Spring 2011

Electrical & Computer ENGINEERING News

Once again, I am pleased to share the department's latest examples of excellence in teaching, research, and outreach. You'll see that our students, faculty, staff, and alumni are fueling our success, even in the most difficult economic times.

We have experienced growth in enrollments, and more students are taking on leadership roles in professional organizations and outreach activities. The hard work of these exceptional individuals has generated a ripple of positive outcomes throughout the department.

In late 2010, the ECE doctoral program was ranked among the nation's best by the National Research Council. Our research expenditures have exceeded $11 million – an all-time high for us – greatly contributing to the University's recent surge in research productivity.

On a personal note, I enjoyed reading so many updates from our alumni in the Class Notes section. I encourage all our constituents to share your news anytime by contacting us at ece@engr.colostate.edu.

Tony Maciejewski,
ECE Department Head

Colorado State University

ECE Department Expands Program in Energy and Environment

In step with the nation and state, the ECE department is ramping up its program in energy and environment-related coursework and research. With the support of federal stimulus funding for the new energy economy, the department hired two new faculty members last fall to focus on smart grid systems. Additionally, Dr. Ron Sega, professor of electrical and computer engineering, assumed a shared leadership position in a unique agreement that brings together two national research powerhouses: Colorado State University and The Ohio State University.

New Faculty in Smart Grid Systems

Dr. Siddharth (Sid) Suryanarayanan has joined the Department of Electrical and Computer Engineering as an assistant professor.

Suryanarayanan was born and raised in Chennai, India, where he earned his B.E. in electrical and electronics engineering from the Madras University in 2000. He received his master's and Ph.D. degrees in electrical engineering from Arizona State University in 2001 and 2004, respectively. Prior to joining Colorado State, he held research appointments at Arizona State University and Florida State University and, later, a tenure-track faculty appointment at Colorado School of Mines.

Suryanarayanan's research and teaching interests are in design, operation, and economics of advanced electric power systems. At CSU, he will continue his ongoing research on microgrid technology, impact of the smart grid, and integration of renewable energy technology to the electricity grid. His research has been sponsored by agencies like the National Science Foundation (NSF), the Department of Energy, the National Renewable Energy Laboratory/ Joint Institute for Strategic Energy Analysis, and the Office of Naval Research (ONR), to name a few. He has authored more than 50 journal publications and conference proceedings, as well as several technical reports. Suryanarayanan is a senior member of the IEEE and was the recipient of the T. Burke Hayes Faculty Recognition Award from the IEEE Power and Energy Society in 2009.

In his free time, Dr. Suryanarayanan enjoys traveling, eating adventurously, golfing, and reading.

Dr. Liuqing Yang has joined the Department of Electrical and Computer Engineering as an associate professor. With an active research program in communications and networking, as well as experience in power engineering and electromagnetics, her current research is focused on smart grid systems. Her work encompasses fundamental issues, such as wireless communications, power line communications, intelligent space and smart homes, and networked sensing and control in a distributed manner. Already the recipient of numerous awards in her young career, Yang's honors include the prestigious NSF Early Career Development Award and the ONR Young Investigator Program Award. Yang is a senior member of the IEEE and is heavily involved in technical committees in her field.

Yang received a bachelor's degree in electrical engineering from Huazhong University of Science and Technology in 1994. She earned her master's and Ph.D. degrees from the University of Minnesota in 2002 and 2004, respectively. Prior to joining Colorado State, she served as an associate professor with the Department of Electrical and Computer Engineering at the University of Florida

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Student Spotlight: Ambassadors Spread Enthusiasm for Electrical and Computer Engineering

ECE ambassadors socialize outside the engineering building. From left to right: Austin Steingrube, Rachel Dondero, and Torie Hadel.

Choosing the right college and major can be both exciting and daunting for high school and transfer students. Thanks to three motivated, charismatic ECE undergraduates, prospective students are learning first-hand why it is exciting to study electrical and computer engineering at Colorado State University. The new ambassadors are jazzed about the program and are helping boost recruitment efforts.

"I love what I'm learning at CSU. There are so many opportunities to do what you want, whether in the classroom or through hands-on research," says junior Torie Hadel, describing why she enjoys the major. "ECE students are friendly, the professors are smart, and the curriculum is interesting and challenging." Torie, a first-generation student, and her counterparts, sophomores Rachel Dondero and Austin Steingrube, are playing an important role in attracting new students to the department.

The student ambassadors lead building and lab tours, assist with phone-a-thons, and pitch in with events. Most importantly, their energy is contagious when they share their stories and experiences to educate others about the department's strengths and benefits and the breadth of opportunities offered by the major.

"If you have an idea or if there is an invention that doesn't exist, you can bring it to fruition with this degree," says Austin. Rachel adds, "It's exciting to know that what I am learning in my classes affects everything around me. My friends are surprised to hear that I have a basic understanding of the electronic technology that surrounds us on a daily basis."

Torie and Austin were born and raised in Colorado, and Rachel grew up in Albuquerque, N.M. While each student has a different story and a unique perspective to impart, they all possess leadership skills and share a love for challenges, problem solving, and learning.

"It is refreshing to see these students working tirelessly to promote our program and generate excitement among the undergraduate student body," says ECE Department Head Tony Maciejewski. "Our ambassadors are demonstrating how students have fun in this rigorous, but rewarding, discipline."

If you know a high school or transfer student who is considering a degree in electrical and computer engineering, we encourage you to contact the ECE department at ece@engr.colostate.edu. We are pleased to provide students with additional information and to help arrange personal campus visits with a student ambassador.

Program in Energy and Environment

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When she is not teaching or conducting research, Yang loves singing karaoke.

Shared Research Position with Ohio State

ECE Professor Ron Sega was named to a shared leadership position between Colorado State University and The Ohio State University. Between the two land-grant universities, more than 500 faculty members are researching areas of energy and the environment. As part of the three-year position, Sega will look for opportunities for collaboration between the institutions. He also will help the universities work together to identify and lead potential national initiatives and economic development opportunities.

Sega, former astronaut and Under Secretary of the U.S. Air Force, currently serves as CSU's vice president for Energy and the Environment and Woodward Professor of Systems Engineering, and obtained his master's degree in physics at Ohio State. He will split his time between Ohio State and Colorado State and serve as a full-time tenured faculty member at both institutions.

Big Year for Optical Biosensors Design Team

Grand Prize at Engineering Days

The ECE Optical Biosensors team enjoyed many successes in 2010. In addition to being named the innovators of the next century at the ECE centennial celebration, the team shined at the 2010 Engineering Days competition, claiming the grand prize for the top project in the College of Engineering. The design team consisted of three electrical and computer engineering students, Wes Fuller, Torsten Kiljan, and Ashley Miller, and two chemical and biological engineering students, Mohamed Eldeiry and Liesel Mundhenke. The project was advised by ECE Professor Kevin Lear and two faculty affiliates, Dave Kisker and Susan Hunter, as well as graduate students Weina Wang and Joel Kindt. Judges recognized the team for a "great and crisp presentation, excellent team management, clever work, and for the multidisciplinary aspect of the project."

Winners of Best Paper Contest

Last June, the Optical Biosensors team also gained recognition for their communication skills. They were named the winners of the 2010 Best Paper Contest by a group of volunteer judges from the ECE Industrial Advisory Board and the IEEE. The paper entitled, "Optical Biosensors," described their research project aimed at developing a test for a common canine cancer, hemangiosarcoma, by using a drop of blood. The apparatus the students helped develop requires a range of expertise including optics, fluid dynamics, electronics, and biology.

The team received a cash award and a certificate from contest sponsors, the IEEE Denver Section and the local IEEE Solid-State Circuits Society. The paper was chosen for its exceptional technical content, organization, development, clarity, style, and grammar.

The Best Paper Contest is an annual competition open to all electrical and computer engineering senior design students.

The ECE Optical Biosensors team, including project adviser Professor Kevin Lear, accepts the top project award at the 2010 E-Days celebration.

2010-2011 ECE Scholarship Recipients

Undergraduate Scholarships

Allen Porter Mowry Memorial Scholarship
- Daniel Higley
- Keith Wernsing

Aram Budak ECE Fellowship
- Leah Belval
- Alan Burgesser
- Torie Hadel
- Kathleen Mantell

Claude W. Wood Scholarship
- Casey Anderson
- Diana Peterson

Delano F. Scott Memorial Scholarship
- David Anderson

Eads Family Scholarship
- Luke Engelbert-Fenton
- Terrance Taylor

Edward B. House Scholarship
- Tucker Kern

Electrical and Computer Engineering Alumni Undergraduate Scholarship
- Nicholas Brantley
- Michael Taylor

Electrical and Computer Engineering Undergraduate/Graduate Scholarship
- Daniel Higley
- Diana Peterson

Lee and Bette Wehrman Scholarship
- Odunlami Adefisayo
- Brandon Carr
- Rachel Dondero
- Rachel Franklin (Lawrence)
- Justin Grantham
- Ryan Selby
- Eric Smith

Micro Motion Scholarship
- Tucker Kern
- Michael Taylor

Myron Brown Ludlow Scholarship
- Craig Odell

Thomas A. Brubaker Scholarship
- William Wilson
- Andrew Geck

Union Pacific Scholarship
- Shakari Grigsby

Vorhees Family Scholarship
- Justin Haze
- Adelina Segura

Walter Scott Jr. Scholarship
- Shannon Ourada
- Olivia Trinko

Willis T. Johnson Memorial Scholarship
- Rachel Dondero
- Shakari Grigsby

Graduate Scholarships

NTU Scholarship
- Dulanjalie Dhanapala

Perl Family Graduate Fellowship
- Kyle Gilliam
- Nicholas Klausner

Shrake Culler Graduate Scholarship
- Bhavesh Khemka

SPIE Optical Science and Engineering Scholarship
- Rongjin Yan

ECE Welcomes New Faculty in Lasers, Optics, and Applications

This spring, the Department of Electrical and Computer Engineering welcomed two new faculty members to further strengthen its foothold in the area of lasers, optics, and applications.

Dr. Sandra G. Biedron has joined the department as an associate professor. Her interests include coherent light source development across the spectrum, RF devices, controls, uses of light sources, and detection devices. She particularly enjoys building bridges with colleagues outside her areas of interest to generate new ideas and research collaborations. In her role at Colorado State, she is eager to work with fellow faculty and researchers to integrate existing breakthroughs, such as those in controls and optics, into new light sources.

Before joining the Colorado State team, Biedron worked for nearly 20 years at Argonne National Laboratory, where she most recently served as director of the Department of Defense Project Office and associate director of the Argonne Accelerator Institute. Her technical research in these roles was primarily in the area of directed energy for the Navy. Since 2000, she has served as a technical and management consultant for the FERMI@Elettra Free-Electron Laser (FEL) project in Trieste, Italy. FERMI@Elettra is a new free-electron laser – a very bright and coherent light source – that will be used for basic research.

Biedron also is a visiting senior research associate faculty member for the Department of Electrical and Computer Engineering at the University of Maryland and an adjunct senior research fellow in the School of Physics at Monash University (Group of Eight University), where she recently mentored two Ph.D. students.

Biedron received a bachelor's degree in chemistry and biology from Trinity Christian College in Palos Heights, Ill., and a Ph.D. in accelerator physics from Lund University in Sweden.

In her spare time, Biedron likes spending time with her family (including two Shih-Tzus), friends, and colleagues. She enjoys skiing, flying, and racing around in her 1955 MG TF. She recently renovated a 1905 home to the national historic standard. Its garden was featured on a Chicago garden tour in 2006.

Dr. Stephen V. Milton has joined the ECE department as a professor. Milton's interests include free-electron lasers, synchrotron radiation sources, particle accelerators, and beam physics. His recent interest includes making accelerator and beam systems more efficient and more compact.

Milton received a bachelor's degree in physics from the University of California-Davis and a Ph.D. in physics from Cornell University.

Prior to joining Colorado State, Milton was the director of the 155M Euro FERMI@Elettra Free-Electron Laser project in Italy. During that time, he also served as a senior scientist at Argonne National Laboratory. Before taking on the FERMI director role, Milton led the design, engineering, and construction of the $55 million magnetic device undulator line for the Linac Coherent Light Source, the world's first X-ray FEL, at SLAC National Accelerator Laboratory. SLAC is a multipurpose laboratory for astrophysics, photon science, accelerator, and particle physics research. Six scientists have been awarded the Nobel Prize for work carried out at SLAC.

Milton also led the Argonne FEL, also known as the Low Energy Undulator Test Line, the world's first Self-Amplified Spontaneous Emission FEL to achieve saturation at visible through ultraviolet wavelengths.

In his spare time, Milton enjoys spending time with his family, friends, and colleagues. He likes skiing, flying, and riding his motorcycle. Having grown up close to the Sierra Nevadas outside of Sacramento, Calif., he is happy to be "home" near the mountains in Colorado.

ECE Celebrates a Century of Innovation

Last spring, the ECE department hosted an event for alumni and friends to celebrate a century of innovation. Marking 100 years since the first bachelor's degrees in electrical engineering were awarded at Colorado State University, the program, held May 1, paid tribute to the people and projects that have made an impact on the world over the last 100 years.

ECE emeritus faculty were honored and a commemorative video showcased the department's history with highlights of the last century. The event also featured a panel presentation from a team of alumni who led the successful 2008 Phoenix Mars Mission. Recognized as the innovators of the next century, the Optical Biosensors senior design team also was honored for their project aimed at developing a test for a common canine cancer. See related story on Page 3.

Visit www.engr.colostate.edu/ece/centennial to read the department's history and to view the video, "A Century of Innovation."

ECE alumni lead a panel discussion at the centennial event, highlighting the 2008 Phoenix Mars Mission and other innovative projects under way at Lockheed Martin. From left to right: Jeff Coyne, '86; Ed Sedivy,'79; and Larry Ellis, '81.

ECE Emeritus Professor Charles Britton commends the alumni panel for their impressive accomplishments featured at the 2010 centennial celebration.

ECE Graduate Student Honored by Chinese Government

ECE graduate student Rongjin Yan has been named a recipient of the 2011 Chinese Government Award for Outstanding Self-Financed Students Abroad. Yan, who is the first student from Colorado State to receive the highly competitive award, was among a select group of researchers from around the world to receive the honor.

Presented annually, the $5,000 award recognizes the academic and research achievements of Chinese graduate students who work abroad and do not receive financial support from the Chinese government.

Yan is currently working toward his Ph.D. in electrical engineering under the guidance of ECE Professor Kevin Lear to develop a low-cost optical biosensor for tuberculosis. His research interests include nanophotonics, optoelectronics, and semiconductor devices.

Yan also is the 2010-2011 recipient of the SPIE Optical Science and Engineering Scholarship (see Page 3).

Professor Chong Receives Distinguished Member Award

In December, ECE Professor Edwin Chong received the IEEE's Control Systems Society (CSS) Distinguished Member Award for his significant technical contributions to control, optimization, and modeling, and for his outstanding long-term service to the CSS.

Chong is an IEEE Fellow and serves as an inaugural senior editor of the *IEEE Transactions on Automatic Control*. He is on the Board of Governors of the CSS and is heavily involved in conference activities in the society. He is general chair for the Joint 50th IEEE Conference on Decision and Control and European Control Conference.

ECE Senior Receives Scholar-Athlete Award

ECE senior Ryan Friese, a top competitor for Colorado State's cross-country/track-and-field team, has received the Merrill-Gheen Award. The honor is presented annually to the University's most outstanding male scholar-athlete based on academic excellence, athletic achievement, and campus activities.

Friese also has been selected for academic all-conference every semester in which he has been eligible and has earned academic All-America honors. Dual majoring in computer engineering and computer science, Friese will graduate this spring. He plans to continue his graduate studies in the ECE department, pursuing a Ph.D.

ECE Beams With Pride for Students' Award-Winning Work in Lasers

Wigner Postdoctoral Fellowship

Mark Berrill, who received his Ph.D. in electrical engineering at Colorado State last May, was selected as a Wigner Fellow at the Oak Ridge National Laboratory Program. Each national laboratory offers only a few of these postdoctoral competitive awards. More than 100 applicants apply each year, and only four to seven are selected.

The Wigner Fellowship Program is a highly competitive two-year appointment that offers a unique early career opportunity at the U.S. Department of Energy's largest and most diverse science and energy laboratory. The program is designed to provide research opportunities for exceptional new scientists.

Berrill, whose research focuses on computational modeling of extreme ultraviolet lasers, received numerous awards and honors while at CSU, including the DOE Computational Science Fellowship in 2006, a competitive graduate fellowship for research in an area of computational science.

Theodore Maiman Student Paper Competition

Selected from a pool of 944 candidates, graduate student Brendan Reagan won the prestigious Theodore Maiman Student Paper Competition, perfectly timed on the 50th anniversary of Maiman's invention of the laser. The award comes with a $3,000 prize.

Reagan wrote a paper based on his work with University Distinguished Professor Jorge Rocca and members of Rocca's research group to develop a small, compact X-ray laser with a very short wavelength.

Both Berrill and Reagan performed their research at the department's Engineering Research Center for Extreme Ultraviolet Science and Technology, a multi-organizational center that is based at Colorado State University and supported by the National Science Foundation. Reagan, who earned his bachelor's and master's degrees in electrical engineering at Colorado State, is currently working toward his Ph.D. in electrical engineering. In addition to his doctoral degree, Berrill also received his bachelor's and master's degrees in electrical engineering from CSU.

ECE Students Share Passion for Engineering

ECE students Matt Duwe and Ryan Selby are doing their part to inspire local high school students to pursue engineering. Liberty Common High School (LCHS) and Fossil Ridge High School (FRHS) have partnered with Colorado State to expand their engineering programs and increase interest in the field.

Both schools, part of the Poudre School District in Fort Collins, are collaborating with Colorado State's GK-12 program, a National Science Foundation-sponsored education and outreach program designed to train a new generation of scientists in biomedical science and engineering.

ECE graduate student Matt Duwe works with FRHS, helping bring engineering concepts to the physics classroom. Ryan Selby, a senior in electrical engineering, is partnering with teachers at LCHS to develop new content that infuses engineering into the curriculum and helps students expand their critical thinking and problem-solving skills.

Professor of engineering education, Michael de Miranda, said both students are ideally suited for their posts. "We are proud to see Matt and Ryan sharing their passion for engineering with high school students," said de Miranda, a faculty participant in the GK-12 program. "It is incredible to see their impact in the classroom. Their hard work clearly demonstrates their commitment to engineering and engineering education."

Senior Ryan Selby is working with Liberty Common High School.

Duwe is sponsored by the NSF GK-12 program Graduate Fellowship, a highly prestigious program that supports outstanding graduate students in science, technology, engineering, and mathematics, or STEM, disciplines. His primary focus is studying silicon sensor design from both the analog and digital perspectives.

A Wyoming native, Selby will earn his bachelor's degree from the ECE department in May and enter the graduate program in pursuit of an advanced degree in electrical engineering. Beginning in June, he will also be supported by an NSF Fellowship.

The CSU GK-12 Program is one of many outreach and recruitment initiatives under way in the department to help attract students to engineering. As part of the program, NSF graduate fellows are required to spend time each week in a K-12 classroom, creating and delivering lessons to develop their communication and teaching skills. Many of these lesson plans are then posted online for use by teachers across the country. To learn more about the program, visit: http://csu-gk12.engr.colostate.edu.

Graduate student Matt Duwe in the physics classroom at Fossil Ridge High School.

Can You Identify These Alumni?

Can you identify the alumni in this 1992 photo with ECE Professor Anura Jayasumana? Contact the ECE department at (970) 491-6600 or send e-mail to ece@engr.colostate.edu.

In 1992, compact discs surpassed cassette tapes as the preferred medium for recorded music, and a text-based Web browser was first made available to the public. Also that year, the ECE department's Optoelectronics Center was recognized by the Colorado Commission on Higher Education as one of four Colorado Programs of Excellence.

An update will be published in the next ECE newsletter.

Update: Alumnus Duane Boyd (B.S.E.E. '52) contacted the ECE department to identify the individual featured in this photo taken in 1951. Boyd pulled out his *Silver Spruce* yearbook from that year and was able to identify John Achille (B.S.E.E. '52), now deceased. Boyd has been retired nearly 20 years after serving 38 years with the Aerospace Division of Westinghouse in Lima, Ohio.

Class Notes

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

Lloyd Gingery (B.S. EE '61) has been retired for 22 years. He stays busy during the winter months doing volunteer income tax preparation through AARP Tax Aide.

Lawrence E. Oswald (B.S. EE '64) spent most of his career in the eastern part of the country, working primarily for Ashland Oil in Ashland, Ky. Prior to that, he worked for Texaco Research Labs in Bellaire, Texas. Currently, Oswald is enjoying retirement and lives in the Falcon, Colo. area. He reports, "Life is good."

Fred Lukens (M.S. EE '66) has been working since graduation as a space power electronics engineer for Lockheed Martin in Colorado. He has been an LM Fellow for the last several years, with assignments focusing on resolution of corporation technical issues. Lukens received the Colorado State University Individual Achievement Award in 1994 in recognition of his contributions to the space industry. He holds two patents and authored several publications in space power. He is married with five grown children and six grandchildren.

David Vacanti (B.S. EE '74) currently is employed with Honeywell in Redmond, Wash., where he is an Aerospace Fellow for Communications Navigation and Surveillance, working on new low-power, solid-state radars for aviation-, marine-, and land-based applications. He also was an Associate Technical Fellow for Boeing Aerospace, where he served for 21 years until 1998.

Steve Malyszko (B.S. EE '75, M.S. EE '77) is president and founder of Malisko Engineering, Inc. (www.malisko.com), specialists in manufacturing automation. The company, which just celebrated its 16th year in business, has offices in St. Louis, Mo., and Denver. **Dan Malyszko (B.S. EE '02)** heads up the Denver office. For the past 15 years, Steve also has served as an alumni ambassador for Colorado State's Office of Admissions, representing CSU at recruitment events in the St. Louis area.

Larry Ellis (B.S. EE '81) recently celebrated 25 years at Lockheed Martin in Littleton, Colo. He currently is working on the NASA GRAIL program to the moon, launching in 2011, and the NASA MAVEN Mars mission, launching in 2013.

Kelly Robinson (Ph.D. EE '82) worked as a research engineer at the Eastman Kodak Company for 25 years. In 2007, he formed Electrostatic Answers, an engineering consulting company that helps clients solve static problems in research, development, manufacturing, and customer applications. Robinson, a professional engineer and patent agent, resides in Rochester, N.Y.

Greg Boothe (B.S. EE '83) is the director of Product Quality for General Electric Analytical Instruments in Boulder. He has three children, Sarah, Brian and Rachel. Sarah graduated with a bachelor's degree in Biology from the University of Colorado at Denver in May 2010 and is now working toward her master's degree in Biomedical Science at Midwestern University in Glendale, Ariz. Brian, who wants to be a physical therapist, is a junior at the University of Colorado at Denver, working on a B.S. in sports medicine. Rachel is a freshman attending Mesa State College on a softball scholarship, majoring in graphic design.

Mary Peery (B.S. EE '84), retired senior executive from Hewlett Packard Company, is president of Mary Peery & Associates. She and her husband, Dennis, also an ECE alumnus, have six children and 17 grandchildren. She is a member of the board of directors for Pathways Hospice, Larimer County, Colorado, and chair of the Advancement Council for Engineering and Technology at Brigham Young University's College of Engineering and Technology.

Lt. Col. Al Batten (Ph.D. EE '85) retired in December 2009 from teaching at the U.S. Air Force Academy, where he served on the faculty for 19 years. He also taught at Colorado Technical University for eight years. His primary motivation for retiring was the birth of his first grandchild. Batten and his wife, Nancy, reside in Black Forest, Colo.

Anthony Eimen (B.S. EE '92) is a senior design engineer for Curry, Roosevelt, and Quay counties of eastern New Mexico. He has been married for 15 years and enjoys building and flying RC aircraft.

Paul Chihoski (B.S. EE '95) regularly traveled throughout North and South America as an electrical and instrumentation engineer for material handling. Currently, he is in the process of opening, and eventually managing, a Denver branch of an electrical engineering and electrical field services company. He has been married for 12 years with two daughters, ages 8 and 2.

Amnoradi Baijuri (B.S. EE '96) is employed with Shell Malaysia Exploration and Production in Miri, Sarawak, Malaysia, where he works as a senior instrumentation and control engineer. He is married with two boys and two girls.

A. El-Emawy (Ph.D. EE '96) is a professor at the University of New Mexico, Albuquerque. He is founder of VESCO-NM, a company that specializes in crystal growth using molecular beam epitaxy and metal organic chemical vapor deposition techniques. He has four sons, all of whom graduated from the University of New Mexico.

Cari (Pederson) Schnepp (B.S. EE '96) is taking a break from engineering to raise two daughters. In addition to spending time with the girls, she is now self-employed as a personal publishing consultant: www.PicturesWithStories.com. She helps clients to put the photos and stories of their life into lasting books that will be cherished for generations. Her background in IC physical design is still proving useful, as she does digital layout of photos, text, and artwork.

Alex McHardy (B.S. EE '99) is taking a hiatus from his career in web application development, formerly with iContact.com. He and his wife, Emma, are working with youth as Peace Corps volunteers in Ukraine.

Nischal Piratla (M.S. EE '99, Ph.D. '06) is chief scientist, Mobile Services and Platforms, Innovation Development, at Deutsche Telekom, Inc., R&D Laboratory, also in conjunction with Deutsche Telekom Laboratories in Berlin. Dr. Piratla also is an adjunct associate professor in the Department of Computer Science at the University of California, Santa Barbara. His focus areas are mobile services, architectures, and platforms. He is a senior member of the IEEE.

Jianguo Tang (B.S. EE '99) is a professor of materials science; department head of materials science and engineering; associate dean of chemistry, chemical, and environmental engineering; and director of the Institute of Hybrid Materials at Qingdao University (QDU), People's Republic of China. His work includes 105 publications, 10 patents, 12 governmental awards, and 25 projects as the main investigator supported by the China Key Fundamental Research Program.

Jeremy Brownrigg (B.S. EE '00) is a system planning engineer at Platte River Authority in Fort Collins. He and his wife, Jordann, welcomed their first son, Dawson Davis, on December 10, 2010. Dawson joins two older sisters, Madison (6) and Isabelle (2).

Dennis Liptak (B.S. EE '03) is a senior test engineer for Ball Aerospace Electronic Products Center in Boulder.

Eric Mui (B.S. EE '03) has been employed since graduation by General Electric. In his current role, he travels the world providing technical instruction for turbine control systems.

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ECE Alumni Honored at 2010 Awards Dinner

Outstanding College of Engineering alumni were recognized at the annual Distinguished Alumni Awards Dinner on April 10, 2010. Two ECE alumni were among the honorees.

Desi Rhoden (B.S. '83, M.S. '84) – Distinguished Alumni Award Winner

With more than 25 years of experience in a broad range of areas, including memory and high-performance systems, Mr. Rhoden is a seasoned veteran in the semiconductor industry. He currently serves as executive vice president at Montage Corporation, a Shanghai-based company focused on low-power/high-performance mixed-signal devices.

Rhoden also is chairman of the Memory Committee and the past chairman of the board for JEDEC, the world leader in standards and technology development for the semiconductor industry. His involvement in JEDEC has continued for 25 years, and he now serves as a liaison with Chinese organizations and industry, promoting JEDEC standards and the semiconductor industry. Previously, he was president and CEO of Advanced Memory International, Inc.

An advisee of Professor Aram Budak, Rhoden earned both his bachelor's and master's degrees in electrical engineering from Colorado State University in 1983 and 1984, respectively. Rhoden is married to fellow alumna, Lisa (Loudon) Rhoden, who graduated with a degree in electrical engineering in 1984. The Rhodens reside in Austin, Texas.

Jason Gentry (B.S. '00) – Graduate of the Last Decade Award Winner

Jason Gentry serves as senior-level technical lead for Avago Technologies in Fort Collins, where he is responsible for architecting the ASIC top-level floor planning methodologies and flows to be used by the worldwide ASIC design labs. Gentry holds four patents and has been repeatedly recognized by Avago for his design successes.

Prior to joining Avago, Gentry was a design automation engineer for Agilent Technologies until 2005. He also has been employed by Hewlett-Packard, Lockheed Martin Astronautics, and Derby Associates, International.

Gentry graduated from Colorado State University in 2000 with a bachelor's degree in electrical and computer engineering.

ECE alumni Desi Rhoden (second from left) and Jason Gentry (third from right) pose with fellow College of Engineering award recipients at the 2010 alumni awards dinner.

He is married to another ECE alumna, Michelle (DeHerrera) Gentry, who graduated in 1999. The couple has two young sons, Graden and Coen, and resides in Windsor, Colo. The 2011 Distinguished Alumni Award winner, Steve Malyszko (B.S. EE '75, M.S. EE '77), will be featured in the next ECE newsletter.

Chandra Named Distinguished Professor of Finland, Awarded $1.5 million

ECE Professor V. Chandrasekar (Chandra), whose research is helping to revolutionize weather radar, has been named a Finland Distinguished Professor – a high distinction that comes with an award of $1.5 million (1 million Euros).

The Finnish Meteorological Institute, the University of Helsinki, a consortium of Finnish industries, and the Finnish Agency for Technology and Innovation honored Chandra during his visit to Finland last May. He later visited the country in September to deliver his grand inaugural lecture.

One of the main objectives of the appointment is to establish a world-class radar technology and application group in Finland. "I am humbled by this award and am excited about the collaborative research with my Finnish counterparts, who also want to develop earth- and space-based remote sensing systems," Chandra said. In this role, Chandra will conduct research with the Finnish Meteorological Institute and the Department of Physics at the University of Helsinki. He will also work in close collaboration with Aalto University School of Science and Technology.

Tom Williams Named 2010 University Distinguished Alumnus

Dr. Thomas W. Williams (Ph.D. EE '71) is the winner of the 2010 University Distinguished Alumni Award for the College of Engineering. Considered by many as the father of the widespread adoption of scan design technique and a pioneer in Electronic Design Automation, Williams received his doctorate from Colorado State University and is former Fellow of Synopsys Inc. in Boulder.

Williams was named an IEEE Fellow in 1988 and this November he received the highly prestigious IEEE TTTC (Test Technology Technical Council) Lifetime Contribution Medal for his advancements and contributions to the test community. In 2007, he was the recipient of the European Design and Automation Association's Lifetime Achievement Award and was named a member of the Chinese Academy of Sciences for his technical contributions and leadership. In 1985 and 1997, he was a Guest Professor and Robert Bosch Fellow at the Universitaet of Hannover in Hannover, Germany. Williams has twice served as a distinguished lecturer for the IEEE Computer Society and received the Computer Society's W. Wallace McDowell Award in 1989.

Currently, Williams is an adjunct professor at the University of Calgary in Calgary, Alberta, Canada. He resides in Canmore with his wife, Candace.

Research Spotlight: Professor Krapf Explores Portable TB Tests for Developing World

ECE Assistant Professor Diego Krapf is leading research to create new methods for the early detection of tuberculosis, or TB. Every year, 9 million people around the world develop tuberculosis and more than 1.5 million people die from the disease. It is estimated that 2 billion people carry a form of latent TB, with 10 percent going on to develop active TB during their lifetimes. Creating new methods for early tuberculosis detection is an important step to reducing these numbers.

Krapf and a team of engineers, physicists, chemists, and biologists are working together to solve this critical problem. The end goal of the project is to develop a platform for the detection of TB that is portable, affordable, and does not require highly trained personnel.

Using light to detect traces of TB bacteria in fluids, the team has been recognized by the Optical Society of America for the test's potential to detect latent cases of the disease in developing countries with a greater risk of TB.

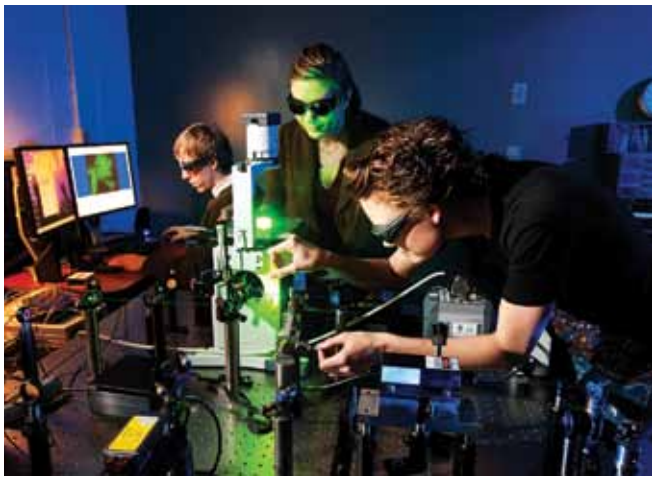
Krapf developed a biosensor that uses a combination of chemistry and lasers to isolate proteins prevalent in TB. He mixes a sample with fluorescent antibodies for the targeted TB proteins and coats the glass slide with a molecular brush that will stick only to those proteins. Using a homemade microscope, Krapf can determine whether a large number of the proteins are present, which indicates the test is positive for TB.

"The problem of TB – in areas lacking the minimal resources such as water and medical facilities – is extremely severe," Krapf says. "Currently, the detection problem is so drastic that at least half of the people carrying TB don't even realize it. An effective test for latent TB could save 400,000 lives annually."

The detection techniques now used in the United States require special facilities and training that would be far too expensive for widespread use in the developing world where there are scarce resources and high incidences of the disease. Current technologies used in these areas have only a 60 percent sensitivity for TB detection. These tests are also unable to detect latent forms of TB.

"We expect that the development of a TB biosensor will also be applicable to other infectious diseases, both viral and bacterial," Krapf says.

An interview about Krapf's research was broadcast earlier on Colorado Public Radio. This cutting-edge work has gained attention from other media outlets as well.



ECE students conduct research in Assistant Professor Diego Krapf's laboratory to create new methods for the early detection of tuberculosis.

Class Notes

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Charissa Duskis (B.S. EE'04) is a test development engineer for Oracle in Louisville, Colo. She resides in Denver.

Patrick Corrigan (B.S. EE '05) currently works as a transmission planner for Pacific Gas & Electric Company in San Francisco. Prior to that, he served for one year as an optical systems engineer at Honeywell Aerospace. Corrigan earned his master's degree with a concentration in electric power from Arizona State University in 2007.

Chris Hofbauer (B.S. EE '05) is an electrical engineer at Northern Colorado Water Conservancy District in Berthoud, Colo. He works in power, control, and communication engineering.

Michael Pacini (B.S. EE'05) is married to ECE alumna, Heidi Shray, who earned her B.S. degree in 2008. Pacini is a captain in the USAF, flying F-16s at Hill Air Force Base in Utah, where he also serves as the electronic warfare officer.

Nick Roseveare (B.S. EE '05, M.S. EE '07) is working toward his Ph.D. in electrical engineering at Kansas State University. He is considering going overseas for part of his research or perhaps a postdoc appointment.

Abbie Tippie (B.S. EE '06) recently received the prestigious Harvey Fellowship to continue her Ph.D. research in optics at the University of Rochester.

Manjukumar Harthikote Matha (M.S. EE '07) has been employed since graduation as a firmware design engineer at Picosecond Pulse Labs in Boulder. He also is involved in the Colorado Cricket Organization to bring awareness of cricket to the state.

Prasanna Ramakrishna (M.S. EE '08) is a senior hardware engineer at Seagate Technology in Longmont, Colorado, working with a product development team for computer hard drives.

Przemek Wachulak (Ph.D. EE '08) has served since 2009 as an engineer at the Institute of Optoelectronics, Military University of Technology, Warsaw, Poland.

Kasturi Adhya (M.S. EE '09) is a component design engineer with the consumer electronics group at Intel in Santa Clara, Calif.

Josh Gabler (B.S. CpE '09) is working as a testware manager for Seagate Technology in Longmont, where his responsibilities include creating and managing calibration software for hard drives. Last spring, he also had a football tryout in Atlanta.

Manasi Katragadda (M.S. EE '09) is currently working toward her M.B.A. at Gonzaga University in Spokane, Wash.

Dean Kooiman (B.S. EE '09) was recently deployed to Afghanistan with the U.S. Army. He plans to attend Colorado State this spring to pursue a degree in computer science.

Darryl Benally (B.S. EE '10) is an electronic warfare test engineer for the Air Force Flight Test Center at Edwards Air Force Base. He currently works with the Air Force Airborne Laser program. He resides in Lancaster, Calif.

Three New Fellow Appointments for ECE

Carmen Menoni

Mario Marconi

Randy Bartels

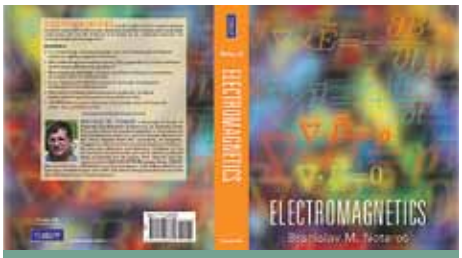
Three more ECE faculty members have been named Fellows of their respective professional societies – one of the highest distinctions bestowed upon scientists and researchers. ECE Professor Carmen Menoni was named a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), while Professors Mario Marconi and Randy Bartels were selected for the Optical Society of America (OSA).

"Fellow status is reserved for a small fraction of exceptional performers in a given field," said Tony Maciejewski, ECE department head. "The percentage of Fellows in our department speaks to the impressive quality and productivity of our faculty."

Menoni was elected a Fellow of the IEEE for her contributions to nano-scale imaging with ultraviolet lasers and semiconductor optical materials and devices. The number of IEEE fellows elected in a year is no more than one-tenth percent of the total IEEE voting membership. The prestigious honor was announced just one year after she was elected a Fellow of the American Physical Society and the OSA. She joins eight other ECE faculty members who currently are IEEE Fellows. The percentage of IEEE Fellows in the ECE department is comparable to – or better than – the country's most prestigious schools ranked in the top ten by *U.S. News and World Report*.

Marconi and Bartels recently were named Fellows of the OSA. Marconi was honored for his significant contributions to the development of compact soft X-ray lasers and for pioneering their use in table-top coherent lithography, holography, and interferometry. Bartels received the designation for his advances in ultrafast pulse shaping, quantum coherent control of electronic and molecular nuclear wavepackets, and developments in nonlinear propagation and microscopy. The number of OSA Fellows is limited to no more than 10% of the total membership.

In addition to the IEEE and the OSA, ECE faculty Fellow awards span a broad range of professional societies, including the Association for Computing Machinery, the American Meteorology Society, and the American Physical Society.



Notaros Publishes Electromagnetics Textbook

Last summer, ECE Associate Professor Branislav Notaros published a comprehensive textbook, *Electromagnetics*, for undergraduates with PEARSON Prentice Hall. This thorough text features a clear and deliberate presentation, unique pedagogy, and outstanding examples, problems, and conceptual questions, enabling students and other readers to readily grasp EM fundamentals, develop true problem-solving skills, and really understand and like the material. Notaros hopes his book, which already has received glowing reviews by educators and scholars in the field, will serve as an "ultimate resource" for undergraduate electromagnetics.

Notaros, who joined the department in 2006, also developed a unique collection of Computer Exercises in Electromagnetics Using MATLAB, with tutorials, an e-supplement to the new book. For more information, visit http://www.pearsonhighered.com/notaros/.

CSU Launches State's First Undergraduate Degree in Biomedical Engineering

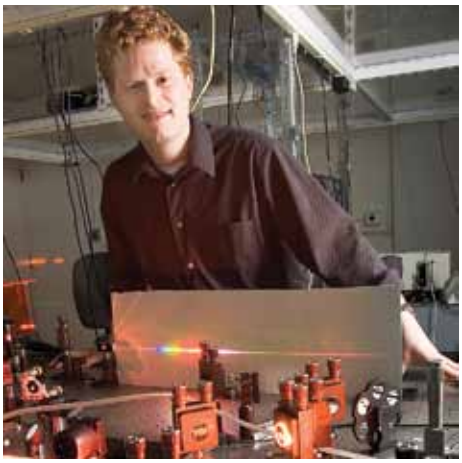
Colorado State University is making a growing investment in biomedical engineering in the College of Engineering and across campus. Construction started this spring on a new $69 million, 122,000-square-foot building that will house the University's School of Biomedical Engineering and focus on bioengineering research and programs. The school, based in the College of Engineering, encompasses 50 faculty members from 14 departments in four colleges: Engineering, Applied Human Sciences, Natural Sciences, and Veterinary Medicine and Biomedical Sciences.

Beginning Fall 2011, the University will offer a new undergraduate degree in biomedical engineering. It is one of the few undergraduate bioengineering programs offered in the western United States, and the program is the first of its kind in the state. In this five-year, dual-degree program, students will graduate with a degree in biomedical engineering as well as a traditional engineering discipline, such as electrical engineering, chemical and biological engineering, or mechanical engineering.

ECE Professor Kevin Lear is the associate director for the school and the director of its undergraduate program. Lear is one of many ECE professors who conducts cross-disciplinary research and serves as core faculty for the school.

Professor Kevin Lear and a student conduct cross-disciplinary research for the new School of Biomedical Engineering.

Engineering Professors Receive Keck Foundation Grant to Visualize Molecules in Live Tissues



Colorado State University engineering professors received a highly competitive $1 million Keck Foundation grant to create a microscope that could, for the first time, "see" characteristics of molecules that tell other molecules what to do.

These signaling molecules control biological behaviors spanning from basic human development to attack from toxins. "The molecules are so tiny that not even dye techniques – known as fluorescence – used to light up tiny particles can reveal their properties," said Dr. Randy Bartels, ECE professor and the principal investigator on the grant.

"This would give a new window into the fundamental level of molecular communication in biology," Bartels said. "It could potentially have an impact on understanding the underlying molecular biology of cancer, which could suggest new treatments."

With this grant, Bartels and Dr. Stu Tobet, director of the University's School of Biomedical Engineering and a professor in the College of Veterinary Medicine and Biomedical Sciences, will create the Keck Laboratory for Ultrasensitive Raman Microscopy in the College of Engineering, where they will test the Keck Microscope using live tissue samples. The laboratory will be housed in the new engineering building scheduled for groundbreaking this spring at the southeast corner of Laurel Street and Meridian Avenue

"Finding the answers to biomedical questions using engineering solutions, a primary focus for CSU's School of Biomedical Engineering, could yield essential discovery while providing strong opportunities for economic growth in Colorado's bioengineering field," said Colorado State President Tony Frank. "We are grateful to the W.M. Keck Foundation for its support of research at Colorado State University and the groundbreaking work of Drs. Bartels and Tobet."

The Keck project was enabled by early funding from the Beckman Foundation, which allowed Bartels to develop a research effort in new types of nonlinear microscopy for biomedical applications. His work has generated many discoveries in diverse fields.

"Since joining Colorado State in 2003, Dr. Bartels has been awarded millions of dollars in grants for his cutting-edge research. He has obtained numerous awards in engineering, physics, chemistry, computer science, and optics. CSU is very pleased to partner with the Keck Foundation to continue support of his successful research," said William Farland, vice president for research at Colorado State.

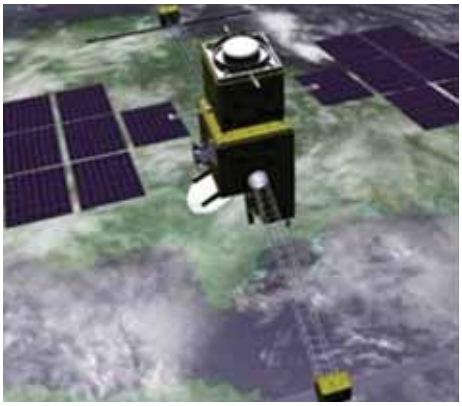
The W.M Keck Foundation is known for funding high-risk, high-return projects in science, engineering, and medical research. Established in 1954 by the late William Myron Keck, founder of The Superior Oil Co., the foundation is one of the nation's leading private sponsors of cutting-edge scientific research.

Reising Wins $3.2 Million Grant to Develop Airborne Radiometer in Advance of Future NASA Earth Science Mission

ECE Associate Professor Steven Reising, in collaboration with NASA/Caltech's Jet Propulsion Laboratory, will spend the next three years developing a new airborne radiometer instrument as a proof of concept for a NASA Earth observation satellite that will measure surface water levels across the globe.

NASA awarded Reising, who will lead the project that includes seven JPL scientists and one UCLA professor, a $3.2 million grant to build and fly an airborne radiometer for NASA's Surface Water and Ocean Topography, or SWOT, Earth science mission, which is planned for launch in 2020. The grant is designed to develop and demonstrate an aircraft prototype for next-generation satellite technology. It is one of only 16 prestigious NASA Instrument Incubator Program grants awarded once every three years.

The high-frequency radiometer they are building will measure natural electromagnetic energy emitted from water vapor, or humidity in the atmosphere, which will help the satellite more accurately study how water levels around the Earth change over time and how they relate to climate change.



"This mission will let us measure the ocean surface at a sufficient level of detail to improve understanding of the fundamental processes of how both heat and carbon are exchanged between the ocean and the atmosphere," Reising said. "The challenge is to learn how these processes are connected to climate when both the ocean and the atmosphere are changing at the same time. This satellite will also allow scientists to look near the coast where sea level changes critically affect biological and human activity, as well as marine life."

The SWOT mission aims to obtain higher-resolution images of the ocean, look more closely at what is happening near the coastlines, and measure changes in inland water bodies across the globe,

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CSU Receives NSF Grant for High-Performance Computer

The National Science Foundation (NSF) has awarded Colorado State University $627,326 for a centralized high-performance computing system as a shared University resource. Receiving the grant were ECE Professor H.J. Siegel, director of the University-wide Information Science and Technology Center (ISTeC), and Patrick Burns, vice president for information technology.

The new "ISTeC Cray High Performance Computer," operational in January, is an XT6m model, with 1,248 cores (computing devices), a peak performance of 12 teraflops, 1.6 terabytes of main memory, and 32 terabytes of disk storage. Hundreds of faculty and postdoctoral students and thousands of graduate and undergraduate students will benefit from the computer.

The new system will support much larger and more complex problems in science and engineering, especially for data-intensive applications; add greater physical fidelity to existing models; facilitate application of computing to new areas of research and discovery; and support training to attract new researchers to computational science, engineering, and mathematics.

Dr. Patrick Burns (left) and ECE Professor H.J. Siegel. Photo by Michael Bettis, Rocky Mountain Collegian.

Woods Recognized for Contributions to Engineering in Colorado

The American Council of Engineering Companies of Colorado has honored Sandra Woods, dean of the College of Engineering at Colorado State University, with the 2011 General Palmer Award for her significant contributions to Colorado engineering.

The General Palmer Award is given to an engineer in the industry for significant contributions in Colorado as well as accomplishments that have advanced the engineering community and made an impact on future generations.

In her role as dean, Woods has focused on making the College of Engineering more collaborative and building interdisciplinary programs in biomedical and systems engineering. Her leadership in the engineering college has focused on greater interdisciplinary cooperation within the college and across campus. She has also created a strategic focus on research programs that have global impact and affect quality of life.

Woods joined CSU in 2001 as a professor and department head of civil engineering. She also has served as interim vice provost for special projects and interim vice provost for faculty affairs. She served as interim dean for a year before being formally appointed to the position in 2006.

Graduate Degrees Offered in Systems Engineering

Colorado State University now offers a Master of Science and a Ph.D. in systems engineering. Shaped by input from industry and government leaders, the degrees are well-suited for working professionals who are interested in obtaining advanced training in the field of systems engineering.

Classes are offered on campus and online in a collaborative environment. The program can be taken synchronously or asynchronously, which means students can attend class and interact as if they are in the classroom during regular meeting times or any time that fits into their schedules.

In 2008, Colorado State launched a Master of Engineering degree with a specialization in systems engineering. The overwhelming success of that program helped drive the creation of the new M.S. and doctoral degrees.

For more information, visit www.learn.colostate.edu/degrees/systems-engineering.

Reising Wins Grant

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including water storage that is critical for life in the Rocky Mountain region.

Reising's and JPL's teams, including undergraduate and graduate students at Colorado State, will design and build the high-frequency airborne radiometer instrument. Using higher frequencies than are currently available on NASA's ocean surface topography missions will enable measurements to be taken 5-10 times closer to the coastlines. Integration of the instrument on the aircraft and its testing with airborne flights will be completed principally by CSU graduate students in collaboration with JPL engineers.

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