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Student Research Symposium



EE student Chelsea Lau details her project with symposium guests

Due to the relative geographic isolation of Hawai'i and the high costs associated with travel, University of Hawai'i students have very limited opportunities to present their scholarly work at national and international conferences. The College of Tropical Agriculture and Human Resources (CTAHR) – College of Engineering (CoE) Student Research Symposium provides students with an experience to present their work in a professional conference setting.

At the 2012 symposium held last April, College of Engineering students Chelsea Lau and Jarrod Ng both received awards. Lau, an electrical engineering major, received an award for the CoE Best Undergraduate Poster Presentation and Ng, a mechanical engineering major, was awarded CoE Best Undergraduate Oral Presentation. A total of thirty-eight awards were given out from over 126 entries.

The symposium brings together undergraduate students from CoE and both graduate and undergraduate students from CTAHR to share the research they are pursuing under the supervision of their respective faculty. The investigations presented ranged from fundamental studies to novel applications and encompass engineering, production agriculture, environmental technologies, health and food sciences, family and consumer sciences and natural sciences. The symposium contributes to CoE's mission by providing students with research experiences and opportunities to enhance the growth of the technological workforce and stimulate the growth of technology based industries in the state. It also helps to fulfill CTAHR's mission by fostering viable communities, a diversified economy and a healthy environment.



Hakulau

Spring 2013

New College of Engineering Website

The University of Hawai'i at Mānoa College of Engineering unveiled a redesigned website late last year at www.eng.hawaii.edu. The new site provides a dynamic and appealing platform highlighting the College and its programs together with user-friendly navigation making information searches more intuitive.

"We are pleased to announce a contemporary website," said Peter E. Crouch, dean of the College. "We are committed to serving our community with better access to, and information about our College and its programs and this accessibility starts with providing a website in keeping with the expectations of its stakeholders and especially the College's current and prospective students, its alumni and community supporters."

Some of the new features include:

- Enhanced pages with more information on the College and its programs
- User-friendly navigation to make finding content easier
- Higher visibility of upcoming events, activities and news at the College
- Look and feel that is more representative of the College and the University of Hawai'i at Mānoa

The new website is built on a content management system that will allow the College to move efficiently and effectively contribute content. The new website provides



A look at the College's new website homepage (screen capture)

access to the existing web pages of its academic units and units within the College. The upgrade of the College website will be continuing with a focus on providing a similar feel for the web pages of these units.

Native Hawaiian Engineering Students Showcased



Undergraduate research students demonstrating their research project to attendees

Last September, engineering projects by Native Hawaiian students from across the UH System were featured at a student symposium called Ma Ka Hana Ka 'IKE, or "In doing, one gains Indigenous Knowledge in Engineering." Over 130 attended the inaugural event at Windward Community College, including families, faculty members and representatives of Native Hawaiian organizations and the local engineering industry.

The 'IKE or Indigenous Knowledge in Engineering Program, is a pre-engineering education collaborative funded by a five-year, \$5 million grant from the National Science Foundation, intended to support 155 Native Hawaiian students to complete their bachelor's degree in engineering at the UH Mānoa. The program was developed by Kapiolani Community College with assistance from members of the UH Engineering Consortium,

A Message from the Dean

I hope everyone's year is off to a great start.

We began the New Year with some new additions to our faculty. Just joining us is Civil and Environmental Engineering Assistant Professor Gaur Johnson, who is a graduate of UH Mānoa and hails from the Big Island. Last year, Assistant Professor Oceana Francis, who is of native Hawaiian ancestry, joined CEE and Assistant Professor Matthias Fripp became a member of the Department of Electrical Engineering. The College is also pleased to welcome home our new Director of Development Kellie Takenaka, who comes to us from the University of Oxford.

Our student teams continue to make their mark as well with first place finishes again in both the UH 2012 Business Plan Competition and the Breakthrough Innovation Challenge put on by the Shidler College of Business. Individually, Larry Martin was named the 2011-12 most outstanding electrical engineering student in the nation by IEEE and Christopher Dang was recently named the 2013 Student Engineer of the Year by the HCES.

Also, did I mention that we have a new website? If you haven't visited it yet, please go to www.eng.hawaii.edu and take a look around. We hope you like it.

Finally, we bid a sad goodbye to two longtime stalwarts of the college, Paul Yuen and Fay Horie, who both passed away last year.

Aloha!


Peter E. Crouch
Dean



Peter E. Crouch

Engineering Teams Claim Top Spots

Once again, teams from engineering claimed top prizes in two entrepreneurial competitions organized by the Pacific Asian Center for Entrepreneurship (PACE) at the Shidler College of Business.

2012 UH BUSINESS PLAN COMPETITION



1ST PLACE Unique Lite Design - a lightweight unit load device, used for compartmentalizing and carrying cargo on a wide body aircraft

TEAM MEMBERS: Christian Daoud, Alanna James and Dr. Mehrdad Nejhad



2ND PLACE Surgical Lighting Solutions - a company that licenses and markets advanced semi-autonomous lighting for the medical industry

TEAM MEMBERS: Justin Carland, Aaron Cates, Greg Judd and Karol Zemier

2012 BREAKTHROUGH INNOVATION CHALLENGE



1ST PLACE Chameleon Skin - chameleon skin-inspired thermal insulation to affordably control building temperature.

TEAM MEMBERS: Trent Robertson, Cody Hayashi, John Hirano and Richard Ordenez



Undergraduate research students demonstrating their research project to attendees

which includes the UH Mānoa College of Engineering, UH Mānoa College of Natural Sciences, UH Hilo, Kapi'olani Community College, Leeward Community College, Windward Community College and UH Maui College. Led by Dean Crouch, the Engineering Consortium's focus is to create and expand pathways to careers in engineering and related disciplines in Hawai'i.

Participating students were enrolled in the 'IKE Summer Engineering Experiences (SEEs), a sequence of summer programs that feature math courses and hands-on engineering projects designed specifically

for three different groups:

SEE1 Targets high school seniors to establish a strong pre-calculus foundation and ease the transition to a college environment

SEE2 Targets pre-engineering students already in the UH System, with an emphasis on calculus and engagement in engineering projects

SEE3 Targets students preparing to transfer from two-year institutions to a four-year campus, with upper division math courses and engineering team design work in a renewable energy and sustainability internship

These students created posters and made oral presentations on their projects ranging from electric guitar construction, aquaponics to wind turbines. To round out the day, five industry representatives participated in a panel discussion to share their knowledge and experiences as students and professionals in the engineering field.

For more information on the 'IKE program, please visit the website at <http://www.hawaii.edu/ike/>.

Dang Named Top Student Engineer



Jonathan Dang

Electrical engineering student Jonathan Dang has been named the winner of the 2013 Student Engineer of the Year Award by the Hawai'i Council of Engineering Societies. This

annual award is presented to one undergraduate from among all engineering majors in the State and will be presented to Dang at the Engineers Week Banquet on February 23rd.

Dang, a UH Regents Scholar, is in his final semester as an undergraduate with a 3.96 GPA. He has been very active in a variety of extracurricular activities, particularly those associated with the Institute of Electrical and Electronics Engineers (IEEE).

In his junior year, Dang and his teammates built an autonomous robot that won first place in the IEEE Region 6 Micromouse Competition. In his senior year, his team placed in the top ten percent of over 1,900 teams worldwide in the IEEE Extreme Programming Competition. He is also the president of the UH Mānoa chapter of

IEEE-HKN, the international electrical engineering honor society.

As part of the UH Mānoa College of Engineering's Small-Satellite Program, Dang serves as the lead software engineer for a student-designed nanosatellite that will be launched into low-earth orbit this year. He has interned at the Information Systems and Global Solutions Sector of Lockheed Martin for two summers, where he developed a graphical user interface for synthetic aperture radar imaging.

After graduating this May, Dang plans to pursue a PhD. Having served as a teaching assistant for a freshman computer-programming course, Dang has come to recognize that his passion is teaching, so his ultimate goal is to become a college professor.

"Jonathan has been a model student and a great contributor to our Small-Satellite Program," said Wayne Shiroma, program director and electrical engineering chair. "It's very rewarding to hear about Jonathan's aspirations and I look forward to working with him as a peer."

In Memoriam: Fay Horie



Fay Horie, former secretary to the dean, passed away last year.

Horie arrived at the College of Engineering in the mid-1980's and served four deans, including Paul Yuen, Reginald Young, Wai-Fah Chen and Peter Crouch. She retired in November 2006.

In addition to her duties assisting the dean, Horie coordinated a number of conferences and workshops for both faculty and students, including an NSF workshop in Japan and the International Ocean Technology Conference in Taiwan. She was also very active with the College's alumni and was a welcoming presence at these events.

Hakulau

Hakulau, "to make drawings or plans" in Hawaiian, is the newsletter for the College of Engineering at the University of Hawai'i at Mānoa. It is published twice a year by the Marketing and Public Affairs Office, 2540 Dole Street, Holmes Hall 240, Honolulu, Hawai'i 96822 and is circulated to the over 6,500 alumni and friends of the College of Engineering. If you have comments, suggestions, news, even an address change, please contact us at (808)956-7584 or e-mail hakulau@hawaii.edu.

College of Engineering

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Host-Madsen Named IEEE Fellow



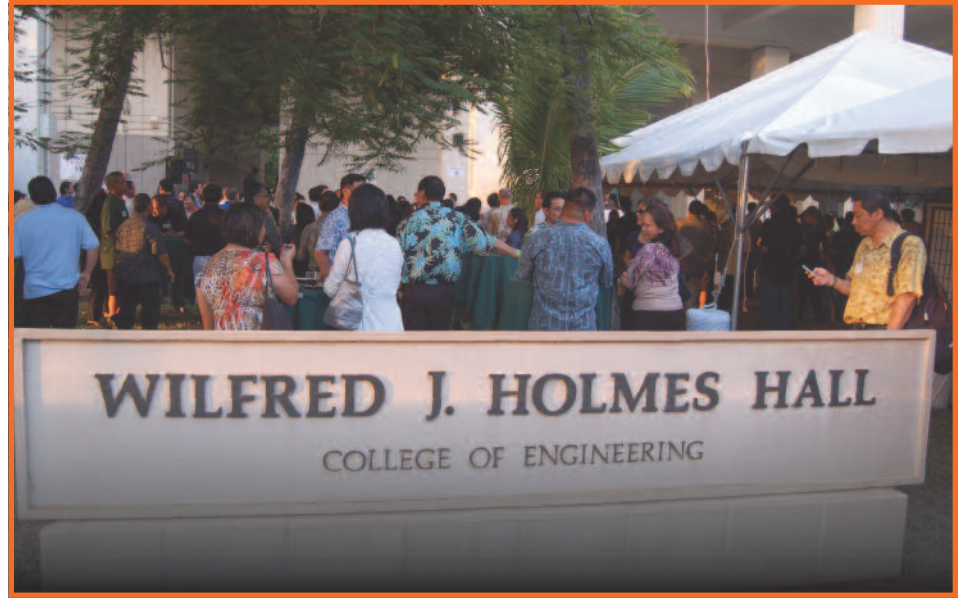
Anders Host-Madsen

Electrical Engineering Professor Anders Host-Madsen was elected a Fellow by the Institute of Electrical and Electronics Engineers (IEEE) late last year. His research interests are in statistical signal processing, information theory and wireless communications, including ad-hoc networks, cooperative diversity, wireless sensor networks, heart monitoring and signal processing for underwater acoustics. Host-Madsen has been with the college since 2001.

IEEE Fellows are conferred by the IEEE Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interests. The total number selected in any one year does not exceed one-tenth of one percent of the total voting membership. IEEE has over 400,000 members in more than 160 countries who are engineers, scientists and technical professionals in electrical and computer sciences, engineering and related disciplines.

"Professor Host-Madsen is a valuable faculty member in the Department of Electrical Engineering and the College of Engineering," said Anthony Kuh, former department chair. "He has been doing cutting edge research in communications, networking and information theory for a number of years and we are thrilled that IEEE bestowed this prestigious honor upon him."

Holmescoming 2012



Hundreds returned to Holmes Hall to celebrate



Chef D.K. Kodama crafts a delicious sushi handroll for a guest

Over 600 engineering alumni and friends were treated to another unforgettable evening of food, fun and fellowship at Holmescoming 2012. Held once again on the familiar grounds of Holmes Hall, guests were wined and dined under the stars with culinary delights from d.k. Steak House and Sansei Seafood Restaurant & Sushi Bar.

Entertainment was provided by George Kuo and Funk and Fusion. If that was not enough to get everyone's heart rate going, the routines by the Rainbow Dancers sure did. For those who wanted to get in the act themselves, the evening also

featured karaoke. Guests also visited the displays and games set up by ten engineering student organizations. Co-emcees Tammy Mori and Kristine Uyeno kept the evening on track.

"It was a great evening and judging by what I saw, everyone had a wonderful time," said Dean Crouch. "I would like to thank the Holmescoming committee for their continued efforts to help build our College tradition."

Holmescoming 2013 is scheduled for Friday, November 8th.

Engineering and Architecture Partner with DHHL

The UH Mānoa College Engineering and the School of Architecture have teamed up with the State Department of Hawaiian Home Lands (DHHL) to provide opportunities for students to use DHHL land, homes and projects as a learning laboratory.

In the agreement signed in April 2012, the College of Engineering plans on incorporating engineering research and innovation to help DHHL identify any current and long-term infrastructure and maintenance issues on its homes and land such as assessing rock fall mitigation concerns, drainage and water infiltration problems, or structural concerns with roadways. The School of Architecture will design 10 homes in 10 years for DHHL's Kanehili subdivision in Kapolei, with student involvement in all aspects of designing affordable, custom-built, energy efficient homes for qualified Native Hawaiian beneficiaries of the Hawaiian Home Lands Trust.

"We are pleased that our students can assist DHHL with their very important mission, while gaining real-world engineering experience in the process," said Dean Crouch. "This wonderful partnership is a win-win for all parties involved."

12th Annual Banquet a Success



The popular student Q&A session with emcee Keoki Kerr

Over 700 alumni and friends gathered once again at the Hilton Hawaiian Village’s Coral Ballroom to participate in the College of Engineering’s 12th annual banquet on April 26th. The event brought in over \$120,000 for prospective and current students.

Themed, *Making a Global Impact: The Power of Engineering*, the

evening began with a guest talk from global entrepreneur Hank Wuh, MD, president and CEO of SKAI Ventures. After dinner, guests were delighted with the ever-popular student question and answer session hosted by emcee Keoki Kerr.

It was a special night, as three engineering alums were presented with the Distinguished Alumni Award for their long and invaluable careers that helped shape the infrastructure of both our city and state. Honored were former state transportation directors Kazu Hayashida and Edward Hirata and former Castle & Cooke Hawaii executive Wallace Miyahira. The Distinguished Service Award was presented to Dr. Dennis Hirota for his contributions to the university both as a regent and a member of the Engineering Dean’s Council.

This year’s banquet will be held on April 25, 2013 at the Hawai’i Convention Center.

DISTINGUISHED ALUMNI AWARDS

Kazu Hayashida Edward Hirata Wallace Miyahira

DISTINGUISHED SERVICE AWARD

Dr. Dennis Hirota

Engineering Alumni Association of the University of Hawai’i (EAAUH)

PRESIDENT

Glenn Nohara

VICE PRESIDENT

Dayna Nemoto

SECRETARY

Neal Miyake

TREASURER

Keith Uemura

PAST PRESIDENT

Kyle Yukumoto

DIRECTORS

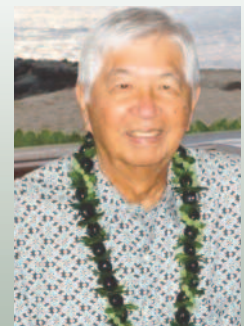
- Ronald Ho
- Robert Akinaka
- Ken Hayashida
- John Katahira
- Diane Kodama
- Michael Magaoay
- Derek Mukai
- Martin Nakasone
- Ross Okuda
- Anthony Paresa, Jr.
- Wayne Shiroma
- Reid Shizumura
- Jonathan Suzuki
- Dennis Toba
- Edward Yoshimura
- Russell Young

In Memorium: Paul Yuen

Former UH College of Engineering Dean Paul C. Yuen passed away in November of last year. He was 84.

Yuen was one of the most versatile and longest serving administrators. He joined UH as associate professor of electrical engineering in 1961 and served as dean from 1981-99. He also served in numerous other positions, including assistant to the UH Mānoa chancellor, director of the Hawai’i Natural Energy Institute, acting president of the Pacific International Center for High Technology Research, UH Mānoa vice president for academic affairs, UH senior vice president/UH Mānoa executive vice chancellor and acting UH president.

“The loss of Paul Yuen leaves a huge void that cannot be easily replaced,” said Dean Crouch. “We will honor his memory by continuing to build on the foundations he established in his tenure as dean and as a dedicated member of our faculty.”



Paul C. Yuen

Shiroma New EE Chair



Wayne Shiroma

Professor Wayne Shiroma has been named chair of the Electrical Engineering department, effective January 1, 2013. Shiroma takes over for Anthony Kuh, who served as served as the department's chair for five years.

"I look forward to working closely with Wayne in this new capacity," said Dean Crouch. "His demonstrated leadership, research work and highly successful mentorship of his programs and students will be an asset not only to the Electrical Engineering department, but to the entire College as well."

Shiroma specializes in novel architectures for next-generation communication and sensor systems that integrate high-speed devices, circuits and antennas. He received his BS in electrical engineering from UH Mānoa, his MEng from Cornell University and his PhD from the University of Colorado at Boulder.

Takenaka is New Director of Development



Kellie Ann Takenaka

Kellie Ann Takenaka has been appointed the College of Engineering's new director of development. A graduate of Punahou School, Takenaka comes to Holmes Hall after serving as senior campaign executive – mathematical, physical and life sciences at the University of Oxford, where she was responsible for the stewardship and cultivation of a diverse donor portfolio. Her duties included major gift planning strategies and initiatives, oversight of development publications, alumni relations and events. Her desire to be close to her parents and family spurred Takenaka's return home in July 2012.

Previously, she served as fundraising and public relations officer for Volunteer Service Overseas/Children Aid Ethiopia and as deputy development director for Lincoln College in Lincolnshire, England.

Takenaka received her BA with honors in modern history from Balliol College, University of Oxford in 1997. In 2000, she received her JD from the Boalt Hall School of Law at the University of California at Berkeley and returned to the University of Oxford to earn her bachelor of civil law in 2004.

"We are pleased to have Kellie on board to start the New Year," said Dean Crouch. "With her multiple skillsets as a development professional and attorney, we look forward to many positive contributions from her in both our College's fundraising and fundraising arenas."

Martin Named Nation's Top EE Student



Larry Martin

Larry K. Martin, a University of Hawai'i at Mānoa electrical engineering graduate student, has been named the winner of the 2011-12 Alton B. Zerby and Carl T. Koerner Outstanding Electrical and Computer Engineering Student Award, recognizing him as the most outstanding electrical engineering student in the nation. Martin, who graduated with his BS in electrical engineering from UH Mānoa in Fall 2011, was named the winner of the award by

Eta Kappa Nu, the national electrical engineering society, based on his achievements as an undergraduate student.

Martin is the fourth UH Mānoa student to win the award. Previous awardees are Blaine Murakami (2005), Aaron Ohta (2003) and Kendall Ching (2001). In 2007, Monte Watanabe was selected as an honorable mention recipient.

In February, Martin received the 2012 Hawai'i Council of Engineering Societies Student Engineer of the Year Award, identifying him as the most outstanding student engineer in the state of Hawai'i for 2011. He was also named the Fall 2011 Outstanding Graduating

Senior in Electrical Engineering. Martin has received numerous other scholarships and awards, including being a two-time recipient of the prestigious National Consortium for Measurement and Signature Intelligence Research Scholarship. He has also authored or co-authored several journals, conference papers and magazine articles.

As program/technical manager of the UH Mānoa College of Engineering's Small-Satellite Program, Martin assisted in writing several proposals that earned the UH Mānoa program two NASA launch opportunities in 2013-14. The mission of the two nanosatellites scheduled to launch is to provide calibration for radar stations around the world. The program was founded by Electrical Engineering Professor Wayne Shiroma in 2001.

"It's great to see that Larry's tremendous accomplishments are being recognized on the national level as well," said Shiroma. "I'm also very proud that another student from our program has received this prestigious honor."

Martin will be recognized at the IEEE-Eta Kappa Nu awards banquet in March in Orlando, Florida.

New Engineering Faculty

The College of Engineering welcomed two faculty members last year to the Department of Civil and Environmental Engineering and the Department of Electrical Engineering. In January, another assistant professor joined the CEE ranks.

Oceana Francis



Oceana Francis

Civil and Environmental Engineering Assistant Professor Oceana Francis has a joint appointment at College of Engineering and the School of Ocean and Earth Science and Technology. She has two bachelor's degrees in physics and civil engineering, a master's degree in civil engineering, and a PhD in atmospheric science with a specialization in ocean wave mechanics. She is a licensed civil engineer with the State of Alaska and the State of Hawai'i.

Her work focuses on coastal and ocean engineering, wind-generated waves, sustainable water and wastewater systems, flood control protection, meteorological and ocean processes on coastal infrastructure, development of sustainable coastal infrastructure affected by climate change and water shortage, design and construction, field measurements and modeling.

Francis is a Native Hawaiian born and raised in Honolulu and has lived in Alaska working as both an engineer and scientist. Her most recent award was in 2010 where she received the Young Engineer of the Year award from the Alaska Society of Professional Engineers.

Matthias Fripp

Electrical Engineering Assistant Professor Matthias Fripp specializes in modeling the technical and economic performance of power systems with large shares of renewable energy, particularly focusing on the potential for demand-side response to ease the integration of intermittent renewable resources.

Fripp was the NextEra Energy Resources Research Fellow in Renewable Energy at the Environmental Change Institute in 2008-12.



Matthias Fripp

He has previously worked as a modeler and researcher at Lawrence Berkeley National Laboratory, Trexler Climate+ Energy Services, Inc., and the Renewable Northwest Project.

He holds a PhD and master's degree from the Energy and Resources Group at the University of California at Berkeley and a bachelor's degree in environmental studies from Lewis & Clark College.

Gaur Johnson



Gaur Johnson

Assistant Professor Gaur Johnson comes to the College of Engineering from Naval Facilities Engineering Command Hawai'i where he served as a structural engineer.

Prior to working at NAVFAC HI, he was a post-doctorate researcher at the UH Mānoa and a design engineer at Martin & Chock, Inc., a structural engineering firm in Honolulu. He has been involved in a number of research projects with topics including construction materials development and testing, structural component testing, and multi-hazard mitigation.

Johnson's research, teaching and professional interests are: experimental testing of structural components, structures testing techniques for structural health screening (SHS) and structural health monitoring (SHM), construction material testing and development, reinforced concrete design, structural steel design, fiber reinforced polymers, applied mechanics, mechanics of materials, multi-hazard mitigation planning and research and development laboratory management.

He received his PhD in civil and environmental engineering from UH Mānoa in 2006. Johnson also received both his MS and BS in civil and environmental engineering from UH Mānoa in 2001 and 1999, respectively. He was born and raised on the island of Hawai'i.

Ohta Receives Regents' Medal



Aaron Ohta

Electrical Engineering Assistant Professor Aaron Ohta was selected by the University Research Council to receive the 2012 Regents' Medal for Excellence in Research. The award is given in recognition of scholarly

contributions that expand the boundaries of knowledge and enrich the lives of students and the community. He was recognized and presented with the medal at a Board of Regents meeting last year.

Ohta specializes in microelectromechanical systems (MEMS) and nanoelectromechanical systems (NEMS), with an emphasis on microfluidics and optofluidics. In 2011, Ohta and Professor Wayne Shiroma were awarded a three-year \$344,000 grant from the National Science Foundation to study the use of liquid metal in circuits to create new types of tunable communication systems.

Under his stewardship, UH Mānoa's first microrobotic team placed second in the 2011 Microrobotics Challenge in Shanghai and this year, the team scored two impressive awards at the 2012 IEEE International Conference on Robotics and Automation (ICRA) in St. Paul, Minnesota. The UH Mānoa microrobot consists of a very tiny air bubble inside of a microchamber. Light from a computer projector or a laser is used to heat the surface of the microchamber, which generates a force that moves around the microrobot. Since the microrobot is less than half a millimeter in diameter, it can be used to move around objects that are also less than a millimeter in size. This can be useful for building structures made up of living cells, which can help to grow tissues and organs outside of the human body.

Ohta received his BS in electrical engineering from UH Mānoa, his MS from UCLA and his PhD from the University of California at Berkeley.

"It's great to see that Aaron's many accomplishments in research were recognized by the Board of Regents and the university," said Dean Crouch. "We are fortunate to have faculty members like Aaron who excel in both research and teaching."