

The Department of

CIVIL

ENGINEERING



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Newsletter

Civil Engineering • Environmental Engineering • Bioresource and Agricultural Engineering

Walter Scott Jr. Receives Honorary Doctor of Science in Engineering Degree

To recognize more than 50 years of outstanding corporate leadership and significant contributions to the construction, mining and telecommunications industries, Colorado State University presented alumnus Walter Scott Jr. with an honorary doctor of science in engineering degree during the school's spring commencement ceremonies on May 16 in Moby Arena. A successful business executive and internationally respected corporate leader, Scott serves as chairman of the board of Level 3 Communications and director and chairman emeritus of Peter Kiewit Sons', Inc.

"This honorary degree recognizes Walter Scott's extraordinary accomplishments in business and industry, but more importantly, it pays tribute to his personal character, integrity and values. He personifies the best and brightest leaders in America," said Albert C. Yates, former president of Colorado



State and chancellor of the university system. "Mr. Scott is an outstanding role model who brings honor and distinction to Colorado State University. We are very proud of the significant and positive impact he has made in our world."

Scott graduated from Colorado State in 1953 with a bachelor's degree in civil engineering. The recipient of numerous honors and awards, in 1982 Scott was named the College of Engineering's Honor Alumnus in recognition of his achievements as president and

chairman of Peter Kiewit Sons'.

In addition to his success as an entrepreneur and businessman, Scott continues seeking out ways to provide opportunities for others. Scott and his wife Suzanne (*shown at left*) are well-known as philanthropists and humanitarians as well as advocates for higher education.

In 1982, he established the Walter Scott Jr. Scholarship Endowment at Colorado State to provide a means for highly motivated young people to pursue their engineering degrees. To date, the endowment has funded 49 scholarships to undergraduate students seeking engineering degrees and continually supports the educational endeavors of approximately 18 students each year at Colorado State.

"For 15 years, the engineering students at Colorado State have been the benefactors of Walter Scott's generosity and vision. He has motivated the students he supports to create new opportunities for our nation and engineer new solutions to many of the world's problems," said Neal Gallagher, Dean of the College of Engineering.

Scott joined Kiewit Sons' in 1953 and, through hard work and determination, was named vice president and elected to Kiewit's board of directors in 1964. He became president of the company in 1979 and was named chairman of the board after Peter Kiewit's death.

Under Scott's leadership, Kiewit adapted to a changing world to meet the needs of society and expanded to include operations in mining, con-

struction materials, packaging operations, communications and energy. Kiewit has grown to become one of the largest construction and mining companies in North America and is listed as a Fortune 500 company and ranked by *Fortune Magazine* as one of America's Most Admired Companies.

In 1985, Scott, recognizing the differing structure needs of Kiewit's core and diversified interests, separated the business into two companies. He created Kiewit Diversified Group to focus on telecommunications and computer services and to develop a nationwide Internet-based telecommunication network. The company was renamed Level 3 Communications in 1998 and already is an industry leader in providing broadband networks fully dedicated to high-volume corporate business.

Scott semi-retired from Kiewit in 1998 but still remains director and chairman emeritus while also serving as chairman of the board at Level 3 Communications.

"With his combined business and philanthropic orientation, Scott exemplifies the very best of our graduates - success in business and the vision to give back to his community and to important educational and other humanitarian institutions," said Sandra Woods, head of the Department of Civil Engineering at Colorado State. "Mr. Scott has taken his Colorado State education to a higher level through an entrepreneurial vision, and his achievements demonstrate what a modern land-grant university is about."

Recruiting and Retention

Across the U.S., engineering departments are working hard to increase the diversity of their student bodies. By educating students from a wide variety of backgrounds, we are best able to develop a workforce that will meet national and international needs. Two years ago, we created strategic plans to increase the recruitment and retention of students in our three majors (civil engineering, environmental engineering, and bioresource and agricultural engineering). As part of this plan, we have made a conscious effort to recruit female and minority students, and to develop a community and academic programs that make it possible for our students to succeed.

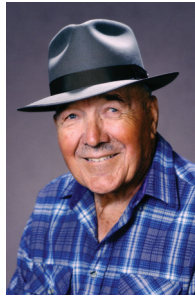
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**Colorado
State**
University

Knowledge to Go Places

Alumni News

The Faoro Professorship in Water Resources was filled this academic year. The professorship was made possible through a series of gifts made by the late **Abraham B. Faoro**, B.S. 1932 Civil Engineering, and his wife Jean M. Faoro. See page 4 for more information about Jeff Niemann, Faoro Professor of Water Resources.



Abraham B. Faoro

A January 16, 2003 article appeared in the *Rocky Mountain News* about the late **Phillip McOllough**, B.S. 1956 Civil Engineering. He was an engineer for the Colorado Highway Department for 35 years and worked on Interstates 25 and 70. Mr. McOllough was the principal engineer on the Eisenhower and Johnson Memorial tunnels. At its peak, 1,140 people were working around the clock six days a week on the projects.

Dr. Henry Liu, M.S. 1963, Ph.D. 1966 Civil Engineering, has published a book, *Pipeline Engineering: Fundamentals for the Water and Wastewater Maintenance Operator*. Following 35 years of teaching and research at University of Missouri-Columbia, he is Professor Emeritus and serves as president of Freight Pipeline Company.

Robert H. Janowski, B.S. 1969, M.S. 1970 Civil Engineering, is the Chief Programme Officer of the London Underground. He is responsible for £153 million in construction per month and oversees contractors.

Dr. James van Hoften, M.S. 1968, Ph.D. 1976 Civil Engineering, has been elected an AIAA Fellow. Selection of Fellows is limited to those who have distinguished themselves in the field of aerospace and who show strong potential for leadership. Dr. van Hoften is a senior vice president and general manager of global aviation for the Bechtel Group. Van Hoften joined Bechtel in 1986 from NASA, where in 1984, he became the first civil engineer to fly on the space shuttle.

Bruce Meaker, B.S. 1973 Civil Engineering, is working for the Snohomish County Public Utility District in Everett, Washington. Aside from being a great dad, he is currently the senior manager of regulatory affairs leading the relicensing of the 112 MW Jackson Hydroelectric Project.

Members of the Class of 1974 are planning a 30 year class reunion in Hawaii. **Clement Dang**, B.S. 1974, M.S. 1976 Civil Engineering, is coordinating the effort in Hawaii. **Mike Applegate**, B.S. 1974 Civil Engineering, will handle plans for Fort Collins. **Matt Sakurada**, B.S. 1974 Civil Engineering,

is webmaster for the reunion website at www.74csuce.com.

The Lake Mead Membrane Water Treatment Plant received a National Finalist Award in the Engineering Excellence Competition sponsored by the American Council of Engineering Companies (ACEC). This is the second consecutive year that Richard P. Arber Associates has been honored with the award. The president of the firm is **Richard P. Arber**, M.S. 1974, Civil Engineering.

Carlos Rodriguez-Amaya, Ph.D. 1976 Civil Engineering, has been working on the navigability project for the Meta River to the southeast of Bogotá, acting as project director as well as the hydrology and hydraulic specialist. The project includes geology, geomorphology and environmental aspects, as well as field work. **Victor Ponce**, M.S. 1970, Ph.D. 1976 Civil Engineering, is also collaborating on the project.

S. Janakiram, M.S. 1977 Civil Engineering, works in rural development for World Bank in Washington

D.C. He designs and implements rural information systems and works on income generation activities in conflict-affected areas. He recently completed a successful operation in Russia. He is also an executive member of World Bank's Sustainable Agricultural Systems Knowledge and Institutions (SASKI) thematic group.

Margaret A. (Peggy) Catlin, B.S. 1978 Civil Engineering, has been named winner of the 2002 Woman of the Year Award by the Colorado Women in Transportation Seminar. Catlin is the deputy executive director of the Colorado Department of Transportation, where she is responsible for day-to-day management, operation and overall strategic direction of the agency and its 3,100 employees.

Dr. Ahsan Kareem, Ph.D. 1978 Civil Engineering, chair of the University of Notre Dame's Department of Civil Engineering, specializes in probabilistic structural dynamics, fluid-structure interactions, structural safety and mitigation of natural hazards. His research focuses on the environmental loads of wind, waves and earthquakes on structures, the associated dynamic behavior of the structures and risk management.

On July 3, Astronaut **Kent Rominger**, B.S. 1978 Civil Engineering, threw the ceremonial first pitch at a Houston Astros game. On "NASA Night" the Astros saluted NASA and honored the communities of East Texas that were integral in the recovery of

Columbia.

Mohammed Al-Ani, M.S. 1980 Civil Engineering, was elected as one of two vice presidents at Al-Mustansiriyah University in Baghdad.

Luiz Alberto Küster, M.S. 1983 Civil Engineering, is a member of the Board of Directors and Sales Officer of the joint venture between GE and Inepar, a Brazilian industrial group. GE Hydro Inepar is responsible for equipment production and supply for hydropower generation on large Brazilian projects such as Tucuruí II (4,000 MW), Campos Novos (880 MW), Itiquira (156 MW), and Ponte de Pedra (176 MW), among others.

Dr. Elizabeth Jones, B.S. 1984 Civil Engineering, is an assistant professor at the University of Nebraska-Lincoln's Peter Kiewit Institute and lab director for their new I-Cubed laboratory. The Intelligent Transportation Systems Information and Infrastructure Laboratory provides a research-intensive educational environment for students and faculty, supporting basic research in traffic flow theory, human factors, communications, and computer/machine image processing. Major equipment in the lab includes an Autoscope Solo Pro system for traffic control and monitoring, NEMA and 170 traffic controllers, global positioning satellite systems, a mobile traffic data collection van with Autoscope Solo Pro cameras mounted on a 42-foot extendable mast and a trailer for communication of video and data over an 802.11b

Alumni Focus: Dr. A. R. Chamberlain, Ph.D. 1955, Civil Engineering

Dr. A. R. (Ray) Chamberlain is Vice-President of Parsons Brinckerhoff, a worldwide engineering consulting firm in transportation and power. He is a National Associate of the National Academies (NAE, NAS & IOM). Ray received the first Ph.D. ever awarded by CSU. He was a member of the CSU staff for 24 years. For more than ten of those years he was the President of CSU and for a time also guided both CSU-Pueblo and Pueblo Community College. He served on the governing board of the National Association of State University and Land Grant Colleges, and was elected to a term as its Chairman. He served a term in the role of Chairman, Board of Trustees



Dr. A. R. (Ray) Chamberlain

for the National Center for Atmospheric Research. He also spent five years as the board chairman of the University National Bank. After being president/ceo of a number of Colorado private companies, Ray became Executive Director of the Colorado Department of Transportation. He devoted more than six years to this role and was elected to the position of President, American Association of State Highway and Transportation Officials. Ray spent four years in Washington, D.C. as vice-president-freight policy, American Trucking Associations. He has been awarded two honorary doctorates. He was awarded the Order of the Aztec Eagle by the president of Mexico.

Alumni: We want to hear your news!

E-mail us at civil@engr.colostate.edu with your recent promotions, honors, publications, research, speaking engagements, and photos, so we can keep your classmates informed about important changes in your life.



At left: Ghatghar dam project located in the state of Maharashtra in India.
Below: Hesham Elbadry and Chris Hicks in Amman, Jordan.



network with a range of over 5 miles. More information about Dr. Jones and the I-Cubed Lab can be found at <http://www.i3lab.unomaha.edu>.

José A. Raynal-Villaseñor, Ph.D. 1985 Civil Engineering, was elected to Mexico's Academy of Sciences in 2002. He is a member of Mexico's Academy of Engineering since 1985 and is the Head of the Department of Civil Engineering at the Universidad de las Américas-Puebla in Mexico.

Ayob Katimon, M.S. 1990 Agricultural Engineering, is a lecturer in the civil engineering department at Universiti Teknologi in Johor, Malaysia. His interest is in water resources research.

Abdullah S. Al-Ghamdi, M.S. 1991 Mechanical Engineering, Ph.D. 1993 Civil Engineering, was promoted to associate professor in Civil Engineer-

ing and appointed Dean of Community Services and the Continuing Education Center at King Abdulaziz University in Jeddah, Saudi Arabia.

Chris Hicks, B.S. 1991 Civil Engineering, is working on the Ghatghar project (photo above), located in the state of Maharashtra in India. The Ghatghar project is the first RCC (Roller Compacted Concrete) dam project in India. It is a pumped storage scheme with three RCC dams, two for creating an upper reservoir and one creating the lower reservoir. The largest of the three is the lower dam, approximately 600,000 M3 of RCC and 84 meters tall. The project will have the capacity to produce 250 megawatts of electricity.

Chris happened across a fellow CSU graduate in Amman, Jordan at an RCC conference. **Hesham Elbadry**,

Ph.D. 1993 Civil Engineering, (shown with Chris Hicks above) picked Chris out of a crowd of people assembling for a group picture for the conference. Hesham was a graduate student and GTA for fluid dynamics while Chris was an undergraduate at CSU. Chris said, "It was very interesting — we were from very different backgrounds, he an Egyptian and I an American, but both CSU graduates meeting in a controversial region in hopes of trying to further our work as engineers."

Katherine Chase, M.S. 1992 Civil Engineering, is working for U.S. Geological Survey in Helena, Montana.

Carlos Sanchez, B.S. 1994 Civil Engineering, is working in McAllen, Texas as Assistant City Engineer.

Mark Beebe, B.S. 1995, M.S. 1997 Civil Engineering, was awarded the New Faces in Engineering Award by the American Council of Engineering Companies. The New Faces program recognizes 109 nominees out of 1.8 million engineers in the United States. Mark was one of the top three young engineers in the U.S. to be nominated. To qualify, engineers had to have worked on unique or high profile projects and/or engineering achievements during the last two to five years. Some of the projects Mark has been involved with include: Lake Mead Membrane Water Treatment Plant, AZ; Alamosa Arsenic Removal Project, CO; and La Junta Water Treatment Plant, CO. Mark is employed by Richard P. Arber Associates in Denver.

Suleyman Akalin, M.S. 1997, Ph.D. 2002 Civil Engineering, is an assistant professor in the Department of Civil Engineering at Mersin University in Turkey. During spring semester 2003 he taught Fluid Mechanics and Water Supply and Sewage courses. Dr. Akalin began a 6-month military service in August and looks forward to visiting Colorado in the future.

Dan Stenta, B.S. 1997 Civil Engineering, is in private consulting for Keogh Land Surveying in Moab, Utah.

Brittany Albrandt, B.S. 2002 Engineering Science and Civil Engineering, is working for the Atlas Mission Integration - Flight Dynamics team for Lockheed Martin.

Tiffany McEnerney McEachen, M.S. 2002 Agricultural Engineering, is working as a water resources engineer with CH2M Hill in Englewood, Colorado. She has been working on a hydrology model for several basins in Colorado Springs. In March, Tiffany was in Varanasi, India doing volunteer work with a non-profit organization called Lifewater International. They offered basic hygiene and sanitation training in rural villages.

Mae Benvenga, B.S. 2003 Civil Engineering, is now a CE graduate student at Colorado State studying Geotechnical and Structural Engineering.

Jason Claeys, B.S. 2003 Civil Engineering, is working at JR Engineering in Fort Collins as a Design Engineer.

Carrie Ryan Fitzgerald, B.S. 2003 Civil Engineering, is pursuing a masters degree in hydraulics at the University of Iowa.

Alan Halley, B.S. 2003 Biore-source and Agricultural Engineering, is an Agricultural Resources Specialist with Northern Colorado Water Conservancy District.

Paul Forrester, B.S. 2003 Civil Engineering, is an ensign in the Civil Engineering Corps of the U.S. Navy.

Ryan Laird, B.S. 2003 Civil Engineering, is a Geotechnical Engineer in Training at Heller & Johnsen in Stratford, Connecticut. He reports that he has been skulling on the Housatonic River, the Connecticut River and the Long Island Sound near the Thimble Islands.

Joel Liesman, B.S. 2003 Civil Engineering, is pursuing a Masters degree in transportation at the University of Wyoming.

Emily Magnuson, B.S. 2003 Civil Engineering, is working at Merrick & Company in Aurora, Colorado as a Civil Designer I for Buildings and Infrastructure.

Chris Ott, B.S. 2003 Civil Engineering, is a Design Engineer at RG Consulting Engineers in Denver.

Kate Rudman, B.S. 2003 Civil Engineering, is a research assistant at the University of Aberdeen. She is working on a project funded by the Arthritis Research Campaign to develop a finite element model of the hip to investigate how it carries loads and to explore alternative mechanisms of force transmission through the hip joint.

Upcoming Events

Alumni and friends: please mark your calendars for the following events. For more information, contact Shannon Davis at 970-491-7028 or SupportEngineering@engr.colostate.edu.

Engineering Homecoming Celebration

Friday, October 3, 4:30-6:30pm

University Park Holiday Inn, 425 W. Prospect, Fort Collins

Gear up for the big game with faculty, staff, alumni and friends for food, fun and door prizes. There is no charge to attend, but the RSVP deadline is September 30.

The Denver-area reception held in March was so well-received, the College will host these additional alumni receptions:

Grand Junction Alumni Reception

Thursday, October 30, 5:30-7:30 pm, Grand Junction Holiday Inn

Boulder/Longmont Alumni Reception

Thursday, November 20, 5:30-7:30 pm, Boulder Cork Restaurant

Colorado Springs Alumni Reception

Thursday, January 15, 5:30-7:30 pm, Garden of the Gods Club

Denver Alumni Reception

February 2004, details to come

Faculty News



Stephen Abt

Steven Abt is the Environmental and Water Resources Institute Governing Board Official Nominee for the 2003 position of EWR1 Vice President. The Board position will start on October 1, 2003. The 2003 Vice President is scheduled to advance to President-elect, and then President in 2004 and 2005 respectively.

Professor Bogusz Bienkiewicz, president of the American Association for Wind Engineering (AAWE), was a member of the field investigation team assembled to collect perishable damage information in areas impacted by tornado touchdowns at ten sites (*photo at right*) in Kansas and Missouri. The tornado touchdowns occurred on May 4 and 8. The team's objective is to provide an information source for in-depth studies of wind loads, structural resistances and water penetration problems.

Children from a home-school science and art co-op had a great time testing kites (*photo at right*) in CSU's wind tunnel. **Bogusz Bienkiewicz** hosted 23 children, ranging in age from 3 to 12 years old. Many of the children designed and built their own kites, using a variety of materials. During the initial trials, wind engineering students recommended changes to kite configurations, modifications were then made and the children had several more chances to improve their kite's performance. This is the second year for the event.

Omnia El-Hakim, Ph.D. 1984 Civil Engineering, has been named the new Assistant Dean for



Omnia El-Hakim

Diversity in the College of Engineering at Colorado State University. She will work with the College to recruit and retain undergraduate and graduate women and underrepresented ethnic minority students in the College and enhance academic programs. She will also direct the Women and Minorities in Engineering Program (WMEP) and represent the College in national organizations that focus on women and minority enrollments.

Dr. David Gilbert is the principal investigator on the project titled "Influence of pH on the Electrolytic Degradation of TNT & RDX in Groundwater." The objective of the project is to evaluate the role of alkaline hydrolysis in the electrolytic degradation of aqueous explosive compounds. The results will be used to complement other



The AAWE damage investigation team in Battlefield, Missouri.



2003 Departmental Awards

Faculty Award for Excellence in Teaching Innovation	_____	Jim Loftis
Faculty Award for Excellence in Research	_____	Ken Carlson
Faculty Award for Excellence in Service	_____	Marvin Criswell
Outstanding Faculty Performance Award	_____	Brian Bledsoe
Staff Award for Excellence	_____	Laurie Howard
Staff Award for Excellence	_____	Beth Mitchell
Research Faculty Award for Excellence	_____	Tom Sale
Research Faculty Award for Excellence	_____	David Gilbert
Faculty Award for Excellence in Outreach	_____	Omnia El-Hakim

Niemann Joins Civil Engineering Faculty



Jeff Niemann

Dr. Jeffrey D. Niemann joins the Department of Civil Engineering as assistant professor this fall with a primary interest in hydrology and geomorphology. Dr. Niemann's position is made possible by gifts from the Faoro Fund. He earned his M.S. and Ph.D. from Massachusetts Institute of Technology in civil and environmental engineering and earned a B.S. with high distinction in civil engineering from the University of Colorado at Boulder. He was a member of the faculty at Pennsylvania State University prior to joining Colorado State. His professional career includes serving as a consultant for the U.S. Environmental Protection Agency in Kathmandu, Nepal, and Dhaka, Bangladesh, and as a research assistant for the International Institute for Applied Systems Analysis in Austria.

Niemann's research focuses on the interaction of water and topography and covers a broad range of studies, including soil moisture variability, fractals and scaling invariance, landscape evolution modeling, watershed morphology, interpolation and parameter estimation, hydrologic modeling and impacts of land-use and climate change.

Niemann has received several awards and honors during his academic career, including the Presidential Early Career Award for Scientists and Engineers (2002), the Martin Fellowship for Sustainability (1995) and the Chancellor's Recognition Award (1993). He is a member of the American Geophysical Union, the American Society of Civil Engineers and the American Society of Engineering Education.

research. The project is funded by the U.S. Army Corp of Engineers - Engineer Research and Development Center.



David Gilbert

A team of CSU engineers and sociologists received an NSF grant to develop methods to assess and report the safety of the country's water, transportation and energy systems. **Professors Neil Grigg** and **Evan Vlachos** are the co-principal investigators. The study is based on the idea that safety and management of public infrastructure can be improved if the public has more relevant and easily understood information regarding facility condition and security. This information can be used to help communities and individuals prepare emergency response plans in case of terrorist attack or other disaster.



Neil Grigg



Evan Vlachos

Dr. Stephen Klein has joined the Department as a research scientist.

He is an environmental engineer with a Ph.D. in civil engineering from the University of Colorado. He has an M.S. in civil engineering and a B.S. in chemistry/biochemistry from UC-Boulder. Dr. Klein's areas of expertise include aqueous environmental chemistry, mercury transformations and cycling, contaminant transport and fate modeling, interactions between sediment and water, and design and fabrication of sampling equipment.

Professor **Jim Loftis** provides fiscal and personnel management on two National Park Service projects titled "Guidance and Technical Support to the Natural Resource Program Center" and "Inventorying and Monitoring National Resources Status and Trends in National Park Service."

In April, **Professor John Nelson** presented an address — "Design of Foundations for Light Structures on Expansive Soils" — to the California Geotechnical Engineers Association at their annual meeting in California.



John Nelson

Professor José Salas (Pepé) is the principal investigator on a project, "Quantifying Space-Time Variability in Agricultural Landscapes." The project addresses the critical problem

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Second Joint Symposium Between Faculty and Alumni Held in Korea

Seven faculty members from Colorado State University's Department of Civil Engineering participated in the second joint symposium between Colorado State faculty and Korean alumni.

The symposium, which took place May 25-28, 2003, at Seoul National University, focused on recent water, wind and environmental civil engineering research issues concerning both Korea and the United States.

The 2003 symposium included sessions in water resources engineering, hydrology, hydraulics and environmental engineering, and hydro technology and wind engineering. In addition, attendees participated in a full-day field trip that included an overview of the Lower Han River and visits to the Unification Observatory and the Tidal Barrier and Ecological Wetland Park in the Sihwa Reclamation Project.

Inspired by Dr. Hyoseop Woo, Vice President of the Korea Institute of Construction Technology, and Dr. Darrell Fontane, Colorado State civil engineering professor, the first joint symposium was held at Colorado State University in August of 2002.

"Our Korean alumni hold prestigious positions in the water sector of Korea. They are the leaders of the water resource agencies and of universities in Korea. The United States

and Korea have common water resource and wind engineering problems. We look forward to working collaboratively to solve these problems for the mutual benefit of both Korea and the USA," Fontane said.

The 2003 event was hosted by the organizing committee of Colorado State Korean alumni with the goal of pursuing additional collaborative opportunities between CSU faculty members and Korean alumni. The symposium was sponsored by Myungji University, Korea Water Resources Corporation, Chungbuk National University, KwangJu Institute of Science and Technology Advanced Environmental Monitoring Research Center, and the Korea Institute of Construction Technology.

Civil Engineering faculty who attended the 2003 symposium were: Fontane, Bogusz Bienkiewicz, Neil Grigg, Pierre Julien, John Labadie, Jorge Ramirez and José Salas.



Front row (left to right): Dooho Park (Ph.D. 2002, Agricultural Economics), Hung Soo Kim (Ph.D. 1997, Civil Engineering), Young Jun Kim (Ph.D. 1989, Economics), Seok-Ku Ko (M.S. 1985, Ph.D. 1989, Civil Engineering), Darrell Fontane, Jung Ho Sonu (Ph.D. 1973, Civil Engineering), John Labadie, José Salas, Neil Grigg, Ick Hwan Ko (Ph.D. 1997, Civil Engineering).

Back row: Jerry Stedinger (friend of the department), Kyu-cheoul Shim (Ph.D. 1999, Civil Engineering), Dong Ryul Lee (friend of the department), Chang Wan Kim (friend of the department), Hyoseop Woo (Ph.D., 1985 Civil Engineering), Pierre Julien, Bogusz Bienkiewicz, Jorge Ramirez, Gye Woon Choi (Ph.D. 1991, Civil Engineering), Chea-Won Kim (friend of the department), Boosik Kang (Ph.D. candidate, Civil Engineering), Jun-Haeng Heo (Ph.D. 1990, Civil Engineering), Sungsu Lee (Ph.D. 1997, Civil Engineering), Jaeeung Yi (M.S. 1987, Ph.D. 1996, Civil Engineering) and Sung-Je Park (Ph.D. candidate, Civil Engineering).

For more information on this year's symposium or future gatherings, contact Darrell Fontane at 970-491-5248 or fontane@engr.colostate.edu.

Faculty Focus: Paul Heyliger Nanostructure Mechanics: From Molecules to Materials



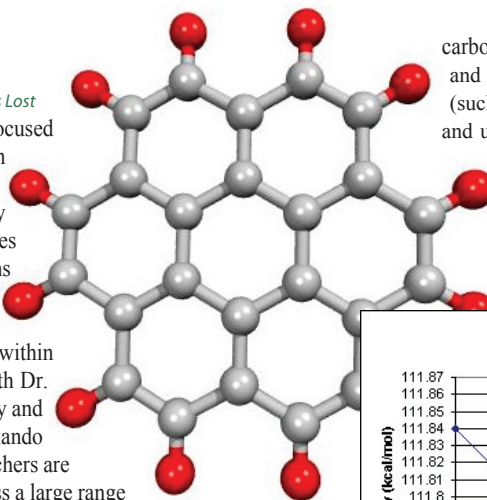
Paul Heyliger

"No; he is best endued in the small."

William Shakespeare, *Love's Labour's Lost*
Professor Paul Heyliger has focused some of his current research on structures much smaller than those typically explored by civil engineers. Nanostructures are components or systems with sizes in the range of 10^{-9}

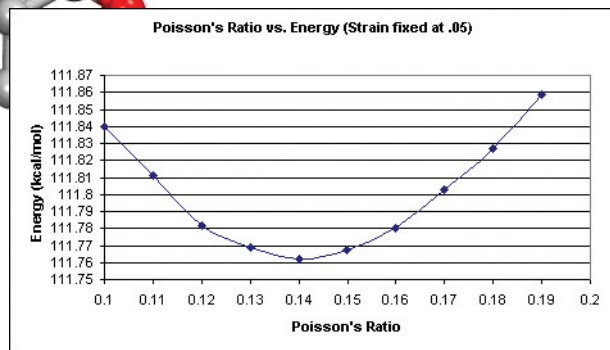
meters, and have been suggested for an increasingly large number of applications in many branches within science and engineering. Working in collaboration with Dr. Anthony Rappe from CSU's Department of Chemistry and assisted by Civil Engineering Ph.D. candidate Fernando Ramirez and undergraduate John Karspeck, the researchers are attempting to develop models for components that cross a large range of size scales, from the molecular level up to and including solid materials.

With funding from the National Science Foundation and the Army Research Office, current efforts have focused on matching the energy of deformation stored in molecular structures under certain types of bending or stretching. A typical example of a C_{24} molecule is shown in Figure 1, where the white spheres denote



carbon atoms and the red spheres are hydrogen. By stretching and bending this molecule, effective continuum properties (such as the Poisson ratio in Figure 2) can be determined and used in subsequent micromechanics simulations. These tiny structures can then be used alone or as reinforcing elements within composites, along with many other applications currently under study.

Figure 1 (at left): example of a C_{24} molecule
Figure 2 (below): Poisson's ratio



"No; he is best endued in the small."

William Shakespeare, *Love's Labour's Lost*

Student News

Jason Christenson was awarded the ASCE Outstanding Student by the ASCE Colorado Section.

Dillon Cowan has been accepted to the Notre Dame REU program on water resource development in third world countries. As part of the program, Dillon will be spending 2 1/2 weeks in Honduras doing research and helping to build wells and set up other facilities.

Tim Hinerman has been recognized by the American Council of Engineering Companies of Colorado with the Fu Hua Chen Scholarship of \$2,500. The competition is statewide for engineering students.

Rob Jackson, president of Colorado State's Environmental Engineering Society, was profiled in an article in the March 23 issue of *The Coloradan*. The article featured three CSU student environmentalists. Rob is also involved in the creation of a student chapter of Engineers Without Borders.

Joseph Kane has been awarded an American Council of Engineering Companies of Colorado scholarship of \$2,000. The competition is statewide for engineering students.

Two civil engineering students were recognized in the *Celebrate Colorado State* publication for their achievement during 2002-2003. **Joel Liesman** and **Katie Swanson** were both *magna cum laude* candidates in Civil Engineering.

Melanie Melonakis and **Jason Andrews** received ASCE Student Achievement Awards from the ASCE Northern Colorado Branch.

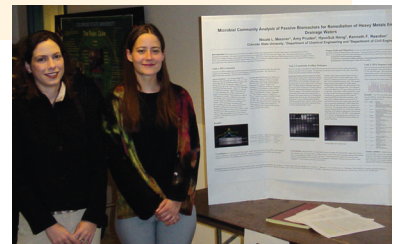
Steven Pool, a Civil Engineering junior, received a scholarship from the Construction Workforce Foundation of Colorado to assist him in pursuing his

interest in large-scale design.

Linda Vandamme has been awarded the William Russell Stoneman Scholarship from the American Council of Engineering Companies of Colorado. She will receive \$4,000 through this statewide scholarship competition for engineering students.

Nicole Messner, a junior majoring in Chemical Engineering and Fine Arts, has been working with Civil Engineering Assistant Professor Amy Pruden (shown with Nicole at right) in the Stu-

dent Leaders in Engineering Program. Nicole won first place at E-Days in the junior poster competition. Her poster was entitled "Microbial Community Analysis of Passive Bioreactors Remediating Heavy Metals Emanating from Acid Mine Drainage."



Steel Bridge Team Wins Regional

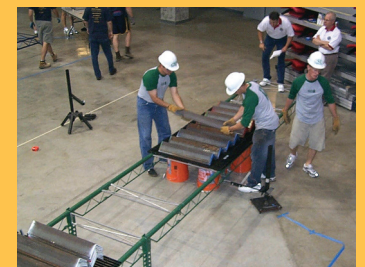
A team of Colorado State University students earned first place honors in the Steel Bridge Competition at the annual American Society of Civil Engineers Rocky Mountain Regional Competition held at Utah State University.

Bridges were judged on five criteria including weight, stiffness, how fast they were assembled, a lateral load test (shown at right) and aesthetics. Colorado State's 24-foot-long, 171-pound bridge had to span gaps of 14 feet and 7 feet and support a total weight of 2,500 pounds. The team, lead by students **Justin Meihaus** and **Jason Andrews**, took first place in each category except for a third-place finish in aesthetics and a second-place finish in stiffness.

"We finished second last year, and building on this success, we have set a benchmark that Colorado State is a top-level competitor in the Steel Bridge Competition," said Andrews.

A five-student assembly team put the bridge together in an official time of 5.5 minutes, receiving very few time penalties for mistakes such as dropping a bolt or having a team member step in the imaginary water surrounding the building area.

The regional win advanced the team into the national competition held in San Diego this May. The team placed 26th, eight places better than last year.



Get Involved!

CSU will host the 2004 ASCE student regional conference April 2-3. Contact Marilee Rowe if you would like to assist (970-491-5247 or mrowe@engr.colostate.edu).

2003 Departmental Student Awards

Bioresource and Agricultural Engineering

Outstanding Senior	Eric Douglas Martin
Outstanding Civil Engineering Student	Katie Swanson
Civil Engineering Achievement Award	Travis Brinkman
Civil Engineering Achievement Award	Joel Liesman
Civil Engineering Student Leadership Award	Andrew Hunt
Ralph Parshal Award	Mark Jason Christensen
Environmental Engineering Achievement Award	Brannan Davis
Environmental Engineering Student Leadership Award	Robert Jackson

Chi Epsilon Spring 2003 Initiates

Ryan Clark Fleming	Karol A. Miodonski
Henrik Per Forsling	Tanner Owen Randall
Noah Isaac Friesen	Dillon Michael Cowan
Joshua David Johnson	Julie Marie Mages



Spring 2003 Commencement Top row (left to right): Ryan Laird, Ysidoro Gutierrez, Jeff Olsson, Steve Babcock, Eric Martin, Matt Schram, Jason Claeys, Chris Ott, Brooks Webber, Jonathan Kiefer. 3rd row: Gilbert LaForce, Emily Magnuson, Morgan McDermott, Eric Gray, Jason Andrews, Paul Forrester, Steve Leu, Jonathan Chorey, Erik Haugen, Jill Mathewson. 2nd row: Ben Kiene, Carrie Fitzgerald, Kate Rudman, Joel Liesman, Jason Christensen, Brad Sours, Robert Lewis, Phil Law, Joe O'Malley. First row: Andy Hunt, Justin Perry, Treena McClellan, Nick Leinweber, Anna Smith, Jenny Daigre, Michelle Melonakis, Clint Wood, Mae Benvenga.

BAE Program Update

There has been much discussion about the future of the Bioresource and Agricultural (BAE) program at Colorado State. The BAE program has always been small, which has allowed close interactions between students and faculty. However, at the administrative level at the University, the BAE program has been under scrutiny as a "low enrollment" program.

In addition, the past year has been especially difficult due to the departure of Dr. Paul Ayers and the inability to obtain a replacement for his position in the Power and Machinery area. With the current budget constraints in higher education, many vacant faculty positions have been frozen. This impacts our ability to offer an ABET accredited BAE program.

While the current BAE program is ABET accredited, we cannot admit future students to the program under

the present circumstances. We have taken a proactive approach and are developing an alternative to the BAE program. This body of knowledge is the soil and water engineering area, which is vital to Colorado, the Nation and the world.

If the new Soil and Water Resource Engineering concentration is approved, as expected, current BAE students will have a choice of completing their current program of study or changing their major to civil engineering with a soil and water engineering concentration.

The discontinuation of the BAE program has been an extremely difficult decision. We have kept the needs of students, both present and future, in mind while weighing alternatives. We believe that the proposed SWRE concentration is the best plan for the future.

Summer REU Programs

Paul Heyliger and Jorge Ramirez had busy summers, working to provide 8-week research experiences for 29 undergraduate students. They were the principal investigators of two REU programs in Civil Engineering.

Dr. Heyliger's program had 15 undergraduates working on research teams with faculty and graduate students investigating vibration and sound in engineering, physics, and mathematics. The program had the objective of providing a broader base of knowledge of the fundamentals of sound and vibration and how they are used in science and engineering, and to encourage additional research and education in vibration and sound leading to careers in related areas. This

program was funded by the National Science Foundation and the Army Research Office.

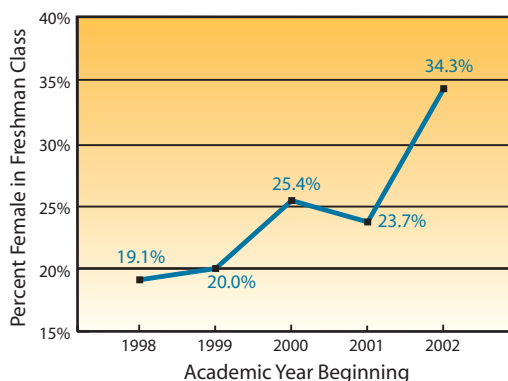
Dr. Ramirez offered an opportunity to 14 undergraduates to conduct independent research in water science and engineering. The program, funded by the National Science Foundation and the Water Center at Colorado State, was designed to provide a comprehensive research experience which will motivate students toward a career in water. The students worked in teams with faculty in the departments of Civil Engineering, Earth Resources, Soil and Crop Science, Chemical and Bioresource Engineering, Fishery and Wildlife Biology, and Rangeland Ecosystem Science.

Dr. Jill Baron, Research Ecologist with the Natural Resource Ecology Lab, leads a REU field trip group in Loch Vale, Rocky Mountain National Park.



Recruitment *continued from page 1*

Recruitment. The results of our efforts to increase the number of female students in our program are shown below. It is clear that the percentage of females in our freshman CE class has increased substantially over the past few years (from 19% in Fall 1998 to 34% in Fall 2002). To put this in perspective, the percentage



of female students in CSU's College of Engineering freshman class was 21% in Fall 2002 and our environmental engineering program enrolls about 50% female students. Nationally, female students represented 22% of the total civil engineering graduates in 2001. Therefore, our recruiting

efforts have resulted in a CE freshman class that has over 50% more females than the freshman class for the College of Engineering as a whole or female CE graduates nationally.

Retention. Increasing the number of females in the freshman class is meaningless if women leave the program at a higher rate than male students. An analysis of data for the last several years suggests that our male and female students are retained equally well in our undergraduate CE program. For example, as we follow the freshman class of 1998 through their senior year, the percentage of women in the sophomore, junior and senior classes exceeded the percentage of women in the freshman class.

Our students are among the best at CSU. In addition to increasing the diversity of our freshman class, our recruiting and retention efforts have resulted in an overall increase in the number of applicants and size of our undergraduate program. While national graduation rates for civil engineering programs have fallen over the last several years, CE enrollments at Colorado State are increasing.

It is clear that our recruitment and retention efforts have resulted in more and better undergraduate students and have improved the diversity of our undergraduate class. We will continue to work on improving our recruiting and retention programs. Hopefully, this will result in similar improvements in the numbers of students from all underrepresented groups.

Environmental Engineering Laboratory

In our last newsletter, we asked alumni and friends to help us develop a new environmental engineering laboratory. We are deeply grateful for the extraordinary response, not only by our alumni, but also our faculty and staff. These generous gifts have made this project possible.

The faculty and staff within the Department of Civil Engineering contributed gifts exceeding \$44,000 in 2003. Some of these funds were specifically dedicated to the development of the environmental engineering laboratory. In addition, friends and alumni contributed thousands of dollars that will be used to purchase laboratory equipment or complete construction, based on donor wishes.

Construction of the new environmental engineering laboratory began in July and we expect completion during Fall Semester, 2003. We are especially grateful to the following alumni and friends who specifically identified "Environmental Engineering Laboratory" as the focus of their recent gift to the Department.

Dr. Jeris A. Danielson
Mr. Max L. Goracke
Drs. Xiaoniu Guo & Chuan-Mian Zhang
Mr. William P. King

Lt. Colonel Wayne C. Kuse
Meurer and Associates, Inc.
Dr. Robert H. Montgomery
Mr. & Mrs. Scott A. Rutherford

Letter from the Department Head – Providing an Excellent Education

Faculty lead and develop a department's academic and research programs and are the individuals students remember long after their graduation. The Department of Civil Engineering at Colorado State has excellent programs due to our highly qualified and dedicated faculty. Their imagination and commitment results in new academic programs, cutting-edge classes, and research programs that enrich the education of undergraduate and graduate students. Clearly, it is important that we continue to recruit the best faculty in the U.S. and the world.

In the last two years, we have been fortunate to hire several extraordinary new assistant professors. These include Brian Bledsoe and Amy Pruden, who joined our environmental engineering and hydraulics programs, and Tom Sale and Dave Gilbert, who have strengthened our groundwater research program. Already, these four faculty have made important contributions to our graduate and undergraduate programs through their classroom teaching, research programs, and by mentoring students. I am confident that Jeff Niemann (*see page 4*), who joined us in August, will make similar contributions.

As a department, our goal is to provide an excellent education for our undergraduate and graduate students. One of the ways we accomplish this



Sandra Woods

is by recruiting the highest calibre faculty and by increasing the number of faculty in our department. As a result we can provide students with stronger academic programs, a wider range of elective classes, smaller class sizes, and more opportunities to participate in research. Therefore, one of our short-term goals is to develop funding to allow us to hire additional faculty. In some cases, we will leverage retirements to create new positions. In other cases, gifts from donors will allow us to create endowed positions to hire faculty in a new area or strengthen an existing area. We are deeply grateful for the generosity of Harold Short (who established the Harold H. Short Endowed Professorship in Civil Infrastructure Systems that allowed us to hire Larry Roesner), Abraham Faoro (who established the Faoro Professorship in Water Resources that allowed us to hire Jeff Niemann), and Whitney Borland (whose gift will allow us to hire a Borland Professor in the area of hydraulics or hydrology). Their generosity has truly made an impact on the Department and will enhance our students' education.

Sandra Woods

Sandra Woods, Professor and Head, Department of Civil Engineering

Faculty News *continued from page 4*

in modern agriculture of management of land for economic benefit and environmental sustainability where the agronomic and environmental factors and the resulting production vary dramatically in space and time. The project deals with transfer of information from relatively small experimental plots to field scales, taking into account on-farm variability in site assessment and management plans.



Tom Sale



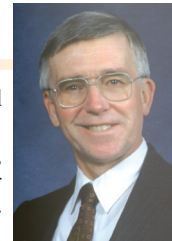
Chris Thornton

Dr. Tom Sale is the principal investigator on "Sequential Electrolytic Degradation of Energetic Compounds in Groundwater." The objective of this project is to develop reaction pathways for electrolytic oxidation and reduction of aqueous explosive compounds TNT and RDX. The results from this project will be used in the design of a field scale demonstration of e-barrier technology for treatment of groundwater contaminated with nitroaromatics and nitramines. To date, experiment setup is complete and analytical method development is underway. The project is funded by the Strategic Environmental Research and Development Program (DoD).

Dr. Christopher Thornton is conducting a prototype model study to examine the hydraulic performance

of various types of fish screens utilized in structures along the American river. The team is constructing a scaled, physical model of a section of the river in an effort to quantify hydraulic performance of an engineered structure.

How does society obtain scientifically sound data to make fair and equitable decisions within a water quality management program? **Robert Ward**, as the academic representative on the 35-member U.S. National Water Quality Monitoring Council (NWQMC) and a member of the Scientific Committee for the European Monitoring Tailor-made IV conference (to be held September 2003 in The Netherlands), is part of an international effort to answer the question. Most recently, he served as co-editor of the September 2003 issue of *Water Resources*



Robert Ward



Jack Cermak

IMPACT that presents the NWQMC's 'monitoring framework'— an effort to establish a common definition of water quality monitoring so that design tools and strategies can be established in a consistent and comparable manner.

At the Eleventh International Conference on Wind Engineering in June, a paper entitled, "A Tribute to **Jack E. Cermak** – Wind Effects on Structures: A Reflection on the Past and Outlook for the Future" was presented by Dr. Ahsan Kareem, Ph.D. 1978, Civil Engineering.

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Knowledge to Go Places

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