



U N I V E R S I T Y   O F   P I T T S B U R G H

# Engineering Sustainability 2005

Next-generation technology  
for green construction  
and sustainable water use.



*Sponsored by*  
The Mascaro Sustainability Initiative  
in the School of Engineering  
at the University of Pittsburgh

*Location*  
David L. Lawrence Convention Center  
Pittsburgh, PA

*Dates*  
April 10–12, 2005

*First Call for Papers*



## WELCOME

On behalf of the University of Pittsburgh Mascaro Sustainability Initiative, we are pleased to announce this first call for papers for the MSI Engineering Sustainability Conference, to be held in Pittsburgh, Pa., April 10–12, 2005. This conference aims to bring together scientists and engineers from academia, government, and industry to share the results of cutting-edge research directed at creating the next generation of green building and sustainable water use technology.

The built environment provides services that sustain our economy and way of life, though at the cost of heavy resource use and waste generation. In 1997, about 80 per-



cent of all materials, by volume, were used by the construction industry. Buildings over the course of their life cycle account for 17 percent of fresh water withdrawals, 25 percent of wood harvest, 40 percent of materials use, 54 percent of energy used, and 50 percent of fossil fuels consumed. Green construction aims to lessen the impact of the buildings on the environment over their full lifetime—while great strides have been made in greening the process and products of construction, scientific and engineering advances

in many fields will be needed to create the next generation of sustainable buildings.

Contributions are solicited in the following areas:

- ▶ New construction materials that can be produced with less energy and waste, and require less maintenance when installed; materials that emit lower volumes of volatile compounds; materials that inhibit the growth of mold.
- ▶ Smart control systems or algorithms that allow for a comfortable and healthy indoor environment while using less energy.
- ▶ New technology that lowers building water usage or allows for efficient recycling of water.
- ▶ Construction methods that produce lower environmental impacts.
- ▶ Life cycle and economic analyses.



Water, although often perceived to be an infinite resource, is fast becoming a leading cause of societal stress throughout the world. In the developed world, competing needs for water among agriculture, industry, and homes creates severe stress upon water supplies. For example, using current photolithographic processes, manufacturers employ approximately 20 liters of water to produce a two-gram microchip. In the developing world, the lack of sufficient clean water is fast becoming the most important obstacle to the creation of sustainable economies. It is estimated that two to three billion people currently lack access to clean water, and that 10,000 to 30,000 people die each day from water-borne diseases. Water has been used to produce energy “cleanly” (hydroelectric power), yet the dams needed to furnish this power are themselves considered nonsustainable, owing to the damage done to a river’s ecosystem. Contributions are solicited in the following areas:



- ▶ Next-generation technologies that allow for reduced water use in industrial or manufacturing processes.
- ▶ Sustainable, economical water-treatment processes and products that are compatible with those countries where they are to be employed.
- ▶ Technologies that allow for enhancement of one’s standard of living while reducing impact on the water supply.
- ▶ Processes that employ wave-power, or that employ the potential energy in rivers without the deleterious effects of dams.

We look forward to seeing you in Pittsburgh in 2005!

Sincerely,

Eric J. Beckman

BAYER PROFESSOR AND CHAIR,  
DEPARTMENT OF CHEMICAL AND PETROLEUM ENGINEERING  
CODIRECTOR, THE MASCARO SUSTAINABILITY INITIATIVE





## PITTSBURGH

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Cultural and ethnic diversity, renowned educational institutions, world-class medical facilities, short commutes, and a low cost of living combine to create Pittsburgh, one of the most livable communities in America. Add to this mix the region's breathtaking urban and rural landscapes,



an abundance of outdoor activities, and a thriving nightlife and you can see why Southwestern Pennsylvania is such a desirable place to live, work, and play. In February 2004, The Green Building Alliance announced that Pittsburgh is currently the greenest city in America, based on the number of Leadership in Environmental and Energy Design (LEED)-rated commercial/industrial buildings and square footage within the

city limits. Over five million square feet of green development has been completed or is underway in the region, more than anywhere else in the country. Pittsburgh is within 500 miles of more than half of the U.S. population, and the city is less than 90 minutes' flying time from 20 states and Canada. The average temperature in April is 61 degrees.

## DAVID L. LAWRENCE CONVENTION CENTER

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The new \$367 million David L. Lawrence Convention Center was completed in September 2003. It's the world's largest certified "green" building and holds a Gold LEED Rating from the U.S. Green Building Council. The new center incorporates high-performance green features such as daylight, natural ventilation, recycling of water, and green materials, and is the first in the nation designed to meet green building specifications. Set along the Allegheny River in downtown Pittsburgh, the new Convention Center offers stunning views of the river and the city skyline, as well as open-air terraces and walkways that connect with Allegheny Riverfront Park. Positioned along the Allegheny River, the center features 313,400 square feet of exhibit space, 236,900 square feet of which is column free, 51 meeting rooms, 37 loading docks, and a large ballroom.

### CONTACT INFORMATION

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[www.engr.pitt.edu/msi/conference.html](http://www.engr.pitt.edu/msi/conference.html)

*For more information or to register online,  
go to [www.engr.pitt.edu/msi/conference.html](http://www.engr.pitt.edu/msi/conference.html).*



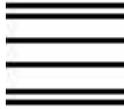
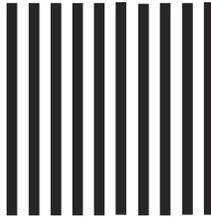
## ACCOMMODATIONS

A block of rooms has been reserved at The Westin Convention Center. One of Pittsburgh's newest downtown hotels, The Westin is within walking distance of commercial, cultural, and shopping districts, PNC Park, and Heinz Field, and is connected to the Convention Center via pedestrian walkway.

Mention the MSI Conference to receive the conference rate of \$119/night.

Westin Convention Center  
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# PRELIMINARY TECHNICAL PROGRAM

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## Keynote Speakers

THE FOLLOWING INDIVIDUALS HAVE ALREADY ACCEPTED INVITATIONS TO SPEAK AT THE CONFERENCE:

- Katie McGinty**, *Secretary, PA Department of Environmental Protection (invited)*  
**Amory B. Lovins**, *Chief Executive Officer, Rocky Mountain Institute*  
**Dr. Bernard Amadei**, *Founding President, Engineers Without Borders and Professor of Civil Engineering, University of Colorado at Boulder*  
**Dr. Takashi Asano**, *Professor, Department of Civil and Environmental Engineering, University of California at Davis*  
**David Eakin, P.E.**, *Chief Engineer, Office of the Chief Architect, Public Buildings Service, General Services Administration*  
**Dr. Mahmoud El-Halwagi**, *McFerrin Professor, Associate Head for Graduate Program, Department of Chemical Engineering, Texas A&M*  
**Dr. Bernard D. Goldstein**, *Dean, Graduate School of Public Health, University of Pittsburgh*  
**Dr. Vivian Loftness**, *Head, School of Architecture, Carnegie Mellon University*  
**Dr. Jorge A. Vanegas**, *Fred and Teresa Estrada Professor, College of Engineering, Georgia Institute of Technology*

## Track I = **Water**

### TOPICS

- Water and Industry**
- Water, Sanitation and Human Health**
- Water and Energy**
- Water and Homeland Security**
- University-Based Initiatives**
- Cases Studies**

## Track II = **Green Construction**

### TOPICS

- Materials**
- Energy and Electronics**
- Design and Procedures**
- Economics and Life Cycle Analysis**
- University-Based Initiatives**
- Cases Studies**

## Welcome Reception

Sunday, April 10, PNC Firstside Center, *LEED™ Silver*

## Poster Session and Social

Monday, April 11, David L. Lawrence Convention Center

## Sponsorship

Government and industry will play a major part in engineering solutions for a sustainable future. Organizations with an interest are actively encouraged to take part in the conference. If you are interested in sponsorship opportunities, please contact Gena Kovalcik at 412-624-9698 or [Kovalcik@engr.pitt.edu](mailto:Kovalcik@engr.pitt.edu)

## Tours

Check back for selected tours of Pittsburgh's LEED-certified green buildings. Hosted by the Green Building Alliance.

### REGISTRATION FEES

Conference Fee	\$500	Student Conference Fee	\$100
Early Registration	\$400	Early Registration	\$80
One-Day	\$300	One-Day	\$60



# MASCARO SUSTAINABILITY INITIATIVE

## CRITICAL DATES

<b>Call for Papers</b>	May 2004
<b>Abstracts Due</b>	October 15, 2004
<b>Confirmation of Accepted Abstracts</b>	November 15, 2004
<b>Early Registration Ends</b>	March 11, 2005
<b>Conference</b>	April 10–12, 2005



## MASCARO SUSTAINABILITY INITIATIVE

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*Please check the appropriate box:*

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| <input type="checkbox"/> I am interested in attending the conference. | <input type="checkbox"/> I am interested in presenting an oral talk.              |
| <input type="checkbox"/> I am interested in submitting a poster.      | <input type="checkbox"/> I am interested in becoming a sponsor of the conference. |



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Pennsylvania*



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