

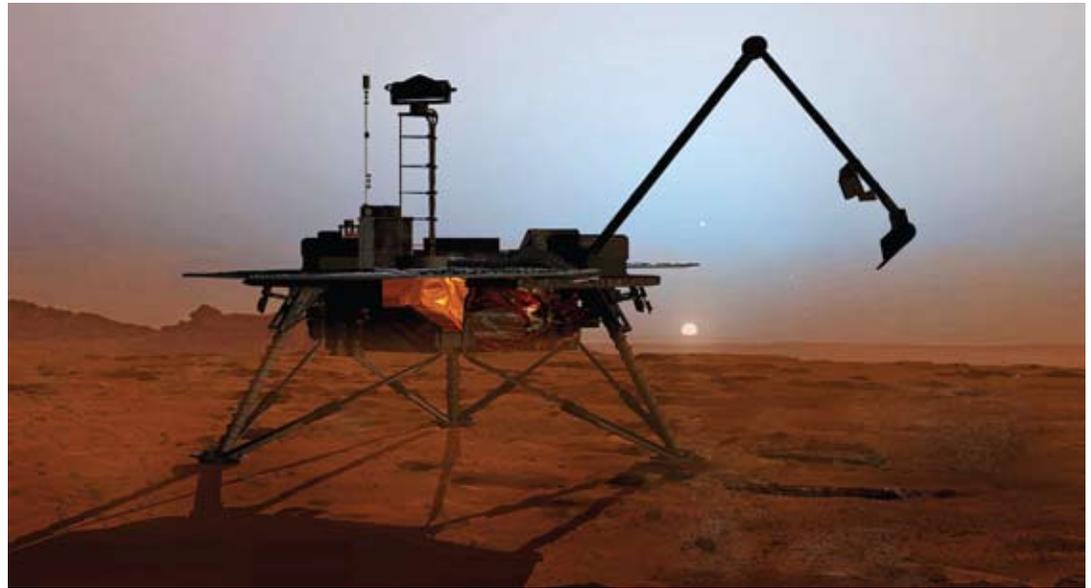
# Electrical & Computer ENGINEERING News



## ECE Sets Record for Research

Despite competition for federal funding being at an all-time high, the Department of Electrical and Computer Engineering experienced record research expenditures in fiscal year 2008.

ECE's annual research expenditures totaled \$9.9 million, up from \$2.3 million just five years ago. Research contracts and grants from the National Science Foundation comprise most of the funding, but other leading governmental agencies, industries, and nonprofit organizations also invest heavily in the cutting-edge work conducted in the ECE department. At the University level, research expenditures soared to nearly \$303 million, setting a record for Colorado State University.



NASA/JPL/Corby Waste

## ECE Alumni Engineer Successful Mission to Mars

Mission scientists and engineers erupted in applause as the Phoenix Lander arrived safely on Mars May 25, 2008. After traveling 422 million miles to study water and the planet's potential habitability, the 772-pound spacecraft flew in like a bullet, landing unscathed and ready for work.

For ECE alumni Ed Sedivy (B.S. '79) and Larry Ellis (B.S. '81), that monumental day marked a high point in their careers. Sedivy and Ellis are among six Colorado State electrical and computer engineering alumni who have worked since 2003 to make the Phoenix Mars Mission a reality. The alumni and their colleagues are responsible for equipping the Lander with some of the most advanced and sophisticated technology ever sent to Mars.



Photo illustration courtesy of Lockheed Martin

Phoenix spent more than five months on Mars digging and scooping the Red Planet's soil. Among its breakthrough results, the mission verified the presence of water and ice on the Martian subsurface. Unlike other landers and rovers that have detected acidic dirt with sulfates indicative of volcanic activity, the findings also revealed alkaline in the soil with carbonates and clay minerals. "The soil is very similar to what you'll find on Earth in cold, dry climates such as Antarctica and the Andes," said Sedivy.

Utilizing the first atomic force microscope with a camera ever used outside Earth, the spacecraft's robotic arm captured 25,000 pictures from panoramic vistas to microscopic close-ups of the soil. The Lander also collected atmospheric data with an innovative LIDAR (Light Detection and Ranging) instrument. For the first time ever, Phoenix witnessed snow falling and frost on the ground, a surprise to mission scientists.

The Phoenix Mars Lander was designed and built for NASA by Lunar and Planetary Laboratory at the University of Arizona in partnership with the Jet Propulsion Laboratory (JPL), Lockheed Martin, and the Canadian Space Agency. The spacecraft far surpassed its planned operational life of three months, exceeding its design life by two-thirds. The Lander, which worked for a total of 152 Martian days, sent

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## Student Spotlight: ECE Junior Running Down His Dreams

For computer engineering student Ryan Friese, it is hard to say which moves the fastest: his mind or his feet. The quick-witted honor student and Colorado State University athlete makes the grade in the classroom and on the track.

Having earned all-state honors in the triple jump and 400 meters at Rampart High School in Colorado Springs, Friese was recruited by Colorado State's track and field coaches. But as he learned more about the University, he discovered that CSU was a smart decision for his academic career as well.

"I was impressed with Colorado State and its programs, and Fort Collins is practically the perfect town," said Friese. "I decided to pursue my degree in computer engineering because I have always been fascinated with computers. As a little kid I liked taking apart my computer and putting it back together."

Nearly 80 percent of Friese's education is funded by track and field scholarships, but he also is the recipient of two major scholarships from the College of Engineering. Friese, who is a junior double-majoring in computer science and computer engineering, boasts a 3.79 GPA, which helped him earn the honors of Mountain West Conference Scholar Athlete and the NCAA Academic All-American award.



*ECE junior Ryan Friese*

Between his studies and athletics, it's hard to keep up with Friese. On an average day, he spends three hours in the classroom, four hours studying, and two to four hours on the track. Since joining Colorado State, Friese has taken on two new challenges – the 800 meters and cross country. He keeps his mind in shape with a full load of computer engineering coursework, including digital design and digital logic, his favorite subjects.

"I didn't realize how supportive the ECE faculty would be of my athletic

career," said Friese. "They have been extremely cooperative, working with me to advance both interests." He added, "Everything seems to have fallen into place for me. I am loving life right now."

In the long-term, Friese dreams of a fast-paced life as a professional runner and a lead designer for a company such as Intel or Advanced Micro Devices. In his limited free time, he enjoys hiking, mountain biking, and playing the guitar. Friese also participates in volunteer events with the Colorado State University track team.

## Mehdi Mehrpartou Wins Best Paper Contest

Last spring, the ECE department announced the winner of its 2008 Best Paper Contest. Senior design student Mehdi Mehrpartou received the award for his paper entitled, "Design of an Embedded Controller for a Radiometer."

Mehrprou received a cash award and a certificate from the IEEE Denver Section and the local IEEE Solid-State Circuits Society, the sponsors of the contest. The Best Paper Contest provides students an opportunity to showcase their writing skills and compete for a cash prize. The judges, a panel comprised of volunteers from the ECE Industrial Advisory Board and the IEEE, selected Mehrpartou's paper for its exceptional technical content, organization, development, clarity, style, and grammar.

The ECE department will again host the annual contest in the spring. The competition is open to all senior design students.



*Mehdi Mehrpartou (center), the winner of the 2008 Best Paper Contest, with ECE Department Head Tony Maciejewski (left) and Alvin Loke (right), vice president of the ECE Industrial Advisory Board.*

## Mars Mission *from Page 1*

its last signal to the mission team on November 2.

Alumnus Ed Sedivy led the Lockheed Martin engineering team in designing, constructing, and testing the Phoenix spacecraft. Sedivy won a 2008 Breakthrough Innovator Award from *Popular Mechanics* for his team's work on the mission. Alumnus Larry Ellis led Lockheed's software engineering team to create flawless systems for the spacecraft. Throughout all phases of the mission,

ECE alumni and their Lockheed Martin teammates closely monitored Phoenix's health by connecting their spacecraft operations centers with those at the JPL and the University of Arizona.

"This project has been the highlight of my career," said Sedivy. "I can honestly say that my electrical engineering education has prepared me for the challenges we have faced along the way." He added, "My message to current students is that perseverance pays off."

## Class Notes

Please send your professional and family updates to [ece@engr.colostate.edu](mailto:ece@engr.colostate.edu). Your news will be published in the next ECE newsletter.

**Parker Stafford (B.S.E.E. '59)** and his wife, Sally, currently reside in Melbourne, Florida, during the winter months and Littleton, Colorado, in the summer. Until last year, he had been doing consulting work on space missions for NASA. Now he is fully retired.

**Lloyd Gingery (B.S.E.E. '61)** has been retired from the Federal Government for 20 years. He worked for Western Area Power Administration in the sale and distribution of power. He likes retirement and enjoys participating in volunteer work.

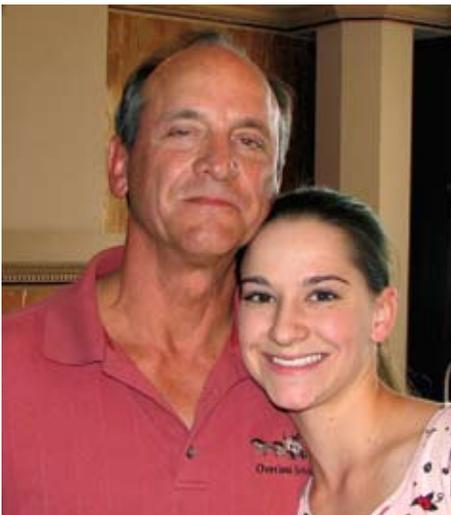
**Chris Tillman (B.S.E.E. '78)** emigrated to New Zealand and has taken a job as a software developer at Datacom in Wellington. His job is supporting the New Zealand Ministry of Justice Case Management System. He says the location is beautiful and the people are friendly and helpful.

**Larry Ellis (B.S.E.E. '81)** has worked for Lockheed Martin for 24 years. His daughter,

Samantha, 24, graduated from CSU with a bachelor's in Biology in 2006. His daughter, Stephanie, 23, earned her bachelor's in Computer Science from Colorado State in 2008. She currently works for HP in Fort Collins. Larry was the software manager of the Phoenix Mars Lander that landed on Mars in May 2008 and had a successful Mars surface mission for almost six months, confirming the presence of water-ice (see related article on front page). He now is the software manager of the GRAIL moon mission at the Waterton campus of Lockheed Martin.

**Charlie Sun (B.S.E.E. '94)** is currently working as a sales and marketing engineer for Aetrium Corporation. He is responsible for driving Aetrium's business in Asia. As a result, he has been traveling in the Asia Pacific region for nearly 50 percent of his time. He reports that the current economic downturn is presenting some interesting challenges and opportunities simultaneously.

**Kenneth Darbonne (B.S.E.E. '07)** is working for Bombardier Aerospace - Learjet in Wichita, Kan.



Tom Aurand with his daughter, Emily.

## Tom Aurand Celebrates 30 Years

If you have spent time in the ECE laboratories, you likely remember Tom Aurand. In 2008, he celebrated 30 years of service to Colorado State University.

For years the department has relied on Tom to maintain and troubleshoot its equipment and computer systems. His thoughtful, innovative, and careful consideration to every project and problem has made him an invaluable asset to Colorado State.

A reception was held in October to commemorate the milestone event.

## 2008-2009 ECE Scholarship Recipients

### Undergraduate Scholarships

#### Aram Budak ECE Fellowship

- Natalie Smith
- Ashlie Tagawa

#### Achievement Rewards for College Scientists (ARCS)

- Ryan Hoppal

#### Eads Family Scholarship

- Rachel Grissinger

#### Electrical and Computer Engineering Alumni Undergraduate Scholarship

- Lauren Netherton

#### Electrical and Computer Engineering Undergraduate/Graduate Scholarship

- Craig Odell

#### Engineering College Scholars Scholarship

- Darryl Benally
- Alan Burgesses
- Keith Wernsing

#### Fry Family Electrical Engineering Scholarship

- Justin Grantham

#### John and Amy Lawton Scholarship

- She-Ming (Allen) Chen

#### Lee and Bette Wehrman Scholarship

- Kyle Dimmitt

#### Thomas A. Brubaker Scholarship

- Matt Duwe

#### Walter Scott Jr. Scholarship

- Jarrod Zacher

#### Willis T. Johnson Scholarship

- Nicholas Powers

#### Vorhees Family Scholarship

- Jessica Sullenberger

### Graduate Scholarships

#### National Technology University (NTU) Scholarship

- Klaus Hartinger

#### Perl Family Graduate Fellowship

- Jason Fritz
- Randy Hoover
- Delbert Willie

#### Sjostrom Family Scholarship

- Evan Ruzanski

#### Shrake Culler Graduate Scholarship

- Lihua Wan

## ECE Receives NAE Grant to Recruit and Retain Women

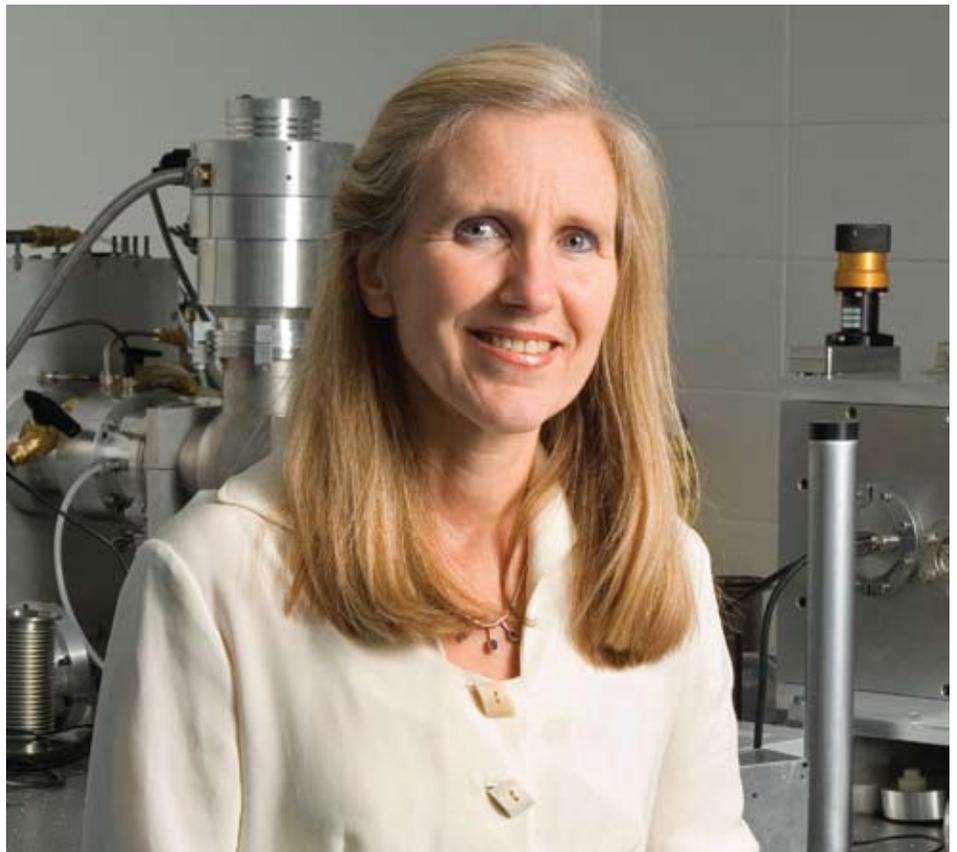
**A**t a time when the nation needs more engineers to stay competitive, the latest numbers show declining enrollments among women, according to the American Society for Engineering Education.

With its recent grant from the National Academy of Engineering (NAE), the Department of Electrical and Computer Engineering is hoping to reverse this trend by continuing to grow its female population. The grant is part of the NAE's Engineering Equity Extension Service program, a project supported by the National Science Foundation, with the goal of increasing the number of women attaining baccalaureate degrees in engineering.

"We continue to emphasize our recruitment and retention efforts, particularly as it relates to women," said ECE Department Head Tony Maciejewski. "In the last two years, we have seen a dramatic increase in the number of females entering our program." He added, "This grant will help us be even more effective at attracting women and, more importantly, at providing the support that students need to be successful."

The NAE grant, secured by Karen Ungerer, ECE program coordinator, allows the department to expand its current efforts to enhance the attraction, retention, and academic progression of undergraduate women in the department. Striving to provide additional activities related to gender equity, ECE launched new initiatives geared toward female students, such as panel discussions, luncheons, conference participation, and a speaker series. The department believes such activities enhance the educational experience female students receive by creating a welcoming environment and sense of belonging.

ECE also will continue partnering with the College of Engineering's Women and Minorities Program and the student chapter of the Society of Women Engineers to provide women with avenues for networking and support.



## Menoni Named Fellow of American Physical Society, Optical Society of America

**J**ust weeks after she and her team accepted the *R&D Magazine* award for the Top 100 most significant technological advances for 2008, ECE Professor Carmen Menoni received word that she has been named a Fellow of both the American Physical Society and the Optical Society of America.

Menoni joins a select group of colleagues who are chosen by their peers for these distinct honors.

"Clearly, this has been a fantastic year for Professor Menoni," said ECE Department Head Tony Maciejewski. "Being named a Fellow of two prestigious professional societies is an impressive achievement. These honors serve as a tribute to her standing in the field."

Fewer than 0.5 percent of the 46,000 members in the American Physical Society are named as Fellows. Menoni was honored for "advancing nanoscale imaging using extreme ultraviolet laser light and seminal contributions to the understanding the physics of semiconductor optical materials and laser diodes."

The Optical Society of America named Menoni as a Fellow "for contributions to nanoscale resolution imaging using

compact extreme ultraviolet lasers and the understanding of semiconductor optical materials and devices." Menoni was one of 61 Fellows selected this year by the Optical Society of America. The organization, which has more than 70,000 professional members from 134 countries, promotes the science of light and the advanced technologies made possible by optics and photonics.

Menoni's professional accomplishments and mentoring work have helped her gain recognition as a role model and a voice of inspiration and experience for women in optics. She appears in the 2009 SPIE Women in Optics Calendar, a monthly planner from the International Society for Optical Engineering that features more than two dozen influential women working in optics who offer their insights and inspirations.

Professor Menoni joined the Department of Electrical and Computer Engineering in 1990. She earned her bachelor's degree in electrical engineering from the University of Rosario, Argentina, in 1978 and her Ph.D. in physics from Colorado State University in 1987.



## ECE Remembers Dr. Derek Lile

It was a sad day in late July when news of Dr. Derek Lile's passing reached the ECE department. The faculty, staff, and students mourned the loss, as they shared their fondest memories of Emeritus Professor Lile. He is remembered as a brilliant teacher and researcher and a kind, warm, and generous person. Lile was known for his sense of humor and accent.

"He was my friend in my days at CSU, when I was a Ph.D. student and later a research associate," said alumnus Julio Gonzalez, EE Ph.D. '91. "He helped me in many ways, with his great wisdom and positive attitude toward solving problems. Derek was a good man with high moral values and a great sense of humor, who loved his family very much."

Lile, who served as department head from 1993 to 2003, was a highly respected educator. He connected with his students in courses such as Electrical Engineering Fundamentals, Circuit Theory, Semiconductor Devices, and Electronics. A senior member of the IEEE, Lile's research focused on compound and alloy semiconductor electronics, optoelectronics, and surface passivation. He served as the principal investigator on research projects supported by major agencies such as NASA, the National Science Foundation, the Defense Advanced Research Projects Agency, and the Office of Naval Research.

As department head, Lile's major accomplishments include establishing a five-year Master's in Engineering degree as well as the computer engineering major. He announced his retirement from Colorado State University in August 2005, after more than 20 years of service. He resided in Fort Collins with his wife, Christine. He also is survived by two sons.

## Reising Takes on Key Leadership Roles

Dr. Steven Reising, ECE associate professor, was named vice president for Technical Activities of the IEEE Geoscience and Remote Sensing Society beginning in January 2008. In his new role, Reising enables the chairs and co-chairs of five international technical committees to promote collaboration and technical advances in Earth remote sensing by more than 3,000 Society members.

Reising also serves as Secretary of the U.S. National Committee (USNC) of the International Union of Radio Science (URSI) for 2009-2011. After three years, the Secretary customarily becomes the Chair of USNC-URSI. URSI is an international organization of engineers and scientists who employ the study of radio waves spanning the electromagnetic spectrum in the design of electronic components and systems, as well as the study of the Earth, its nearby space environment, and celestial bodies.

## ECE is on Facebook

The ECE Department recently created a profile on Facebook, a social networking web site hugely popular among high school and college students. The department uses its profile as a recruitment and retention tool to share updates, news, and events with current and prospective students.

Millions of people use Facebook every day to keep up with friends, upload photos, share links and videos, and learn more about the people they meet. Check out our page by visiting [www.facebook.com](http://www.facebook.com) and search for "Colorado State Electrical and Computer Engineering Department."

## Can You Identify These Alumni?



Can you identify the alumni featured in this photo? Contact the ECE department at (970) 491-6600 or send e-mail to [ece@engr.colostate.edu](mailto:ece@engr.colostate.edu).

The photo was taken in 1970, the year the Beatles broke up. In contrast to today, the median household income was \$8,734 and the national unemployment rate was 3.5 percent. In science, the LCD (liquid crystal display) was invented.

An update will be published in the next ECE newsletter.



**Update:** Our last issue featured two former students in the lab in 1962. They have not yet been identified. Contact the ECE department if you recognize these alumni.

## Engineering Career and Internship Fair February 26

The 2009 College of Engineering Career & Internship Fair is scheduled for Thursday, February 26. Geared specifically toward students interested in engineering, science, technology, math, and related fields, the annual fair will take place in the CSU Lory Student Center. For questions, contact Terry Comerford, engineering career center liaison, at [Terry.Comerford@colostate.edu](mailto:Terry.Comerford@colostate.edu) or (970) 491-7088.



## Menoni Team Wins 'Invention Oscar'

**R**&D Magazine has recognized a tabletop microscope developed by a team of Colorado State University and Berkeley researchers at the National Science Foundation Engineering Research Center for Science and Technology as one of the Top 100 most significant technological advances for 2008.

The team, which includes several graduate students, received the R&D 100 award on Oct. 16 in Chicago at a ceremony the *Chicago Tribune* calls "the Oscars of invention."

ECE Professor Carmen Menoni led the team that developed the microscope using light from a unique extreme ultraviolet laser invented at Colorado State by ECE Professor Jorge Rocca and collaborators, along with specialized lenses created at Lawrence Berkeley National Laboratory. Also contributing to the project are scientists from the Lebedev Physical Institute in Moscow, who created mirrors used in the microscope.

The microscope uses pencil-like beams of light of wavelength 10 times shorter than visible light known as extreme ultraviolet light to "see" objects 1,000 times smaller than a human hair. It can also take single-shot flash images of the nanostructures, opening the possibility to make movies that track the dynamics of nanoscale objects.

In winning the competitive award, Colorado State University joins an elite group of winners that includes universities, national laboratories, and multinational companies.

## New Faculty Join ECE

**D**r. Sudeep Pasricha is a new assistant professor in the Department of Electrical and Computer Engineering. Pasricha's research interests are in the area of multicore



embedded system-on-a-chip design and optimization, with a special emphasis on the design of novel on-chip communication architectures. At Colorado State, Pasricha is pursuing research on emerging trends in on-chip communication, including the design of networks-on-a-chip, on-chip optics and carbon nanotube interconnects, and three-dimensional architectures. This research has a broad impact on creating low-cost and high-performance electronic chips found at the heart of intelligent systems all around us, such as in cell phones, gaming consoles, portable computers, automobiles, medical instruments, and aerospace equipment.

Pasricha received a bachelor's degree in electronics and communication from Delhi Institute of Technology in 2000, and later joined the research and development labs at STMicroelectronics, where he worked until 2002. He received a master's degree and Ph.D. in computer science from the University of California Irvine in 2005 and 2008, respectively.

A racquetball fanatic, Pasricha is always looking for a challenge at the Student Recreation Center courts. In his free time, he enjoys hiking, running, reading, yoga, and playing computer games. He also is

trying to learn how to bowl, but has much to learn about the fine art of knocking down pins over and over again.

**Dr. Ali Pezeshki** joined the Department of Electrical and Computer Engineering this fall as an assistant professor. His research interests are in statistical signal processing and coding theory and their applications to distributed sensing, wireless communications, data networking, and bioimaging. Pezeshki's current research is focused on signal design for active sensing and communication and on the design of reliable, secure, and efficient schemes for extracting and fusing information in distributed systems and large-scale data networks. Pezeshki particularly enjoys multidisciplinary research, where he can develop new mathematical tools for solving real-world problems that are



beyond the conventional boundaries of electrical and computer engineering.

Pezeshki received his bachelor's and master's degrees from

the University of Tehran in Tehran, Iran, in 1999 and 2001, respectively. He received his Ph.D. in electrical engineering from Colorado State University in 2004. Prior to joining the CSU faculty, Pezeshki served as a postdoctoral research associate in the Program of Applied and Computational Mathematics at Princeton University.

In his free time, Pezeshki enjoys reading and playing table tennis and racquetball.

## CSU Launches Systems Engineering Program

To meet the growing demands of employers, this fall Colorado State University unveiled new coursework in systems engineering. Designed for engineers involved in complex systems – such as those in aerospace, energy, environment, and bioscience fields – systems engineering provides a disciplined development process for multifaceted engineered systems that results in a quality, cost-effective product that meets user needs.

The new program, led by Ron Sega, Woodward Professor of Systems Engineering, is a collaborative effort with industry, government, and other universities. Sega was charged with developing the systems engineering program as part of his role as a professor in the Department of Electrical and Computer Engineering. ECE Department Head Tony Maciejewski helped Sega launch the program and is co-teaching one of its core courses.

“The practice of systems engineering has been evolving for more than 50 years,” Sega said. “Colorado employers have expressed a critical need for systems engineering education that will give their workers a broad base of knowledge that can be applied to complex systems, whether that’s in aerospace, energy, environment, or other fields. We are trying to meet those needs through the flexibility



*CSU addresses industry’s need for multifaceted engineers with its recently approved systems engineering program.*

of an in-class or out-of-class, synchronous or asynchronous delivery approach.”

The systems engineering courses are offered online as well as on campus. The program of study offers a non-degree certificate track or a Master of Engineering degree. The master’s degree in systems engineering requires 10 courses totaling 30 credits and the certificate program consists of four core courses totaling 12 credits.

The Master of Engineering degree is designed to provide a broad understanding of the fundamentals of systems engineering, while offering considerable flexibility as the student progresses through the program. Upon completion of the core fundamental courses, students may tailor their coursework, choosing among in-depth

courses and electives that align with their area of interest. The program culminates with a capstone special project, giving students an opportunity to apply their knowledge to a real-world problem.

“For a long time we have been hearing from our industry partners that they would like our graduates to have a deep understanding of systems engineering,” said Tony Maciejewski, ECE department head. “This program addresses the current trend toward increasingly complex systems that exists across a variety of disciplines, making our alumni even more marketable and desirable to employers.”

For additional information, including specific courses and requirements, visit [www.engr.colostate.edu/ece/current\\_students/MS\\_sys\\_engr.shtml](http://www.engr.colostate.edu/ece/current_students/MS_sys_engr.shtml).

## ECE Forms Partnership with University of Luxembourg

The Department of Electrical and Computer Engineering recently entered into a formal partnership with the University of Luxembourg (UL). Together, the two universities will work to advance specialized research in computer engineering through the exchange of faculty, postdoctoral students, and graduate students.

Founded in 2003, UL is a young, small, and personable research-based institution located in Luxembourg

City. A short drive from France, Germany, and Belgium, the university is centrally located in Europe. UL is considered an inviting locale for English-speaking students to explore continental Europe and learn a foreign language. It is distinctive from other universities in Europe in that it is trilingual. Teaching and research are conducted in English, French, and German, creating a diverse learning environment with an exceptionally high number of students, faculty, and staff from abroad.

UL’s Computer Science and Communications Research Unit is comparable in size to the ECE department, boasting 20 professors. The unit’s research projects align well with the work being done at Colorado State University in the

areas of advanced software systems, communication systems, intelligent and adaptive systems, distributed computing, and information security. Because of the strong overlap, myriad opportunities exist for collaborative research.

Plans are well under way for shared research. Last spring, the ECE Department hosted a team of faculty from UL and helped them get acquainted with CSU. In turn, ECE faculty traveled to Luxembourg last summer to visit the university and established plans for collaborative research. In addition to the exchange of postdoctoral and graduate students, the two universities hope to expand the partnership to include undergraduate students as well.

## Dual-Polarization in the Forecast for TV Stations Nationwide

Last summer, Professor V. “Chandra” Chandrasekar taught a nationwide audience of broadcast meteorologists a course on dual-polarization radars. The radar technology, developed at Colorado State, is the latest to be used by forecasters to warn the public about developing severe weather and will be adopted as the new National Weather Service standard starting this year.

“Dual-polarization weather radars have become a key operational tool for forecasters, and many TV stations will upgrade to dual-polarization systems,” Chandra said.

Dual-polarization works by transmitting and receiving both horizontal and vertical radiation. This technique allows better discrimination of particle shapes, which means more

accurate information can be gathered on rain and hail, snowflakes, and other particles in clouds. Colorado State University installed a unique new antenna in Spring 2008 at its CHILL radar facility near Greeley – the first time this type of technology has been installed on a weather radar anywhere in the world. The antenna improves the radar’s dual-polarization capabilities.

Chandra, who is considered a top expert on the technology, has more than 25 years experience working with dual-polarization. He continues to receive national press for his work, including a recent feature on ABC Nightly News. Visit the department web site ([www.engr.colostate.edu/ece/media\\_more.shtml](http://www.engr.colostate.edu/ece/media_more.shtml)) for more examples of ECE faculty in the media.



*New antenna technology, which was installed last spring, improves the CHILL radar’s dual-polarization capabilities. Many TV stations nationwide will upgrade to dual-polarization systems.*

## Research Spotlight: Professor Young Leads Smart-Grid Research

As the nation moves toward energy independence, research is under way in the ECE department to solve some of the most challenging infrastructure problems. Dr. Peter Young, associate professor, is leading the effort,



working on how to incorporate “green” solutions into the complex puzzle of the electricity grid.

Dr. Young and his team are conducting research to help

make the country’s energy generation and distribution systems more affordable, clean, efficient, and reliable. Controlling the various aspects of reconfigurable power grids to deliver high performance, while at the same time maintaining guaranteed stability, has proved challenging to researchers.

“It is a large and complex system,” said Young. “Certain aspects are statistically predictable, such as when people turn on

their air conditioners. However, renewable energy sources, such as wind and solar, are not totally predictable, making the problem much more involved.”

While supply and demand is a core concept in virtually all other industries, it is one with which the current grid struggles greatly, because electricity must be consumed as soon as it is generated. Without being able to determine demand precisely, at a given time, having just the right supply available to deal with every contingency can be problematic.

Young is addressing these challenges by developing and testing more advanced tools for microgrid operations, with a particular focus on clean energy sources integrated with traditional power generation systems. He is leveraging the large-scale experimentation capabilities of the InteGrid Laboratory, which is jointly owned and operated by Colorado State’s Engines and Energy Conversion Laboratory and Spirae, a Fort Collins company specializing in the characterization and integration of renewable and distributed power into smart-grid systems. The laboratory

models all the elements of a real world power distribution system. It can operate connected to the grid or its switch gear system can disconnect InteGrid from the grid at anytime, islanding the system, and extending the capabilities of the facility.

The InteGrid researchers work in conjunction with a team of clean energy companies as part of Fort Zed, a three-way partnership between the City of Fort Collins, Northern Colorado Clean Energy Cluster, and UniverCity Connections. Fort Collins also was selected by the Department of Energy as one of nine demonstration projects nationwide that will demonstrate peak load reduction on substation feeders using renewable and distributed energy technologies.

To learn more about Dr. Young’s research, contact him at [pmy@engr.colostate.edu](mailto:pmy@engr.colostate.edu) or visit [www.engr.colostate.edu/ece](http://www.engr.colostate.edu/ece).

This newsletter is produced twice yearly by the Department of Electrical and Computer Engineering. Please send story ideas and comments to: Andrea Leland, Lead Writer and Editor, 1373 Campus Delivery, Fort Collins, CO 80523-1373. E-mail: [andrea.leland@colostate.edu](mailto:andrea.leland@colostate.edu) Phone: (970) 491-1033

# Special Recognition

January 1, 2008 – December 31, 2008

## Donors to Electrical and Computer Engineering



The ECE faculty, staff, and students would like to extend our sincere appreciation for your ongoing support of our departmental initiatives and programs. Your support truly makes a difference.

Every effort has been made to ensure the accuracy of this donor honor roll. Please advise us of any errors by contacting us at (970) 491-1033 or [ece@engr.colostate.edu](mailto:ece@engr.colostate.edu). We appreciate the opportunity to correct our records. Listing is by graduation year.

### 1940-1949

William and Barbara Gepford  
H. Norris and Mary Lou Lynch

### 1950-1959

David and Evelyn Akers  
Wilbert and Patricia Aldrich  
Robert and Linda Bertorello  
William and Phyllis Grant  
Galen Herstein  
Ted and Marie Lough  
William McCarty  
Raul Pettai  
Robert Phelps  
William Quinn  
Gilbert and Lynne Reeser  
Lloyd and Julia Spafford  
J.K. Williams

### 1960-1969

Leopoldo and Linda Barrios  
James and Joanne Brownrigg  
Michael and Judith Chandler  
Chris and Georgia Christopher  
Calvin and Carol Eddleman  
Walter and Susan Green  
Robert and Carleen Grossman  
Roger Hedlund  
William and Jean Hurt  
Robert and Susan Johnson  
Stuart and Linda Morgan  
Gary and Vicki Reynolds  
John and Rosemary Rigger  
Jerry L. Sparks  
Stephen and Marcia Venzke

### 1970-1979

John and Betty Becker  
Scott Billings  
Kenneth Bolin  
Bruce and Kathleen Bowie  
John Bridges  
John and Annette Briggs  
David Farden  
Sang Hee Hong  
Stuart and Edith Kramer  
David Larson  
George and Donna Laughlin  
Kim and Karen Montross  
Dennis and Mary Peery  
Charles and Debra Pitman

Douglas and Janet Reese  
Robert and Theresa Reich  
Paul and Rebecca Rinne  
Don Stuehm  
Lisa White  
Thomas Williams and Candace Merrill-Williams

### 1980-1989

Gregory Ash and Susan Johnson-Ash  
Gary and Lynn Barbari  
Kenneth and Lori Bernhardt  
David and Lori Berry  
David Blankenbeckler  
J. Dan and Anne Byers  
Andrew and Roberta Denenberg  
Chuck Duey  
Larry and Deborah Ellis  
David and Margaret Farrell  
Fred Hansen  
John Hoffmaster  
Gina Holland  
Ping-Fan Hu and Shin-Shin Shieh  
Sree and Suganda Iyer  
Craig and Harriette Jasper  
George and Alicia Kovall  
Ralph and Elizabeth Krause  
James and Barbara Longino  
Scott and Jeni Makinen  
Van and Joy Martin  
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