

– DOE Supports Successful Oil Research and Recovery Programs

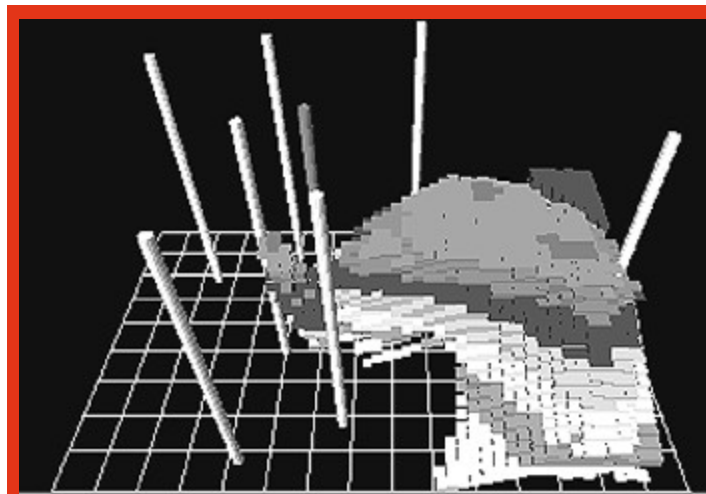
According to the Department of Energy (DOE), approximately two-thirds of the discovered oil in the U.S. cannot be recovered economically—mainly because of harsh environments with high temperatures and high pressure downholes. But around the country, several DOE-sponsored research facilities and collaborative programs focused on oil recovery are helping to counter that statistic.

Optical Fiber Sensors

A new oil recovery project at the Virginia Tech Photonics Lab is exploring the promise of optical fiber sensors for data gathering. Conventional electrical and electronic sensors and measurement devices have been unreliable in getting the information needed for the complete and efficient extraction of oil reserves in existing reservoirs.

The new sensors will monitor pressure, temperature, oil flow, and acoustic waves in downhole oil wells and will allow for self-calibrating, low cross-sensitivity measurements at elevated temperatures. Offering more

accurate measurements and cheaper production and operating costs, the sensors are particularly attractive because of their small size, immunity to electromagnetic interference, and ability to operate in high temperatures,



Interwell Seismic Imaging: This graphic illustrates a 3-D interwell seismic reconstructed image of a volume of CO₂ injected in a CO₂ pilot project in the Permian Basin of west Texas.

high pressure, and corrosive environments from a remote area.

The fiber sensors are expected to significantly improve reservoir characterization and evaluation—resulting in less risk and more effective

regulation of oil flow in productive wells (including hard-to-reach offshore and horizontal well-based production). The 42-month program is jointly funded by the DOE, Chevron Research and Technology, and Virginia Tech.

For more info: Anbo Wang, 540-231-4355, awang@vt.edu; Rhonda Lindsey, 918-699-2037, rlindsey@npto.doe.gov

Interwell Seismic Technology

Besides exploring for new reserves, 3-D surface seismic imaging is now an important part of monitoring and exploitation (especially in reservoir description). New projects are now underway at Advanced Reservoir Technologies (ART) in Addison, TX to evaluate the use of 4-D, or “time-lapse”

3-D, imaging of reservoirs for monitoring data such as changes in time and relativity of fluid movement—important information that helps reservoir engineers with project planning and management.

Surface seismic or medical imaging technology can be applied to seismic data acquired at or near

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New EduLink Newsletter Inside!

Inside this issue of *NewsLink*, you'll find the first issue of the revamped *EduLink*—a quarterly FLC newsletter dedicated to “transferring technology to education.” Published by the FLC's Education Committee, this free newsletter will highlight federal lab alliances with educational institutions. If this topic interests you or someone you know, subscribe by sending an e-mail to jbegley@utrsmail.com and typing “Subscribe EduLink” in the subject line. Be sure to include your name, mailing address, and phone number.

INSIDE

This *NewsLink* focuses on ENERGY, OIL, and GAS. The next issue will focus on environmental technologies.

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reservoir level for one or more wells in a producing field. Using special seismic source and receiver tools designed for borehole use, interwell seismic technology shows great promise for future development and use in reservoir description and management and high-resolution imaging of the reservoir environment. The cost savings could also be substantial.

The project was subcontracted to ART by Oxy under a Class II project that is part of the DOE's Reservoir Classification Program.

For more info: Jim Justice, 972-418-0992; Gary Walker, 918-699-2083, gwalker@npto.doe.gov

New Petroleum Research Facility

To find ways to increase oil recovery and lower operational costs, a new petroleum research facility at the University of Tulsa (TU) will simulate the drilling of an oil well in high heat and pressure conditions below ground.

TU's new "flow loop" at the Advanced Cuttings Transport Facility will examine the behavior of compressible fluids and lighter weight foams (which will be used more frequently in future drilling operations), as well as fluids designed for more environmentally sensitive offshore operations. The flow loop simulates the continuous circulation of fluids and cuttings of an actual field drilling operation—allowing them to be studied in highly elevated temperatures and pressures.

The facility is the centerpiece of a 5-year, \$5.9 million joint project between the DOE (the key funding source) and nine major oil and service partnering companies. The DOE's National Petroleum Technology Office (NPTO) in Tulsa secured the grant.

A multidisciplinary team of TU faculty science professors and engineers is tasked with the difficult technical challenges, while students will tackle the bulk of the cutting-edge research and experimental work. The first studies will examine one of the new-generation fluids used for offshore drilling and the behavior of foam, which has a high cuttings transport capacity.

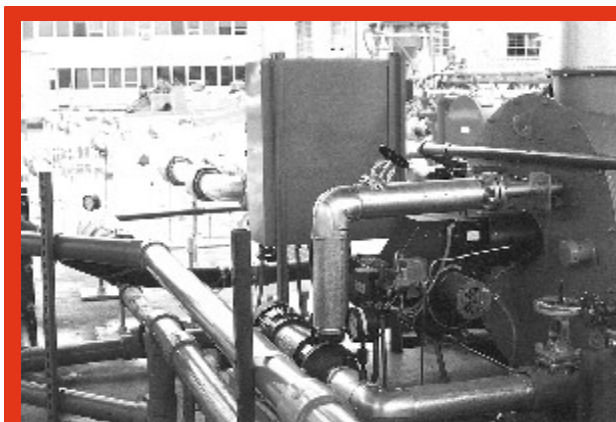
For more info: Dr. Troy Reed, 918-631-5174; Rhonda Lindsey, 918-699-2037, rlindsey@npto.doe.gov

Petroleum Research Center

The Petroleum Research Center (PERC) at the University of Utah carries out applied research and graduate training in: optimized oil and gas recovery; reservoir and production simulation and process control; and the chemical and physical properties of petroleum related to solving production and transport problems. With tech transfer an important function, PERC has research

affiliations with both major and independent petroleum companies. Several research projects are sponsored by the DOE, including:

- ◆ **Wax Precipitation in the Trans-Alaskan Pipeline System (TAPS).** This project—cosponsored by the Alyeska Pipeline Company—seeks to understand and solve wax precipitation problems in TAPS's 800-mile pipeline system. By studying precipitation causes, PERC seeks to develop practical, low cost solutions.



Simulated Drilling: In the new flow loop at the University of Tulsa, fluids and cuttings circulate continuously to simulate an actual drilling operation in the field.

- ◆ **Carbon Dioxide Induced Solids Precipitation.** The most common form of enhanced oil recovery, carbon dioxide injection leaves behind dark solids ("asphaltenes"). This 3-year project focuses on studying the nature of solids deposited in production wells, determining the precipitation mechanism, and developing solutions.

- ◆ **Optimized Thermal Heavy Oil Recovery.** At the world's second largest thermal heavy oil recovery operation in the San Joaquin Basin in California, an integrated team used innovative, low-cost methods

to bring part of an oil field back to commercial production. Cosponsored by Shell and ExxonMobil, the project was recognized as Hart's "Best of the Pacific" enhanced oil recovery project.

- ◆ **Online, Optimization-Based Simulation of Fractured and Non-Fractured Reservoirs.** In this online project, PERC engineers and scientists are improving current reservoir descriptions and simulation methods to enable independent producers to access and use the technology as an effective tool in reservoir management and improved oil recovery. **NL**

For more info: Steve Schamel, 801-585-5299, www.perc.utah.edu



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FED LABS FLASH

Technology transfer news, notes, and events within the federal lab community

Maximizing Mini Power Producers

Clean, affordable, and highly efficient solid oxide fuel cells on the market in 10 years—that is the goal of a new industry-government-university consortium led by two DOE labs—**Pacific Northwest National Lab (PNNL)** and the **National Energy Technology Lab**. Called the **Solid-State Energy Conversion Alliance (SECA)**, the consortium's goal is to develop a fuel cell that meets the power needs of multiple markets and runs on abundant fossil fuels. SECA members believe they can reduce fuel cell costs via mass production of a versatile, five-kilowatt fuel cell module. Near-term applications include auxiliary power to operate heaters, air conditioners, and other accessories in autos and semi-trucks. Developers also foresee "stackable" modules that can be combined to accommodate larger power needs. DOE funding for SECA is projected to be \$350 million over the next 10 years.

For more info: PNNL Public Affairs, 509-375-3776

DOE Study Focuses on Keeping Nation's Power On

A recent DOE study headed by **Sandia National Labs** suggests that major power emergencies could be averted if power companies adopt new command and control software that predicts future energy demand rather than simply responding to it.

Traditionally, power companies use state-of-health software tools to monitor how power is flowing from place to place, watch for the telltale signs of outages, and determine whether additional power should be purchased. The DOE report concludes that these "deterministic" grid-monitoring tools are becoming outdated and that

more sophisticated software based on "probabilistic" risk assessment is needed. Such software would include mathematical models that simulate load flow, dispatch options, weather factors, contingencies, and more. The report also suggests further study of a "distributed power grid": the idea that hundreds of traditional and nontraditional generation sources and storage devices could supply power to the grid—enabling less reliance on large-scale power plants and providing a broader, more stable foundation. The report was prepared as part of the DOE's **Transmission and Distribution Reliability Program**, which focuses on improving the reliability of the nation's electric grid. As part of the program, DOE formed the **Consortium for Electric Reliability Technology Solutions (CERTS)**, which brings together utility

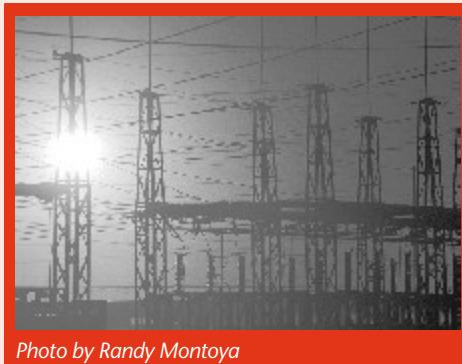


Photo by Randy Montoya

companies, universities, and national labs to study and recommend solutions to grid reliability issues.

For more info: www.sandia.gov/media/NewsRel/NR2000/gridrel.htm

National Protection Center Protects Emergency Responders

The **National Protection Center (NPC)** at the **Soldier and Biological Chemical Command (SBCCOM)** is enhancing the safety and survivability of the nation's emergency responders by providing the best protective clothing and equipment science can offer at affordable prices. The center also helps government, industry, and academic researchers leverage their efforts and avoid duplication. The NPC is working in conjunction with **NASA Ames Research Center** and the **National Institute for Justice's Office for Law Enforcement and Corrections Technology Commercialization**. Committed to developing technologies with both civilian and military applications, the NPC is perfectly positioned to capitalize on the U.S. **Army Natick Soldier System Center's (NSSC)** world-class textile and materials research capabilities, individual protective equipment design and development expertise, and unique testing facilities. The NSSC is also home to the **Navy Clothing and Textiles Research Facility** and **Army Research Institute for Environmental Medicine**. One cooperative agreement with the **University of Massachusetts at Dartmouth** focused on developing smart textiles that can sense and react to ever-changing physical and chemical environments.

For more info: Bill Haskell, 508-233-4477,
William.Haskell@natick.army.mil

Spin-Off Company Commercializes MEMS Metrology Tool

A spin-off company has been started to commercialize a MEMS metrology tool developed under a contract managed by the **Air Force Research Lab Information Directorate** and sponsored by **DARPA's Microsystems Technology Office**. The tool is being ported to multiple university users and will support model development for mixed technology CAD tools for early MEMS design experiments and insertions. The tool uses strobed interferometric microscopy to image and analyze 3-D motions of MEMS devices. The product contains certain test and data analysis protocols involving non-strobed blurred images that are a direct result of collaborative work between the directorate and **MIT**. **NL**

For more info: Frank Hoke, 315-330-3470, franklin.hoke@rl.af.mil



TECHNOLOGY WATCH

Federal laboratory technologies available for technology transfer

Marine Imaging Technology Good News for Oil and Gas Industry

A technique developed by the DOE's Lawrence Berkeley National Lab (LBNL) has the oil industry anticipating its potential use for finding petroleum and natural gas reservoirs hidden beneath underwater bodies of salt. Called "marine magnetotellurics" (or marine MT), the technique augments seismic imaging in geological surveys by revealing the size and thickness of underwater salt structures. This info can help researchers gauge the prospect that the sediment underlying the salt is rich in oil or gas. "Most of the undiscovered oil and gas in the Gulf [of Mexico] and other bodies of water throughout the world are hidden under salt, where the companies couldn't see it using seismic imaging," says Michael Hoversten, a geophysicist in LBNL's Earth Science Division. "By showing where and how deep the possible pay zones are, marine MT can go a long way toward helping a company pick its drilling targets." In addition, marine MT costs significantly less than seismic imaging. Computer programs are being developed to allow marine MT data to be integrated with seismic imaging data, which should improve the accuracy of predicting underwater petroleum and gas reservoirs and enable the technique to be applied to geologic structures under lava flows and other difficult formations.

For more info: www.lbl.gov/Science-Articles/Archive/magnetotellurics.html

For info on other LBNL oil and gas research projects: <http://esd.lbl.gov/ER/oilgasproj.shtml>

Software Casts Wide Net for Energy, Spatial Info

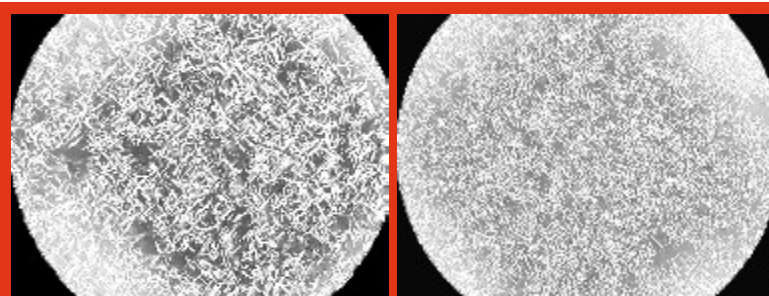
As we enter the 21st century, experts anticipate that nine-tenths of the nation's new electrical generating capacity will be gas-fired. To determine the best sites for building new plants or adding units, plant managers and other decision-makers must have ready access to data on fuel supplies and demand for electricity. Now GASMAP—an Internet-server-based system developed by the DOE's Argonne National Lab—provides the needed energy and spatial information in an integrated, user-friendly format. Using GASMAP's analytical and tracking capabilities, decision-makers can assess pipeline capacities, address routing and location issues, and obtain data on natural gas sales, customers, system flow, and storage. Users can access GASMAP's vast data via the

Internet to generate maps that display specific transmission lines or lines layered with other energy data and background information; map data are available on more than 100 interstate pipelines. The system also contains all government data forms collected by the DOE. Industry users can review data by company, state, or topic and can securely add proprietary information. Training generally takes less than a day, and a special feature ensures that, if help is needed, an Argonne staffer can connect to a user's session and provide interactive guidance.

For more info: www.techtransfer.anl.gov/software/gasmap.html

AFRL Research Could Revolutionize Jet Fuel

The Fuels Branch of the Air Force Research Lab's Propulsion Directorate is beginning the second year of a 5-year program to improve the low temperature properties of JP-8 fuel via the use of additives. JP-8 is the jet fuel powering all Air Force aircraft—with the exception of the high-altitude U-2 reconnaissance aircraft. The goal is to replace the U-2's JP-TS fuel with the more economical and readily available JP-8. The dilemma has been that only JP-TS provides the decreased freeze-point and elevated thermal stability required for the U-2's higher altitude



Improved Jet Fuel: The Fuels Branch of the Air Force Research Lab's Propulsion Directorate is working to improve the low temperature properties of JP-8 via the use of additives. "Neat" JP-8 is shown on the left; JP-8 with cold flow enhancer is shown on the right.

flights. Although JP-8 has already become more effective via the introduction of the additive package +100 (which raised the fuel's thermal stability), JP-8+100 still falls short of JP-TS low temperature capabilities—prompting researchers to expand JP-8+100's temperature range at the lower end. Cost is a motivator because JP-8 is roughly one-fifth the cost of JP-TS, which could reduce U-2 fuel costs by as much as 80%. Other nations and commercial airlines have expressed interest in the fuel additive program. To support the R&D effort, the directorate opened a new cold flow fuel lab that houses a cold stage microscope, differential scanning calorimeter, and a low temperature fuel wing tank simulator.

For more info: Kristen Schario, 937-255-3428, kristen.schario@wpafb.af.mil

Strong Lightweight Tanks and Pipes for Chemically Aggressive Fluids

NASA Marshall Space Flight Center is seeking qualified companies to test and develop a process for making composite layered tanks and pipes that can store and carry

TECH WATCH *continued*

highly unstable fluids (such as 90% hydrogen peroxide and cryogenic fluids). Tanks made using this process offer better containment of fluids and weigh less than aluminum or fiberglass tanks. The process also overcomes problems associated with metallic and other composite tanks—including cracking, high weight, and the inability to contain highly unstable fluids. Containers can be custom designed to withstand a variety of temperatures and pressures. Potential applications include alternative-fuel motor vehicles, offshore drilling and oil production, liquid-oxygen tanks for scuba equipment, chemical manufacturing, and fossil fuel transportation and storage.

For more info: Amy Witsil, 919-541-6923, awitsil@rti.org

Energy Efficiency at “Core” of Home

“Home sweet energy-efficient home” could be the sign hanging inside a manufactured home built with foam core panels designed to reduce heating and cooling costs by as much as 50%. This summer, researchers from the DOE’s **Pacific Northwest National Lab** are monitoring the potential energy efficiency of a new manufactured home constructed with structural insulated panels (SIPs). The panels’ foam core better insulates and controls air leakage than traditional building materials, and less lumber is used to build the homes. Through the DOE’s **Building America** program, researchers will analyze and report the home’s energy efficiency, affordability, and structural integrity. The home was built with the DOE’s technical support at the **Champion Enterprises** factory in Silverton, OR.

For more info: www.pnnl-sips.org

Cleanup Method May Save Oil and Gas Industry Millions

Oil and gas producers may save millions of dollars in cleaning up soils contaminated with naturally occurring radioactive materials thanks to an on-site soil sampling and testing method developed by the DOE’s **Argonne National Lab**. Naturally occurring radioactive material accumulates when the production of oil and natural gas from underground reservoirs carries small quantities of radium to the surface. Over time, the radium can concentrate in pipe scale and sludge deposits, which can then contaminate soil and equipment. The traditional cleanup approach involves complicated soil sampling techniques and shipping samples to offsite labs for analysis—a time-consuming and costly

process. But a recent demonstration has shown that using Argonne’s Adaptive Sampling and Analysis Program (ASAP) can dramatically reduce the time and money needed to characterize and remediate sites contaminated by naturally radioactive materials. ASAP combines real-time data collection techniques with in-field decision-making for faster and more precise site characterization. At a recent demo, ASAP saved a site owner at least \$36,000 in disposal costs.

For more info: Cynthia Wesolowski, 800-627-2596, partners@anl.gov



Home Sweet Energy-Efficient Home: The set-up crew assembles a home made from foam core panels that could reduce heating and cooling costs by as much as 50%.

USDA Biofuels Research Program

The **USDA Agricultural Research Service Biofuels Research Program** is an investment in an alternative future for U.S. agriculture—where an increased use of renewable agricultural resources as biofuels and value-added bioproducts reduce dependence on foreign oil, decrease environmental pollution, and benefit farmers and consumers. Two major research efforts are currently focusing on ethanol from raw agricultural materials and biodiesel from American farms.

For more info: www.nal.usda.gov/ttic/biofuels.htm

Study Evaluating Feasibility of Biodiesel Production Facilities

Under the terms of a recent Cooperative Research and Development Agreement (CRADA) with the **Naval Air Weapons Center** in Point Mugu, CA, **Biodiesel Development Corporation (BDC)** is evaluating the feasibility of establishing biodiesel production facilities using grease trap and high free fatty acid (hffa) used cooking oils as feedstocks. The project will focus on three areas of feasibility—technical, marketing, and legal. The objective is to assess the suitability and availability of feedstocks relative to receptive biodiesel markets with favorable legal and regulatory environments and to determine viable locations for biodiesel production facilities using these types of

Please see TECH WATCH, p. 6

Don't see what you're looking for?

Looking for a specific technology or facility at a federal lab? Submit a Technical Request to the **FLC Laboratory Locator**, who will find the answers you need—at no cost! Go to the FLC web site at www.federallabs.org and click on LABORATORY LOCATOR or call 888-388-5227 or 856-667-7727 and ask for Frank Koos or Rick Christ.

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feedstocks. BDC acquired an exclusive license from the **University of Toronto** for a continuous flow process (known as Phaster) that produces biodiesel from hffa feedstocks. The advantage of Phaster is that it is faster, cheaper, and cleaner than other processes. Cost is particularly important as price has been a principal barrier to market acceptance of biodiesel. With Phaster, it costs only \$1.40 to produce a gallon of diesel.

For more info: Dr. Mike Sullivan, 805-989-9208, sullivanme@navair.navy.mil; Russell Teal, 305-743-3492, rteall@aol.com

Advanced Diesel Desulfurization Catalysts May Lead to Ultra-Clean Fuel

New diesel fuel desulfurization catalysts have been identified by **Argonne National Lab** scientists. Sulfur is generally an undesirable component in diesel fuel because it creates corrosive combustion by-products, releases sulfur oxides into the atmosphere, and increases deposits on fuel injection and combustion systems. Current desulfurization technology uses catalysts to add hydrogen and typically requires costly high-pressure (350-1,000 psig), high-temperature (400-550°C) hydrodesulfurization equipment. Argonne researchers synthesized and tested several new catalysts at 400°C and 400 psig and believe it may be possible to achieve optimal processing using less expensive equipment at lower temperatures and/or pressures—even for heavier crude oils.

For more info: www.techtransfer.anl.gov/techtour/desulfur.html

Domestic Source of Castor Oil?

Because of its unique chemistry, castor oil and the products derived from it are useful for lubricants, paints and coatings, cosmetics, biodegradable plastics, and anti-fungal components—almost 300 biobased products in total. However, the presence of a naturally occurring toxic protein (ricin) and a highly allergenic storage protein greatly impedes the production and processing of castor in the U.S. As a result, the U.S. imports all its castor oil—more than 100 million pounds per year. Now, a **USDA Agricultural Research Service** invention allows for genetic engineering of the castor plant. The method is currently being applied to develop safer castor plants in order to provide a domestic source of castor oil. Using the invention, it will be possible to develop castor with greatly reduced levels of toxin and allergens and improve agronomic performance of the castor plant, which will play a key role in the development of the U.S. biobased industry. The technology is applicable to the oilseed processing industry. Companies involved in biobased chemicals and fuels, agricultural biotechnology, and seed production would also benefit. **NL**

For more info: Mary Ann Gwodz, 301-504-5345, mag@ars.usda.gov

Tech Transfer on the Web



New Consumer Information DOE Web Site

www.energy.gov

Go here to visit the DOE's new consumer information web site, which offers energy information based on the following categories: health, house, transportation, school, business, community, world, and future. There are also sections on data and prices, efficiency, environmental quality, national security, science and technology, and sources and production.

Alternative Fuels Data Center

www.afdc.doe.gov

If you are interested in or working with alternative fuels, check out this comprehensive web site sponsored by the DOE. Major sections include alternative fuels, alternative fuel vehicles, refueling sites, fleet info, FAQs, resources and documents, upcoming events, and periodicals. A collection of related web sites and info on the **National Alternative Fuels Hotline** is also included.

Biofuels Program Research

www.ott.doe.gov/biofuels

Sponsored by the DOE's **Office of Fuels Development (OFD)**, this web site highlights OFD's three major programs—bioenergy feedstock development, biofuels, and regional biomass energy. The mission is to realize the large-scale use of environmentally sound, cost-competitive, biomass-based transportation fuels via the adoption and commercialization of the best technologies.

Petroleum Technology Transfer Council (PTTC)

www.pttc.org

Funded primarily by the DOE, the PTTC identifies and transfers upstream technologies to domestic producers to help reduce costs, improve operating efficiency, increase ultimate recovery, enhance environmental compliance, and add new oil and gas reserves. Through its 10 regional resource centers, PTTC offers expert assistance, information resources, interdisciplinary referrals, and demonstrations of E&P software solutions.

Natural Gas and Oil Technology Partnership

www.sandia.gov/ngotp

Initially established to help independent oil producers recover more oil at lower costs and risk, the **National Gas and Oil Technology Partnership (NGOTP)** expanded to include nine multiprogram DOE labs and more than 200 industry and university participants. NGOTP's current technology areas are: oil and gas recovery; diagnostic imaging; drilling, completion, and stimulation; upstream environmental technologies (well to pipeline); and downstream environmental technologies (pipeline to refinery and out the door). **NL**



SPOTLIGHT ON SUCCESS

Success stories from the federal lab community

Pea-size Pellets Key to Advanced Power Generation

“Don’t count coal out yet,” said the **National Energy Technology Lab’s Ranjani Siriwardane** as she showed off the “magic rocks” that *R&D Magazine* is calling one of the 100 most significant technology developments of the year 2000. Dr. Siriwardane and her partner **Daniel Cicero** were recently selected to receive a prestigious R&D 100 award—often referred to as the “Nobel Prizes of Applied Research.”

Though her invention RVS-1 (regenerable desulfurization sorbent) will probably never be a household word, the cheap, coal-fired electricity made clean by RVS-1 may soon be powering our homes.

RVS-1 looks like bunny chow but acts like a sponge—a remarkably efficient sponge—to remove sulfur from gasified coal used to power turbines that generate electricity. The result? Coal-fired power generation with no sulfur oxide emissions to end up as acid rain.

Cicero, who handled the commercial development of the invention, said “although the concept of using a sorbent to remove sulfur is not new, what is new about RVS-1 is that it removes nearly all the sulfur, removes it efficiently because it can withstand the high temperatures of gasification, and can be used over and over again. It’s regenerable. All this at a cost up to 50 times less than

competing products.” The exclusive right to produce RVS-1 has been licensed to **Süd Chemie** (formerly **United Catalysts Inc.**) of Louisville, KY.

On a bit more exotic front, the **U.S. Navy** is exploring the use of fuel cells—electrochemical devices that convert hydrogen to electricity—as shipboard power sources. Sulfur removal from the diesel-derived hydrogen gas stream is a critical issue, and the sorbent proved to be the ideal solution. The RVS-1 sorbent, with its ability to be regenerated over multiple cycles, will allow significant reduction in the size (as much as 80%) and weight of the shipboard fuel cell power system. Because of the sorbent’s high reactivity and effectiveness, the customary shipboard use of diesel fuel will provide a virtually pollution-free operation.



Not Bunny Chow: These pea-size pellets are RVS-1—the regenerable desulfurization sorbent that represents a breakthrough in state-of-the-art coal and fuel gas cleaning.

The development of RVS-1 is a leapfrog advancement in state-of-the-art coal and fuel gas cleaning. Dr. Siriwardane was able to develop a simple solution—20 years in the making—to a very complex longstanding quandary in advanced power generation. **NL**

For more info: Diane Newlon, 304-285-4086, Roberta.Newlon@netl.doe.gov

For more success stories, visit the FLC web site at www.federallabs.org

Tell us what you think of the FLC web site...

The FLC Marketing and Public Relations Committee is in the process of revamping the FLC web site to better serve your needs. Because your input is critical to this process, please take a moment to complete a simple online survey telling us what you think of the current site. To show our appreciation, we’ll send you a FREE 15-minute phone card! All you need to do is visit the FLC web site—www.federallabs.org—during the month of September and complete the pop-up survey that will appear. It only takes a few moments, and your feedback will help us considerably!

...and get a FREE 15-minute phone card!



COMING ATTRACTIONS

October 26, 2000

**Cabin Pressure Monitor Technology
Kennedy Space Center, FL**

NASA Kennedy Space Center has developed a new device to help prevent aircraft accidents by warning pilots and crew of dangerous cabin pressure conditions and reminding them of the need for supplemental oxygen. This technology briefing will highlight the personal, portable device, which can be used in a variety of aviation, aerospace, and nonaerospace settings.

**Susan Brown, 919-541-7401, seb@rti.org;
www.rti.org/technology/tbrief/signup.cfm**

October 30 - November 2, 2000

**Technology 2000 Series
Technology Expo and Conference
Seattle, WA**

The 11th Annual Technology 2000 Series Technology Expo and Conference will showcase new and next-generation technologies and resources and partnership opportunities for developing and selling in the global marketplace. Colocated events include the Third Annual Small Business Tech Expo and the National SBIR Conference.

www.t2kexpo.com

October 31- November 1, 2000

**Next Generation Sensors Initiative
Planning Workshop
Pittsburgh, PA**

Bringing together sensor technology users, manufacturers, and researchers, this workshop will foster collaborations to improve the productivity and competitiveness of U.S. industry. The goal is to identify opportunities for partnerships in new sensor development. Attendance is limited, and reservations will be accepted on a first-come, first-served basis.

412-383-2500 or http://ngsi.mtact.pitt.edu

November 6-8, 2000

**Co-LAB-oration 2000: A Global Focus
on International Partnerships
Houston, TX**

Cosponsored by the FLC's Mid-Continent and Southeast Regions, this meeting will focus on issues associated with international technology transfer. Sessions will include "Government Programs that Support International Agreements," "Cultural Challenges of Working Internationally," and various panel discussions.

**www.stac.ufl.edu/flc/
Information%20Page.html**

November 6-9, 2000

**Technology Commercialization
Training Series 2000
Wheeling, WV**

The National Technology Transfer Center (NTTC) is offering courses in intellectual property negotiation, advanced licensing, and valuation of intellectual properties. Participants will be able to interact with expert instructors, network with fellow course attendees, and earn professional credits.

www.nttc.edu/training/certificate.html

November 8-11, 2000

**2000 Conference of State Sponsored
Seed and Venture Funds
Honolulu, HI**

This conference provides a forum for investment and development leaders concerned with serving the capital needs of local entrepreneurs. The agenda is full of new strategies, methods, and ways of thinking about seed and venture investing and how states can facilitate access to capital. Many networking opportunities are also offered.

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