



Welcome ECEE alums to the spring 2012 electronic edition of the ECEE Alumni Newsletter. This semester is the first time that electronic mailing of the biannual newsletter has been used to enhance the reading experience and expand the availability of our newsletter. We hope that you enjoy this new format.

This issue describes recent accomplishments and changes within the School's research activities, academic programs, and faculty. The highlighted research endeavors include solar energy technology advances made by Prof. Christina Honsberg, the creation of a new compound crystal material by Prof. Cun-Zheng Ning, and the development of a new portable sensor for asthma control by Prof. N. J. Tao.

This semester the ECEE School offered new graduate degree programs in Computer Engineering. These multidisciplinary M.S. and Ph.D. programs combine resources from the School of ECEE and the School of Comput-

ing, Informatics, and Decision Systems Engineering. For more information visit our website at <http://engineering.asu.edu/graduate/cen/>.

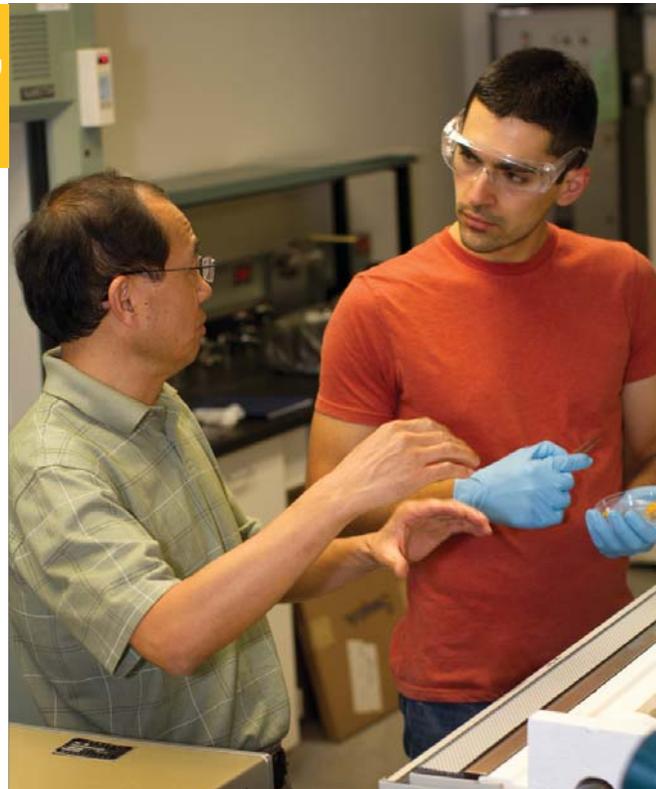
Congratulations to Prof. Ron Roedel on his retirement this year. We wish him well in all of his future endeavors. We are saddened to announce the death of former chair Prof. Thomas Tice and Prof. Richard Farmer. They were both outstanding individuals and will be dearly missed.

**Stephen Phillips**  
**Professor and Director**

## new material can enhance energy, computer, lighting technologies

Arizona State University researchers have created a new compound crystal material that promises to help produce advances in a range of scientific and technological pursuits. ASU electrical engineering professor Cun-Zheng Ning says the material, called erbium chloride silicate, can be used to develop the next generations of computers, improve the capabilities of the Internet, increase the efficiency of silicon-based photovoltaic cells to convert sunlight into electrical energy, and enhance the quality of solid-state lighting and sensor technology.

Ning and his team are now trying to use the new erbium compound for various applications, such as increasing silicon solar cell efficiency and making miniaturized optical amplifiers for chip-scale photonic systems for computers and high-speed Internet. Story by Joe Kullman



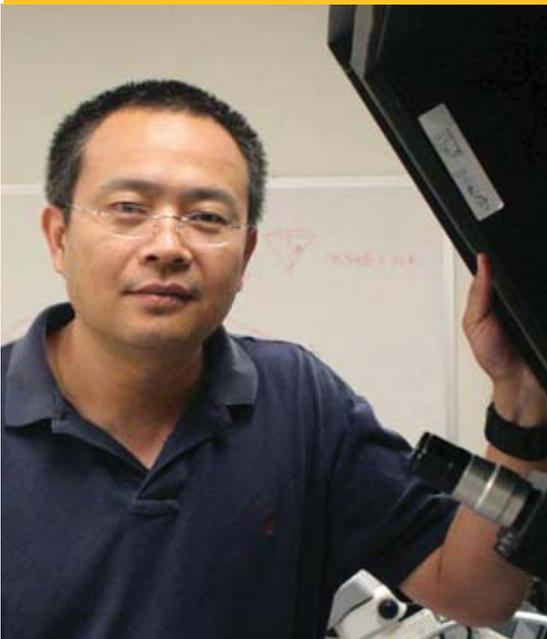
Dr. Ning and Ph.D. student Derek Caselli  
Photo by Jessica Slater

## new academic degree programs

The Computer Engineering (CENG) degree is a synergy of resources from the School of Computing, Informatics, and Decision Systems Engineering (CIDSE) and the School of Electrical, Computer, and Energy Engineering (ECEE). The design of this degree program will require students to determine the concentration area they are interested in pursuing at the time of application to the program.

Computer engineering is concerned with ways that the science of computation is applied to building devices, components and systems that perform the computation. The CENG degree provides the knowledge and skills necessary to advance and develop new paradigms for the design, system integration, testing, evaluation and deployment of state-of-the-art hardware and software systems that include computing, communications and networking (wired and wireless), control functions, sensing, signal processing and actuation. It is a multidisciplinary program that builds on the fundamentals of computer science, electrical engineering, industrial engineering and applied mathematics, with a balance between hardware and software courses.

## sensor aids asthma control



Managing asthma is a daily battle. Although asthma patients live with the disease every day, most only see their doctors about once a year or during an acute attack.

“So what a doctor gets for information comes from one static point,” says N. J. Tao, a professor in the School of Electrical, Computer and Energy Engineering. However, health measures like blood pressure and temperature can vary widely from day to day and week to week. A single measurement taken once a year doesn’t provide a complete picture of a patient’s health, Tao says.

Tao has developed a portable sensor that can detect nitric oxide (NO) in a patient’s breath. High levels of this gas indicate that the patient’s airways are inflamed. Existing devices that measure NO are large and expensive. Not all doctors have these machines in their offices, and they are far too expensive for patients to purchase for home use.

“What we have developed is about the size of a cell phone. It’s also much less expensive,” says Tao. “The concept we have is to provide consistent, continuous monitoring of a patient’s health status over a long period of time. So the next time I see my doctor I have one year of data to show him, to see the trend.”

In fact, patients won’t even have to wait until they visit their doctors to provide their data. The monitor can send its information directly to a cell phone or computer.

Tao’s patented sensor has been licensed to Zcube, Srl, the research venture of Italian pharmaceutical leader Zambon, Co., SpA. The licensing agreement allows Zcube to use the technology to develop and commercialize devices for monitoring and treating chronic respiratory diseases.

Story by Diane Boudreau

## ASU leading solar research, commercialization through NSF-DOE Engineering Research Center



ASU is leading a new national Engineering Research Center (ERC) supported jointly by the National Science Foundation (NSF) and Department of Energy (DOE) to solve challenges to harnessing solar power in economically viable and sustainable ways. The ERC for Quantum Energy and Sustainable Solar Technologies—or QESST—is led by faculty at ASU, including center director, Christiana Honsberg, professor in the School of Electrical, Computer and Energy Engineering, along with faculty from partner institutions: California Institute of Technology, Massachusetts Institute of Technology, University of Delaware and University of New Mexico.

The center's mission includes accelerating commercialization of solar energy technologies through partnerships with industry and expanding opportunities for education in energy engineering.

"An expanding global economy is bringing an unquenchable demand for more electrical power. It will become vital to progress throughout the 21st century

to have the benefits of alternative energy sources that solar power can provide through photovoltaic technologies," said Honsberg, who also directs ASU's Solar Power Lab.

Beyond enabling collaborations among university research teams, the center will bring universities, major energy companies, photovoltaics industry leaders and entrepreneurs together in partnerships. Another component of the center's mission is to improve engineering education and expand the community that is engaged in energy research and education. Story by Joe Kullman

## leaving a lasting legacy



**Ronald Roedel**, professor in the School of Electrical, Computer and Energy Engineering, joined the faculty in 1981 and was associate dean of the Ira A. Fulton Schools of Engineering has retired this year. He has always tried to carry out research and teaching activities in equal measure. Recently, he has become involved in curriculum reform issues, active-learning strategies and technology-enhanced education. On the research side, he has been involved in semiconductor research for more than 25 years, first with silicon, then with compound semiconductor materials and now with silicon again. He is the author or co-author of 35 publications, roughly 50 presentations and two book chapters. He holds two patents in the fields of semiconductor characterization and engineering education. Good luck to Dr. Roedel in all his future endeavors!

## save the date for these ECEE events

**m** 3-4, 2012  
**ay** ASU golden  
 reunion

Class of 1962, come celebrate your 50th year reunion with ASU! This 2-day event will include campus tours, social opportunities, commencement, and induction into the golden circle. Contact Alissa Pierson to RSVP (480) 965-2586.

**m** 17, 2012  
**ay** engineering alumni  
 networking mixer

The Engineering Alumni Chapter and the Engineering Career Center invite alumni, new graduates and employers to the May Networking Mixer! This event is free, we only require that you register in advance. Go to <http://events.engineering.asu.edu/> for more information and registration updates.

## In Memoriam: Richard Farmer, 1928-2012



**Richard Gregg Farmer**, adjunct professor of the School of Electrical, Computer and Energy Engineering at Arizona State University passed away on March 26, 2012 after a courageous battle with cancer. He was 83. Born November 5, 1928 in Laramie, Wyoming, he graduated high school from Eaton High School in 1946 and immediately joined the U.S. Navy. It was his naval training that headed Farmer in the direction towards electrical engineering. After discharge he received his Bachelors degree in electrical engineering from Colorado State University in 1952, and later his Masters degree from Arizona State University. Through his work, Richard inspired and educated many students and colleagues with his rich knowledge and willingness to share his expertise.

## In Memoriam: Thomas E. Tice, 1924-2011



**Thomas Earl Tice**, former professor and chairman of the School of Electrical, Computer and Energy Engineering at Arizona State University passed away on December 20, 2011. He was 87. Born January 24, 1924 in Florence, Alabama, he moved with his family to Huntington, West Virginia where he graduated from high school and attended Marshall College. World War II interrupted his formal education, and he enlisted to serve in the U.S. Army Signal Corps, setting up communications and electronic air navigational aids in North Africa, Europe, and the Middle East. Following the war, Tice returned to complete his Bachelors, Master, and Doctoral degrees in Electrical Engineering at The Ohio State University, remaining there as a professor and director of the OSU Antenna Laboratory for several years. Moving to Arizona in 1961, he became a chief engineer for Motorola Government Electronics Division for six years before he returned to his first love of teaching at Arizona State University. His last years at ASU were combined with sabbaticals in San Diego and consulting with Naval Ocean Systems Center on state of the art radar systems, as well as serving as a chairman for many years. Tice was a man who loved life and loved people, and nothing brought him more joy than sharing love and laughter with family and friends of all ages and backgrounds.

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