



## \$1.85 Million for Carbon Sequestration Research

With a \$1.85 million grant from the New York-based Doris Duke Charitable Foundation (DDCF), Carnegie Mellon's M. Granger Morgan will lead a team of investigators from Carnegie Mellon, the University of Minnesota, the Vermont Law School and the Washington, D.C.-based energy law firm Van Ness Feldman to develop and promote a regulatory structure for the safe and economical capture, transport and deep geological sequestration of carbon dioxide (CO<sub>2</sub>) in the United States.

Morgan and his colleagues note that CO<sub>2</sub> can be removed from coal or natural gas in a variety of ways before or after combustion. Once it is removed, it can be deposited deep underground in appropriate geological formations. The National Energy Technology Laboratory in Pittsburgh and Morgantown, W.Va., is supporting much of the research that is needed to make such processes commercially viable.

"Getting the technology right is important," Morgan said. "But if the U.S. is going to put large quantities of CO<sub>2</sub> underground, we need to be sure it is done in a safe and effective way."

Morgan and his colleagues argue that before any definitive regulations can be developed, the U.S. must first get experience with several commercial-scale facilities. For this

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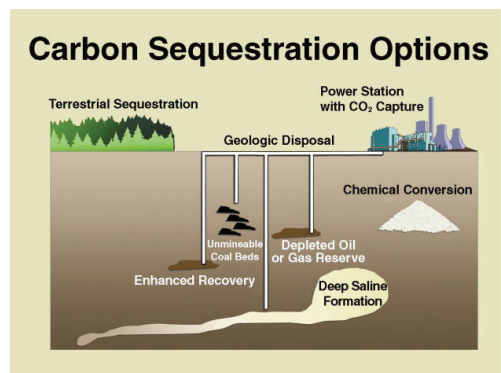


Image from [www.whitehouse.gov](http://www.whitehouse.gov)

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## Hartkopf Named Chair of UN Environmental Initiative



Carnegie Mellon Architecture Professor Volker Hartkopf has been named chair of the United Nations Environment Programme (UNEP) Sustainable Building Construction Initiative (SBCI). The SBCI (<http://www.unepsbci.org/>) works with governments and companies worldwide to adopt sustainable building practices.

"I am pleased to have been asked to chair the UNEP think tank and shall work hard with my colleagues to develop well-informed policy instruments, which can generate positive solutions to our resource and environmental challenges," said Hartkopf, director of the University's Center for Building Performance and Diagnostics (CBPD). "Together we want to enable future generations to live a life in dignity with health and within an ever-improving environment."

Since 1972, Hartkopf has pursued socially and environmentally responsible solutions to major challenges. Hartkopf's projects range from hurricane-proof refugee camp redevelopment in Bangladesh and earthquake-resistant housing and schools in Peru, to breakthrough commercial buildings in Europe, China and the United States and master planning efforts in Wolfsburg, Germany.

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## Research Fellowships Review

The three 2007 Steinbrenner Institute Graduate Fellows presented their work January 24 to Jan and Lowell Steinbrenner. Engineering and Public Policy and Civil and Environmental Engineering PhD candidates Anny Huang, Heather Wakeley, and Yan Xu discussed their continuing research topics as well as their own background and interest in the environment.

Heather Wakeley, who took time between her undergraduate work at Dartmouth to train for the National Rowing Team, is investigating the infrastructure requirements and environmental impacts of hydrogen and ethanol fuels. Marrying policy and environmental engineering, Anny Huang, who moved to Chicago from Taiwan as a teenager, has been looking at how governments facing increased production of goods in modern times might mitigate the affects of resource extraction, environmental degradation, and waste output. Finally, Yan Xu, who grew up and studied in China before coming to the United States for graduate school at Carnegie Mellon, is working on cutting edge research involving application of molecular biology techniques to determine the sources of microbial contamination in watersheds that feed particular surface waters.



Pictured from left to right: Dave Dzombak, Jan and Lowell Steinbrenner, Heather Wakeley, Yan Xu, and Anny Huang.

More information is available on the Steinbrenner website <http://www.cmu.edu/steinbrenner/Initiatives>

## In House Counsel

### Vermont Law School Graduate Visits the Brownfields Center

In Fall 2007, the Western Pennsylvania Brownfields Center enjoyed the company of Troy Frederick, a recent graduate of Vermont Law School. Troy's semester long research project allowed him to explore environmental liability, which continues to be a constraint for owners of contaminated properties. Troy explored a model for a charitable trust fund, which would be administered by the Commonwealth, as a novel liability relief mechanism. The ingenuity of this model lies in two of its proposed characteristics: 1) the effectiveness of liability protection would not be contingent upon the solvency of the party assuming the liability, as is the case in the environmental liability transfer companies and 2) the Commonwealth would waive any environmental liability through its management of the trust. Troy presented his results to the Brownfields Center Advisory Board in December and will be presenting his paper at the Engineers Society of Western Pennsylvania's April 2008 Business of Brownfields Conference, where he will discuss these opportunities as well as potential challenges facing such a trust.

## CO<sub>2</sub> Sequestration Grant

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reason, developing an "adaptive, two-stage" approach to regulation will be a key part of the new DDCF-supported project. "This grant is further recognition of the great strength that Carnegie Mellon has built up in technically-focused work in energy policy," said Pradeep K. Khosla, Dean of the College of Engineering at Carnegie Mellon.

"Previous work done by Carnegie Mellon's Ed Rubin and his colleagues on modeling carbon capture, by Jay Apt, Lester Lave and Paul Fischbeck on the electricity industry, and by investigators associated with our NSF-supported Center for Climate Decision Making, have laid the groundwork that makes us the obvious choice to do this kind of work," Khosla said. The grant to Carnegie Mellon is part of a \$100 million Climate Change Initiative created by the DDCF to develop new energy technologies that can help society reduce greenhouse gas emissions and create a cleaner economy. Visit <http://cdmc.epp.cmu.edu/> for more information.

# Plan B: Adapt

An environmental report that discusses adaptation planning for climate change was recently released by The H. John Heinz III Center for Science, Economics and the Environment in Washington, D.C. Bill Perkins — a graduate student in Carnegie Mellon's Heinz School — was the lead author of the report, which explores resources available and actions being taken in the United States and abroad.

"It was a fantastic opportunity that arose during my summer internship as a Global Change Fellow at the Center," said Perkins. "Adaptation planning is becoming critical as communities, states and countries begin to address rising sea-levels and other challenges of a changing global climate."

Formerly a military officer, Perkins is now one of 1,000 volunteers in the United States selected and trained by Former Vice President Al Gore and the non-profit group The Climate Project to spread the message of global warming and the urgent moral responsibility to take action.

Perkins describes his unusual path from Army Ranger to environmental advocate. "After I suffered a period of illness several years ago, I sat down and reevaluated my priorities and where I was going," explained Perkins. "I determined to dedicate the rest of my life to serving humanity in the best way I could. When I learned about the climate crisis shortly thereafter, something clicked: I knew that I had found my calling."

He now tries to use the skills he gained in the military and apply them to what he considers to be "the greatest challenge of our generation." He says his experience seems to garner him more legitimacy with some audiences, who might otherwise be skeptical.

Perkins noted, "Every day I think, 'What can I do to make the world a better place?' You never know where the road will lead, but it's been a great ride so far, and it's a great privilege to be a public servant and to make a contribution to the future of our planet."

Perkins believes climate change is a problem that can be solved. "Every single one of us can contribute — from driving a more fuel-efficient car to keeping the environment a priority in whatever field you work in," he said. "We can all find ways to contribute to making our society more sustainable."



Visit [www.cmu.edu/steinbrenner/news](http://www.cmu.edu/steinbrenner/news) for more information.



## Hartkopf UN Environmental Initiative

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Through his development and application projects, Hartkopf has demonstrated ways to reduce buildings' resource consumption while improving the human quality of life within those buildings and surrounding communities. Hartkopf believes sustainable building can be economical and yield political benefits. To disseminate his message, Hartkopf is working with industry, governments and colleagues around the world to encourage each school to advance sustainable building practices.

Left: School of Architecture's Robert L. Praeger Intelligent Workplace

# GRAND OPENING: THE STEINBRENNER INSTITUTE IN QATAR



The Steinbrenner Institute officially opened up shop at the Carnegie Mellon Qatar campus in January 2008. Rosemary Lapka, a former Steinbrenner Institute Fifth Year Scholar at the Pittsburgh campus is encouraging the eco-minded at the CMU-Q campus. 'SEER-Q' will be working to connect the student environmental group on the Pittsburgh campus, Sustainable Earth, with the Live Green student group in Qatar.

Top: Live Green Student Group  
Bottom, clockwise:  
Anne Humphreys,  
University Business Network  
Coordinator,  
contemplating her ride; City of  
Doha; Carnegie Mellon at the  
Education City campus in Doha.



# Focus the Nation

Focus the Nation (FTN), an educational initiative on global warming solutions for America occurred at more than 1,000 universities and colleges across the country January 30-February 1, 2008. The Carnegie Mellon campus was teeming with FTN activities, led by Engineering & Public Policy graduate student Vanessa Schweizer. The events kicked off with a "Climate Change 101 Keynote Address" by Professor Granger Morgan and a webcast titled the "2% Solution" which was co-produced by the National Wildlife Federation and aired by the Earth Day Network. The broadcast featured Edward Norton; Stanford climate scientist Steve Schneider; Hunter Lovins, CEO of Natural Capitalism; and environmental justice leader Van Jones, executive director of the Ella Baker Center in Oakland, California. (The webcast can be viewed at <http://www.focusthenation.org/2percentsolution.php>).

On January 31st, Carnegie Mellon hosted a day of events focusing the community on solutions to global warming for America, including panel presentations by dozens of University and local sustainability leaders. Session topics included, "All Your Climate Science Questions Answered," practical tips for a "low-carbon" lifestyle, the latest developments in solar technology, what a changing climate will mean for Pennsylvania and much more. Finally, on Friday, February 1st the three day event concluded with a Green Democracy Political Forum at the University of Pittsburgh. The University of Pittsburgh, Carnegie Mellon, La Roche College, Duquesne University, and Chatham University invited city, county, state, and national civic leaders to engage in a Green Democracy political forum. Student representatives opened the forum, featuring U.S. Representative Mike Doyle and Pittsburgh City Councilman Bill Peduto, with statements about what each campus is doing to address climate change. Please visit [www.focusthenation.org](http://www.focusthenation.org) for more information about the national project.



In the dead of night, Focus the Nation student organizers painted the fence with their event advertisements, in traditional Carnegie Mellon fashion.

## Pittsburgh Gets On Board!



Dr. Deborah Lange, Executive Director of the Steinbrenner Institute currently serves as co-chair for the University Subcommittee of the Pittsburgh Climate Protection Initiative (PCPI). The University Subcommittee, comprising representatives from the University of Pittsburgh, Duquesne University, and Point Park, is working to benchmark the environmental efforts at each of the city's higher education institutions. The PCPI seeks to raise awareness and engage Pittsburgh's residents, businesses, government and institutions of higher learning in taking actions that will reduce greenhouse gas emissions

and their impact on our local economy and human well being. The PCPI is financially supported through funding from the Roy A. Hunt Foundation, The Heinz Endowments and the Surdna Foundation.

The Green Building Alliance of Pittsburgh and Clean Air-Cool Planet, a non-profit organization providing climate protection services throughout New England and the Mid-Atlantic states, are co-managers of the PCPI. Technical support is being provided by ICLEI Local Governments for Sustainability, a membership organization serving communities around the world.

The Green Government Task Force, a coalition of local stakeholders, is responsible for developing a Local Action Plan for emissions reductions as part of the Initiative. The task force has been convened and is co-chaired by Pittsburgh Mayor Luke Ravenstahl, Pittsburgh City Councilman Bill Peduto, and Pennsylvania State Senator Jim Ferlo. Carnegie Mellon Professor Cliff Davidson also serves on the task force. For more information on the Pittsburgh Climate Protection Initiative visit <http://www.pittsburghclimate.org/index.htm>.

# The Environmental Legacy of Dr. Martin Luther King Jr.

In celebration of Dr. Martin Luther King Jr. on January 21, Dr. Peter Madsen, Distinguished Service Professor for Ethics and Social Responsibility moderated a panel titled “Environmental Justice: Is it working in Pittsburgh?” The event featured Court Gould, Executive Director of Sustainable Pittsburgh; Dr. Stephen B. Thomas, Director of The Center for Minority Health and Philip Hallen Professor of Community Health and Social Justice, Graduate School of Public Health University of Pittsburgh; and Khari Mosley, Campaign Director for Pittsburgh UNITED (regional policy action center) and former PA State Director for the League of Young Voters and the League of Young Voters Education Fund.



Thomas described environmental justice as the “inequities that result from human settlement.” These inequities often put minority and low income individuals in proximity to toxic land. The panelists implored attendees to think beyond the normal separations in movements. “The civil rights movement, the environmental movement, and the climate change movement exist in silos and the dots never get connected,” said Thomas. Mosley echoed this sentiment on universality, urging attendees to reflect on Dr. King’s letter from the Birmingham jail which stated “Whatever affects one directly, affects all indirectly.” The MLK Day events also included a choral tribute to Dr. King, an address by Carnegie Mellon President Dr. Jared Cohon on the state of Diversity at Carnegie Mellon and a candlelight procession.



## The Engineering Persuasion

Five hundred Girl Scouts filled the Carnegie Science Center in Pittsburgh February 15-16 for “Women Engineering the Future,” which the Steinbrenner Institute co-sponsored. Events celebrated the achievements of millions of engineers who contribute daily to our quality of life and were intended to inspire young women to explore engineering. The activities focused on the environment, with attention on green buildings, pollution prevention, and alternative energy. For more information visit <http://www.carnegiesciencecenter.org/default.aspx?pageId=358>.

## Hoop Dreams

The 2008 RecycleMania competition has officially commenced with over 400 schools across the country vying to see who can motivate their campus communities to recycle more and reduce overall waste. Green Practices “tipped off” Carnegie Mellon’s effort by building a 10-foot tall basketball hoop into which University community members tossed their recyclables. The hoop will be moved around campus over the course of the 10 week period of the competition to keep the campus competitive spirit alive! RecycleMania is supported by the U.S. Environmental Protection Agency’s WasteWise program, the National Recycling Coalition (NRC), and the Coca-Cola Company, and is coordinated as a project of NRC’s College and University Recycling Council (CURC). For more information visit <http://www.recyclemaniacs.org>.



# Walter J. Blenko Sr. Professorship

David A. Dzombak was officially honored as the Walter J. Blenko Sr. Professor of Environmental Engineering for his outstanding accomplishments in Civil and Environmental Engineering.

“Dave has contributed to raising the national visibility and impact of our environmental engineering education and research; the Blenko professorship recognizes his significant contributions to, and leadership of, the environmental engineering program in the top-ranked Department of Civil and Environmental Engineering. His contributions will enable this program to rise to even higher levels,” said Pradeep Khosla, dean of Carnegie Mellon’s College of Engineering.

For more than two decades, Dzombak has conducted leading-edge research in the areas of aquatic chemistry, water and wastewater treatment, abandoned mine drainage remediation, river and watershed restoration and hazardous waste site remediation.



Above: Dave Dzombak and Dean Pradeep Khosla

The Walter Blenko Sr. Professorship, established in 1981, is funded by Walter Blenko Jr. and his wife Joy. Walter Jr. received his mechanical engineering degree from Carnegie Mellon in 1950. A lawyer at Eckert Seamans Cherin & Mellott in Pittsburgh, Walter Jr. established the Walter Blenko Sr. Professorship in Civil and Environmental Engineering in memory of his father Walter J. Blenko Sr., who was a mechanical engineering graduate and a life trustee of the university.

“I am honored to be recognized with the Blenko chair, and I will use the visibility and resources of the chair to advance the mission of Civil and Environmental Engineering, the College of Engineering and Carnegie Mellon,” said Dzombak, who is associate dean for graduate and faculty affairs in the College of Engineering and Faculty Director of the Steinbrenner Institute. “The environmental engineering research and education program at Carnegie Mellon is world-class, driven by outstanding, highly motivated faculty, students and staff. I am fortunate to be a part of this innovative group,” said Dzombak.

Below: Andrew Blenko, Mr. and Mrs. Walter J. Blenko Jr., and Dr. John W. Blenko



# Early Bloomer: Jeremy Michalek



Jeremy J. Michalek has received the National Science Foundation’s most prestigious honor for new faculty members, the Faculty Early Career Development Award. Michalek, an assistant professor of mechanical engineering, will receive the five-year, \$400,000 grant to analyze how public policy — such as fuel-economy standards — could determine the types of more efficient vehicles built in coming years and how consumers might respond to these new models. The award recognizes the early career development activities of those teacher-scholars who are most likely to become the academic leaders of the 21st century.

Michalek’s research comes at just the right time. Industry experts are predicting gas pump prices, which jumped by almost a dollar a gallon in each of the last two springs in many parts of the United States, will spike again this year as refiners and gas stations switch from winter- to summer- blended fuels. The increases, starting as early as February in southern California, could push the average national price to a record \$3.50 a gallon or more by June.

“Well-intended policies can lead to counterproductive outcomes when technical tradeoffs and market reactions are not anticipated,” said Michalek, director of the Design Decisions Laboratory at Carnegie Mellon. “Our aim is to understand tradeoffs in the capabilities of new technologies and predict what consumers will buy and how profit-seeking automakers will respond in the regulated marketplace.”



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WATERQUEST: CENTER FOR WATER QUALITY IN URBAN ENVIRONMENTAL SYSTEMS

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