

CE²

NEWSLETTER

civil & environmental engineering

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Christopher J. Earls, Chair

Message from the Chair

It is with enormous pride and satisfaction that I sit down and write this update to you, our alumni and friends. Since production of the last issue of *CE²*, many exciting things have happened. I would like to share some highlights with you.

On the educational front, our undergraduate enrollment continues to surge, and the Department of Civil and Environmental Engineering (CEE) now has the second largest undergraduate enrollment in the School of Engineering (approximately 260 students). In addition, our graduate enrollments are improving—PhD enrollment has grown by more than 50 percent in the last 21 months!

The faculty have worked very hard over the last year and a half—completely revisiting the CEE curriculum, carefully assessing its strengths, and looking for opportunities to improve it. I am happy to report that our curriculum is now on par with the best schools in the country, and all of us are very appreciative of the helpful comments and feedback from you, our alumni and friends, as we have pressed to improve the quality and

relevance of our educational program. This improvement is an indication of our preparedness for the ABET accreditation visit, which was in early November. We are expecting to do very well in this regard.

On the faculty news front, I am delighted to report that we are continuing to aggressively recruit the best and brightest faculty to join our department. Dr. Xu Liang will be joining us from the University of California at Berkeley next summer, and we couldn't be more excited about her arrival. You can read more about Liang's extraordinarily distinguished record in the area of water resources engineering on page 2. She and Professor Kent Harries are the newest members of our department's faculty. The future is indeed bright! However, we are not stopping there. We have just launched a search to recruit a world-class faculty member in the area of structural engineering and mechanics to join us in early fall 2006. This position will precede the search to fill the Anthony E. Gill Chair in Civil and Environmental Engineering that was endowed by Tony Gill (see page 4).

Our research activities have also taken a positive turn despite the challenges facing the federal government with regard to funding research at universities. This past year, the department's research expenditures have doubled to approximately \$1.2 million. We are on track to double that amount again this year and break the \$2 million mark. The research programs of our faculty continue to be funded by agencies such as the National Science Foundation, the U.S. Department of Energy, the Federal Highway Administration, and the Pennsylvania Department of Transportation. Our faculty's research reflects the important duality in mission that our department, as part of the University of Pittsburgh, pursues in terms of its scholarly charge.

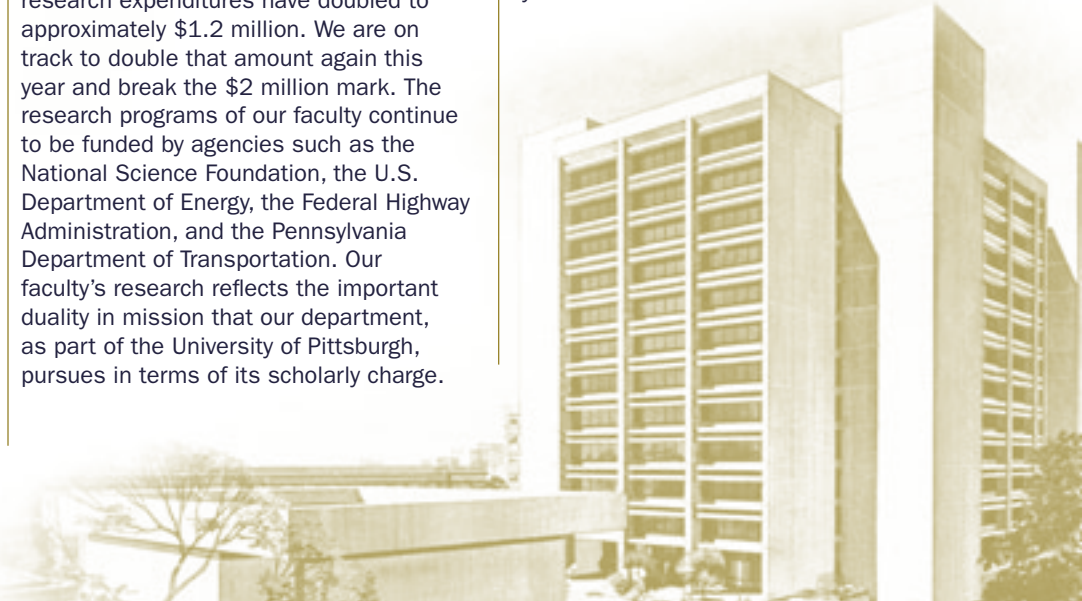
Vision

The Department of Civil and Environmental Engineering will be a national leader in the discovery and creation of new knowledge and its dissemination through scholarly publication and inspired instruction.

Mission

The mission of the Department of Civil and Environmental Engineering is to achieve scholarly excellence through the pursuit of leading-edge research and through the education of civil engineering professionals who are technically proficient problem solvers with a global outlook and a commitment to lifelong learning.

Teaching and mentoring the next generation of civil engineering professionals, making discoveries, and improving our understanding—all of which lead to safer and more economical designs and newer and more useful technology for society—are at the heart of everything we do in the Department of Civil and Environmental Engineering. However, we cannot achieve the greatness to which we all aspire without the continued help, support, and advice that you generously share with us each and every year. On behalf of the students, faculty, and staff of our department, thank you and hail to Pitt! ■



Pitt's chapter of Chi Epsilon



Chi Epsilon Under New Leadership

By Colleen Daley, Class of 2006

Pitt's chapter of Chi Epsilon, the national civil engineering honor society, continued to excel in 2005. During the spring semester, the chapter gained a new faculty advisor, **Leonard W. Casson**, and welcomed 15 new members: **Sidney Brandt, Neil Churman, Melissa Fontanese, Donald Gregor, Vincent Gullo, Michael Hartranft, Janet Kim, Mark Krajcovic, Dillon Lunn, Michael McCready, Todd Minnich, Joseph Rynn, L. Carmin Sbarro, Wendy Varga, and Timothy Ward.**

Following the principles of Chi Epsilon, the membership has been dedicated to scholarship, leadership, sociability, and service in engineering. Last spring Chi Epsilon promoted excellence in civil engineering by sponsoring graduate school seminars and hosting review sessions for the Fundamentals of Engineering Exam. The chapter gave back to the community by volunteering for the MATHCOUNTS and Future City competitions, as well as Habitat for Humanity, Schenley Park cleanup, and National Engineers Week. Social activities were also held at the roller rink and bowling alley, promoting friendship and camaraderie. The success of the chapter would not have been possible without fundraising efforts.

Under the new leadership of **Colleen Daley** (president), **Kevin McNulty** (vice president), **Brian Phillips** (treasurer), **Michael Hartranft** (secretary), **Neil Churman** (marshall), and **Dillon Lunn** (editor), the chapter is looking forward to another successful year. The chapter will be embracing the new electronic initiation system, preparing for the 2006 National Conclave at the University of Missouri at Rolla, and continuing its community service, social, and professional education activities. ■

Department Upgrades Learning Technology

Technology is always changing, and keeping student facilities up to date is a charge that department chair **Chris Earls** takes seriously. "We want our students to have access to the latest software packages and be well versed and adept with all the technologies they'll need in the workplace," Earls said.

Toward that end, last year the department set aside more than \$190,000 for learning technology upgrades to its John C. Mascaro Learning Center and student computer lab. The instructional technology updates consisted of replacing computers, servers, projectors, and other instructional equipment.

The department's commitment to instructional technology further extends to learning tools, such as the software package AutoCAD, which was upgraded to the newest version this year. According to **Rich Colwell**, manager of computer services in the School of Engineering, "We're continuously updating the software in these labs so that students have access to what they need." Colwell said class sizes permit students to sit just two at a computer, ensuring that they have hands-on experience with the learning software.

Colwell further explained that advances in the design of the technology have made it more accessible and less intrusive to classroom learning. For example, new projectors have been installed in the classroom that project with an intensity that allows the screen to be seen throughout the classroom with the lights on, saving time and eliminating inconveniences to the faculty and students. ■

Rich Colwell, manager of computer services for the School of Engineering



Xu Liang Joins Department



The newest addition to the Department of Civil and Environmental Engineering, **Xu Liang**, will be the department's 13th full-time faculty member when she comes

on board in July 2006. Liang is currently an assistant professor in the Department of Civil and Environmental Engineering at the University of California at Berkeley, where she has taught and researched since 1998.

While at Berkeley, Liang founded and developed the surface water hydrology and water resources program and is credited with recruiting the program's first graduate students. She developed and taught two graduate courses and advised doctoral student dissertations in this research area.

Liang's research interests include land-surface hydrological modeling at different spatial scales, land-atmosphere interactions with regional and global climate and water resources, hydrologic impact of climate change, applications of remote sensing, information technology-based hydrology, hydrologic forecasting, non-point source pollution, and surface-water hydrology.

Prior to her appointment at Berkeley, Liang worked as a postdoctoral researcher in the Department of Civil and Environmental Engineering at Princeton University and then as a research scientist in the Climate and Radiation Branch of the Joint Center for Earth Systems Technology at NASA.

Department chair **Chris Earls** is delighted to have someone of Liang's caliber join the department. "She brings with her a wealth of knowledge in the area of water resources research," Earls says. "Her numerous refereed articles are highly cited in the journals in our field. Dr. Liang's research group has been supported by continuous funding from federal agencies such as NOAA [National Oceanic & Atmospheric Administration], NASA, and the U.S. Department of Energy. She is going to be a real asset to our department." ■

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STUDENT NOTES

Jonathan Moses' (graduate student) research on "Fiber Reinforced Polymer for Use in Bridge Decks" was selected as the winner of the 2005 Gary B. Multanen Applied Research Student Scholarship. He was invited to attend the American Composites Manufacturers Association (ACMA) COMPOSITES 2005 conference, held September 28–30 in Columbus, Ohio. Moses' research was featured in the October 2005 issue of *Composites Manufacturing*.

The steel bridge team of Pitt's student chapter of the American Society of Civil Engineers (ASCE) placed third overall at the 2005 Ohio Valley Regional Conference.

The Construction Advancement Program (CAP) of Western Pennsylvania has selected **Steven A. Scott** (senior) as its 2004 scholarship recipient.

Noah Accord (graduate student) received the 2004–05 Cameron Graduate Scholarship from the Concrete Reinforcing Steel Institute (CRSI) Foundation.

Daniel George (junior) was named the 2005 Association of Bridge Construction and Design (ABCD) Scholarship recipient.

Colleen Daley (senior) was an ASCE Pittsburgh Section Student Award Foundation Award recipient for 2004. ■

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ALUMNI NOTES

Hani G. Melhem (MSCE '87, PhD '89) has been elected president of the Kansas Section of ASCE. Melhem is currently professor of structural engineering in the Department of Civil Engineering at Kansas State University.

The Pittsburgh Section of ASCE has named **Greg Scott** (MSCE '05) Young Pittsburgh Civil Engineer of the Year for 2004.

Fred Reginella (BSCE '57, MSCE '64) was named the Engineers' Society of Western Pennsylvania (ESWP) 2004 Engineer of the Year. Reginella recently retired as director of the Bureau of Engineering and Construction for the City of Pittsburgh, where he began

working in May 1994 as assistant director. Named director in 2004, Reginella was responsible for the management of the city's capital program, including streets, bridges, city-owned buildings, and recreational facilities. ■

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FACULTY NOTES

Chris Earls, chair, was invited to be the 2005 Visiting Postgraduate Program Lecturer at the South African Institute of Steel Construction. He was named member of the International Advisory Committee of the First International Conference on Advances in Bridge Engineering, to be held at Brunel University in Uxbridge, Middlesex, England, June 26–28, 2006; member of the International Scientific Board of the Third International Conference on Steel & Composite Structures, to be held at the University of Manchester, England, August 22–24, 2007; and member of the International Scientific Committee of the Seventh International Congress on Civil Engineering, to be held in Tehran, Iran, May 8–10, 2006. Earls has also been named the editor-in-chief for the Americas of *Steel and Composite Structures*.

Earls received funding from the Pennsylvania Department of Transportation (PennDOT) to conduct a two-year research project, "Safety Assessment of Steel Bridges Damaged by Truck Strikes." The project will focus on the occurrence of impacts involving overheight trucks and the underside of steel bridge overpass superstructures and how such accidents pose problems for decision makers trying to protect the public and preserve interstate commerce. Through the deployment of state-of-the-art laser scanning technology and robust image processing techniques, the actual post-incident geometry of the damaged structure can be precisely determined so sophisticated nonlinear finite element models of the structure may be constructed very quickly. The finite element models then permit a virtual load test to be conducted so the reserve capacity of the damaged bridge may be ascertained, with a very high degree of accuracy, in a matter of hours instead of weeks.

Assistant Professor **Kent Harries** was awarded a Japan Society for the Promotion of Science Fellowship and spent four weeks in Japan researching performance-based seismic design. For 10 days, Harries and Jerome Lynch (University of Michigan) led the National Science Foundation Natural Hazards Mitigation in Japan Program, accompanying a group of 12 U.S. graduate students and

three high school teachers on a whirlwind tour of many of Japan's largest structural engineering research facilities and a number of signature bridge and building projects. For the remainder of the fellowship, Harries was a visiting researcher at the Earthquake Research Institute at the University of Tokyo. While in Japan, Harries also delivered a number of invited lectures.

Rafael Quimpo, professor, was named associate editor of the *Journal of Hydrological Engineering* of ASCE. Quimpo will deliver the keynote paper at the International Conference on Water, Environment, Energy & Society, held December 18–21, 2007, at the National Institute of Hydrology in India.



Luis Vallejo

Luis Vallejo was promoted to full professor effective September 1, 2004. Additionally, he was approved for membership on the editorial board of the *Journal of Geotechnical and Environmental Engineering*.

Vallejo was also invited to present a lecture titled "A Network of Fractal Force Chains and Their Effect in Granular Materials under Compression" at Fractals in Engineering V, held June 22–24 in Tours, France. Vallejo's paper, coauthored with PhD students Sebastian Lobo-Guerrero and Zamri Chik, was published as a chapter in *Fractals in Engineering: New Trends in Theory and Applications*.

The Editorial Board of the Environmental Engineering Division appointed Professor **Radisav Vidic** associate editor of the ASCE's *Journal of Environmental Engineering*. This prestigious appointment is normally extended for a period of two years to individuals with outstanding professional stature. Additionally, the U.S. Department of Energy (DOE) Office of Fossil Energy awarded him a three-year \$400,000 grant titled "Partitioning and Mechanism Studies for Mercury and Associated Trace Metals within Coal-Fired Processes." The grant is to study chemical reactions and mercury transformation in flue gases of coal-fired power plants and to develop and validate a mathematical model to predict mercury emissions. The researchers' main focus is to understand fundamentals of the catalytic reactions that are promoted by solid surfaces present in coal combustion systems, which can be exploited to develop more effective and efficient technologies for controlling mercury emissions from coal-fired power plants. The grant is part of the DOE's University Coal Research Program, which supports research in clean coal technology.

PennDOT has provided three separate grants to the department.

The first, in the amount of \$300,000, is to study sources and remediation strategies for acid rock discharges. Professor **Ronald Neufeld** will lead a team of graduate students and engineering consultants from GAI Consultants to evaluate low- and high-maintenance (passive and active) technologies for acid rock drainage remediation and propose engineering alternatives and best designs for application to the Jonathan Run area of central Pennsylvania.

The second, in the amount of \$194,274, will enable Assistant Professor **Julie Vandebossche** to conduct a "Smart Pavement" study.

The third, in the amount of \$67,274, is for Harries to develop a testing protocol and test method for the evaluation of offset reinforcing bar splice systems.

The department hosted the 2005 Landis-Epic Lecture "Bridge Forms and Aesthetics" on December 1 in the Frick Fine Arts Auditorium and Cloister. Man-Chung Tang, chairman of the board and technical director of T.Y. Lin International in San Francisco, Calif., delivered a lecture on the importance of

aesthetics in bridge design and its impact on the environment. The Landis-Epic Lectureship was established in 1991 in honor of **Donald H. Landis** (BSCE '52), president of Epic Metals Corp. An outstanding businessman and engineer, Landis is nationally recognized as a leader in the design and construction of cold-formed steel structures. This distinguished lectureship is possible because of Landis' generous contribution. ■

Passing of Alumnus Brings New Chair

by Aaron Conley, Executive Director of Development and Alumni Relations

In September 2000, **Anthony Gill** (BSCE '49) visited with Dean **Gerald D. Holder** to discuss his interest in supporting the school's campaign with a deferred gift that would comprise part of his overall estate plans. Holder remembers the meeting like it happened just a few days ago.

"Before going into this meeting," he recalled, "I had little idea what Tony wanted to support or even the amount he was going to set aside in his estate for the school." Their conversation wandered from memories of Gill's childhood in Pittsburgh to his years at Pitt studying civil engineering to his military service during World War II and his career with Dravo Corp. "He also asked pointed questions about the students in civil and environmental engineering," recalls Holder.

"He wanted to know what they were learning, where they were getting jobs after graduation, and what could be done to make the program even better."

Within a few short months of this meeting, Gill notified Holder that he was setting aside \$1.5 million to endow the Anthony E. Gill Chair in Civil and Environmental Engineering, to be awarded to a professor in the department. He established a charitable remainder trust through the University for \$700,000 and set aside \$800,000 as a bequest in his will. "We were stunned by this amazing news," Holder remembers. "A named chair is one of the highest honors a university can bestow upon its faculty, and this one came to us quite literally out of nowhere."

Sadly, Gill died just a short time later, on December 11, 2003. "Tony's passing came far too soon after he made these gift arrangements," remarked Holder.

CEE chair **Chris Earls** agrees. "Alumni and friends who set aside the school in their estate plans should be able to enjoy their selfless gesture for decades rather than just a few short years, but we're sure Tony enjoyed knowing what he had done for the school and the impact it will have on the Department of Civil and Environmental Engineering." ■

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