficient plasma displays."

Weber started his career in plasma displays at Illinois as a student of plasma display inventors Donald Bitzer (BSEE '55, MSEE '56, PhD '60) and Gene Slottow. Joining this area of research during the 1960s had been an entirely new experience for Weber.

"The transistor was the exciting device back then. I saw so many people going into that area that I decided that I wanted to do something different. I was afraid that if I went into transistors, I would get lost among everyone else and wouldn't be able to make a big impact," said Weber.



**"The transistor was the exciting device back then.** I saw so many people going into that area that I decided that I wanted to do something different. I was afraid that if I went into transistors, I would get lost among everyone else and wouldn't be able to make a big impact."

—Larry Weber

More than 40 years later, it is without a doubt that Weber has accomplished his goal of making an impact in industry. In 1987, he founded Plasmaco, Inc., by purchasing the world's largest plant for manufacturing plasma displays from IBM. In 1996 he sold Plasmaco to Panasonic and continued to lead the company as its CEO for eight more years. He has received numerous awards for his work, including two Society for Information Display (SID) Special Recognition Awards, SID's prestigious Karl Ferdinand Braun Prize, and the IEEE Daniel E. Noble Award.

"In the end it all worked out. I was able to do something very significant in a somewhat obscure area," said Weber. "When I first started, the plasma panel had only 16 pixels and was very small. It was not very impressive at all. But now look at it today. It is used by millions of people. It's amazing."

For Weber, obtaining his degree at Illinois was a key factor in his success.

"The Illinois education was very practical. What I learned is that the job isn't done until you transfer the technology into industry, and that was a key thing in my education," said Weber. "Illinois has taught me that and I've always lived by it since." 🔌

## 1940s

**SORAB GHANDHI** (MSEE '48, PhD '51) is the recipient of the IEEE Electron Devices Society Education Award. He is professor emeritus at Rensselaer Polytechnic Institute (RPI) and currently resides in Escondido, California.

## 1970s

**RICHARD WAKEFIELD** (MSEE '70) was a 2010 recipient of the U.S. National Committee of CIGRE Attwood Associate Award and the Distinguished Member Award. He is the vice president of KEMA.

**BOB BROTON** (BSEE '74) received the Association of Old Crows (AOC) Col. Anton D. Brees Life Achievement Award in Electronic Warfare (EW). Broton has recently retired from Northrop Grumman after spending 25 years in design, development, and management of electronic warfare and information operations equipment.

**DON GUNN** (BSEE '74) became a member of the Board of Directors at Golden Phoenix Minerals, Inc. Gunn has served as the vice president of engineering and director for Media Sciences International, Inc. He also founded ultraHue, Inc., and is part owner of PinPoint LLC.

**JAMES SOLARI** (BSEE '77) was promoted to president of G&W Electric Company.

**JOHN CIOFFI** (BSEE '78) was named *The Economist's* 2010 Computing and Telecommunications Innovation Award winner for his advances in digital subscriber line (DSL) technology. Cioffi is known as the father of DSL and is currently the founding CEO of ASSIA Inc.

## 1980s

**TINA KILMER** (BSEE '81) was named the recipient of the 2009 Great Women of Gaming "Proven Leader" and "Rising Star" awards. She is the vice president of product compliance at Bally Technologies, Inc.

**STEVE MAHON** (BSEE '81) joined Cascade Microtech, Inc., as vice president of operations after spending more than 16 years at TriQuint Semiconductor.

**LIZ KIRKLEY** (BSEE '82) joined the Lodi Electric Utility as the new director.

Do you have a photo of yourself at work or at play that you'd like to share?

If so, please send these photos along to Tom Moone, editor, at [moone@illinois.edu](mailto:moone@illinois.edu). Though we'll only be able to print a few in each issue, you can see these and other submissions from our alumni at [www.ece.illinois.edu/news/resonance](http://www.ece.illinois.edu/news/resonance).

You can also mail your photos to:

Tom Moone  
56 Everitt Laboratory  
1406 W. Green St.  
Urbana, IL 61801

**ADAM BORIS** (BSEE '83, MSEE '85) was named to the position of chief operating officer at C\$ eMoney, Inc. He has almost 30 years of experience in the mobile technology industry with companies such as Motorola, Inc., Ameritech, and DBS Communications.

**JEFFREY PINE** (BSEE '84) joined Dykema in its Intellectual Property Department as Of Counsel in the firm's Chicago office. Prior to joining Dykema, Pine was a co-founder of Valauskas & Pine, Baniak, Pine & Gannon. He started his intellectual property career at Brinks, Hofer, Gilson & Lione.

**JEFFREY FERRARA** (BSCoMPE '89) is the sub-system lead for the Global Precipitation Measurement Mission at the NASA Goddard Space Flight Center.

**DINA YUE** (BSEE '80) joined Western Union Company as senior vice president and will head the Asia-Pacific region.

**ROB ROY** (MSEE '89, PhD '92) was named chief of business development for Atrenta, Inc.



**Paul Graessi (BSEE '00)** shows a bit of excitement at winning his prizes at the ECE Young Alumni Bowling event held November 18.

## 1990s

**SHARON HWANG** (BSEE '90) was named to the 27th Fellows Class of Leadership Greater Chicago. She currently practices intellectual property law at McAndrews, Held & Malloy.

**CRAIG MOHAN** (BSEE '90) was named managing director, co-location and data center services at CME Group. Prior to joining the CME Group, Mohan was the director of global Infrastructure at Citadel Investment Group and has held positions with ShopperTrak RCT, Accenture, and Blue Meteor, Inc.

**ALEX BRATTON** (BSCoMPE '93) developed the iRa C3 software, which allows security videos to be accessible from mobile devices. Bratton is the founder of multiple companies, such as Lextech Labs and Lextech Global Services.

**CLARK POPE** (BSEE '92, MSEE '94) won the 2010 DRS Innovation Award for his work "RedRock Direction Finding/ Geolocation System." This is the second year in a row that Pope has won the award. He has been designing radios and radio systems since graduating.

**DAVID PEARAH** (BSCoMPE '96) was named chief technology officer and senior vice president of product management at Emmi Solutions.

**SUNIL KUMAR** (PhD '96) was named the new dean at the University of Chicago's Booth School of Business.



**ECE Professor Kent Choquette** and several other ECE faculty members met with alumni at a reception hosted by the department at the IEEE Photonics Society Annual Meeting held in Denver last November.



**ERIC KELLER** (BSEE '99) joined Fish & Richardson P.C., one of the largest law firms in the U.S. Prior to becoming a lawyer, Keller was an engineer at Northrop Grumman Mission Systems. He received his JD from Stanford Law School in 2007.

**JEREMY STOPPELMAN** (BSCoPE '99), co-founder of Yelp, has joined the board of advisers at the event-management site Eventbrite.

## 2000s

**JUSTIN ELKOW** (BSEE '03, MSEE '05) is a co-founder of Striped Sail, a company that sells accessories for Apple products. He currently works for Intel Corp. in Sacramento, California, as a design engineer for microprocessors.

**NEGAR KIYAVASH** (MSEE '03, PhD '06) is a winner of the Air Force Young Investigator Award. She is an assistant professor in industrial and enterprise systems engineering at the University of Illinois. Kiyavash was also a faculty fellow for the 2010 Air Force Summer Faculty fellowship program.

**ANDREW RIVERA** (BSEE '08) joined Shell Pipeline as a facilities engineer. He provides technical support to operations for Shell Pipeline's onshore pipelines and facilities in Louisiana.

**MICHAEL TOWSTER** (BSEE '09) joined AT&T in the network planning and engineering organization departments.

## In Memoriam

**STEPHEN BUSHMAN** (BSEE '39) died February 26, 2010. He served in the Army Signal Corps during World War II.

**IRVING KAUFMAN** (MSEE '49, PhD '57) died July 14. He was a professor of electrical engineering at Arizona State University. He was a Fellow of IEEE and had received honors including a leadership award from the IEEE Phoenix chapter in 1994 and the Distinguished Research Award from the ASU Graduate College in 1986–1987.

**PRICE WICKERSHAM** (BSEE '43) died July 21. He served in the U.S. Army during World War II and headed engineering for DIT-MCO International in Kansas City, Kansas.

**HERMAN KOENIG** (BSEE '47, MSEE '49, PhD '53) died July 31. He taught at MIT before joining the faculty at Michigan State University in 1956, eventually serving as chair of MSU's Department of Electrical and Computer Engineering. He retired in 1990.

**MARK SHEPHERD JR.** (MSEE '47) died in February 2009. He worked at Texas Instruments starting in 1951, retiring as company chairman in 1988.

**RICHARD F.H. YANG** (MSEE '48, PhD '51) died July 12. He had been an assistant professor at South Dakota State University before joining Andrew Corporation in 1952 as chief engineer of the antenna group. In 1962 he became a professor at the Illinois Institute of Technology in Chicago. Yang was named a Fellow of the IEEE in 1967.

**S. JOSEPH BARANOWSKI** (BSEE '49) died April 15, 2010. He served in the Army's 82nd Airborne as a paratrooper during World War II.

**LEO WILLIAMS, JR.** (BSEE '50, MSEE '53) died April 20, 2010. He was a retired professor at the North Carolina A&T State University and worked as a consultant in industry.

**WARREN JOHNSON** (BSEE '51) died April 3, 2010. He had served in the Navy during World War II. He worked for Standard Oil of California, General Electric, and Electric Regulator of Norwalk before establishing his own business as a manufacturer's representative.

**ARTHUR BARRETT JR.** (MSEE '52) died July 22. He worked at the Advanced Research Laboratory of General Electric in Ithaca, New York, and at Sanders Associates of Nashua.

**WILLIAM BLACKWELL** (MSEE '52) died March 12, 2010. He served in the Army Air Corps during World War II. He taught electrical engineering at a number of universities, and served as department head at Virginia Tech.



**ECE alumnus Dale Hallerger (BSEE '82)** sent along this image of engineering and Marching Illini buddies getting together and drumming with the Alumni Band for Homecoming 2010. From left: Hallerberg, Joe Jaruski (BS Mechanical Engineering '81), Erik Olson (BSEE '85), and Tom Kundmann (BSEE '84, MSEE '86).

**MYRON WEINSTEIN** (MSEE '52, PhD '55) died March 23, 2010. He served in the Army during World War II. He founded and served as president of Micron, Inc.

**GEORGE FERGUSON** (BSEE '53) died July 12. He spent his career with Commonwealth Edison Company of Chicago and was a veteran of the Korean War.

**ROBERT LENKE** (BSEE '56) died April 7, 2010. He worked for McDonnell-Douglas and then Rockwell until his retirement in 1990.

**JOSEPH SEMMER** (BSEE '58) died April 15, 2010. He worked at Hallmark Electronics for 25 years, 15 as president.

**ROBERT PATTON** (BSEE '59) died February 17, 2010. He served in the Air Force following graduation and later became a pilot for American Airlines, retiring in 1999. He achieved the rank of major in the Air Force Reserve.

**EDWARD BAILEY** (BSEE '60) died July 24. He lived in Collinsville, Illinois, and served in the Navy. Bailey had a 34-year career with Boeing and retired as the director of program engineering.

**VIRGIL MONEY** (BSEE '62) died June 11. He served in the Air Force and had numerous military decorations and awards.

**HARRY SANDERS** (BSEE '68) died March 10, 2010. He was a retired federal computer analyst.

**ROBERT CAMILLONE** (BSEE '65) died November 16, 2010.

**LEO MANDL** (BSEE '66) died April 25, 2010. He was a certified public accountant.

**RICHARD EUSTICE** (BSEE '67) died September 11, 2010. He served for three years in the United States Navy and retired from Upjohn Company in 1992 to begin a career as a rehabilitation engineer for the next decade. Eustice was a member of IEEE, the Rehabilitation Engineers Society, and the Michigan Rehabilitation Association.

**JOHN ARMSTRONG** (PhD '72) died July 6. He retired from the Air Force in 1982 and as the president of the Legacy Ministries Foundation in October 2007.

**CHARLES HUDSON** (BSCoPE '76) died April 23, 2010.

**NADINE SMITH** (MSEE '89) died April 2, 2010. She was a professor of bioengineering and acoustics at Penn State University. ♪

# Donald Bitzer featured at PLATO@50 Conference

By Amy Jackson, Computer History Museum

Last June, the Computer History Museum (CHM) in Mountain View, California, welcomed a select group of Illinois alumni as it celebrated the 50th Anniversary of PLATO, a large-scale computer system for which numerous popular technologies were invented, including gas-plasma flat-panel displays and interactive touch screens, as well as many software innovations.

A co-production of the PLATO History Foundation (PHF) and CHM, the event brought together many of the key people involved with the creation of PLATO for the first-ever public conference celebrating its history and accomplishments.



Donald Bitzer

PLATO's list of innovations and seminal influences is considerable. Originating at the University of Illinois in the 1960s and later marketed by Control Data Corporation, PLATO (Programmed Logic for Automated Teaching Operations) was originally designed as a large-scale system to teach students nationwide, with more than 10,000 hours of courseware in subjects ranging from elementary math to air traffic control. The federally funded system quickly became much more—a virtual microcosm of today's online world with a thriving online community predating today's social media by decades.

The PLATO@50 conference featured a significant lineup of speakers, including Illinois alumnus and ECE Professor Emeritus Donald Bitzer (BS '55, MS '56, PhD '60), creator of PLATO and co-inventor of the flat-panel gas plasma display; and Ray Ozzie (BS Computer Science '79), chief software architect of Microsoft who worked as a systems programmer on PLATO in the 1970s.

“Those of us who were fortunate enough to have been early users of the PLATO system got a sneak peak at what one day the Internet would become,” said Ozzie. “Don Bitzer believed that computers could have a far broader impact than just simply computing, that in fact they could transform how we learn. But beyond education, the unbounded creativity of its emergent online community caused PLATO's impact to be far broader than any of us could have ever imagined.”

“It's one of the great, unsung stories in computing over the last half century, and we're proud to stage this event on site and online,” said John Hollar, president and chief executive officer of the Computer History Museum. [🔗](#)



In April 2010, Donald Bitzer was honored as one of the inductees into the College of Engineering Hall of Fame. He is shown holding the banner that honors his achievements, which is currently displayed in the Grainger Engineering Library. From left: Interim President Stanley Ikenberry, Bitzer, Chancellor Robert Easter, and College of Engineering Dean Ilesanmi Adesida.



## About the Computer History Museum

The Computer History Museum is a nonprofit organization dedicated to the preservation and celebration of computer history. It is home to the largest international collection of computing artifacts in the world, encompassing computer hardware, software, documentation, ephemera, photographs, and moving images.

CHM brings computer history to life through an acclaimed speaker series, dynamic website, onsite tours, as well as physical and online exhibits. The online exhibit, featuring the Timeline of Computer History and more than 600 key objects from Visible Storage, can be found at [www.computerhistory.org](http://www.computerhistory.org). [🔗](#)



## Large-scale study reveals major decline in bumblebees in the U.S.

The first in-depth national study of wild bees in the U.S. has uncovered major losses in the relative abundance of several bumblebee species and declines in their geographic range since record-keeping began in the late 1800s. University of Illinois entomology Professor Sydney Cameron and her colleagues analyzed bumblebee populations across the U.S. Their study found dramatic declines in four of eight species studied. The researchers report that declining bumblebee populations have lower genetic diversity than bumblebee species with healthy populations and are more likely to be infected with *Nosema bombi*, an intracellular parasite known to afflict some species of bumble bees in Europe.



## Nugent Hall offers more space, amenities to entice students

This fall, 150 students moved into Timothy J. Nugent Hall, U of I's first new residence hall in 44 years. Nugent Hall and the new Student Dining and Residential Programs Building opened this semester in the Ikenberry Commons residence hall complex (named for former U of I President Stanley O. Ikenberry), located between Gregory and Peabody drives and Fourth and First streets in Champaign, just north of the Activities and Recreation Center.

## McFarland Carillon dedicated

The Sarah "Sally" McFarland Carillon and Carillon Legacy Gardens were dedicated during a ceremony Oct. 22. The carillon was created in memory of Richard McFarland's late wife. He presented the gift of a 185-foot carillon located on the College of ACES south Quad to create a unique place on campus for gathering and relaxing. The carillon's 48 bells are electronically programmed to play familiar songs as well as Illini tunes.



## Long-extinct passenger pigeon finds a place in the family tree

With bits of DNA extracted from century-old museum specimens, researchers have found a place for the extinct passenger pigeon in the family tree of pigeons and doves, identifying for the first time this unique bird's closest living avian relatives. The new analysis, which appears this month in "Molecular Phylogenetics and Evolution," reveals that the passenger pigeon was most closely related to other North and South American pigeons, and not to the mourning dove, as was once suspected.



## Newly developed cloak hides underwater objects from sonar

Led by mechanical science and engineering professor Nicholas Fang, Illinois researchers have demonstrated an acoustic cloak, a technology that renders underwater objects invisible to sonar and other ultrasound waves. 🔄



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