

PDF Versions of Fuel Cell Connection are posted at <http://www.usfcc.com/resources/backissues.html>

UNSUBSCRIBE using the link at the bottom of this email.

SUBSCRIBE at <http://lb.bcentral.com/ex/manage/subscriberprefs?customerid=9927>

~~~~~

## **FUEL CELL CONNECTION – March 2005 Issue**

~~~~~

IN THIS ISSUE

- * Hydrogen Aggressor Tested by Army NAC
- * Fuel Cell, Hydrogen Topics in DOD STTR Solicitation
- * Hydrogen Projects Receive Funding through DOE Clean Coal Program
- * Tokyo Gas Introduces Commercial Residential Fuel Cell System
- * OSU Engineers Develop Non-Toxic Chemical Catalyst for Hydrogen Production

~~~~~

### **CONTENTS**

#### **News on U.S. Government Fuel Cell Programs**

1. Sandia Researchers Developing Water-Splitting Nanotubes for Fuel Cells
2. Hydrogen Aggressor Tested by Army NAC
3. Fuel Cell-Powered Military Electronic Devices Planned for 2006
4. DOT Reorganization Moves RSPA Hydrogen Research to New RITA
5. New Federal Hydrogen Program Web Sites

#### **RFP / Solicitation News**

6. SEED Funding Available for Fuel Cell-Related Companies in Massachusetts
7. Fuel Cell, Hydrogen Topics in DOD STTR Solicitation
8. DOE Seeks Sources for Hydrogen Production Technology
9. DOE & NCMS Invite Project Ideas for Manufacturing Issues in Hydrogen & Fuel Cells
10. LIPA Issues RFP for 10 MW of Fuel Cell Power

#### **Contract / Funding Awards**

11. Hydrogen Projects Receive Funding through DOE Clean Coal Program

#### **State Activities**

12. Florida Hydrogen Initiative Announces New Projects

#### **Industry Headlines**

13. Tokyo Gas Introduces Commercial Residential Fuel Cell System
14. Fuel Cell Technologies Installs First Canadian Residential Fuel Cell System

#### **University Activities**

15. OSU Engineers Develop Non-Toxic Chemical Catalyst for Hydrogen Production
16. University Fuel Cell Roundup

#### **Administration**

About *Fuel Cell Connection*

Subscribe at <http://lb.bcentral.com/ex/manage/subscriberprefs?customerid=9927>

~~~~~

News on U.S. Government Fuel Cell Programs

1. Sandia Researchers Developing Water-Splitting Nanotubes for Fuel Cells

Researchers from Sandia National Laboratory are developing porphyrin nanotubes – which can be engineered to have minute deposits of platinum and other metals and semiconductors on the outside or inside of the tube – to split water at the nanoscale using sunlight. The nanotube devices could be suspended in a solution and used for photocatalytic solar hydrogen production. <http://www.sandia.gov/news-center/news-releases/2005/renew-energy-batt/nano.html>

2. Hydrogen Aggressor Tested by Army NAC

The U.S. Army's National Automotive Center is testing its first hydrogen-powered car, the Aggressor Alternative Mobility Vehicle, which uses a 10-kW fuel cell in a parallel hybrid configuration with an energy storage module. http://www.military.com/soldiertech/0,14632,Soldiertech_Cool050310,,00.html

3. Fuel Cell-Powered Military Electronic Devices Planned for 2006

MTI MicroFuel Cells announced plans to deliver fuel cell-powered products to the government and military markets in 2006. Products include military electronic devices such as sensors, rugged PDAs, and radios. <http://www.mechtech.com/newsandevents/article.asp?id=205>

4. DOT Reorganization Moves RSPA Hydrogen Research to New RITA

As part of a U.S. Department of Transportation reorganization, the Research and Special Programs Administration ceased operations on February 20, 2005. DOT's hydrogen research will now be handled under the new Research and Innovative Technology Administration. <http://www.rspa.dot.gov> <http://www.rita.dot.gov>

5. New Federal Hydrogen Program Web Sites

The Department of Energy recently launched a new web site focused on its Hydrogen Program, and the federal government announced a new web site for the president's Hydrogen Fuel Initiative (HFI), which links to the various programs under the HFI. <http://www.hydrogen.energy.gov> <http://www.hydrogen.gov>

RFP/Solicitation News

6. SEED Funding Available for Fuel Cell-Related Companies in Massachusetts

The Renewable Energy Trust, in Massachusetts, is accepting applications for its Sustainable Energy Economic Development (SEED) Initiative, which provides capital on affordable terms for companies undergoing new product development at the critical stage between R&D and the marketplace. Awards range from \$50,000 to \$500,000 and are available as a convertible loan on a competitive basis. Eligible companies must be Massachusetts-based and provide products or services related to fuel cells, biomass, or other eligible energy technologies. Deadline for applications is April 4, 2005. <http://www.masstech.org/SEED/>

7. Fuel Cell, Hydrogen Topics in DOD STTR Solicitation

The Department of Defense's Small Business Technology Transfer Program has issued its 2005 solicitation, with phase I award funding of up to \$100,000. Topics under the solicitation include Compact Formic Acid Fuel Cells and a JP-8 Fueled Person-Portable Fuel Cell-Powered Generator. Deadline for responses to the solicitation is April 15, 2005.
<http://www.dodsbir.net/solicitation/sttr05/default.htm>

8. DOE Seeks Sources for Hydrogen Production Technology

The Department of Energy is soliciting expressions of interest from companies wishing to participate in a joint research project under a Cooperative Research and Development Agreement (CRADA) with the Savannah River National Laboratory to develop a thermochemical cycle for the production of hydrogen. Any company interested in participating in this research project must respond with a letter of interest no later than April 21, 2005.
<http://www1.eps.gov/spg/DOE/WSRC/SRS/Reference%2DNumber%2DSRNL%2D03%2D2205%2DJS/SynopsisR.html>

9. DOE & NCMS Invite Project Ideas for Manufacturing Issues in Hydrogen & Fuel Cells

The U.S. Department of Energy and the National Center for Manufacturing Sciences (NCMS) are working together to identify and implement collaborative projects addressing manufacturing issues in hydrogen storage and fuel cell components. They are inviting one-page descriptions of collaborative projects for consideration in the program. NCMS anticipates projects will average \$250,000 in funding with an additional \$250,000 in cost sharing. Project ideas must be submitted by April 22, 2005, for consideration. <http://hydrogen.ncms.org/>.

10. LIPA Issues RFP for 10 MW of Fuel Cell Power

The Long Island Power Authority issued a Request for Proposals for the construction and operation of a fuel cell generation project capable of producing 10 MW of electricity. The deadline for responding to the RFP is April 25, 2005. <http://www.lipower.org/papers/RFP/fuelcell.html>

~~~~~  
**Contract / Funding Awards**  
~~~~~

11. Hydrogen Projects Receive Funding through DOE Clean Coal Program

DOE announced the award of \$62.4 million for 32 clean coal research projects, including twelve projects to develop hydrogen storage and generation technologies.
http://www.fossil.energy.gov/news/techlines/2005/tl_coal_bbfa.html

~~~~~  
**State Activities**  
~~~~~

12. Florida Hydrogen Initiative Announces New Projects

The Florida Hydrogen Initiative announced three hydrogen energy projects that include the installation of a fuel cell at a Florida interstate rest area, a hydrogen energy museum exhibit at the Orlando Science Center and a plan for a mobile hydrogen infrastructure in metro Orlando.
<http://www.h2florida.org/news/032105.htm>

~~~~~

## Industry Headlines

~~~~~

13. Tokyo Gas Introduces Commercial Residential Fuel Cell System

Tokyo Gas introduced a commercial Residential Polymer Electrolyte Fuel Cell Cogeneration System developed jointly with Ebara Ballard Corporation and Matsushita Electric Industrial. Two hundred units will be installed by the end of FY2005.

http://www.tokyo-gas.co.jp/Press_e/20041206-2e.pdf

14. Fuel Cell Technologies Installs First Canadian Residential Fuel Cell System

Fuel Cell Technologies installed its first 5-kW residential solid oxide fuel cell system in Canada, at the Canadian Centre for Housing Technology in Ottawa, where it will utilize natural gas as the fuel. <http://www.fct.ca/index.php?pressid=43>

~~~~~

## University Activities

~~~~~

15. OSU Engineers Develop Non-Toxic Chemical Catalyst for Hydrogen Production

Engineers at Ohio State University have developed a chemical catalyst they say increases hydrogen production without using a toxic metal common to other catalysts.

<http://www.stevenspublishing.com/stevens/eppub.nsf/d3d5b4f938b22b6e8625670c006dbc58/ddf1af29cd76dfca86256fc70053a6e8?OpenDocument>

16. University Fuel Cell Roundup

(summaries contributed by Kathy Haq, Dir. of Outreach and Communications, National Fuel Cell Research Center, UC Irvine, khaq@nfcrc.uci.edu)

A research team led by Professors Yoshitake Nishi and Haruhisa Uchida of Tokai University has developed technology to raise the operating speed of a hydrogen-based drive unit for vehicles by 100 times. The team will seek to apply the technology for car manufacturing by collaborating with auto parts makers, as it can be used for making the valves that adjust amounts of liquid according to hydrogen density. The drive unit is made of hydrogen-absorbent alloy of lanthanum and nickel. When it absorbs hydrogen, the alloy expands 20 percent and changes shape. The speed of this deformation becomes 100 faster when the alloy is covered with a thin layer of palladium. [7-March-2005, *The Nikkei Weekly* (Japan)]

A team of researchers at Oxford University has found a way to generate a potentially unlimited source of hydrogen for fuel cells using only daylight. A second Oxford team has developed a method of storing hydrogen at a high weight in a hydride that beats previous attempts to release the fuel at low temperatures. The first team placed transition metal nanoparticles inside a microporous oxide material that caused water to split into hydrogen and oxygen in ordinary daylight, without the need for an external electricity source like solar cells to drive the reaction. Professor Peter Dobson, academic director of Begbroke Science Park at Oxford, said the research could lead to a 'radical breakthrough' in hydrogen generation that would be simpler and cheaper than coupling a renewable energy source with an electrolysis unit. Dr. Tiancun Xiao, the Oxford inorganic chemist who made the discovery, is setting up a company called Oxford Catalysts to develop the technology. Elsewhere at Oxford, a team led by Professor Peter Edwards has found a way of storing hydrogen at 8-9 weight percent in a hydride that releases it again when subjected to temperatures of around 80 degrees Celsius. Hydrides can absorb

hydrogen molecules into their structure and release them to power a fuel cell without the need for bulky and inefficient gas or liquid storage. [11-March-2005, *The Engineer*]

A wind-to-hydrogen project at the new Renewable Energy Research and Demonstration Center at the University of Minnesota West Central Research and Outreach Center, in Morris, is expected to stimulate the use of renewable hydrogen in applications like fuel cells and localized fertilizer production. In the future, the facility will conduct research and demonstration projects on wind storage and on-demand renewable energy systems such as biomass and biodiesel generation, in addition to hydrogen fuel cells. A 230-foot wind turbine will be commissioned at the center in a ceremony scheduled for April 22 to coincide with the 35th observation of Earth Day. The turbine is the only large-scale wind research instrument at a public university and provides the foundation for the wind-to-hydrogen project. It will supply 5.6 million kilowatt-hours of power each year to the nearby University of Minnesota, Morris campus, supplying more than half its annual electricity use. [14-March-2005, PR Newswire US]

The University of Delaware fuel cell bus project recently received \$500,000 under the Transportation Equity Act of 2005. The university plans to develop and acquire two 40-foot, fuel cell powered buses as part of a larger fuel cell bus project to replace and augment older conventional buses that operate as part of the university's transit system. A key objective of the university's program is to support the development of fuel cell technology for transit applications, in addition to providing an efficient and environmentally sound transportation option. [15-March-2005, *States News Service*]

Georgetown University and UTC will supply one of two fuel cell buses to be displayed and used this week at the National Hydrogen Association's Annual Hydrogen Conference in Washington, D.C. The second bus is being supplied by ISE Corporation. Both vehicles will be put into service delivering conference attendees for tours of Shell's new retail fuel station that supplies hydrogen as well as conventional gasoline, located in Northeast Washington. The Shell hydrogen station will be used for fueling the ride-and-drive vehicles and buses during the three-day conference. [15-March-2005, *U.S. Newswire*]

The National Fuel Cell Research Center at the University of California, Irvine is the sponsor of a hydrogen fuel cell exhibit in the U.S. Pavilion at the 2005 World's Fair, called EXPO 2005, in Aichi, Japan. The sponsorship, made in association with the Pacific Rim Consortium on Energy, Combustion, and the Environment, was made possible by private donations, largely a major gift from Toyota Motor Sales, U.S.A. The expo opened March 25 and runs through Oct. 25. [22-March-2005, NFCRC news release]

Researchers from Purdue University are working to develop a high-altitude, helium-filled craft that may hover over the same spot for up to a year for applications in areas such as surveillance, homeland security, missile defense and weather forecasting. About ten Purdue researchers are involved in the work, funded by the U.S. Air Force Research Laboratory. The team is working to develop solar cells and an advanced fuel cell to power the craft. They also are developing the aerodynamic design and a control system to help keep the airship steady amid high winds and computer simulations to show how the craft would perform given specific design characteristics. [22-March-2005, *AScribe Newswire*]

For the second consecutive year, Caltech placed second among American universities and university systems for the number of patents awarded annually. Pasadena-based Caltech received 135 patents in 2004, and was once again slightly ahead of MIT, which received 132 patents. The entire nine-campus University of California system was in first place with 424 patents. Caltech is the smallest institution on the top-five list, which this year includes the entire University of Texas system and Johns Hopkins University. Roughly two-thirds of the inventions were licensed, which Caltech expects will one day lead to products that will benefit the public in fields ranging from nanotechnology for clinical diagnostics, fuel cells, and inexpensive power amplifiers for mobile handheld devices. [24-March-2005, *City News Service*]

A team of three Princeton University chemical engineering graduate students—Warren Hogarth, James Nehlsen and Swaroop Chatterjee—won the seventh annual Business Plan Contest for their proposal of a new fuel cell design for laptop computers. During the Feb. 26 competition, sponsored by the Entrepreneurship Club, students presented their business plans to a panel of judges made up of venture capitalist entrepreneurs. The top three finalists were awarded a total of \$10,000 in prize money. The winning design applies newly developed surface-functionalized mesoporous ceramic membrane technology to the concept of laptop batteries. The fuel cell can then be instantly recharged by a chemical cartridge in place of plugging it into an electrical source, such as a wall socket. [24-March-2005, *University Wire*]

~~~~~  
**Administration**  
~~~~~

Press releases and story ideas may be forwarded to Bernadette Geyer, editor, for consideration at bernie@usfcc.com.

Subscribe at <http://lb.bcentral.com/ex/manage/subscriberprefs?customerid=9927>

~~~~~  
**About Fuel Cell Connection**  
~~~~~

The Sponsors

US Fuel Cell Council -- The US Fuel Cell Council is the business association for anyone seeking to foster the commercialization of fuel cells in the United States. Our membership includes producers of all types of fuel cells, as well as major suppliers and customers. The Council is member driven, with eight active Working Groups focusing on: Codes & Standards; Transportation; Power Generation; Portable Power; Stack Materials and Components; Sustainability; Government Affairs; and Education & Marketing. The Council provides its members with an opportunity to develop policies and directions for the fuel cell industry, and also gives every member the chance to benefit from one-on-one interaction with colleagues and opinion leaders important to the industry. Members also have access to exclusive data, studies, reports and analyses prepared by the Council, and access to the "Members Only" section of its web site.
[\(http://www.usfcc.com/\)](http://www.usfcc.com/)

National Fuel Cell Research Center -- The mission of the NFCRC is to promote and support the genesis of a fuel cell industry by providing technological leadership within a vigorous program of research, development and demonstration. By serving as a locus for academic talent of the highest caliber and a non-profit site for the objective evaluation and improvement of industrial products, NFCRC's goal is to become a focal point for advancing fuel cell technology. By supporting industrial research and development, creating partnerships with State and Federal agencies, including the U.S. Department of Energy (DOE) and California Energy Commission (CEC), and overcoming key technical obstacles to fuel cell utilization, the NFCRC can become an invaluable technological incubator for the fuel cell industry.
[\(http://www.nfcrc.uci.edu/\)](http://www.nfcrc.uci.edu/)

National Energy Technology Laboratory -- The National Energy Technology Laboratory is federally owned and operated. Its mission is "*We Solve National Energy and Environmental Problems.*" NETL performs, procures, and partners in technical research, development, and demonstration to advance technology into the commercial marketplace, thereby benefiting the

environment, contributing to U.S. employment, and advancing the position of U.S. industries in the global market.

<http://www.netl.doe.gov>