

Materials Experts Share Expertise at AFRL MMETS Series

Who remembers life before Post-it® notes? And how many of us know how those indispensable little stick 'ems were developed?

At the **Materials, Manufacturing and Enabling Technologies Series (MMETS)**—sponsored by the **Air Force Research Laboratory (AFRL)** and held in Dayton, OH—**3M Company** engineer **Art Fry** talked about the development of his life-changing invention—the **Post-It™** adhesive. The audience could then connect the science, the research, and the research results—seeing firsthand how science enriches our lives.

Military/Civilian Benefits

A collaborative effort among the Air Force, government, industry, academia, and professional societies in southwest Ohio, MMETS is a series of talks by world-renowned speakers—Nobel Prize-winning scientists, successful engineers, and pioneers in space and industry. The

talks encourage an open exchange of ideas and information and foster interaction and networking among materials and manufacturing scientists, engineers, managers, and



Materials Superstar: Dr. Bonnie Dunbar—astronaut and ceramist from NASA Johnson Space Center—signs a MMETS poster held by Dr. Wade Adams, Chief Scientist for the AFRL's Materials and Manufacturing Directorate.

others from the AFRL lab—as well as regional colleges and industries.

“We were hiding our light under a barrel,” says AFRL’s **Materials and Manufacturing Directorate (MMD)** Chief Scientist **Dr. Wade Adams** of the cutting-edge materials work produced in the MMD. “MMETS is a way of sharing with the public. It is good PR for AFRL, as it demonstrates leadership in materials and manufacturing in the region. Our mission is not just to transfer our technologies for military use. We’re thinking of the civilian community too,” says Adams. “MMETS is a way to show that our labs are contributing to the region’s economic health and success.”

Partnering Potential

The one-on-ones between AFRL reps and their prominent guests lead to a high level of synergy and “allow us to see if we’re in sync with federal needs and objectives in materials,” Adams says. After each speaker tours the AFRL lab, collaborative activity often results. For example, **Kathy Taylor**, Director of Materials and Processes at **General Motors R&D Center**, was interested in obtaining more affordable and higher performance materials for General Motors. When she responded to

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NASA and Industry Share Benefits with Materials Initiative

In this new era of targeting industries in technology transfer, several NASA centers with materials expertise—**Langley Research Center (LaRC)**, **Glenn Research Center (GRC)**, and **Marshall Space Flight Center (MSFC)**—are instituting “a new way of doing business” by launching a **Materials Sector Initiative**.

At the May meeting of the **Society for the Advancement of Material and Process Engineering (SAMPE)**, senior NASA technologists rolled out their new materials program at a standing room only presentation. Industry representatives responded favorably to the new NASA technologies demonstrated—and also appreciated the lists of technology needs that the centers had developed.



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INSIDE

This issue of *NewsLink* focuses on **MATERIALS** and **COMPOSITES**. The September issue will focus on energy and oil/gas.

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MMETS *from p. 1*

AFRL's work for aerospace, discussions for possible joint activities began. And as a result of her MMETS speech in May, **Dr. Bonnie Dunbar** (see sidebar)—NASA Johnson Space Center astronaut and ceramist—reports that there may be interest in NASA and AFRL partnering on new nanomaterials.

In September, Professor **Rick Smalley** of Rice University (one of three recipients of the 1992 Nobel Prize in chemistry) will speak on new forms of carbon—offering potential consulting opportunities and activity in electronic, optical, and property applications in carbon nanotubes.

Reaching Out to Students

MMETS guests also speak with groups of local schoolchildren from grades K-12. Before a rapt audience of area middle school students, Dr. Dunbar discussed her five space flights—answering well-informed questions about space exploration. The astronaut also stressed the importance of setting goals and education. **NL**

For more info: Rita Scholes, 937-656-6053;
www.ml.afrl.af.mil/html/events/upcoming/mmts

Dr. Bonnie Dunbar, Astronaut and Ceramist

"New materials are the enabler of technology," says Dr. Dunbar. "Without new materials for computer chips, for example, we wouldn't have faster computers. If we don't put effort into the R&D of materials, we don't have breakthrough technologies."

An astronaut on technical leave, Dunbar is the Assistant Director for University Research at NASA Johnson Space Center. Dunbar was involved in the pivotal breakthrough of the space shuttle's ceramic fiber thermal protection system—beginning as a University of Washington undergrad and continuing at Rockwell International Space Division, where the shuttle was built.

As the primary material used for space ventures worldwide, the shuttle's outside skin can withstand the reentry heat of 2300°F degrees. Still being refined, the ceramic fibers must have a high melting temperature and be lightweight and reusable. With new, improved materials, "this century will see a growth in reusable space vehicles," says Dunbar. "We need to realize there's a pipeline there, and if we're not reinvesting in new materials, the methods of evaluating and manufacturing the materials will have an impact later on our technology output." **NL**

MATERIALS INITIATIVE *from p. 1*

Leveraged Resources

Before the show, NASA and SAMPE struck up a partnership to leverage SAMPE resources and identify companies with whom NASA wanted to develop collaborative relationships. By show time, the NASA presence was established. Prepared with a host of materials technologies to display, NASA presented its defined needs to companies that were eager for opportunities to do business with NASA. Thus, the SAMPE show helped the initiative achieve a strong start with many targeted industry leads.

The initiative offers many mutual benefits. By collaborating with industry, NASA hopes to reduce mission costs and take advantage of technology expertise outside its own labs. Companies benefit from NASA science and leveraged R&D expenses. In addition, early collaboration accelerates the development of new high-tech materials and their transition into the marketplace—as well as infusing commercially available technologies into NASA missions. Another advantage is that collaborating companies end up with the commercial rights and the ultimate economic benefits.

Technology Road Maps

NASA Langley manages the initiative—with the Mid-Atlantic Technology Applications Center (MTAC) helping to connect potential collaborators and handling the publicity. According to MTAC Director **Lani Hummel**, advance PR before the SAMPE show helped a great deal. Currently, the exact technology R&D requirements identified are being "road mapped," says Hummel. **NL**

For copies of the NASA materials needs presentations:
Lani Hummel, 412-383-2525, lhummel@mtac.pitt.edu

Materials Sector Initiative Industrial End Users

Protective Coatings	Flexible Circuits	Adhesives
Optical Fibers	Reflective Surfaces	Sensors
Mechanical Parts	Recreational Equipment	Cosmetics
Thermal Insulation	Lightweight Structures	Textiles
Medical Prosthetics	Electrical Insulators	Gaskets
Corrosion Protection	Vibration Isolation	Automotive
Acoustical Absorbers	Safety Equipment	Displays

Candidate Technology Areas

Langley Research Center=LaRC; Glenn Research Center=GRC;
Marshall Space Flight Center=MSFC

- ◆ Smart Materials—including Electroactive Materials and Piezoelectric Polymers (LaRC)
- ◆ Nanostructured Materials (LaRC)
- ◆ Multifunctional Materials for Space Applications (LaRC)
- ◆ UV Curable Polyimides (GRC)
- ◆ GRCOP-84 (GRC)
- ◆ "Green" High-Temperature Polymers (GRC)
- ◆ High-Temperature Solid Lubricant Coatings and Foil Air Bearings (GRC)
- ◆ Reaction-Formed Silicon Carbide (GRC)
- ◆ High-Temperature, Environmentally Durable Coatings (GRC)
- ◆ Vacuum Plasma Spray and EB-PVD Forming of Cu-8CR-Nb (MSFC)
- ◆ Composite Tank Compatible with 98% Hydrogen Peroxide (MSFC)
- ◆ Ceramic Composite Blisk Manufacturing (MSFC)



FED LABS FLASH

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

ORNL and Technology 2020 to Create New Companies

The Department of Energy's (DOE) Oak Ridge National Laboratory (ORNL) and Technology 2020 have formed a partnership to create more jobs in East Tennessee. Called the **Center for Entrepreneurial Growth**, the partnership will use ORNL technologies to form new companies. The partnership is part of a commitment made last year by **UT-Battelle** (ORNL's managing contractor) and the state of Tennessee to help support regional economic development. The center will create an environment in which scientists who develop technology have direct access to items such as planning help and access to the capital needed to start a new company. The center will also conduct monthly seminars on different issues related to forming and maintaining a new business. Technology 2020 is a public-private partnership that focuses on creating jobs in the Knoxville-Oak Ridge region.

For more info: Marty Goolsby, 865-574-4166

New Publication Helps Locate State Programs

State and local governments understand the importance of fostering start-up companies and small firms to promote economic growth and development. Over the years, they have developed a wide-ranging network of services and programs for the entrepreneur, but navigating these offerings can be challenging. To help small companies find the services best suited to their needs, the **NIST Advanced Technology Program** has produced a road map—*A Guide to State Business Assistance Programs for New Technology Creation and Commercialization*. Written by policy researchers at **Johns Hopkins University**, the guide discusses how different types of business support programs target different phases of technology development and addresses a variety of issues—from actual R&D to business planning and marketing strategies. An appendix contains a state-by-state catalog of programs with contact info.

Copies are available by calling 301-975-4332 or downloading a PDF version off the web at www.atp.nist.gov/atp/pubs.htm.

Mid-Continent Technology Database Debuts

The **Mid-Continent Technology Transfer Center (MCTTC)** and the **FLC's Mid-Continent Region** have developed a searchable, user-friendly database—located at <http://kec1.tamu.edu/flc>—that contains 532 new technology opportunities from approximately 70 federal labs located throughout the region. Each technology listing links directly to the lab's web site and contact experts. Users can search for technologies by categories (including advanced materials, biotech, telecommunications, energy, and

photonics), lab, or keyword. The database can also be accessed from www.mcttc.com/techmain.html or www.federallabs.org/Mid-Continent/start.html and is updated quarterly.

To add a federally funded technology to the database, contact Dave Lindelien at David.Lindelien@teexmail.tamu.edu.

Utility Locating Report Now Available

Last August, *NewsLink* published a call for technologies that could locate underground utilities. Now—a year later—a report detailing the results of this solicitation is available—*Utility Locating Technologies: Summary of Responses to a Statement of Need Distributed by the Federal Laboratory Consortium for Technology Transfer*. Partially funded by the **FLC's State and Local Government Committee**, the publication highlights identified technologies and presents conclusions regarding their viability and future utility locating needs. The 53-page report was written by **Dr. Raymond Sterling**—the project's technical lead and director of the **Trenchless Technology Center** at Louisiana Tech University.

To obtain a free copy, contact the FLC Management Support Office via phone (856-667-7727) or e-mail (flcmso@utrsmail.com) or download a PDF version of the report at www.federallabs.org.

Teledentistry Companies Sought

The **National Institute of Dental and Cranofacial Research** is interested in hearing from companies working in the area of teledentistry.

If you can help: Dr. Edward Rossomando, 301-435-4735, RossomandoE@email.nidr.nih.gov

Glass Manufacturing Opportunities Needed

The **Glass Manufacturing Industry Council (GMIC)**—a trade association representing companies in the four sectors of the glass industry (flat, fiber, container, and specialty)—was created in 1998 to coordinate research collaborations between glass companies and various federal agencies and other interested organizations. To date, its primary partner has been the DOE—with projects focusing on energy and production efficiency, the environment, and innovative uses of glass. The GMIC is interested in identifying additional research opportunities that will lead to the further technical evolution of the industry and invites dialogue with any federal agency interested in developing new and improved applications of glass in any of its many present or potential forms. **NL**

For more info: www.gmic.org; Michael Greenman, 614-818-9423, mgreenman@gmic.org



Wood Fiber Thermoplastic Composites

The USDA Forest Products Lab (FPL) has conducted extensive research on using wood fiber with thermoplastic resins. These resins soften when heated and harden when cooled—allowing material such as wood to be mixed with the plastic to form a composite product. The resulting low-cost composites can be easily processed into various shapes via extrusion and injection or compression molding. Using wood as a filler creates a cheaper, lower density product that is less abrasive to processing equipment. Potential applications include automotive components and household products where manufacturers want a “wood-looking” product that can be processed like a plastic.

For more info: Susan LeVan, 608-231-9314, slevan/fpl@fs.fed.us

Photomechanics Lab Helps Evaluate Aerospace Composite Materials

AFRL Materials and Manufacturing Directorate researchers have developed a dynamic in-house lab to evaluate materials that may help strengthen composites used in aircraft and space vehicles. The facility is currently in its second year of operation and was recently expanded. Dubbed the “Photomechanics Lab,” the lab provides highly accurate, cost-effective assessments of the micromechanical and global behavior of composites. Although primarily used to assess composites for Air Force systems, the lab is available to other military services, academia, and industry. The lab uses three widely accepted test methods—moiré interferometry, photoelasticity, and microscopic observation.

For more info: Dr. David Mollenhauer, 937-255-9728, David.Mollenhauer@wpafb.af.mil; Dr. Vernon Bechel, 937-255-9077, Vernon.Bechel@wpafb.af.mil

Tamper-Proof Smart Adhesives

Smart adhesives developed at the DOE’s Lawrence Berkeley National Lab allow users to quickly authenticate and identify an item and determine whether the adhesive was tampered with. The technology’s focus is the synthesis and fabrication of adhesives (and adhesive/film composites) that, once applied, cannot be disturbed without permanently altering the adhesive. Any alterations can then be detected via a variety of monitoring techniques. Counterfeiting of coded adhesives is virtually impossible due to the number of permutations that can be used to design and read the codes.

TECHNOLOGY WATCH

Federal laboratory technologies available for technology transfer

Potential applications include hundreds of items and materials—such as paper, steel, wood, glass, ceramics, metals, and many other solid items.

For more info: Silka Weintraub, 510-486-5947, SBWeintraub@lbl.gov

Composite Bridge Decks for Highways

It is estimated that one-third of U.S. bridges are structurally deficient—mainly because steel components that reinforce concrete bridge decks are highly susceptible to corrosion. This can cause serious safety risks—such as sudden bridge collapse. Although fiber-reinforced polymer (FRP) deck systems are a viable alternative—offering high strength, high stiffness-to-weight ratio, and resistance to environmental effects and corrosion—the fatigue characteristics of FRP systems need to be defined for a range of climatic conditions. Thus, the U.S. Army’s Cold Regions Research and Engineering Lab (CRREL) is conducting an ongoing project to evaluate several FRP deck systems. Conducted in cooperation with the University of Maine, University of Cincinnati, Ohio University, University of Kentucky, and the Ohio Department of

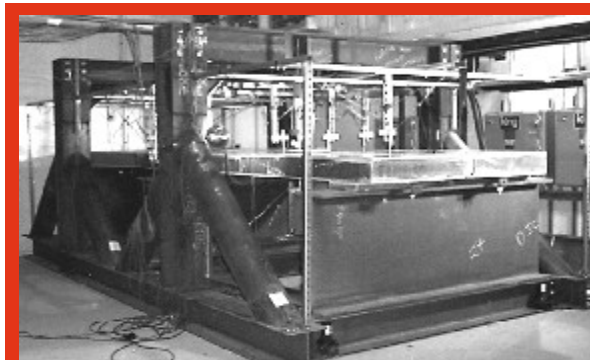
Transportation, the project’s initial data indicate that FRP systems demonstrate good fatigue behavior across a wide range of temperatures. Final results will be published once the experimental work is completed.

For more info: Dr. Piyush Dutta, 603-646-4212, pkdutt@crrel.usace.army.mil

New NIST Amalgam Material Contains No Mercury

If you have a metallic dental filling, you probably have a small amount of mercury in your mouth. For decades, U.S. dentists have used alloys containing copper, tin, silver, zinc, and mercury in amalgams. Although such alloys are ideally suited to the job, concerns about the toxicity of mercury has prompted discussion about restricting their use. Until now, no replacement materials worked as well. However, metallurgists at the National Institute of Standards and Technology (NIST) have perfected a method for making a silver powder that, when properly consolidated, has properties that equal or exceed those of mercury-containing alloys. Fillings made this way are 80% dense and are at least as strong as mercury-alloy amalgams. The patented process is available for licensing.

For more info: Terry Lynch, 301-975-2691, jtlynch@nist.gov



Safer Bridges: Testing of a full-size fiber-reinforced polymer (FRP) composite bridge deck inside CRREL’s Extreme Temperature Material Testing Facility.

TECH WATCH *continued*

On the Road to Lighter Vehicles

A material developed at the DOE's Ames Lab may help automakers create lighter, more fuel-efficient vehicles. Researchers say a quarter-inch-thick ring of the material could be used in an electronic torque sensor to regulate the steering power provided to a car's wheels by an electric motor—allowing the heavy, energy-draining hydraulic pumps currently used in power steering systems to be eliminated and improving a car's fuel efficiency by 5%. The researchers developed a composite of cobalt ferrite and small amounts of nickel and silver that meets the temperature and strength criteria for the torque sensor application and is much less expensive than other materials investigated.

For more info: Susan Dieterle, 515-294-1405, dieterle@ameslab.gov

Structural Integrity Monitoring Using Piezoelectric Sensors

Research at the U.S. Army Construction Engineering Research Lab (CERL) has demonstrated that an array of piezoelectric (PE) patch sensor/actuators bonded to composite structural retrofit materials dramatically increases the strength of concrete masonry and brick walls. The PE patches are used to periodically interrogate the structure at high frequency and measure the structural response in terms of impedance. Damage or severe load fluctuations are indicated by changes in the impedance signature over time. The technology has been successfully used on fiber-reinforced polymer (FRP) composites bonded to concrete masonry unit (CMU) and clay brick walls. Research is now underway to determine the technology's effectiveness at detecting damage to welded steel moment-resisting connections in buildings. Future applications will focus on more effectively pinpointing the location of structural damage. CERL can provide consultation on the use of this technology, sensor application and installation assistance, and data analysis and interpretation.

For more info: Dr. Robert Quattrone, 217-373-6744, r-quattrone@cecer.army.mil; Justin Berman, 217-352-6511 x7673, j-berman@cecer.army.mil

Composites with Better Wear Resistance

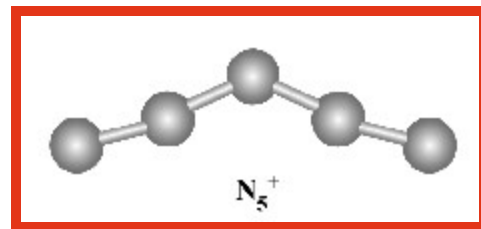
Researchers at the Office of Naval Research have filed a patent on a new way to synthesize a composite material from a metal matrix and reinforcing particles. The technique—sedimentation casting—significantly increases the wear resistance of a metal's surface. Using this method, the researchers have cast bronze components with abrasion-resistant tungsten carbide (WC) and titanium carbide (TiC) particles in the wear area. The new technique will be used to create watertight, wear-resistant seals aboard ships, but other potential applications exist as well.

For more info: Diane Banegas, 703-696-2868, banegad@onr.navy.mil

AFRL Team Synthesizes New Polynitrogen Compound

The AFRL Propulsion Directorate's High Energy Density Matter (HEDM) group develops new chemical propellants for rocket and spacecraft propulsion. A relatively new line of research (funded by the Defense Advanced Research Projects Agency) has been the search for all-nitrogen compounds that could be used as chemical propellants. After much work, the result is a new, surprisingly stable N_5^+ species. Since the initial discovery, synthesis procedures have been scaled up to produce larger quantities, and the compounds can now be

synthesized in less than a week. The team is currently exploring the chemistry of the new all-nitrogen cation to determine



whether stable neutral compounds can be made. As only the third all-nitrogen species to be isolated in bulk form—and the first in over 100 years—the AFRL discovery of N_5^+ has been acclaimed internationally. *Chemical & Engineering News* recently listed the breakthrough as one of the top five achievements in chemistry in 1999.

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

Patent Gives Battery Research a Charge

DOE Brookhaven National Lab (BNL) researchers have received a patent for developing a new kind of electrolyte for use in lithium-ion batteries. The new electrolyte is less expensive and more environmentally friendly than those currently used. Rechargeable lithium-ion batteries currently dominate the market for use as power sources in cell phones and laptop computers. Researchers would like to scale up these batteries for use in electric and hybrid electric vehicles, but the current salt component in the electrolyte is expensive and toxic. With the large quantities required for vehicle batteries, these drawbacks could become prohibitive. So, with funding from the DOE's Office of Basic Energy Sciences, BNL's team has been working to improve the electrical conductivity of the electrolytes using less expensive and less

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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toxic salts. The patented technique synthesizes a series of boron-based compounds that, when added to the electrolytes, increases their electrical conductivity to a level comparable with those currently used.

For more info: Dorry Tooker, 631-344-2078, dorryt@bnl.gov

Spray Enzyme Retting for Bast Fibers

A new USDA Agricultural Research Service (ARS) spray enzyme treatment for flax, hemp, jute, and ramie dramatically improves fiber quality. Currently, fiber is separated using a process known as dew-retting, which can result in inconsistent fiber strength and a color that limits use. The ARS invention helps to control the retting process—resulting in a high-quality, clean, fungal-free, blond flax fiber. The procedure also reduces the retting process from four to six weeks to 24 hours and alleviates fermentation odors and environmental pollution. In addition to the textile and fiber composite industries, manufacturers of processing equipment and enzyme production would also benefit from this technology.

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

EMI Interlocking Gasket

The Naval Undersea Warfare Center Division Newport has developed an Electromagnetic Interference (EMI) Interlocking Gasket that is ideal for use in equipment where quick access to components is a priority. The gasket provides an interface between two conducting materials while maintaining electrical and mechanical connectivity. Due to its unique mechanical strength, fasteners on covers can be eliminated. The gasket also provides increased shielding effectiveness over typical gasket construction.

For more info: Dr. Theresa A. Baus, 401-832-8728, bausta@npt.nuwc.navy.mil

New Tool Gives Scientists Inside Look At Materials

DOE Oak Ridge National Laboratory (ORNL) researchers have developed a powerful new tool to study interconnects and other materials made up of small disoriented crystal blocks called grains. For the first time, the new X-ray crystal microscope is allowing scientists to see the 3-D crystal structure of most materials. Previously, researchers studied isolated single crystals or the average properties of many polycrystalline grains; neither approach gives an accurate picture of what is going on. Other methods (such as electron microscopy) also come up short. Ultimately, the research will help to develop better materials for computers, cars, medical equipment, and the generation and transmission of electricity. **NL**

For more info: Ron Walli, 865-576-0226, wallira@ornl.gov

Tech Transfer on the Web

Easy Access to NASA Langley Technologies

www.mtac.pitt.edu/tech

Go here to find summaries of technologies that NASA Langley Research Center has designated for expedited licensing—complete with nominal fees and minimal negotiations. The site provides brief summaries of each technology, links to related patents, info on licensing options and sample licensing agreements, instructions on preparing a commercialization plan and license application, and contact info for a representative from the Mid-Atlantic Technology Applications Center, which maintains the site for Langley.



NIST Ceramics WebBook

www.ceramics.nist.gov/webbook/webbook.htm

Material researchers wanting easy access to ceramics data should visit this web site prepared by NIST. The site contains evaluated data, a guide to data centers and sources, and software tools and other resources useful for materials research. The WebBook also links to: three NIST-developed materials databases; 22 government and academia data centers devoted to biomaterials, ceramics, metals, composites, and chemical and physical data; software tools; a ceramics virtual library; and a discussion forum.

National Center for the Dissemination of Disability Research (NCDDR)

www.ncddr.org

Visit this site to learn more about the goals and objectives of the National Center for the Dissemination of Disability Research (NCDDR). You'll also be able to read about current research projects, review dissemination and utilization info resources, and search the registry of online resources. If you're interested in disability research, bookmark this site.

DOE Office of Industrial Technologies

www.oit.doe.gov

The DOE's Office of Industrial Technologies (OIT) creates partnerships among industry, trade groups, government agencies, and other organizations to research, develop, and deliver advanced energy efficiency, renewable energy, and pollution prevention technologies. At this site, you'll learn about best practices, various OIT programs, and the latest OIT news and events. You'll also find info on **Industries of the Future**—a program that creates partnerships between industry, government, and supporting labs and institutions to accelerate technology R&D and deployment in nine energy-intensive industries such as agriculture, mining, petroleum, aluminum, and glass. **NL**



SPOTLIGHT ON SUCCESS

Success stories from the federal lab community

Composite Building Demonstrated in the Dominican Republic

A demonstration of new composite building technologies that could help with disaster preparedness and relief efforts was recently conducted in the Dominican Republic. A building fabricated from composite materials was quickly assembled by a 10-person team in less than 24 hours without using any special tools or heavy equipment. The outside finish and roofing materials were applied within an additional 36 hours. The composite building materials were developed under the U.S. Navy's **Manufacturing Technology Center of Excellence for Composites Manufacturing (CECMT)**.

Many Benefits

"Composites are starting to be used in lieu of traditional building materials such as wood, concrete block, and various metals," said project manager **Bruce Brailsford**. "They have outstanding characteristics. For instance, the building frame of the demo structure is fire- and termite-resistant and can withstand hurricane winds up to 196 miles per hour. The insulation ratings meet or exceed what is found in most house construction, with the roof rated at R-42 and the walls at R-24."

Composites resist corrosion and fatigue, weigh less, and are more cost-effective when compared to the life cycles of traditional materials. They also allow engineers to

create innovative designs that could not be attained with other materials and are the material of choice for modular construction. Emergency operations centers, warehouses for prepositioning disaster relief or humanitarian assistance, schools, orphanages, and shelters are only a small sampling of the types of buildings that could be constructed from composites.



Building Success: Dignitaries from the United States and 34 Latin American and Caribbean countries inspect the composite building constructed using technology and funds from the U.S. Navy. The exterior of the building can be finished with any type of building material—such as brick, cement, or shingles.

International Effort

The **Office of Naval Research** provided the funding to CECMT to develop the manufacturing processes for the composite materials used in the demonstration. The **Lemay Center for Composites Technology** (St. Louis, MO)—a CECMT member—provided the composite materials and the enhancements to the manufacturing processes that produced the composite structures.

Other participants in the demonstration included the **Dominican Republic Civil Defense Agency**, the U.S.

Southern Command, the **Missouri National Guard**, and **Americorps Youthbuild Program**. The post-demo engineering reports recommend that the DOD labs work with CECMT to incorporate composites in contingency structures and to field test the structures. **ML**

For more info: Loretta De Sio, 703-696-5032, desiol@onr.navy.mil

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

Free Exhibit Passes!

Composites 2000

September 27-30 ♦ Las Vegas, NV

Society of Petroleum Engineers (SPE) 2000

October 1-4 ♦ Dallas, TX

To receive your passes: Send an e-mail with your name, mailing address, phone number, and the number of passes needed for each show to jbegley@utrsmail.com.



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COMING ATTRACTIONS

September 27-30, 2000
Composites 2000
Las Vegas, NV

Sponsored by the Composite Fabricators Association, Composites 2000 is the composite convention and trade show. Join more than 5,000 composite professionals to network, attend educational sessions, and browse the largest composite-oriented exhibit hall in the U.S. Educational topics focus on industry segments such as cast polymer, corrosion, transportation, and advanced materials. Visit the FLC in Booth 879!

www.cfa-hq.org/composites2000

October 1-4, 2000

Society of Petroleum Engineers (SPE)
Conference and Exhibition
Dallas, TX

The SPE's flagship annual meeting is the upstream oil and gas industry's most comprehensive international event. The exhibition is a showcase of leading-edge applications for petroleum exploration, drilling, and production services, while the conference provides sessions to help identify strategies for improving the bottom line. Visit the FLC in Booth 1724!

www.spe.org/events/2000atce

October 2-3, 2000

Technology Transfer Conference
Portland, ME

This conference sponsored by the National Defense Center for Environmental Excellence and the TransAction Technology Group will facilitate direct interactions between the research and industrial communities. Beginning in seminar settings, the interactions will then be spun out into one-on-one exchanges of technology needs and research efforts.

Chris Sherry, 800-557-2318, sherry@ctc.com

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.mtac.pitt.edu>

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.

405-843-6550 or admin@nasvf.org

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Send articles or address changes to:
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 Suite 208
 Cherry Hill, NJ 08034
 Phone: 856-667-7727 Fax: 856-667-8009
 E-mail: jbejley@utsmall.com
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 Upcoming focus issues include: energy/oil and gas, environmental technologies, and information technology.

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