

Faculty News

GARY FEDDER NAMED DIRECTOR OF ICES



Dr. Gary K. Fedder, the Howard M. Wilkoff Professor of Electrical and Computer Engineering, has been named the director of the Institute for Complex Engineered Systems (ICES).

ICES plays an important role in CIT's success because it provides funding and administrative infrastructure for research projects within the College and the university. "Because of the foresight of former Dean Anderson and now Dean Khosla, the university has been provided a mechanism that can really help springboard research forward," says Fedder.

He stepped into his new position just after the Pennsylvania Infrastructure Technology Alliance (PITA) fulfilled ICES's six-million dollar grant request. Of this coup, Fedder says, "We've generated jobs, fueled ideas, products, and processes within companies and that is what the Pennsylvania state legislature is looking for. We've really impressed them."

PITA is an alliance between the Commonwealth of Pennsylvania, Carnegie Mellon, and Lehigh University that is designed to benefit Pennsylvania's businesses. When ICES receives grants, it distributes the monies to projects that would most profit the region. Fedder says, "You can't predict what's coming up next because the faculty is innovating all the time. Carnegie Mellon

has always been a collaborative place and it always will be. We're not necessarily enabling that interaction, but we're *enhancing* it because we're able to provide more resources so that faculty members are able to get together often and make good things happen."

Two initiatives incubated by ICES were the Center for Sensed Critical Infrastructures and the Center for Nano-enabled Device and Energy Technologies. "That kind of growth was fueled by the PITA funds. It wouldn't have happened without them," Fedder says. In addition to increasing funding, one of his goals is to raise awareness of the groundbreaking research and opportunities for industries that are available through ICES. "I want to make sure that both internally and externally people see the impact of this research. I've inherited a wonderful organization, and I want to do my part to keep it growing."

DZOMBAK NAMED ASSOCIATE DEAN



Civil and Environmental Engineering Professor David A. Dzombak has been named Associate Dean for Graduate and Faculty Affairs in the College of Engineering.

Dzombak is the co-director of the Center for Water Quality in Urban Environmental Systems, and he conducts leading-edge research in aquatic

chemistry, water and wastewater treatment, river and watershed restoration, abandoned mine drainage remediation and hazardous waste site remediation.

A faculty member for nearly 20 years, Dzombak is the author of two books and many research articles, which have been published in prominent journals. His professional activities include service on the EPA Science Advisory Board and the EPA National Advisory Council on Environmental Policy and Technology.

Newsmaker

LET'S TALK ABOUT INNOVATION AND GROWTH

Deploying and managing innovation in a multicultural environment is a key concern for industry, and that's precisely why innovation principles are being integrated into the very foundation of engineering education at Carnegie Mellon University.

On Oct. 10, 2006, the College of Engineering invited four corporate executives, representing worldwide enterprises, to explain to faculty and students how technical innovations when paired with forward-focused business models can drive growth.

"Business leaders know that their companies must differentiate themselves with new products and services, and our panel is designed to voice what various industry sectors are doing when it comes to being innovative," said Dean Pradeep Khosla.

Khosla moderated a panel, consisting of Andrew Towle from H.J. Heinz Co., Anuj Dhanda of PNC Bank, Lisa Roudabush (BS. MSE, 1982) of U.S. Steel Corp., and Mark Harshman of Siemens.

Collectively derived from many years of experience, the panel members shared their perspectives on how emerging technologies and subsequent management methods affect a corporation's bottom line.

JAMES GARRETT NAMED NEW CEE DEPARTMENT HEAD



The Civil and Environmental Engineering Department is welcoming a familiar face as its new leader — Dr. James H. Garrett, Jr. Garrett has been a professor on campus for more than 15 years and had earned his B.S., M.S., and Ph.D. entirely in Carnegie Mellon's CEE department.

Sitting in his new office in Porter Hall, Garrett reflects on his long history in the department. "I remember being in this office when Dwight Sangrey was department head, and he got one of the first personal computers that was delivered to campus. I helped him set it up. If you

would have told me then that I would be department head one day, I would have never believed you."

Dr. Garrett brings more than just memories to the position. His experience at Carnegie Mellon gives him insight that will enable him to lead CEE to new levels of recognition. "The times that I have spent elsewhere have really benefited me, but having 'grown up' here, I have a deep-seated respect for the interdisciplinary and decentralized nature of Carnegie Mellon, and for the fact that at Carnegie Mellon you succeed by having an idea and going out and finding the resources to make it happen."

Garrett quickly calls attention to the successes of the Civil and Environmental Engineering Department. In the past two years, four centers have been established that involve major civil engineering input. Garrett himself was essential in founding one of these initiatives, the Center for Sensed Critical Infrastructure Research (CenSCIR). CenSCIR brings together researchers with backgrounds ranging from nanotechnology to data management. These people aim to equip critical infrastructures, ranging anywhere from highways to bridges to water and power distribution systems, with a "nervous system" that will collect and feed data to places within the system that interpret the data. This work will ultimately enable people to make better decisions about how to manage infrastructure.

"I have a lot of respect for this institution. I try to make this department and this college as good as it can be. I want to provide the students who are now coming in the door with as great an experience as I had. I have a difficult job — I have to help this department become even better than it is, but I have a very good starting point," concludes Garrett.

MEET NADINE AUBRY:

The New Head of Mechanical Engineering

A native of France, Nadine Aubry grew up in the Loire River Valley, a region that through its historic architecture, cultural monuments, and beautiful wine country embodies the Renaissance and Age of Enlightenment. As newly appointed head of the Mechanical Engineering Department, Aubry is bringing about her own kind of renaissance at CIT. She is working to open the minds of her students and peers.

"The world itself has evolved. I think we are not going to survive if we think only among ourselves. We have to think in a more global context — between disciplines as well as countries," she says. A global thinker in every sense of the term, Aubry plans to enable international research collaborations and encourage students to study abroad.

Aubry's outlook may be global, yet she intends to raise the bar at home, too. One of her main goals is to work with faculty to develop a research center housed in the Mechanical Engineering Department. "This department has been very good in participating with other centers or institutes within Carnegie Mellon, but there is still a need for a research center to be headed by Mechanical Engineering," she says. This center would allow for interdisciplinary research, as mechanical engineering is an ever-changing field. Aubry says, "There are now a lot of applications in biomedical engineering, new energy devices and nanotechnology that I would like the students to be aware of. We used to have students come to mechanical engineering because they were interested in working on cars and airplanes and trains, but mechanical engineering has been applied to many fields other than transportation. We have to open the minds of our students so that they can apply their knowledge and have a broader choice of careers."

Aubry's personal research in microfluidics exemplifies the commitment to interdisciplinary study that she advocates with her students. At her previous post, Aubry co-founded the W.M. Keck Laboratory for nanotechnology research and education at the New Jersey Institute of Technology. She was also the founding director of the New Jersey Center for Micro-Flow Control. Her research and close partnerships with industry have earned her a number of impressive honors, including the National Science Foundation's Presidential Young Investigator Award and her recent election as a fellow to both the American Physical Society (APS) and the American Society of Mechanical Engineers (ASME). She is vice chair of the U.S. National Committee on Theoretical and Applied Mechanics. This National Research Council Committee serves as a forum for defining major issues in mechanics research, technology and education, and represents the U.S. internationally in scientific matters related to the field of mechanics.

Aubry earned a B.S. degree in 1984 from the National Polytechnic Institute of Grenoble, France, and an M.S. degree from the Scientific and Medical University also of Grenoble. In 1987, she obtained a Ph.D. from Cornell University. "I think it's very typical for women in mechanical engineering to get a degree but then stop working either to raise a family or move to other fields — which is possible with the mechanical engineering degree because it's a very broad degree — but I would like to see more women stay in mechanical engineering because they have a lot to contribute," she says. Aubry has found raising three children while pursuing a career to be a satisfying challenge and wants to be a role model for women who want to follow that path. "I think that the field would benefit tremendously if there were more women. You can contribute much more if you have a diverse team and attack a problem from different perspectives."

Pradeep K. Khosla, dean of CIT, agrees that Aubry's accomplishments make her an exemplar for women in engineering as well as an excellent department head. Khosla says, "I see the Mechanical Engineering Department growing and achieving greater stature under the leadership of Professor Aubry."

BY AMY BICKERTON

WOMEN ENGINEERS AIM TO RECRUIT MORE FEMALES INTO THEIR RANKS

By Chriss Swaney

What's the best way to recruit more women into the competitive engineering field? Ask those who already have a seat at the table, and they'll offer a combination of strategies.

A panel of engineering experts discussed ways to address the shortage of women in the field and ways to attract younger females to engineering during a panel luncheon at the Pittsburgh-based Engineering Society of Western Pennsylvania (ESWP) on November 8, 2006.

Panel member and President of The Gateway Engineers Ruthann Omer says, "It hasn't been easy to find qualified women." She knows firsthand about stereotypical expectations in the workplace. She talked about male colleagues who expected her to leave the business and raise a family, and meetings where others assumed she was a secretary because she was a female. Omer has inspired other women to join her Green Tree-based civil engineering firm, and about a quarter of the firm's 104 employees are female. "We have to get more women interested in engineering because it is engineers who make just about everything we use today," she said.

"It's an issue every country is wrestling with," said Pradeep K. Khosla, dean of the College of Engineering who led the panel discussion. Only about 9% of all engineers in the United States are women, according to the American Society for Engineering Education in Washington, D.C. In CIT, 25% of our undergraduate students and around 22% of our graduate students are female, according to Khosla.

A key step in raising those percentages, the panelists agreed, is to expose more middle school students to what engineers do.

"Kids need to know engineering isn't boring; it's fun stuff," said Jane Rudolph (B.S. ECE and EPP, 1979), adding, "We probably don't celebrate the contributions of engineering enough." Rudolph is the vice president of business development for Lockheed Martin Transportation and Security Solutions in Rockville, Md.

JoAnn Truchan, an air quality engineer with the Allegheny County Health Department and president of the Pittsburgh Chapter of the Society of Women Engineers, said more girls will consider engineering if they grow up believing that "math and science are not just for geeks."

When people ask Truchan, another Carnegie Mellon graduate (B.S. BME, ChemE and MPM Heinz School), about her primary goal for the Society of Women Engineers, she replies, "To become obsolete."

But Beth A. Wolfe, coordinator of engineering outreach at Marshall University in Huntington, W.Va., said the nation needs more outreach programs to entice females into science and engineering programs. Wolfe was one of more than 40 attendees at the event that was co-sponsored by Carnegie Mellon's College of Engineering and ESWP.

"Women, if they are good in math and science are pushed into medicine because it's a people field," said Sonya Narla, a 16-year-old senior from Winchester Thurston High School. Narla and dozen other high school students wanted to learn how to apply their math and science skills to engineering.

Nadine Aubry, head of CIT's MechE department, told the students to push the envelope and accept challenges, and to learn from those challenges.

"We simply need to communicate in a more dynamic way that women can be engineers; they can do it," said Aubry, who was also joined on the panel by Kirk H. Schulz, dean of the Bagley College of Engineering at Mississippi State University.

Schulz said that it is imperative that families learn to manage time if both spouses are working engineers. "We try to keep our family very structured so we map out the year's most important activities," he said. "It is challenging, but it is not impossible."



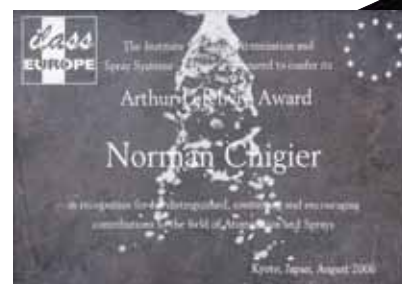
CHIGIER RECOGNIZED AS AN INTERNATIONAL LEADER IN THE FIELD OF ATOMIZATION AND SPRAY

Mechanical Engineering Professor Norman Chigier received the inaugural Lefebvre Award from the Institute for Liquid Atomization and Spray Systems-Europe (ILASS-Europe) in Kyoto, Japan late last summer.

He received the award for his "distinguished, continuing and encouraging contributions to the field of atomization and spray." At one time, this field was practically nonexistent, but because of nearly 50 years' worth of effort by Chigier, one of a handful of pioneers, we now understand the crucial role spray technology plays in diverse industries, ranging from medicine to automobiles. For example, the development of novel drug delivery systems, advancements in automobile painting and improvements in aircraft, gasoline and diesel engines all rely on atomization and spray research. As our concerns about global warming grow, we will rely on this technology to make engines more fuel efficient and less polluting.

At the Kyoto conference, Chigier accepted his award and in addition, he gave the Plenary Lecture. He described the future challenges that researchers in his field will face, and he stressed that they must learn how to monitor and control all spray characteristics.

Chigier is a founding member of ILASS, and he is the founding and present editor of the group's journal, *Atomization and Sprays*. Committed to spreading knowledge of his field, he teaches courses at CIT, and annually conducts an intensive three-day course on atomization and sprays that draws engineers and exhibitors from a wide-range of companies, including Boston Scientific, Ford Motor Company, General Mills, Proctor and Gamble, Robert Bosch, and the U.S. Mine Safety and Health Administration.



Staff Awards

A WINNING TEAM

Each year the College of Engineering presents three major awards to staff members whose contributions are vital to the College's success. Let us introduce you to this year's recipients.

Pamela Golubsky

Burritt Education Award

Pamela Golubsky is the Undergraduate Advisor in the Dean's Office. By day, she guides first-year students through their programs. By night and most weekends, she herself is a student. She is pursuing a Ph.D. degree in Instructional Management and Leadership from Robert Morris University. "I have a strong sense of commitment to learn for the betterment of myself, my students, and for my future in CIT," says Golubsky. That sentiment echoes the beliefs of the award's namesake, the late Tim Burritt, the undergraduate advisor who earned a bachelor's degree while working full-time in the Dean's Office. Like Burritt, Golubsky believes that continuing her education will provide personal enrichment, and "will teach me how to better serve students to be successful tomorrow."

Sarah Páez

Staff Rookie Award

When Sarah Páez signed on in ChemE last year, she hit the ground running. As the department's Graduate Admissions Coordinator she is the chief contact for prospective students, and in 2006, ChemE admitted perhaps their largest number of Ph.D. students ever, more than 30. To find that select group, Páez had to process roughly 180 applications for the selection committee. However, she does more than gather papers, she deals with people often from foreign countries who are filled with questions: Would I live on campus? Do you think I'll get in? Through her excellent work, she has developed strong ties with the faculty and the students, proving to her supervisors that she was the perfect candidate for the Rookie Award. "We are busy here in ChemE. It means a lot to me to know that the faculty and the students took time to write the letters to nominate me," says Páez, "There's an energy here I like."

Jean Stiles

Staff Recognition Award

Stiles, an administrative coordinator, has been busy in the Mechanical Engineering department since 1962. During her epic-long turn in the department, she has masterfully performed a wide range of duties, from maintaining quarterly reports for the BLADE Consortium and coordinating its activities with seven universities, to providing administrative support for faculty who are lucky to have access to her knowledge and experience. She has designed a logo, assumed the one-time role of Mac guru, and is a whiz at managing databases. "Jobs change," says Stiles, "I keep up with changes, you have to." Stunned to receive CIT's top award, she says, "I never wanted the award, but when I won it, I was surprised at how much it means to me. I think it means a lot for MechE, too."

A Special Mention:



Gary Novay

40 Years of Service to the College

During the Staff Recognition Award ceremony, Gary Novay, who works as a Computer Operations Technology Coordinator in MechE, received a standing ovation honoring his 40 years of service to CIT. Gary, the College of Engineering thanks you for your hard work and dedication.

From left to right: CIT Dean Pradeep Khosla, Pamela Golubsky, Sarah Páez and Jean Stiles.

