

Clean Energy News



KEY CERC RESEARCH

Photovoltaic Thin Film

Photocatalytic Detoxification and Disinfection

Solar Thermal Power

Hydrogen Production and Storage

Combined Power/ Cooling Thermodynamic Cycle

Rectenna Solar Energy Conversion

Biomass and Biofuels

Carbon Capture and Sequestration

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At the

USF UNIVERSITY OF SOUTH FLORIDA

NUMBER 5

WINTER 2009

Tampa Grassroots Solar

The largest grassroots solar event in history took place in October, with USF's SMART students hosting the National Solar Tour.

Some of the many solar tour sites across the Tampa Bay included a home with solar panels in Seminole Heights, a restaurant with a solar thermal cooling system in Brandon and an energy-efficient home in Temple Terrace.

This was the first time the event was held in the Tampa Bay Region. It is the 14th annual solar tour nationwide, organized by the American Solar Energy Society. More than 150,000 people visited 5,000 buildings in communities across

the country during the tour weekend.

Before Tampa's guided bus tour set off from the USF CERC labs, CERC director Elias Stefanakos gave opening remarks which were followed by demonstrations on installing solar systems and their cost benefits.

Local dignitaries attending the event included State Rep. Fiasano's legislative aide, Tampa City Councilor Mary Mulhern and Hillsborough County Commissioners.

The tour offered a chance to see how the community uses solar energy, improves energy effi-

ciency and takes advantage of other sustainable technologies to reduce monthly utility bills and tackle climate change. US Congresswoman Kathy Castor endorsed the tour stressing how crucial it is to support alternative sources of energy.

Sponsors included Tampa Bay Sierra Club and WMNF-FM. The USF student group SMART focuses on solar and renewable energy technologies.



Celebrating Research

As part of USF's "Research One," an annual celebration of



Gökmen Demirkaya talks to CERC's Dr. Burton Krakow.

research, discovery and innovation, the College of Engineering's Research Day showcased poster presentations from students and investigator groups during October 2009. The event served as an open house attracting visitors from across the university and community for information exchange and collaborations.

CERC students and post doctoral fellows presented several

posters:

- "Clean Energy Research Center at the USF" (Dr. Sarada Kuravi)
- "Parametric Study of a Combined Power and Cooling Thermodynamic Cycle ..." (Gökmen Demirkaya, Ricardo Vasquez Padilla)
- "Tunnel Diodes Fabricated using Self-Assembled Alkanethiol Films on Au" (Mike Celestin, Dr. Subbu Krishnan)

HHO Games and Expo

Three hydrogen-minded scientists from the USF School of Engineering's Clean Energy Research Center presented seminars and day-long displays of advanced onboard hydrogen generator technology during all three days of the HHO Games in July.

The non-profit HHO Games & Exposition celebrate the vast potential of HHO, or "hydrogen-on-demand." HHO organizers aim at saving the American and world economies by putting 40% of their energy cost back in the pockets of ordinary people. The University of South Florida St. Petersburg campus hosted the event.

Dr. Sesha Srinivasan and engineers Michael Niemann and Pabitra Choudhury discussed and demonstrated the lightweight lithium-boron hydride onboard hydrogen generator they have completed as part of a Dept. of Energy research investigation. It was the first time the public had a chance to see what may be the future of onboard hydrogen, if America chooses the Hydrogen Highway as its future destination.



Undergraduate Timberland Pham demonstrates CERC's hydrogen toy car.

The solution to the looming energy crisis is right before our eyes — and directly above our heads.

Eyes and Ears on the Media

- Yogi Goswami (CERC) was interviewed as a solar energy expert on Tampa Bay's Fox TV 13 "Good Day Tampa Bay" in October 2009. Fox was following up on President Obama's visit to solar photovoltaic utility array in Arcadia, Florida.
- Sesha Srinivasan (CERC) was interviewed by WUSF 89.7 News about CERC's research into using poly-

mers as storage material for hydrogen, in July 2009. Storing hydrogen is not easy due to its being very difficult to compress. CERC's research may make hydrogen powered cars commercially available in the near future.

- John Wolan (Chemical Engineering) hosted "Refuse to Energy" a call-in environmental talk show on

WMNF 88.5 radio, in July 2009. Generally discussing using biomass for fuel, listeners called in with questions ranging from hydrogen power to using animal waste. The stimulating discussions show Tampa Bay's energy proactiveness and interest in our sustainability efforts.

**Clean Energy
is Green Energy**

Solar Car Visits USF

A three-wheeled solar powered car whizzed through Tampa in May, making a sun-stop at the Clean Energy Research Center at USF's Research Park. Students and professors peppered designer and driver Marcelo da Luz with technical questions about his flying-saucer-shaped vehicle. The car

reaches 75 mph with a 0 to 50 mph acceleration in 6 seconds. Its power source are 893 mono-crystalline solar cells; storing energy in 26 lithium ion batteries. It can travel 300 miles on a sunny day, and 130 miles at night with a full battery charge.



The XOF1 on the road.

The presentation was hosted by USF's SMART ("Students for the Marketing and Advancement of Renewable Technology") club. For more information on the solar car, see: <http://www.xof1.com/>

Got Solar?

A featured home on Tampa Bay's first Solar Tour in October was a newly solar powered home with a photovoltaic system, solar hot water heater, back-up batteries and solar attic fans. Also shown was the



Just some of the interested folks who attended the Tampa Tour of Solar homes.

first LEED Gold certified home in Florida, located in St. Petersburg. Over all more than a dozen homes and buildings in the greater Tampa Bay area were featured as part of the 14th Annual ASES National Solar Tour.

"The tour gives locals a glimpse at how an increasing number of families are going solar," said Jamie Trahan, Tampa's tour coordinator. "Its part of a national collaboration to help Americans address a critical problem while introducing them to an array of clean, effective solutions that generate ongoing economic and

environmental rewards," she explained.

Organized by the USF CERC's Students for the Marketing and Advancement of Renewable Technologies (SMART) and the nonprofit American Solar Energy Society, the tour introduced communities to solar technologies and other alternative energy.



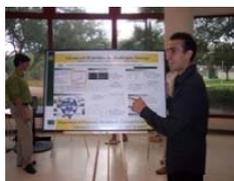
PV panels grace the roof of one of the tour houses.

Excelling Students



- CERC graduate student Pabitra Choudhury (Chemical Engineering) obtained his Ph.D. in September 2009, for his dissertation "Theoretical and experimental study of solid state complex borohydride hydrogen storage materials."
- Anthony d'Angelo, a CERC undergraduate, presented "Advanced Hydride Materials

for Hydrogen Storage" at the 2009 NSF Tampa Interdisciplinary Environmental Research (TIER) and Advanced Materials Research Experience for Un-



Anthony d'Angelo

dergraduates (REU) expo in July 2009. Anthony's CERC sponsors were Sesha Srinivasan and Michael Niemann.

USF serves more than 39,000 students and offers 228 degree programs at the undergraduate, graduate, specialist and doctoral levels including doctor of medicine.

Honors, Activities and Promotions

- Ralph Fehr (Electrical Engineering) won the T&D World Magazine Power Engineering Instructor of the Month in recognition of teaching excellence in the power engineering field.
- Vinay Gupta (Chemical Engineering) won the 2009 Jerome Krivanek Distinguished Teacher Award, from the USF Office of the Provost and Faculty Senate.
- Babu Joseph (Chemical Engineering) was elected Fellow of the American Institute of Chemical Engineers, in June 2009.
- USF, through CERC, was an official cosponsor of the "Hydrogen Production and Storage 2009 Forum," held in Washington, DC, Sept. 30-Oct. 2, 2009.
- Sesha Srinivasan (CERC) promoted to Assistant Professor at Tuskegee Univ., Tuskegee, Alabama.
- Vishnu Nanduri (Ind'l & Mgmt. Syst. Eng.) promoted to Assistant Professor at Univ. of Wisconsin, Milwaukee.



We will miss you Sesha!



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Big Ideas . . . Big Opportunities



The Clean Energy Research Center's mission is scientific research, technical and infrastructure development and information transfer. CERC is involved in fundamental investigations into new environmentally clean energy courses and systems – hydrogen, fuel cells, solar energy conversion and biomass utilization – that meet the needs of both the electric power and transportation sectors.



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Inducted into Pan American Academy of Engineering

Prof. Yogi Goswami was inducted into the Pan American Academy of Engineering in Mexico City during September 2009. Members are chosen based on their outstanding contributions in the field of engineering and in consciously working toward bettering the quality of life.



CERC co-director Yogi Goswami.

Goswami's work has made pioneering contributions in solar energy utilization. Goswami's research and technology contributions earned his induction into the Academy. Goswami was presented with a Member Medallion at the ceremony.

The Pan American Academy of Engineering (Academia Panamericana de Ingenieria) was founded in Panama in 2000, by the Pan American Federation of Engineering Societies in recognition that in the Americas, social progress and economic welfare depends largely on the intelligent use of technology and the activities of the people who created it: Engineers.

Membership in the Academy is a great honor and is based on the validity of the ethical, academic and professional merits and contributions to the progress of engineering.

For more information about the Pan American Academy of Engineering, please see:

<http://www.apingenieria.org/indexen.htm>