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## **FUEL CELL CONNECTION - April 2006 Issue**

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**News on U.S. Government Fuel Cell Programs**  
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*1. Hydrogen from JP-8 for U.S. Army*

Unitel Technologies has designed and built a fully automated computer-controlled pilot plant for making hydrogen from JP-8 for use in fuel cells. The unit will be shipped in May to the U.S. Army Communications Electronics Command at Fort Belvoir, Virginia, where the Army's Fuel Cell Technology Team will use the system to fine tune the process for converting logistical fuel into hydrogen for an SOFC stack on the battlefield. Other potential applications include APUs on military vehicles.

<http://media.prnewswire.com/en/jsp/latest.jsp;jsessionid=C06B1FD4DF37F8D3BF11CD4885359A3F.tomcat1?resourceid=3188899&access=EH>

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*2. NETL Publishes Report Detailing SECA and Other 2005 Accomplishments*

The National Energy Technology Laboratory has published a report on its 2005 Accomplishments, including details on the status of development of fuel cells under the Solid-State Energy Conversion Alliance (SECA) Program.

[http://www.netl.doe.gov/publications/others/accomp\\_rpt/accomp\\_fy05.pdf](http://www.netl.doe.gov/publications/others/accomp_rpt/accomp_fy05.pdf)

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**RFP/Solicitation News**  
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*3. Hydrogen Storage Technologies Solicitation Announced*

The Department of Energy has announced a solicitation for hydrogen storage technologies in support of the President's Hydrogen Fuel Initiative. The solicitation calls for R&D of new materials and concepts, as well as engineering science and analyses, for on-board vehicular hydrogen storage. Two parallel announcements for national laboratories and for non-laboratories will be made. A total of \$6 million is expected to be available for both announcements, subject to Congressional appropriations. Awards are expected to range from \$400,000 to \$2 million over two to five years. Pre-applications are due May 10, 2006. Only projects selected from the pre-applications will be invited to submit a final application.

[http://www1.eere.energy.gov/hydrogenandfuelcells/news\\_detail.html?news\\_id=9854](http://www1.eere.energy.gov/hydrogenandfuelcells/news_detail.html?news_id=9854)

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*4. DOT Invites Applications for Fuel Cell Bus Program*

The Department of Transportation is inviting applications for the National Fuel Cell Bus Technology Development Program, which seeks to develop commercially viable fuel cell bus technology and related infrastructure for transit revenue service operations. Approximately \$49 million is expected to be available for awards. Up to three projects will be selected to receive funding through this solicitation. White papers are due May 10, 2006. Proposals are due July 14, 2006.

<http://www.grants.gov/search/search.do?mode=VIEW&opId=9008>

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*5. California Clean Tech Open Launched to Award Clean Energy Business Proposals*

The California Clean Tech Open invites entrepreneurs to compete for \$50,000 in prizes in five categories, including energy efficiency and transportation technologies. Winners also receive legal, accounting and other professional services. Applications are due May 19, 2006. Finals will be held in late-September 2006.

<http://www.cacleantechopen.com/index.shtml?page=press&mode=4>

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*6. DOE Issues Funding Opportunity for HBCU-OMI Program*

DOE has issued a new funding opportunity for Support of Advanced Fossil Resource Conversion and Utilization Research by Historically Black Colleges and Universities and Other Minority Institutions. Topics covered include sensor networks for emerging fuel cell power systems and advanced materials for hydrogen storage and high-temperature fuel cells. Awards will range from \$80,000 to \$200,000. Deadline for proposals is June 13, 2006. <https://e-center.doe.gov/iips/faopor.nsf/3b3cff0a4a1f243485256ec100490e1a/5fe1980b2b9730a88525715000544603?OpenDocument>

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*7. Fuel Cells Qualify for NJ CHP Incentives*

Fuel cells are included in the list of technologies eligible for incentives under the New Jersey Clean Energy Program's Combined Heat and Power Program. Incentives will be paid out only up to one megawatt of capacity, with no minimum project size. Applications are being accepted until June 30, 2006.

<http://www.njcleanenergy.com/html/Combined/combined.html>

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*8. DOE Announces \$52 Million Solicitation for Basic Hydrogen Research*

DOE announced a forthcoming solicitation to provide \$52.5 million in funding to support basic research to assist in overcoming the scientific challenges associated with the production, use and storage of hydrogen. The solicitation is expected to be released by the end of April, but had not yet been published at the time of this newsletter's writing.

<http://www.energy.gov/news/3439.htm>

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**Contract / Funding Awards**  
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*9. Catacel Receives Grants for Fuel Cell Component Development*

Catacel Corporation has received more than \$1.5 million in grant funding for design and development of components for the fuel cell industry. Two grants were received from the Edison Materials Technology Center, a third grant was received from the National Science Foundation, and a fourth grant was received from the Ohio Department of Development. Projects include development of a platform heat exchanger and a reformer for producing hydrogen from diesel fuel. <http://www.catacel.com>

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**State Activities**  
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*10. Ignite Clean Energy Competition Hosted by MIT Enterprise Forum*

The Massachusetts Institute of Technology is hosting the Ignite Clean Energy Competition, offering \$125,000 to the best clean energy business proposal. One of the ten finalists, the Hydrophen team, proposes to use a nano-membrane technology to produce high-purity hydrogen from water. The final round of the competition is set for May 9, 2006 at the MIT Stata Center.

<http://www.mitforumcambridge.org/EnergySIG/IgniteCleanEnergy.html>

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*11. Connecticut Offers Grants for DG and CHP*

The Connecticut Department of Public Utility Control adopted guidelines that provide incentives to customers who want to invest in distributed generation, which include monetary grants in proportion to the amount of electric load a customer will remove from the grid. Grants of up to \$200 per kilowatt are available for emergency generators. Grants up to \$450 per kilowatt are available for base-load generation, including CHP. Low interest loans will be available to customers seeking to finance DG projects 50 kW or greater.

<http://www.irecusa.org/connect/enewsletter.html>

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*12. IREC Publishes Updated Interconnection, Net-Metering Tables*

The Interstate Renewable Energy Council has published updated versions of its state-by-state net-metering and interconnection tables. The tables are available on the internet free of charge.

<http://www.irecusa.org/connect/statebystate.html>

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**Industry Headlines**  
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*13. Medis Announces Fuel Cell Breakthroughs for Portable Electronics*

Medis Technologies announced a new fuel cell platform to address markets including laptops, VoIP power-up systems, and stationary power for home use. Prototype demonstrators of the new platform provided over 15 watts and up to 12 volts of power over a period of 12 hours from a single fueling.

<http://www.medistechnologies.com/show-news.asp?ID=274>

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*14. ReliOn Introduces New Fuel Cell Backup Power Products*

ReliOn introduced two new fuel cell backup power products, the T-1000™ and T-2000™. The systems are designed specifically for communications backup power application, providing from 600 W to 12 kW depending on configuration.

<http://www.relion-inc.com>

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*15. DaimlerChrysler Introduces Fuel Cell-Powered Police Car*

DaimlerChrysler has introduced a fuel cell-powered police vehicle, based on the Mercedes F-Cell, which will be operated by the Wayne State University Police Department in Detroit's Cultural Center. The vehicle will be refueled at NextEnergy's new hydrogen fueling station.

<http://media.prnewswire.com/en/jsp/latest.jsp?sessionId=ED73C4ADD6E1F1F7AA30F95D18B20A64.tomcat2?resourceid=3181817&access=EH>

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*16. Jadoo Expands Fuel Cell Product Line for Off-Grid Markets*

Jadoo Power Systems introduced its expanded line of fuel cell products – FillOne™ refill station, PowerBase™ desktop support stand, and N-Stor360™ fuel canister – designed for “off-grid” critical power markets including professional broadcasters, portable offices, and emergency responders. The products were launched at the National Association of Broadcasters convention in Las Vegas. <http://www.jadoopower.com>

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**University Activities**  
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#### 17. UC-Davis Launches Energy Efficiency Center

Hydrogen fuel production, power systems for fuel cell vehicles, and fuel cell buses are topics that will fall under the purview of the new million-dollar Energy Efficiency Center at the University of California-Davis. Funding for the center was provided by the California Clean Energy Fund.

[http://www.news.ucdavis.edu/search/news\\_detail.lasso?id=7713](http://www.news.ucdavis.edu/search/news_detail.lasso?id=7713)

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#### 18. 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))

The National Science Foundation recently presented a Faculty Early Career Development Award to Dean R. Wheeler, an assistant professor of chemical engineering at Brigham Young University. Wheeler will receive a \$400,000 grant, considered one of the most prestigious awards for junior faculty in science and engineering, for research and educational activities over a five-year period. Along with student research assistants, Wheeler will perform large-scale molecular simulations of electrocatalysis. The research will allow better understanding of molecular behavior and improved control of electrochemical reactions used in devices such as fuel cells, batteries and chemical sensors. [3-Apr-2006, *Deseret Morning News* (Salt Lake City)]

Space Propulsion Systems, Inc. of Clearwater, Fla., announced that an independent review of its patented Advanced Performance, New Generation, Micro-Fuel Cell-based solid rocket propellants was completed by the Chemical Engineering Department of the University of South Florida. SPS reported the review revealed that, without modification, the solid propellants will demonstrate significant safety in storage and use, while providing significant performance improvements by allowing the use of the most energetic solid propellant ingredients known to the industry, which currently cannot be used due to product instability and safety issues. This review process was a final step in commercializing this product. [7-Apr-2006, *Market Wire*]

The Wayne State University Police Department in Detroit will operate what DaimlerChrysler claims is the first fuel cell-powered police vehicle in the world. The Mercedes F-Cell will be used as a supervisor's vehicle on and in the immediate vicinity of the campus, located in Detroit's Cultural Center. Outfitted with a third-generation police radio, decals, lights and sirens, the new F-Cell is a look into the future use of fuel cell vehicles. The demanding operation of a police car will produce valuable data to help develop fuel cell technology. The Wayne State Police Department F-Cell vehicle will be refueled at NextEnergy's new hydrogen fueling station. The car will serve as a learning laboratory for students in WSU College of Engineering Alternative Energy Technology. [7-Apr-2006, *PR Newswire US*]

Micro-fuel cell technology originally developed at the University of Illinois and licensed by a private company will be used in test units for the military in early 2007. The fuel cells were developed at the University in 2001. Larry Markoski, one of the primary developers, bought an exclusive license for the technology from the university for his company, INI Power Systems, in 2002. Markoski is president and chief technical officer for INI Power Systems, which has offices in North Carolina and Connecticut. INI Power Systems is looking at portable electronic devices, like laptops, as the main application for the micro-fuel cells, Markoski said. The university research was funded through a grant from the Army Research Office. "We look forward to the deployment of test communications units for the military in early 2007 and we've had many offers for more consumer level electronics," Markoski said. [11-Apr-2006, *University Wire*]

FuelCell Energy, Inc., and its partner Alliance Power Inc., have announced the sale of a 1 megawatt fuel cell power plant to California State University, Northridge for a combined heat and power application to help the university meet its goals for greater energy independence, capital growth, cost management and increased use of green power. The installation will generate base load electricity for the university's facilities and surplus heat for hot water. Uniquely, the university also plans on routing exhaust from the heat exchanger into an adjacent greenhouse and

arboretum to enhance photosynthesis, boosting plant growth and harvests by 10 to 40 percent. The carbon dioxide enrichment potential provided by the fuel cell plant may be used for specialized plant research, or as a convention of study within the regular biology academic program—an opportunity rarely made available to baccalaureate biology students. The DFC power plant will be commissioned in the second half of 2006 and operated by CSUN with technical support from FuelCell Energy and Alliance Power. CSUN's unit will be the single largest fuel cell power plant at any university in the world and is the seventh DFC plant of any capacity installed at a university. [20-Apr-2006, *Business Wire*]

The opening of the solid oxide fuel cell facility at the University of Toronto at Mississauga marks Canada's first installation of solid oxide fuel cells in a university student residence as well as the world's first multi-unit installation. The facility houses four 5-kilowatt solid oxide fuel cell systems developed by Fuel Cell Technologies Ltd. These systems will serve as a primary source of combined heat and power for 12 townhouse units in the UTM student residence complex. The \$2-million project will generate 20 kilowatts of "clean" power for the townhouse units. If the units require more than 20 kilowatts of power, the energy will come from the Ontario power grid. The solid oxide fuel cell systems are connected to the power grid but can operate even if the grid goes down. If a blackout occurs, for example, the residence units will remain at power. This project is sponsored by the Government of Canada's Hydrogen Early Adopters Program, UTM, Fuel Cell Technologies Ltd. and Air Liquide Canada. The project forms another part of the GTA Hydrogen Village program, a partnership among industry, government and academia committed to accelerating the commercialization of hydrogen and fuel cell technology in Canada. [18-Apr-06, *FuelCellWorks*]

Oxford University scientists have built an enzyme-based biological fuel cell that takes oxygen and hydrogen from an atmosphere to power electrical devices. The enzymes used are isolated from naturally occurring bacteria that have evolved to use hydrogen in their metabolic process. The unique features of the enzymes are that they are highly selective and tolerant of gases that poison traditional fuel cell catalysts, such as carbon monoxide and hydrogen sulphide. Since the enzymes can be grown, they represent a cheap and renewable alternative to the expensive platinum-based catalysts used by others in hydrogen fuel cells, the researchers said. The device built by a team headed by chemistry Professor Fraser Armstrong has a fuel cell consisting of two electrodes coated with the enzymes. They are in a small glass tank containing normal air with a few percent of added hydrogen. [18-Apr-2006, *UPI Science News via Thomson Dialog NewsEdge via TMC.net*]

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

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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/>)

*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>)