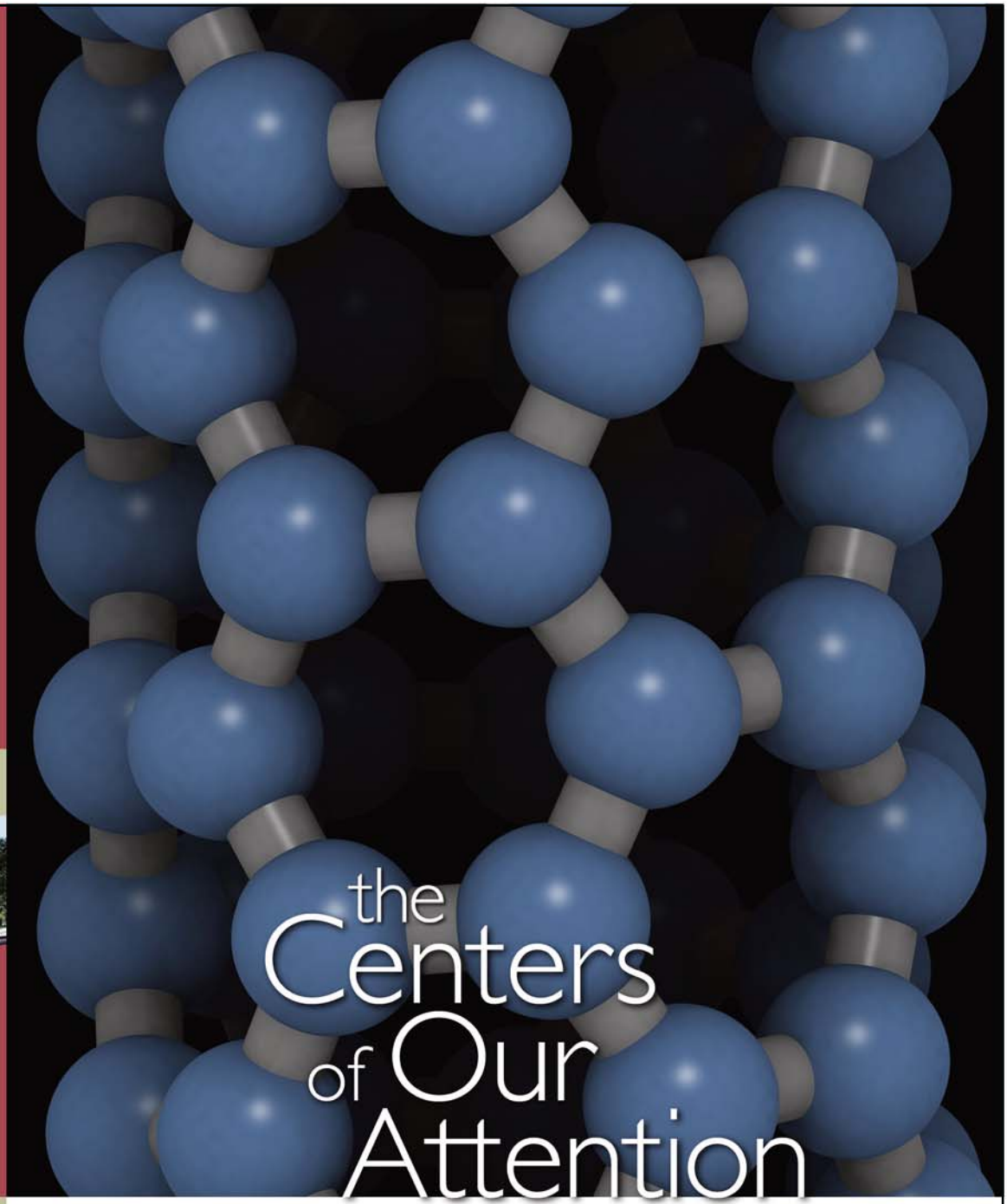
CEE

Carnegie Mellon

Civil & Environmental
ENGINEERING
NEWSLETTER

WINTER & SPRING 2009



the Centers of Our Attention

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CEE Alumni Events!
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CEE Department Head
Jim Garrett

Dear Friends,
Greetings from Carnegie Mellon!

The highlighted theme of this newsletter is the collection of centers that are affiliated with the Department of Civil and Environmental Engineering. We currently have nine centers with strong involvement of, or leadership by, CEE faculty. We added two new centers this past year: an NSF-sponsored Center to study the Environmental Implications of Nanotechnology (CEINT); and the Center for Multiscale Modeling of Engineering Materials (CM2EM). Centers provide a number of important functions: they are natural places for interdisciplinary research to flourish, but not exclusively; they provide a greater "footprint" for the departments involved because faculty from other departments participate in these centers; they bring visibility inside and outside the university to a collection of related research activities; and they provide excellent leadership opportunities. I hope you enjoy and find useful the description of all of the different CEE-related centers highlighted in this issue.

We have a number of excellent pieces of news in the department. We maintained our top ten undergraduate ranking in environmental engineering (10) and we moved up to 11 in civil engineering in the *U.S. News & World Report* 2009 rankings. Congratulations to Professors Burcu Akinci and Greg Lowry, who were both informed that they will be promoted to Full Professor with Tenure as of July 1, 2009. We were also fortunate to have a new staff member, Mireille Mobley, join us this past fall at the front desk. Finally, we congratulate the following alumni who received awards at our Alumni Dinner held this last October: Michael Ellegood (CE '60) who received the CEE Distinguished Alumnus Award; Rick Creech (CE '83) who received the Outstanding Alumni Service Award; and Markus Klausner (CEE '98) who received the CEE Recent Alumnus Award.

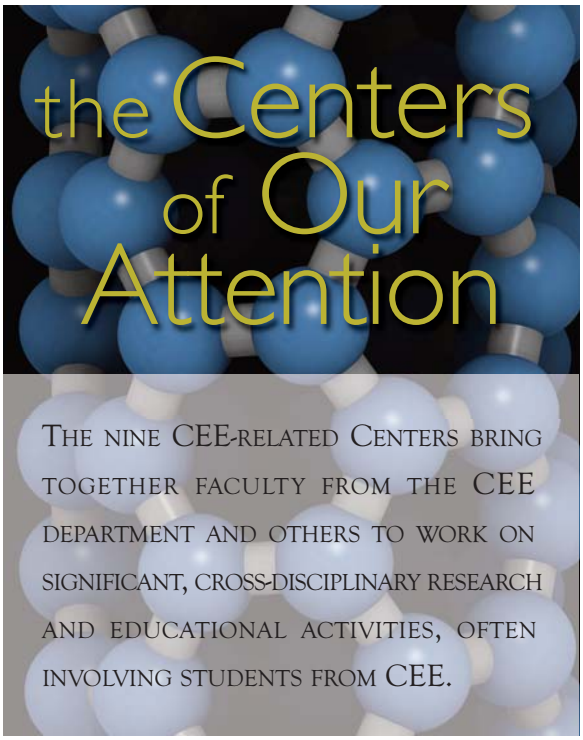
"We sincerely thank those alumni that have continued to support the department in these uncertain economic times."

On the international front, we established a dual PhD degree program with Middle East Technical University (METU) in Ankara, Turkey. Burcu Akinci, Lucio Soibelman and I were present at the official announcement of the establishment of this program in Ankara this past summer. We are also in the process of searching for a faculty member who will be a liaison between the CEE department in Pittsburgh and the research and educational opportunities at our campus in Qatar.

I hope that this newsletter finds you well in these trying economic times. Like many organizations, we have experienced losses in endowment income and annual giving which we use to help operate the department. However, we have continuously and creatively found ways to reduce costs while maintaining many of the activities that define our educational and community cultures. We sincerely thank those alumni who have continued to support the department in these uncertain economic times. Without such support, we would find it more difficult to provide the world class educational environment we strive to maintain at Carnegie Mellon.

Sincerely,

Jim Garrett




Dr. Lowry

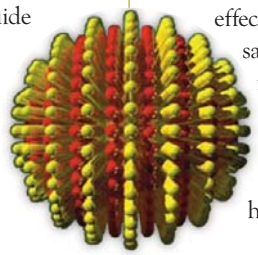
This past fall, **CEE Professor Greg Lowry**, along with co-investigators at Duke University, Howard University, and Virginia Tech, was awarded a $15M National Science Foundation/Environmental Protection Agency Center to study the environmental implications of nanotechnology. The Center, known as the Center for Environmental Implications of Nanotechnology (CEINT) is funded through 2013, and renewable through 2018, and becomes one of the following nine CEE-related centers at Carnegie Mellon:

- **CAPS:** Center for Atmospheric Particle Studies
- **CEINT:** Center for the Environmental Implications of Nanotechnology
- **CenSCIR:** Center for Sensed Critical Infrastructure Research
- **CSE:** Center for Sustainable Engineering
- **GDI:** Green Design Institute
- **CM2EM:** Center for Multiscale Modeling of Engineering Materials
- **SEER:** Steinbrenner Institute for Environmental Education and Research
- **Water QUEST:** Center for Water Quality in Urban Environmental Systems
- **Western Pennsylvania Brownfields Center**

These centers bring together faculty from the CEE department and others to work on significant, cross-disciplinary research and educational activities, often involving a number of graduate students from CEE. The centers provide an effective way to organize faculty beyond departmental boundaries so as to gain synergy and leverage their specific and focused set of research activities. These centers play an extremely important role in defining the research activities in CEE and in bringing visibility to that research.

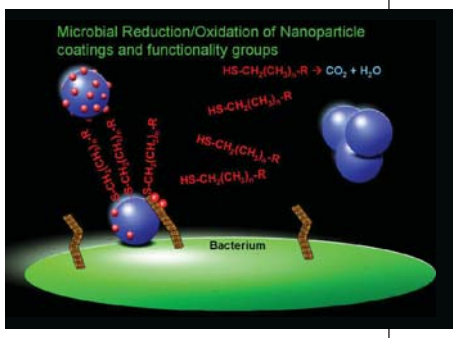
Center for Environmental Implications of Nanotechnology (CEINT)

Dr. Lowry is the Deputy Director of CEINT, only one of two such centers funded by NSF/EPA in the nation, and is the Director of CEINT @ Carnegie Mellon, a Carnegie Mellon-lead interdisciplinary center. The vision of CEINT @ Carnegie Mellon is to elucidate the relationship between the vast array of nanomaterials, including natural, manufactured, and incidental, to their potential for environmental exposure, biological effects, and ecological consequences. With this understanding of how the properties of nanomaterials influence their behavior and effects, it will be possible to guide public policy on how best to reap the benefits of nanotechnology without suffering the potential human health and environmental consequences of their inevitable appearance in the biosphere. The researchers in CEINT do this through a well coordinated interdisciplinary team of researchers with expertise in environmental engineering, nanochemistry, geochemistry, ecotoxicology, ecology, and public policy. This Center offers the unprecedented opportunity to co-develop new nanotechnologies along with and in light of the potential environmental and human health consequences of their impending widespread distribution in the environment. Never before has there been such a concerted effort to develop a new technology to have minimal impact on the environment.



Graduate students and faculty from seven departments within the Carnegie Institute of Technology and the Mellon College of Science study the occurrences, transport, transformations, fate, and toxicity of engineered nanomaterials in the environment, aiming to understand the potential environmental exposure, biological effects, and ecological consequences. These departments include Civil & Environmental Engineering, Engineering & Public Policy, Materials Science & Engineering, Chemical Engineering, Biomedical Engineering, Mechanical Engineering, and Chemistry.

There are many potential benefits of nanotechnology including greater efficiency for alternative energy (e.g. solar cells, or H2 from TiO2), better battery technology, improved environmental sensors and remediation, lighter vehicles for better fuel economy, and better healthcare through nanomedicine. However, engineered nanomaterials are by definition materials having unique properties relative to larger sized materials of the same chemical composition. As such, it is unknown if human or environmental exposure to these materials will have negative health effects. While many nanomaterials will be contained in their products (e.g. tires and tennis racquets), the potential for exposure will depend highly on the matrix in which they are embedded. For example, nanomaterials such as fullerenes in cosmetics will by design provide exposure to humans. Nano Ag particles in socks and pants will ultimately be released to wastewater treatment plants and the environment, so it is important to determine if these materials have negative effects. CEINT @ Carnegie Mellon can help make nanotechnology safer by informing the policies and regulations aimed at minimizing unwanted releases and exposures to nanomaterials, and can determine the risks and benefits of using these materials such that society can make informed choices about investments in nanotechnology. CEE and Carnegie Mellon rank very highly in nanotechnology, particularly in terms of applications



Hypothesized mechanism for the reduction and removal of surface coatings attached to engineered nanomaterials

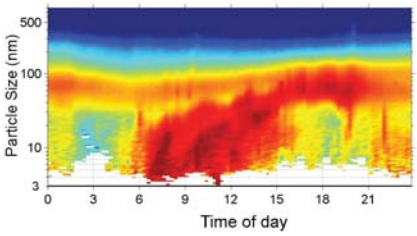
Story continued on page 4 ➢

and implications of nanomaterials in the environment. Given that this issue requires interdisciplinary teams of researchers, particularly the fusion of engineering and policy, Carnegie Mellon has a tremendous advantage over our competitors in this arena.

For more information about CEINT, visit the web site at www.ceint.duke.edu or contact Deputy Director Greg Lowry (412-268-2948; glowry@cmu.edu).

Center for Atmospheric Particle Studies (CAPS)

CAPS faculty strive to be world leaders in science, engineering, and policy covering the full role of fine particulate matter in the atmosphere. Their goal in research is to substantially advance the state of knowledge across this spectrum, and to provide both policy-relevant research and to participate directly and actively in the evolution of environmental policy related to particulate matter.



A contour plot illustrating a new particle formation "event" in Pittsburgh during July 2001. Warmer colors indicate measured high concentrations of atmospheric particles of a given size (y-axis) at a given time of day (x-axis)

An essential part of the mission of CAPS is to educate tomorrow's leaders in this field. CAPS strives to integrate air quality and atmospheric chemistry into the undergraduate curricula of the many departments represented in the center. CAPS provides extensive research opportunities for undergraduate research. At their core is an outstanding collection of graduate students from a broad range of disciplines. Their goal is for these students to become leaders in academia, government, and industry.

For more information about CAPS, visit the web site at caps.web.cmu.edu or contact Faculty Director Neil Donahue (412-268-4415; nmd@andrew.cmu.edu).

Center for Sensed Critical Infrastructure Research (CenSCIR)

The U.S. infrastructure is a trillion dollar investment, defined broadly to include road systems and bridges, water distribution systems, water treatment plants, power distribution systems, telecommunication network systems, commercial and industrial facilities, etc. By their nature, infrastructure systems are large-scale, networked systems with physical components that may be themselves networks of systems and whose health, due to use, environmental impacts, and abuse, can significantly deteriorate. In spite of the enormous investments made in these systems and their importance to the U.S. economy, we need to manage, operate and maintain our infrastructure more efficiently and effectively.

The Center for Sensed Critical Infrastructure Research (CenSCIR) at Carnegie Mellon was formed in 2006 to explore how sensing, data management, and intelligent decision support can improve the creation and management of our critical infrastructure. There are a number of major thrusts within the center: (1) SensorAndrew, which aims to create an environment whereby a dense heterogeneous network of sensors (wireless, wired and embedded within other systems) can be deployed and shared easily and effectively by a large number of different applications on our campus; and (2) Facility and Infrastructure Informatics, which explores the data models, machine learning approaches, and intelligent decision support systems that are able to model, manage, mine and learn from the data collected from the previously described heterogeneous sensor systems. In addition, there are a large number of projects exploring sensor-data based management of a variety of infrastructure systems, such as water distribution systems, wastewater pipelines, gas pipelines, transportation infrastructure and buildings.

For more information about CenSCIR, visit the web site at www.ices.cmu.edu/censcir, or contact Faculty Co-Director Jim Garrett (412-268-2941; garrett@cmu.edu), or Executive Director Matt Sanfilippo (mattsanf@andrew.cmu.edu, 412-268-8859).

Center for Sustainable Engineering (CSE)

As the world population grows and global standards of living rise, there are increasing demands on the world's resources and capacity to assimilate wastes. Engineers are tasked with accommodating the needs of increasing numbers of people and improving living conditions and thus they are at the forefront of making decisions that will have long-term implications for the planet. Given the finite capacity of the earth, it is recognized that engineers of the future must be trained to make decisions in such a way that our environment is preserved, social justice is promoted, and the needs of all people are provided through the global economy.

The Center for Sustainable Engineering (CSE) is a partnership among Carnegie Mellon University, the University of Texas at Austin and Arizona State University in Tempe. Supported by the National Science Foundation and the Environmental Protection Agency, the Center is dedicated to helping engineering professors update their courses and develop new ones to account for rapidly changing world conditions that are transforming the practice of engineering. This is achieved through workshops conducted by the CSE, which provide guidance so that the impacts of engineering decisions on the environment, society, and the economy can be included in courses across the engineering curriculum.

For more information about CSE, visit the web site at www.csengin.org or contact Faculty Director Cliff Davidson (412-268-2951; cliff@.cmu.edu).

Center for Multiscale Modeling of Engineering Materials (CM^{2}EM)

Formed in February 2008, CM2EM's mission is the quantitative understanding of materials from the smallest to the largest relevant scales, with a special emphasis on emergent behavior in complex materials systems. This requires the development of new theories and simulation tools for engineering and scientific applications that often require multiscale physics. Such applications span a broad spectrum ranging from stress management in metallic and semiconductor heterostructures, deformation flow and fracture of bulk metallic glasses, the influence of atomic scale grain and phase boundary structures in the macroscopic response of polycrystalline materials, the mechanics of granular materials from the solid to the liquid regimes, and the rheology of soft polymeric materials.

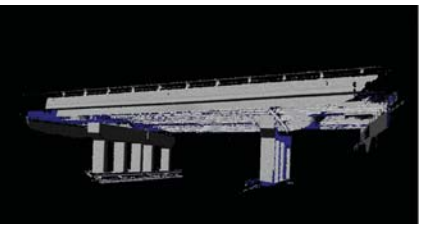
Checking the MEMS (micro-electromechanical system) acoustic emission sensor system on the Victoria Bridge, Montreal

The principal goals of CM2EM include: (1) predicting the properties and performance of existing engineering materials and systems under varied operational conditions; (2) engineering new materials for targeted functionality; (3) serving as a primary hub for materials modeling activity at Carnegie Mellon by providing a common reference, greater visibility, and support to other centers involved primarily with materials development and characterization; and (4) setting up a mechanism for coordinated research

and education activity in multiscale materials modeling across Carnegie Mellon.

For more information about CM2EM, visit the web site at www.ices.cmu.edu/cm2em, or contact Faculty Director Amit Acharya (412-268-4566; acharyaamit@cmu.edu).

Green Design Institute (GDI) The Green Design Institute is a major interdisciplinary education and research effort to make an impact on environmental quality through green design. The central idea of the institute is to form partnerships with companies, government agencies and foundations to develop pioneering design, management, manufacturing, and regulatory processes that can improve environmental quality and product quality while enhancing economic development. Students from many different degree programs at Carnegie Mellon can participate in the Green Design Institute activities.



A LIDAR Scan of a Bridge done by Professor Burcu Akinci and her colleagues and students that is able to be analyzed to provide accurate geometric information to support bridge inspection

The researchers of the Green Design Institute are solving problems and building tools that help businesses accomplish more with less. Their focus is on developing practical pollution prevention technologies and lowering costs, by recycling scarce resources, using fewer raw materials and creating better products. For example, The GDI environmental life cycle assessment tool using an input-output model is available on the web at www.eiolca.net. Creative engineering and science can produce products and processes that both cost less and pose fewer threats to workers, consumers and the environment.

For more information about GDI, visit the web site at www.ce.cmu.edu/GreenDesign, or contact Faculty Co-Directors Lester Lave (412-268-8837; lave@cmu.edu) and Chris Hendrickson (412-268-1066; cth@cmu.edu), or Executive Director Michael Griffin (412-268-2299; mwg@andrew.cmu.edu)

Steinbrenner Institute for Environmental Education and Research (SEER)

The Steinbrenner Institute for Environmental Education and Research, founded in 2004 with a gift from Lowell and Jan Steinbrenner, coordinates and promotes the activities of 19 environmentally-related research centers at Carnegie Mellon. Many of these research centers are led by or have significant involvement by CEE faculty. Environmental research at Carnegie Mellon is diverse but collectively is focused on two general themes: (1) urban infrastructure and sustainable cities; (2) energy transition strategies and the environment.

The Steinbrenner Institute's primary mission is to support and advance environmental research through competitively awarded seed funding and graduate fellowships, through cooperative projects with industry, and through catalyzing interdisciplinary research initiatives. The aim is to support cutting edge research for which traditional sources of funding may not be readily available.

Carnegie Mellon has a long tradition of innovative, collaborative research with industry in environmental science, technology, and policy. Building on past and current work, the Steinbrenner Institute brings together Carnegie Mellon faculty and students, and industrial collaborators, to pursue research to address corporate environmental challenges and advance corporate environmental performance. The mission of the Steinbrenner Institute Corporate Partnership (SICP) is to conduct cooperative world-class research in environmental science, technology, management, and policy to provide innovative solutions to environmental challenges in the metals, chemicals, construction/buildings, energy, and other industrial sectors.

For more information about the Steinbrenner Institute and the affiliated centers, visit the web site at www.cmu.edu/Steinbrenner, or contact Faculty Director Dave Dzombak (412-268-2946; dzombak@cmu.edu) or Executive Director Deb Lange (412-268-7121; dlange@cmu.edu).

Center for Water Quality in Urban Environmental Systems (Water QUEST)

In response to the need for greater understanding of water quality in urban systems, Carnegie Mellon University launched the Center for Water Quality in Urban Environmental Systems (Water QUEST). The goal of this center is to advance the scientific basis for management of inputs and inventories of contaminants in urban watersheds. Water QUEST involves several critical components: (1) primary research on environmental sources and fate of contaminants of concern in urban systems (e.g., pathogens, persistent toxicants), (2) development of necessary monitoring and modeling capabilities for urban watersheds, (3) development of technologies and modeling tools for improved management of water quality in urban systems, and (4) outreach and education to develop a citizenry ready for the challenges of managing urban water systems.

Water QUEST uses its location in an urban area of Pittsburgh as a laboratory for research and development. Faculty participating in the center primarily come from CEE, EPP, Chemistry, and Biology. Two research areas being worked on by these faculty members are pathogen detection and sensor development, and microbial transformation of metals.

For more information about Water QUEST, visit the web site at www.ce.cmu.edu/~wquest, or contact Faculty Director Jeanne VanBriesen (412-268-2946; jeanne@cmu.edu).

The Western Pennsylvania Brownfields Center (WPBC)

Since 1997, The Western Pennsylvania Brownfields Center (WPBC) has focused its attention on sites with complex hurdles hindering development and considers sites in terms of greater community economic development. The WPBC provides access to information and research on previous development efforts, education programs for professional practitioners and academics in the field, and site-specific workshops that bring together national experts and local stakeholders to strategize comprehensive development initiatives for municipalities and small business owners. Training and technical assistance efforts will complement the primary research purpose.

For more information about the Western Pennsylvania Brownfields Center, visit the web site at www.cmu.edu/steinbrenner/brownfields, or contact Executive Director Deb Lange (412-268-2946; dlange@cmu.edu).

CEE NEWS

CEE DESIGN COURSE

COMMUNITY OUTINGS

NEWS BITS

CEE Design Course: The Sound of Muzak

The loading dock was alive with the Sound of Muzak as students in the CEE Design course tested their final projects. Their assignment was to create a small collapsible bridge that could span a 2.5m wide "moat" and would allow Professor Larry Cartwright as well as fellow instructor Jim Campbell and TAs Christine Costello and Amelia Wright, all dressed as an Austrian family band, to cross safely. The components of the bridge had to fit inside a Fender Stratocaster guitar case and the time for assembly, extension, passage and retraction could not exceed 10 minutes.

Students left to right are: Nolan Kurtz, Liz Schwartz, Danny Schoenfelder, Dan Cox (author), Jennifer Lawrence

DAN COX (B.S. 2008, M.S. EXPECTED 2009)

The Sound of Muzak project for Senior Design ended up being one of best academic experiences I have had at Carnegie Mellon. Any project involving the instructors dressing up in lederhosen in the middle of winter has to be good. The creative nature of the project forced us to use out-of-the-box thinking to solve the problem at hand while following the engineering design process. Even though the scenario of a traveling family band escaping from a castle is not a typical 'real world' problem, the skills gained while solving it certainly are applicable to real world engineering.

Throughout the course, Larry stressed the importance of the engineering design process. This importance was certainly realized in the Sound of Muzak project, as my group worked together from looking at the problem statement to evaluating the performance of our constructed bridge. For some of the preliminary design meetings, my group met at the Panther Hollow Inn to discuss project issues and develop our initial ideas. We had a number of these out-of-class meetings to work out some of the difficulties of the project. One of these difficult aspects was the fact that collapsible bridges that fit into guitar cases are somewhat of a rarity. Since no

CEE undergraduate program ranks 10th (Environmental) and 11th (Civil) in new *U.S. News & World Report* Rankings

U.S. News & World Report has released its college and university rankings for undergraduate programs for 2009. The CEE Department is pleased to announce that our undergraduate program was ranked 10th in environmental engineering and 11th in civil engineering.

CEE NEWS BITS

CEE Department Community Outings

The CEE department continued our tradition of community outings for students, faculty and staff. In September about 80 department members attended the **CEE Canoe Trip** on the Youghiogheny River. The sunny weather made for a perfect day on the river, followed by lunch and games including volleyball and horseshoes.

Students enjoy lunch and rest after paddling down the river

The **CEE Ski Trip** was held on a cold and clear Saturday in January at Hidden Valley Four Seasons Resort. Over 110 novice and expert skiers alike enjoyed the slopes and the hot chocolate provided by Department Head Jim Garrett and his wife Ruth Ann. Many thanks to staff member Gloria Dadowski for planning both fun outings!

examples existed, we had to develop our own design. While thinking of initial ideas, we tried to use actual bridges and structures we knew about as inspiration for the design of our own collapsible bridge. These ideas still served as a great starting point for ideas and discussion and led to some truly original design options for the collapsible bridge. In my group meetings, everything from a wooden cot to the sliding chalkboards here at Carnegie Mellon was used as inspiration for possible designs. These ideas ultimately led to a "jungle bridge" being chosen as our final design to develop.

This "jungle bridge" was a cable bridge featuring two cables connected at the ends of two segmented poles that would be in compression. After the final design was created, we had to construct our collapsible bridge. On top of the creative design, my group had to be ingenious in material selection. The compression poles that were critical to our design were ultimately made from steel antenna masts from Radio Shack. These poles ordinarily used for mounting a satellite system to a roof were altered to be used in our collapsible jungle bridge.

The temperature was well below freezing on the testing day for the bridges. Even with these conditions, the instructors still showed up in full lederhosen, while singing their musical rendition of the Sound of Muzak. When it came to bridge performance, most of the groups in the class were successful in helping the family escape the castle. My group's jungle bridge was successful while being assembled quickly and being lightweight. The groups with bridges that failed learned from their design flaws or construction mistakes, and certainly became better engineers. It was a completely unique project to work on and an unforgettable experience.

Assembling bridge left to right are: Maria Pantelaros, Chris Fornataro and Paz Gilboa

Instructors Jim Campbell and Larry Cartwright crossing bridge

Sound of Muzak instructors, left to right are: Jim Campbell, Christine Costello, Amelia Wright, Larry Cartwright

Environmental Engineering

CEE graduate student Alice Wang and ECE sophomore Volkan Eren

At the first annual **CEE Talent Show**, students, faculty and staff displayed many talents such as dancing, singing and playing instruments. Some of the more unusual acts included Graduate Admissions Coordinator **Cornelia Moore's** demonstration of Tae Kwon-Do forms (complete with breaking boards!) and graduate student **Michael Pepe-Mooney** juggling toilet plungers. Students shared aspects of their cultures as well, with songs from China, Spain and Brazil and dances from India and China.

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Patty Langer, CEE's Undergraduate Program and Alumni Relations Coordinator, has received the CIT Staff Recognition Award. which honors staff members who display outstanding job performance, dedication, positive attitude and ability to be a team player. As an example of her ongoing effort to provide students and alumni with excellent experiences on campus, Patty created the CEE Job Fair which drew 14 companies to the department to meet with undergraduate and graduate students. Many of the recruiters were CEE alumni.

Patty Langer receiving the staff award from Associate Dean Dave Dzombak

STUDENTS

CHI EPSILON MEMBERS
STUDENTS HONORED
SECOND TIME AROUND

Chi Epsilon Initiates New Members

Chi Epsilon, the national civil engineering honor society, recently inducted new members. The new members include (left to right): **Professor Scott Matthews, Mary Ashe, Danny Schoenfelder, Miki Urisaka, Edward Yuen, Timothy Baumgarten, Jeffrey Miller, Anna Lenhart, Andrew Zagoren, Sabrina Porter, Adam Larsen** and **Sharad Oberoi**. Chi Epsilon seeks to promote the values of Scholarship, Character, Practicality and Sociability in its members and the profession of civil engineering. Congratulations to all of the new members!

ASCE Pittsburgh Section Awards Banquet

The ASCE Pittsburgh Section Awards Banquet in February was a big night for the CEE department. In addition to **Jeanne VanBriesen** being named as Professor of the Year, two students and two alumni were honored. CEE Senior **Jennifer Lawrence** received the Student Award Foundation American Bridge Leadership Award and a $5,000 prize. The Student Achievement Award and a $500 prize was given to CEE Senior **Paz Gilboa**. Each award is presented to an engineering student who maintains excellent academic standing and participates in extracurricular activities and community service. Alumnus **Dick Gray** (CE 1956) was honored with the Michael A. Gross Meritorious Service Award and alumnus **Tony DiGioia** (CE 1956, 1957, 1960) was recognized as the Distinguished Civil Engineer of the Year. Congratulations to all of our award winners!

From left to right are Paz Gilboa, Dick Gray, Jennifer Lawrence and Tony DiGioia

The Second Time Around in CEE

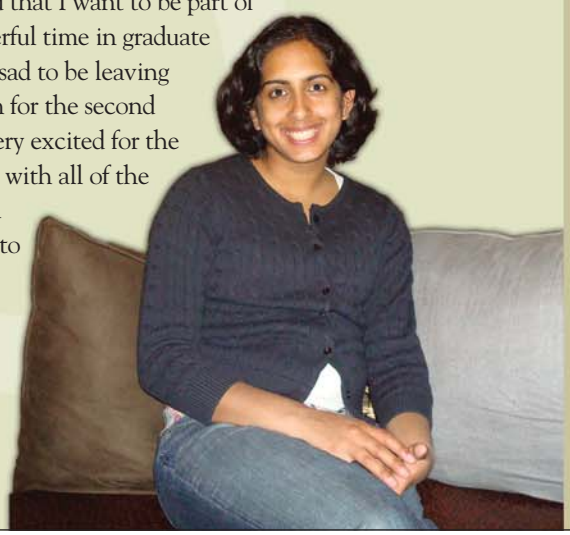
MARTHA ALUNKAL, B.S. 2004, M.S. 2008

The first time I graduated from Carnegie Mellon was with my bachelor's degree in civil engineering in 2004. I spent the next three years working as an oilfield engineer before deciding to pursue a master's degree in civil engineering. Once I determined that my main interest lay in construction and project management, the decision to return to Carnegie Mellon was an easy one.

What appealed to me most about the Carnegie Mellon civil engineering masters program was its ability to be customized to my interests. Although I am officially in the Advanced Infrastructure Systems program, I have been able to take some classes in other areas to create the specific program I wanted. I am very interested in the construction and planning of large infrastructure and have been able to pursue that from many angles. I have taken courses in the Heinz School of Public Policy, in the Department of Architecture and at the University of Pittsburgh. I was also able to complete an independent study involving a local contracting company to further enhance my educational experience.

I was very nervous about hitting the books again after three years away, especially since I used my engineering degree in an untraditional way during that time. However, there is a great sense of camaraderie in the department, particularly among the graduate students. The amount of support I received from classmates, professors and especially TAs was wonderful. I often spent whole days collaborating in the graduate student lounge, grabbing lunch from the trucks, going to office hours, and then staying late into the evening working on homework, and loving the challenge of it all. Of course, I sometimes felt overwhelmed with tests and projects but most of the time, with a bit of pre-planning, I was able to maintain a great school-life balance.

Having completed my master's degree in December 2008, I just accepted a position as a Civil Engineer with the Federal Highway Administration in New Hampshire. I realized during my studies that there is more to civil engineering management than just construction and that I want to be part of it. I had a wonderful time in graduate school and I am sad to be leaving Carnegie Mellon for the second time, but I am very excited for the next step, armed with all of the new information I have packed into my brain this past year.



NEWS BITS

CEE Graduate Students **Mario Berges** and **Kan Shao** were amoung the winners of a popular vote of best poster for the Machine Learning class offered by the School of Computer Science. Their project, "Classifying Electrical Appliance State Transitions from Power Metrics Time-Series," makes use of signal processing and machine learning techniques to disaggregate the overall electricity consumption of a house into individual appliances. This approach only requires a single measurement point: the main feed of the residential building, thus reducing the labor and hardware costs. *Congratulations, Mario and Kan!*

Mario Berges

Kan Shao

Jennifer Lawrence

CEE Senior **Jennifer Lawrence** has been selected to receive a scholarship from the National Recycling Coalition's Recycling Enterprise Trust Fund. The purpose of the scholarship is to encourage the next generation of leaders to preserve our environment.

David Drochner

CEE undergraduate **David Drochner** (Class of 2010) has earned academic honors from the College Sports Information Directors of America (CoSIDA). Drochner and five other members of Carnegie Mellon's soccer team received the honor, which requires that the recipient be a starter or significant reserve and maintain a GPA of 3.3. or better. It is the first time in Carnegie Mellon soccer program history that six team members received this honor at the same time.

Charlotte Cisneros

Charlotte Cisneros, CEE Class of 2009, has been chosen to participate in Environmental Engineers of the Future, a partnership between students and prospective employers. Students receive funding for a masters degree in environmental engineering in exchange for agreeing to work for one of the partner companies for three years. Partner companies include Black & Veatch, Carollo Engineers, City of Phoenix Water Services Department, Malcolm Pirnie and Parsons.

FACULTY

AT&T FELLOWS

ASCE DIRECTOR

FMS

Professor Scott Matthews and Research Associate **Deanna Matthews** have been named AT&T Faculty Fellows in Industrial Ecology for 2008. As AT&T Faculty Fellows, they received an environmental research grant to support their project, "The Role of Information and Communications Technology in Carbon Risk Management," which will analyze the impact information and communications technology can have in helping other industries manage risk of carbon emissions. "This is critically important work, and we're delighted to support such leading-edge research that's taking place in Pittsburgh," said J. Michael Schweder, president of AT&T Pennsylvania.

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Professor Kaushik Dayal has been selected to receive an Acta Student Award for his primary contribution to the manuscript, "A real space non-local phase-field model of ferro-electric domain patterns in complex geometries", Acta Materialia 55, 2007: 1907-1917, written while he was a graduate student. Kaushik joined the CEE department in January 2008. Acta presents only two of these awards each year. Kaushik received his award at the Materials Science & Technology Conference in Pittsburgh in October 2008.

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Professor Lucio Soibelman was a keynote speaker at the 8th International Conference on Construction Applications of Virtual Reality (CONVR) held in Malaysia this fall. The mission of the conference was to bring together researchers and practitioners from all areas of the construction industry in the world in and effort to promote efficient exchange of ideas and develop mutual understanding of needs and potential applications of Virtual Reality modeling in the built environment. Prof. Soibelman was also a keynote speaker at the recent conference for the Brazilian Association of Architectural Offices.

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CEE part-time instructor **N. Catherine (Cathy) Bazan-Arias** has been elected at-large director of the American Society of Civil Engineers (ASCE). Currently a senior staff engineer for DiGioia, Gray & Associates, LLC, Bazan-Arias teaches Structural Analysis for CEE. She has previously been the director of the Pittsburgh section of ASCE and chaired that section's geotechnical group. *Congratulations, Cathy!*

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Don Coffelt, an adjunct faculty member in Civil and Environmental Engineering, has been named director of Facilities Management Services (FMS) for Carnegie Mellon University. He was previously director of facilities operations for FMS. Coffelt received his Ph.D. from the Civil and Environmental Engineering department in May 2008.

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Professor Jeanne VanBriesen has been named the American Society of Civil Engineers (ASCE) Pittsburgh Section's Professor of the Year. This award is given for outstanding teaching ability and significant contributions toward improving professional aspects of civil engineering education. The ASCE Pittsburgh Section's Awards Banquet was held during National Engineers Week in February.

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CEE faculty members **Burcu Akinci** and **Greg Lowry** have been promoted to full professor with tenure, effective July 1, 2009. Prof. Akinci's research focuses on achieving reliable construction schedules and estimates as well as approaches for situation awareness and assessment. Prof. Lowry's work is in the field of sustainable development of nanomaterials and nanotechnologies and sustainable energy via carbon capture and storage.

ALUMNI

ALUMNI AWARDS
ISS DIVISION
SUPER BOWL XLIII

CEE Department Alumni Awards

The CEE department presented two alumni awards during an annual alumni dinner in October at the Pittsburgh Athletic Association.

Michael S. Ellegood received the CEE Distinguished Alumnus Award, which recognizes CEE alumni who have one or more major achievements that have improved the work of professional engineers or have improved people's lives in some way. His 44 years as a professional engineer include design and project management of major urban transportation projects such as the major long-span Krotz Springs Bridge.

Michael S. Ellegood

Richard T. Creech was awarded CEE Outstanding Alumni Service Award, which recognizes CEE alumni who have made sustained contributions to the engineering profession. Mr. Creech is president of Creech Engineers, a civil engineering firm with offices throughout Florida. Mr. Creech has served the university on the CEE Advisory Council, the CIT Dean's Leadership Council and the Carnegie Mellon Alumni Association Board

Richard T. Creech

During the dinner, **Dr. Markus Klausner** received the CEE Recent Alumnus Achievement Award that he was unable to accept in person in the spring. The award had been presented to him via video at the CEE Alumni Reception at Spring Carnival.

Congratulations to all of our award recipients!

Markus Klausner

Dr. Aysegul Askan-Gundogan (Ph.D. CEE 2006) has been named Best Educator of the Year at Middle East Technical University (METU) in Ankara, Turkey. Aysegul came to Carnegie Mellon for her graduate studies have completing her B.S. and M.S. at METU. *Congratulations, Aysegul!*

Maher Named Deputy Division Director of the ISS Division of NSF

CEE Alumna Dr. Mary Lou Maher (MS 1982, PhD 1985) has been named Deputy Division Director of the Information and Intelligent Systems (IIS) Division of the National Science Foundation (NSF). Dr. Maher joined NSF in 2006 as an IIS Program Director to explore a funding emphasis on creativity and computing. Prior to joining NSF, Dr. Maher was a faculty member at Carnegie Mellon University and at the University of Sydney. She is best known for her research in computational models of creative design, designing in virtual worlds, tangible interfaces and spatial cognition, and motivated reinforcement learning as computational curiosity.

Dan Streyle (B.S. 1975) and wife Jennifer attended Super Bowl XLIII as guests of the Arizona Cardinals. Dan managed the construction and design of the University of Phoenix Stadium, home to the Cardinals since 2006. "It was just an amazing experience and gave us so many memories," Dan reported, "Despite the heartbreaking loss in the Super Bowl, we are very happy with the season as no one predicted [the Cardinals] to go as far as they did."

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Mark your calendar for Upcoming CEE Alumni Events!

- **Friday, April 17, 2009, 5 p.m. – 7 p.m.: CEE Alumni Reception at Spring Carnival**
  Join fellow alumni in the Tung Au Lab in Porter Hall to reminisce and catch up with each other before enjoying Spring Carnival.

- **Saturday, July 11, 2009, 11 a.m. – 2 p.m.: CEE Alumni Picnic**
  Come back to campus this summer for our alumni picnic, featuring campus tours, family activities and of course, delicious picnic food!

Contact **Patty Langer**, Alumni Relations Coordinator, by phone at (412) 268-1070 or by email at patty@andrew.cmu.edu for more information on these events.

Civil and Environmental Engineering

Carnegie Mellon University does not discriminate and Carnegie Mellon University is required not to discriminate in admission, employment, or administration of its programs or activities on the basis of race, color, national origin, sex, or handicap in violation of Title VI of the Civil Rights Act of 1964, Title IX of the Educational Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973, or other federal, state, or local laws or executive orders. In addition, Carnegie Mellon University does not discriminate in admission, employment, or administration of its programs on the basis of religion, creed, ancestry, belief, age, veteran status, or sexual orientation, or in violation of federal, state, or local laws or executive orders. However, in the judgment of the Carnegie Mellon Human Relations Commission, the Department of Defense policy of "Don't ask, don't tell, don't pursue" excludes openly gay, lesbian, and bisexual students from receiving ROTC scholarships or serving in the military. Nevertheless, all ROTC classes at Carnegie Mellon University are available to all students.

Inquiries concerning application of these statements should be directed to the Provost, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-6684, or to the Vice President for Enrollment, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-2056. Obtain general information about Carnegie Mellon University by calling 412-268-2000.

Carnegie Mellon University publishes an annual campus security report describing the University's security, alcohol and drug, and sexual assault policies, and containing statistics about the number and type of crimes committed on the campus during the preceding three years. You can obtain a copy by contacting the Carnegie Mellon Police Department at 412-268-2323. The security report is also available at www.cmu.edu/security.

Carnegie Mellon University makes every effort to provide accessible facilities and programs for individuals with disabilities. For accommodations/services, please contact the Equal Opportunity Office at 412-268-2012.

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