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FUEL CELL CONNECTION - January 2009 Issue

IN THIS ISSUE

- * NETL Develops Improved SOFC Interconnect Coating Process
- * DOE Requests Information for Future Hydrogen Storage Materials Funding Opportunity
- * IdaTech Contracts for Delivery of 35 Backup Power Fuel Cell Systems
- * DOT Publishes Final Rule on Transport of Fuel Cells, Fuels On Board Passenger Aircraft
- * Micro SOFC Placed on Silicon Chip

CONTENTS

News on U.S. Government Fuel Cell Programs

1. NETL Develops Improved SOFC Interconnect Coating Process
2. BNL Scientists Develop New Catalyst to Advance Ethanol Fuel Cells
3. DOE Publishes Hydrogen Program Annual Progress Report
4. PNNL Fuel Cell Director Named Founding Member of Washington State Academy of Sciences

RFP / Solicitation News

5. DOE Requests Information for Future Hydrogen Storage Materials Funding Opportunity
6. Navy Issues BAA for Advanced Propulsion Systems
7. Army Seeks Sources of Fuel Cell Auxiliary Power Sources for Military Vehicles
8. DOD 2009.A STTR Solicitation Issued
9. Emerging Technology Demonstration Grant Program Issues Energy Efficiency Solicitation

Contract / Funding Awards

10. IdaTech Contracts for Delivery of 35 Backup Power Fuel Cell Systems
11. Army Awards Contract to Jadoo for Chemical Hydride Development

Legislative / Regulatory News

12. DOT Publishes Final Rule on Transport of Fuel Cells, Fuels On Board Passenger Aircraft
13. CEC Accepting Comments on Regulations to Define Fuel & Vehicle Technology Program

Industry Headlines

14. Micro SOFC Placed on Silicon Chip
15. Automotive X PRIZE Announces Division to Showcase Fuel Efficiency Efforts of Automakers

University Activities

16. University Fuel Cell Roundup

Administration

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**News on U.S. Government Fuel Cell Programs**  
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1. NETL Develops Improved SOFC Interconnect Coating Process

The National Energy Technology Laboratory (NETL), in collaboration with West Virginia University, developed an improved process for coating for solid oxide fuel cell (SOFC) interconnects. Researchers on the project developed an environmentally-friendly electroplating process that offers cost and “ease of operation” advantages.

http://www.ornl.gov/info/news/pulse/pulse_v277_09.html

2. BNL Scientists Develop New Catalyst to Advance Ethanol Fuel Cells

Scientists at Brookhaven National Laboratory (BNL), in collaboration with researchers from the University of Delaware and Yeshiva University, have developed a new catalyst to advance ethanol-powered fuel cells. The new catalyst – made of platinum and rhodium atoms on carbon-supported tin dioxide nanoparticles – is capable of breaking the carbon bonds in ethanol at room temperature. Carbon dioxide is the main product of the oxidation reaction.

http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=898

3. DOE Publishes Hydrogen Program Annual Progress Report

According to the U.S. Department of Energy (DOE) Hydrogen Program FY2008 Annual Progress Report, significant advances were made in 2008, including reduction of fuel cell manufacturing cost, an increase in the durability of membrane electrode assemblies, and improvements in the hydrogen storage capacity of various materials under investigation. The Progress Report is now available online and is downloadable for free.

http://www.hydrogen.energy.gov/news_annual_progress08.html

4. PNNL Fuel Cell Director Named Founding Member of Washington State Academy of Sciences

Subhash Singhal, fuel cell director at Pacific Northwest National Laboratory (PNNL), has been named one of 104 founding members of the Washington State Academy of Sciences (WSAS). Singhal received the 2008 Grove Medal for his work to advance solid oxide fuel cells. WSAS conducts commissioned studies and prepares scientific reports that assist with informing public policy-makers and facilitating new research initiatives.

<http://www.pnl.gov/news/release.asp?id=336>

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**RFP/Solicitation News**  
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5. DOE Requests Information for Future Hydrogen Storage Materials Funding Opportunity

DOE has issued a Request for Information (RFI) on the formation of new Centers of Excellence (CoE) for the research and development of hydrogen storage materials. The RFI seeks feedback from the research community and stakeholders which will then be used in the formulation of program strategies in a future CoE Funding Opportunity Announcement. Comments for this RFI are due February 6, 2009. http://www.hydrogen.energy.gov/news_rfi.html

6. Navy Issues BAA for Advanced Propulsion Systems

The Department of the Navy Office of Naval Research has issued a Broad Agency Announcement (BAA) in support of “innovative material concepts, engine components and integrated propulsion system technologies for highly reliable, low-cost, advanced gas turbine engines and propulsion systems that are significantly lighter, more powerful, more fuel efficient and that offer an overall higher capability than state-of-the-art propulsion systems.” The total amount of funding for the program is approximately \$45.5 million over five years, with \$500,000 available for projects in FY2009. Full proposals are due February 19, 2009.
https://www.fbo.gov/index?s=opportunity&mode=form&id=72ca5e2026fdb27d57888c7a799f5b8e&tab=core&_cview=0

7. Army Seeks Sources of Fuel Cell Auxiliary Power Sources for Military Vehicles

The U.S. Army Operational Test Command has issued a notice seeking sources capable of designing, developing and producing ruggedized fuel cell units suitable for use as auxiliary power sources for military armored and other vehicles. Interested parties should submit their Technical Capabilities in writing by February 23, 2009.
https://www.fbo.gov/index?s=opportunity&mode=form&id=f34efaf9aea2fd5a089ca73dde1072fa&tab=core&_cview=0

8. DOD 2009.A STTR Solicitation Issued

The U.S. Department of Defense (DOD) has issued its 2009.A Small Business Technology Transfer (STTR) solicitation for cooperative research and development on a variety of fuel cell and hydrogen topics, including Advanced Hydrogen Reformate Stream Purifier for Fuel Cell Applications. Phase I awards are a maximum of \$100,000 for a one year project. Successful Phase I projects may apply for Phase II awards of up to \$750,000. Prospective proposers may talk directly with Topic Authors until February 23, 2009. Proposals will be accepted from February 24, 2009, until March 25, 2009.
https://www.fbo.gov/index?s=opportunity&mode=form&id=d46cbd18329aaf73f062a08e33c1f1d6&tab=core&_cview=0

9. Emerging Technology Demonstration Grant Program Issues Energy Efficiency Solicitation

The California Energy Commission (CEC) Public Interest Energy Research (PIER) Emerging Technology Demonstration Grant Program has issued a solicitation seeking energy efficient technologies in the areas of Industrial, Water and Water Treatment, Data Centers and Energy Storage. The solicitation focuses on “emerging technologies that are past the ‘proof-of-concept’ stage, currently have a convincing laboratory-scale or a pilot-scale demonstration, and are now ready to be demonstrated in an industrial setting.” Up to \$4.4 million in funding is available under this solicitation with maximum per project funding of \$400,000. Abstracts are required and due March 5, 2009. Full proposals are due April 30, 2009.
<http://www.energy.ca.gov/contracts/PON-08-006/>

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**Contract / Funding Awards**  
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10. IdaTech Contracts for Delivery of 35 Backup Power Fuel Cell Systems

IdaTech has signed a contract to deliver 35 ElectraGen™ XTi backup power fuel cell systems to a major national U.S. mobile telecommunications company. The systems, which will be deployed in Florida, include a reformer that converts liquid fuel to high-purity hydrogen onsite as needed.
<http://www.idatech.com/press218296012.asp>

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**11. Army Awards Contract to Jadoo for Chemical Hydride Development**

The U.S. Army has awarded a contract to Jadoo Power Systems for further development of two chemical hydride fuels – Ammonia Borane and Siloxene – for use in fuel cells. Earlier research on these hydride fuels showed improvements in fuel cell energy density, load weight, usability and system cost savings. [http://www.jadoodpower.com/PDF/Press%20Releases/2008\\_12-17\\_Award%20of%20Army%20Contract.pdf](http://www.jadoodpower.com/PDF/Press%20Releases/2008_12-17_Award%20of%20Army%20Contract.pdf)

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Legislative / Regulatory News
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**12. DOT Publishes Final Rule on Transport of Fuel Cells, Fuels On Board Passenger Aircraft**

The U.S. Department of Transportation (DOT) Pipeline and Hazardous Material Safety Administration (PHMSA) has published its final rule allowing transport of fuel cells and a wide range of fuel cell fuels on board U.S. passenger aircraft as carry-on baggage, as well as providing for routine cargo shipment of fuel cells and fuel cell cartridges by road and rail, and international ocean shipment in bulk. The final rule expands the types of fuel cell cartridges permitted in carry-on baggage to include “water-reactive substances and hydrogen in a metal hydride.” The rule now aligns PHMSA provisions for transport of fuel cells and cartridges with international standards.

<http://phmsa.dot.gov/portal/site/PHMSA/menuitem.ebdc7a8a7e39f2e55cf2031050248a0c/?vgnextoid=4678defc4bd8e110VgnVCM1000001ecb7898RCRD&vgnnextchannel=26a1d95c4d037110VgnVCM1000009ed07898RCRD&vgnnextfmt=print>

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**13. CEC Accepting Comments on Regulations to Define Fuel & Vehicle Technology Program**

The California Energy Commission (CEC) is accepting comments on regulations to define the administration of the state’s Alternative and Renewable Fuel and Vehicle Technology Program. The proceedings and WebEx recordings from the January 8, 2009, Advisory Committee Meeting for the program are now available online. A public hearing to adopt the regulations is scheduled for February 25, 2009. Comments on the proposed regulations will be accepted until February 16, 2009.

<http://www.energy.ca.gov/proceedings/2008-ALT-1/documents/index.html#010809>  
[http://www.energy.ca.gov/ab118/notices/2009-02-25\\_NOTICE\\_OF\\_PROPOSED\\_ACTION.PDF](http://www.energy.ca.gov/ab118/notices/2009-02-25_NOTICE_OF_PROPOSED_ACTION.PDF)

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Industry News
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**14. Micro SOFC Placed on Silicon Chip**

SiEnergy Systems has placed a micro SOFC directly on a silicon chip, which takes advantage of the properties of silicon to operate at lower temperatures than standard SOFCs, using normal industrial materials. SiEnergy says its fuel cells, which are based on existing semiconductor fabrication techniques, will be able to generate power from gaseous hydrocarbon fuel sources, such as propane. <http://www.alliedminds.com/AnnouncementRetrieve.aspx?ID=17591>

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**15. Automotive X PRIZE Announces Division to Showcase Fuel Efficiency Efforts of Automakers**

The Progressive Insurance Automotive X PRIZE competition has announced a new Demonstration Division designed specifically to showcase the fuel efficiency efforts of large, established automobile manufacturers. The new division will not feature a “prize purse” but participating companies will receive a variety of special benefits including the ability to display and

promote current high-efficiency production vehicles. In the Automotive X PRIZE Competition Division, teams compete to design a production-capable vehicle that exceeds 100 MPGe, with \$10 million in prizes at stake. <http://www.progressiveautoxprize.org/news-events/press-release/progressive-insurance-automotive-x-prize-announces-new-division-for-large->

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University Activities
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*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](mailto:khaq@nfcrc.uci.edu))

Research results published in *Applied Microbiology and Biotechnology* describe the "proof of principle of a photosynthetic algal microbial fuel cell (PAMFC) based on naturally selected algae and electrochemically active microorganisms in an open system and without addition of instable or toxic mediators." The solar-powered PAMFC produced renewable biocatalyzed electricity continuously for more than 100 days, according to a paper authored by David Strik and colleagues at Wageningen University in The Netherlands.

<http://www.springerlink.com/content/9k58235872227487/fulltext.html>

The Dec. 15 issue of *New Scientist* magazine carries a story about fuel cell research led by Lin Zhuang of China's Wuhan University. Zhuang and his team have designed a new alkali membrane that would make it possible to replace platinum with a much cheaper nickel catalyst.

<http://www.newscientist.com/article/dn16275-platinumfree-fuel-cell-promises-cheap-green-power.html>

A team of engineering students from the Indian Institute of Technology at Kharagpur received third-place honors in Schneider Electric Industries 4th Annual Innovation Challenge, designed to identify budding engineering talent across India. The competition attracted 150 teams, and the IIT Kharagpur team won for coming up with a microbial fuel cell solution for bringing electricity to rural areas. The winners were announced Dec. 18.

<http://www.pr-inside.com/schneider-electric-announces-the-winners-r973584.htm>

The Oregon Institute of Technology, which identifies itself as "the only public, accredited polytechnic university in the Pacific Northwest," on Jan. 5 announced a new interdisciplinary emphasis area in Sustainable Technologies under the Environmental Sciences bachelor's degree program. As part of the new program, students can take courses with titles such as "Introduction to Renewable Energy," "The Built Environment," "Fuel Cells," and "Principles of Environmental Engineering."

<http://www.oit.edu/Default.aspx?DN=d4688e71-90b0-4c28-949d-90fd6db1513b>

*New Scientist* magazine reported in its Jan. 7 issue that a team of chemical engineers led by Saeed Moghaddam at the University of Illinois at Urbana-Champaign has created "the world's smallest working fuel cell." <http://www.newscientist.com/article/dn16370-worlds-smallest-fuel-cell-promises-greener-gadgets.html>

Stanford University on Jan. 12 announced that it had established the Precourt Institute for Energy. Lynn Orr, a professor in energy resources engineering, was named director of the new \$100 million institute, and will oversee a research portfolio that includes the science of materials used to convert solar energy to electricity, biomass energy conversions, advanced batteries, fuel cells, advanced combustion, and carbon capture and storage.

<http://news-service.stanford.edu/news/2009/january14/pie-011409.html>

Researchers from the University of Aberdeen have been awarded £288,000 from Scottish Enterprise's Proof of Concept Program to develop a more efficient and less costly low-temperature fuel cell that will tolerate carbon monoxide without the need for upstream reforming. The university announced the award on Jan. 13.

<http://www.abdn.ac.uk/mediareleases/release.php?id=1650>

*The Korea Herald* reported in its Jan. 14 edition that the South Korean government had announced plans to promote the development of 17 environmentally friendly and cutting-edge technologies to lead the nation's economic growth for the next 10 years. The technologies include renewable and low-carbon energy, and the government also plans to focus on the development of core technologies for next-generation wireless telecommunication, fuel cell power generation systems, high-tech ships and offshore facilities. As part of this effort, the government plans to open specialized universities and graduate schools "to foster research and development manpower." The complete article is available for a fee on the paper's Website:

<http://www.koreaherald.co.kr/archives/result.asp>

Tokyo's *Daily Yomiuri* newspaper reported in its Jan. 15 edition that a new technology developed by Professor Junichi Takahashi Obihiro of the University of Agriculture and Veterinary Medicine and Sumitomo Corp. produces hydrogen for use in fuel cells from cattle dung and urine. The research may pave the way for the eventual development of household "toilet generators."

<http://www.yomiuri.co.jp/dy/features/science/20090115TDY04303.htm>

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Press releases and story ideas may be forwarded to Bernadette Geyer, editor, for consideration at [fuelcellconnection @ yahoo.com](mailto:fuelcellconnection@yahoo.com).

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**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/>)

*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/>)

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