



T² I N S I D E



An Apple a day...

2 page



Sandia's Tewa Brings Light

2 page



FLC Sets Training for May

5 page



T² F A C T

In 1765, while working for the University of Glasgow, Scottish inventor James Watt was assigned the task of repairing a Newcomen engine. That started the inventor to work on several improvements to Newcomen's design. Most notable was Watt's 1769 patent for a separate condenser connected to a cylinder by a valve. Unlike Newcomen's engine, Watt's design had a condenser that could be cool while the cylinder was hot. Watt's engine soon became the dominant design for all modern steam engines and helped bring about the Industrial Revolution.

- Mary Bellis, About.com



T² E V E N T S

IFPAC 2006
Arlington, Va.
February 20-23, 2006

2006 AUTM
National Meeting
Orlando, Fla.
March 2-4, 2006

World's Best Technology
Showcase 2006
Arlington, Texas
March 27-29, 2006

NJTC Venture Conference
Somerset, N.J.
March 29, 2006

SAE 2006
Detroit, Mich.
April 3-7, 2006

BIO 2006
Chicago, Ill.
April 9-12, 2006

FLC National Meeting
Minneapolis, Minn.
May 1-4, 2006

TECH TRANSFER DIRECTOR RECEIVES ACHIEVEMENT AWARD

by Sara Baragona, U.S. Army

What do the University of Wisconsin, Philip Morris, and the Army have in common? The apparent answer seems to be "absolutely nothing," but there is a common link—all have felt the effects of behavioral toxicologist, whistleblower, and now technology transfer director Paul Mele.

Dr. Paul Mele, Director of the Office of Research and Technology Transfer Applications (ORTA) at Fort Detrick, was recently honored at a Department of Defense (DOD) meeting in Santa Fe, New Mexico, and received the DOD's George Linsteadt Technology Transfer Achievement Award. The award, established by the Deputy Under Secretary of Defense, is named in honor of the father of the Federal Laboratory Consortium and co-founder of the original DOD Laboratory Consortium in 1971.

The award recognizes a technology transfer professional who has notably contributed and put forth extraordinary efforts to transfer technology developed in federal laboratories to partners in the public and private sectors.

Dr. Mele first came to Fort Detrick in 1999, when he accepted a position as the first Director of Technology Transfer for the Army's Medical Research and Materiel Command (USAMRMC). Responsible for the technology transfer efforts of eight research laboratories (and the subsequent ORTAs) and six subordinate facilities located in five states and on four continents, Mele immediately set in motion several

See Mele, page 4



Dr. Paul Mele

LOS ALAMOS, CHEVRON TO REVOLUTIONIZE OIL AND GAS EXPLORATION

by Marjorie Mascheroni, Los Alamos National Laboratory

Los Alamos National Laboratory (LANL) and Chevron Energy Technology Company (ETC) developed the Advanced Energy Solutions Alliance in late 2004 to address critical technological needs of the oil and gas industry. A Cooperative Research and Development Agreement (CRADA) established early in 2004 between the partners to develop and commercialize LANL's patented radio frequency (RF) and sensor innovations quickly led to establishment of the alliance.

Under the alliance, the partners are investigating and plan to demonstrate "proof of principle" using LANL's INFICOMM (wireless communications) technology for collection and transmission of oil well data. From the well to a central data collection station, and from down-hole sensors to above the ground, this project is exploring data gathering both in the drilling operation and producing wells. The importance of being able to enhance such data gathering is vital to improving well yields and, ultimately, to the economic and energy security of the United States, by promoting a diverse supply and delivery of reliable, affordable and environmentally sound energy.

In addition to unique patented and patent-pending technologies, LANL brings to the partnership electronics support facilities not available elsewhere. ETC, the technology development and deployment branch of Chevron U.S.A. Inc., is



LANL's industry partner, Chevron Texaco, and its partner, Transocean Inc., achieved an industry record when Transocean's drillship, Discoverer Deep Seas, used LANL technology to drill Tonga, the deepest well ever drilled in the Gulf of Mexico, at a total vertical depth of 31,824 feet.

responsible for making technology available to Chevron's operating companies under a business model in which it works with oil and gas suppliers to develop, demonstrate, and deploy new technologies and products. Chevron expects that select LANL technologies will be further developed, demonstrated, and deployed to the entire energy industry.

Chevron is using the alliance to collaborate with LANL and to brainstorm solutions to problems it sees in its day-to-day operations. The alliance gives LANL the opportunity to quickly move an innovation from the lab to an actual product

See LANL, Chevron, page 4

DC ON T²

by Gary Jones
FLC Washington, DC Representative

Greetings from DC. On December 15, Senators Ensign (R-NV), Lieberman (D-CT), and others introduced bipartisan innovation legislation entitled the National Innovation Act of 2005 (NIA), which is aimed at "preserve[ing] America's leadership role in the fields of innovation and technology."

This is the culmination, although by no means the final word, of intense scrutiny over the past year regarding the state of U.S. technological competitiveness and, as importantly, the policy prescriptions necessary to ensure continued U.S. leadership in

See DC on T², page 5



COTS GOES RUGGED WITH DMEA PARTNERSHIP

by J.T. Long

How do you get a lot of heat out of a chip?

How can it be done efficiently and inexpensively?

The Department of Defense is asking these questions as it looks for ways to use advanced commercial off-the-shelf (COTS) technology in harsh military environments without waiting for traditional reengineering or risking the failure of overheated, damaged computer-based systems.

Problem

The power density in electronics is doubling every 18 to 24 months, such that a processor that dissipated 70 mW in 1984 dissipates more than 70 W today. Air-cooled systems can't keep up with that increase, especially in small, rugged environments. The military needs an easy yet reliable way to handle the increased heat so it can take advantage of increased computing power; however, it doesn't want to pay the price in time and budget to wait for customized electronics.



Solution

The DOD's Defense Microelectronics Activity (DMEA) is partnering with a small See DMEA Partnership, page 6

FED LABS FLASH | TECHNOLOGY TRANSFER NOTES

FIVE PNNL RESEARCHERS ELECTED FELLOWS BY AAAS

Five scientists from the Department of Energy's Pacific Northwest National Laboratory have been elected Fellows of the American Association for the Advancement of Science (AAAS).

Linda Lasure and Steven Wiley were elected Fellows in the AAAS section on biological sciences, Greg Exarhos and Bruce Kay were elected Fellows in the section on chemistry, and Subhash Singhal was elected a Fellow in the section on engineering. All five will be recognized at the Fellows Forum at the AAAS national meeting in St. Louis in February.

Election as an AAAS Fellow is determined by peer reviewers. Fellows are honored for "meritorious efforts to advance science or its applications." AAAS began honoring its distinguished members with the title of Fellow in 1874.

Y-12 HONORS T² WORK

Twenty-two inventors from the Y-12 National Security Complex were honored for their 2005 patents, disclosures, and related achievements at BWXT Y12's second annual technology transfer awards ceremony held recently in Knoxville.

The Y-12 technologies and processes include nonproliferation and homeland security devices, computer network antivirus protection, industrial safety tools, and high-temperature industrial microwave heating materials.

One Y-12 invention enables large quantities of classified media to be destroyed more efficiently and cost effectively.

Another invention is leading to comparisons of polymers' permeation characteristics and other polymeric behaviors.

Improved, wear-resistant coatings for titanium and titanium alloys, ferrous, and other metals also have been created.

Ceremony highlights included a number of special awards, as well as the presentation of an FLC

Southeast Region Excellence in Technology Transfer Award from Southeast Regional Coordinator Mark Reeves.

The award was for the Y-12 technology RAMSAFE®, a software system designed to help cities and states better prepare for and mitigate emergency situations. Most recently, RAMSAFE® was contracted for installation in New Orleans to aid in the recovery from Hurricane Katrina.

Two new awards were initiated to recognize inventors for issued patents. Symbolizing "from a tiny acorn grows the mighty oak," a sterling silver acorn was presented to seven Y-12 inventors for their first issued patent: Mike Bell, Jerry Byington, Rusty Hallman, Reid Kress, Art Miller, Alan Moore, and Jim Truett. A solid gold acorn that honors inventors who have a significant number of issued patents and designates "special Y-12 inventor status" was presented to Roland Seals, who has eight issued patents, and Ron Simandl, who has nine.

Government-use awards, which celebrate significant contributions to the actual operation of the Y-12 Complex, were presented for three inventions. One, the personal announcement device, or PAD, integrates wireless technology with Y-12's existing criticality accident alarm system and was developed by Peter Angelo, Jim Younkin, and Paul DeMint.

The Platter Destruction Tub, which Lee Bzorgi invented for the destruction of classified media, also was recognized.

The third invention protects temperature-sensitive systems against termite, a generic name given to extremely high-temperature reactions between a metal oxide and aluminum. Ed Ripley, Jonathan Morrell, and Walt Duerksen developed the device.

Technology transfer director Marilyn Giles, who served as emcee, also announced the new trademark name of BWXT Y-12's patented "super materials"—HexBilt™. The family of "super materials" that Y-12 researchers invented can be thousands of times stronger than normal at as much as half the weight.

The event was held in special memory of honoree Walt Duerksen, whose two awards were accepted by his wife, Penny.

ARS APPLES RESIST DISEASE



Technician Greg Noden characterizes morphological traits of *M. sieversii* fruit and cuts the fruit in preparation for taking a digital image.

Grafts, genetic material and rootstocks collected during the 1990s from wild apple trees in central Asia may revolutionize the nation's apple industry.

This material shows potential for helping breed trees that bear popular domestic apples while standing up to destructive diseases and fungi, according to Agricultural Research Service (ARS) scientists. The genetic material was gathered during U.S. Department of Agriculture-sponsored excursions to Asia and Europe aimed at expanding

the known genetic diversity of apples.

Horticulturist Phil Forsline and plant geneticist Gennaro Fazio of ARS's Plant Genetics Research Unit have used the material to raise orchards of the exotic apples near their laboratory in Geneva, N.Y. And, with colleagues in ARS and Cornell University, they have documented the disease resistance of many of these trees and the domestic species they have bred with them.

NIH GRANTS HOPE

The National Institutes of Health's Office of Technology Transfer in Rockville, Md., is contemplating granting an exclusive, royalty-bearing license to Hope Medical Enterprises, Inc., doing business as Hope Pharmaceuticals, for an invention relating to the treatment of cardiovascular conditions with nitrite therapy. This invention is described in patent applications PCT/US2004/21985 and PCT/US2004/22232. The field of use may be limited to using nitrite salts for the treatment of cerebral vasospasm following subarachnoid hemorrhage or cardiovascular conditions.

SANDIA LIGHT-BRINGER DEBBY TEWA PROVIDES SOLAR POWER ADVICE TO INDIAN RESERVATIONS

Debby Tewa spent her first 10 years living without electricity, water, or a telephone in a three-room stone house in an isolated area of the Hopi Reservation in Arizona.

Today, as a contractor to Sandia National Laboratories' (SNL) Sandia Tribal Energy Program, she provides technical advice about maintaining photovoltaic (PV) units to people on Indian reservations who live remotely. For many, it's the first time they've had electricity in their homes.

"I can identify with the people I'm helping," Tewa said. "Many live the way I grew up, and I fully appreciate their excitement in having electricity and light at night."

As part of Tewa's job, she and program director Sandra Begay-Campbell offer technical advice to tribal governments, which receive Department of Energy (DOE) tribal energy grants. Her work also includes teaching Native Americans how to use and maintain PV units, supporting project management plans, and helping people learn from each other about their PV systems. In addition, she is enhancing DOE's PV reliability database with off-grid system information that includes Navajo PV systems maintenance data.

Tewa and Begay-Campbell work closely with the Navajo Nation, with which Sandia signed a Memorandum of Understanding in 2000 to encourage further collaboration. The Navajo Utility Authority, through DOE funding, has installed PV units at more than 300 homes on the reservation since 1993.

"There is still a long way to go," Tewa said. "It's estimated there are 18,000 families in the Navajo Nation without electricity."

The reason there are so many, she added, is that



Debby Tewa with photovoltaic units at Sandia. She is helping Native Americans in remote areas learn how to maintain PV units deployed via DOE grant money.

many Navajos live at remote sites, and it is prohibitively expensive to string electricity lines to those areas. The cost of expanding the gridline is about \$27,000 per mile. Many Navajos make do with kerosene, wood, and coal.

Tewa lived with her grandmother in an unelectrified house through the fifth grade. Then she moved to Tuba City, Ariz., to live with her parents, who had a telephone, electricity, and water.

After graduating at the top of her class from Sherman Indian High School in Riverside, Calif., she attended Northern Arizona University, where she spent two years but never got a degree. She decided to take the non-traditional path and went to a trade school to study to become an electrician.

After obtaining her electrical theory and application certification, she worked briefly as an electrician for the Gila River Indian Reservation south of Phoenix. In 1987 she joined NativeSUN, a Hopi-managed nonprofit or-

See Sandia Brings Light, page 5

FLC NEWSLINK

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TECH WATCH | LABORATORY TECHS READY FOR TRANSFER

BERKELEY LAB DEVELOPS ARM TO EASE WORKDAY

The Berkeley Ergonomic Arm of Lawrence Berkeley National Laboratory (LBNL) is a practical ergonomic intervention and support system to improve productivity and reduce workplace ergonomic-related injuries.

The Berkeley Ergonomic Arm dynamically enhances musculoskeletal support and comfort during sitting tasks at the computer or standing at a benchtop or manufacturing station. The aim is to reduce the likelihood of cumulative trauma injuries to the upper extremities.

Business Opportunity

This is a ground-floor opportunity with enormous upside market growth potential. LBNL is seeking a qualified partner(s) to work with it in a Phase III collaborative effort to refine and commercialize the new Berkeley Er-

gonomic Arm.

The device absorbs or counterbalances normal forces to the anatomy externally. It systematically provides a lifting force, or net decrease in gravity, to selected parts of the arm-shoulder system. Reactions and redistributed forces are routed to the chair or floor.

Ergonomic injuries account for one-third of all occupational injuries and illnesses, and constitute the single largest job-related injury and illness problem in the United States.

Employers, healthcare and insurance entities are well aware that close to half of all disabling workplace injuries nationwide are associated with poor ergonomics. Loss of productivity and human suffering are major issues for employers and employees.

The U.S. Bureau of Labor Statistics

reports that cumulative trauma disorder (CTD), also known as repetitive motion strain, is the single largest injury category driving workers compensation costs in the United States.

Application

The final Berkeley Ergonomic Arm product will provide ergonomic support, incorporate various built-in ergonomic enhancements to minimize strain, and protect the worker or manager from disabling workplace injuries. Some models will directly replace the conventional office chair.

Potential Benefits

- Office environment
- Manufacturing environment
- Lab environment
- Parts inspection
- Fume hood work
- Biological safety cabinets

- Microscope work
- Garment industry
- Production genomics work
- Life sciences benchwork
- Vocation rehabilitation.

More info: Chris Kniel, Technology Transfer Department, crkniel@lbl.gov, 510-486-5566

ORNL DRILLS FOR INVENTION

The oil drilling industry has the need for a simple, reliable means of initiating the set, in 24 hours or less on demand, of set-retarded annular concrete surrounding the well casing.

Researchers from Oak Ridge National Laboratory (ORNL) have developed a method for fulfilling this need.

To accomplish this, oil field set retarders are mixed with another organic containing a specially chosen, thermally stable peroxide and a chelated transition metal such as iron. Irradiation by a gamma-producing or a neutron source moving through the steel well casing would catalyze a Fenton reaction in which free radicals are formed.

The researchers have used this type of reaction to completely degrade very large amounts of phenol and other organics nearly instantaneously.

Potential Areas of Application: Oil drilling industry, other industries where deep drilling is required, construction industry.

Advantages: Rapid controlled delay set of concrete.

State of Development: Proof of principle demonstrated.

ORNL seeks licensees of this technology, either on a stand-alone product basis or in combination with other technologies in this portfolio, to exploit commercial applications and opportunities. For more information, call ORNL T² at 865-574-2577.

NREL DEVELOPS IMPROVED COOKING UTENSIL

Inventors Steven D. Burch, David K. Benson, and Thomas F. Potter of the National Renewable Energy Laboratory (NREL) have developed a cooking utensil with improved heat retention that includes an inner pot received within an outer pot and separated in a closely spaced-apart relationship to form a volume or chamber between.

The chamber is evacuated and sealed with foil leaves at the upper edges of the inner and outer pots.

The vacuum created between the inner and outer pots, along with the minimum of thermal contact between the inner and outer pots, and the reduced radiative heat transfer due to low emissivity coatings on the inner and outer pots, provide for a highly insulated cooking utensil.

Any combination of a plurality of mechanisms for selectively disabling and reenabling the insulating properties of the pot are provided within the chamber.

These mechanisms may include a hydrogen gas-producing and reabsorbing device such as a metal hydride, a plurality

of metal contacts can be adjusted to bridge the gap between the inner and outer pots, and a plurality of bimetallic switches that can selectively bridge the gap between the inner and outer pots.

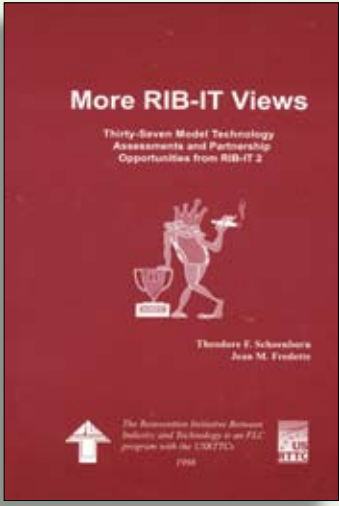
Phase change materials with superior heat retention characteristics may be provided within the cooking utensil.

Further, automatic and programmable control of the cooking utensil can be provided through a microprocessor and associated hardware for controlling the vacuum disable/enable mechanisms to automatically cook and save food.

NREL is looking for an organization to develop and commercialize this innovative technology.

Interested organizations may consider developing and/or commercializing this technology through a license agreement, CRADA, or Work for Others agreement.

More info: Richard Bolin at 303-275-3028 for licensing, CRADA, and Work for Others opportunities.



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FROM INNOVATION TO ENTERPRISE



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From fundamentals, to intermediate, to advanced, this year's FLC national meeting boasts a full day of technology and commercialization training with subject-matter experts, panel discussions, and interactive sessions.

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Be part of the celebration when the FLC unveils its newest technology transfer standouts with the prestigious FLC Awards for Excellence in Technology Transfer.

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Take part in the FLC *Tech Fair*. This exhibit program provides laboratories with an excellent opportunity to display their technologies.

More info

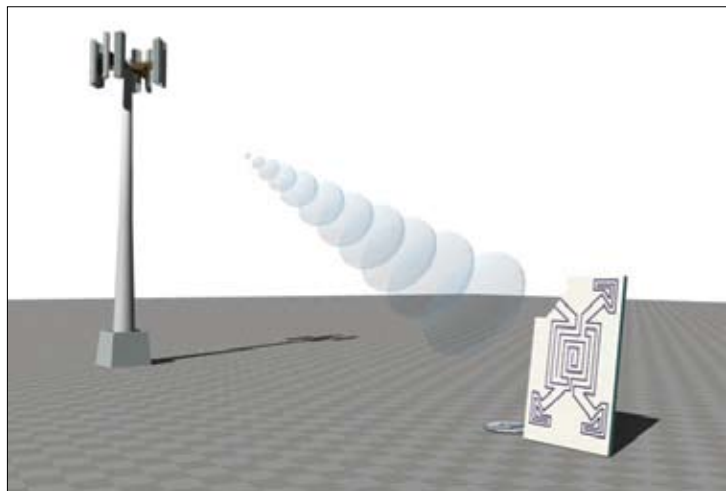
Rachel Berkowitz

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LANL, Chevron, from page 1



LANL's IFNICOMM wireless receiver-reflector device modulates and reflects the transmitter-receiver base unit's radio frequency carrier wave to complete half the "conversation." The other half is transmitted from the base unit using conventional techniques.

used by industry. The alliance is initially focusing on advanced well systems and solutions.

It gives Chevron the chance to test and incorporate a cutting-edge

approach to oil well drilling that could revolutionize the oil exploration and retrieval industry.

More than a dozen additional projects are currently being evaluated by LANL and Chevron, all to be conducted under CRADAs.

Each of these projects is fundamental to the discovery of breakthrough technologies that help address the energy security challenges of our nation.

A partnership like this gives LANL the opportunity to move from mod-

eling and simulation for its electronics package to "proof of principle" using real data in a real-time industrial situation.

More info: John Russell, 505-665-3941, jrussell@lanl.gov

FROM INNOVATION TO ENTERPRISE



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Mele, from page 1

practices that became the foundation for the soon-to-be-bustling licensing office.

In addition to establishing guidelines and procedures for laboratory ORTAs to facilitate communication and provide guidance, education and professional development for other technology transfer offices, Mele also began identifying technologies that were quality candidates for licensing.

Since Mele's arrival at Fort Detrick, the ORTA office has grown to five employees, and USAMRMC's active patent license agreements have increased from 8 to 30. Annual royalties from licensing have gone from \$50,000 in 1999 to \$550,000 in 2005.

Active Cooperative Research and Development Agreements (CRADAs), which come in through laboratory ORTAs, nearly doubled from 309 to 567 during the same time period, and CRADA funding from companies nearly quadrupled from \$2.3 million to \$8.5 million.

Mele has also focused on increasing the output of technology transfer by

initiating industry outreach by way of exhibiting and attending about a dozen trade shows and showcases in the past few years with other ORTA employees. "We're off and running," said Mele. "We want to build up our own marketing program by actively seeking companies. We're starting to knock on doors, as well as leverage the many resources available to us such as Techlink and TEDCO."

TechLink, a center funded primarily by the Department of Defense and NASA, links companies with federal laboratories for technology licensing, joint research, and technology transfer.

TEDCO (Maryland Technology Development Corporation) was established by the state legislature and is Maryland's leading source of funding for technology transfer and development programs.

"This is really a group reward," commented Mele on his achievement. "If you give your staff responsibility and authority, you will be rewarded." Recent commercialization successes include an anthrax vaccine; topical skin protectants; anti-infective therapeutics; absorbable surgical glue; a water bio-monitor; a

leishmania diagnostic kit; a revolutionary new way to prolong the storage of blood; and a small, portable, hand-held device that assists medics in caring for soldiers.

Mele began his career in 1979 as an NIH-sponsored postdoctoral fellow in environmental toxicology at the University of Wisconsin, where he researched the neurobehavioral effects of early-life exposure to lead and polychlorinated biphenyls.

From 1981 to 1985, Dr. Mele was a staff scientist at the Philip Morris Research Center, where he conducted research on the behavioral pharmacology of nicotine and other tobacco smoke constituents.

In 1985, he joined the Armed Forces Radiobiology Research Institute, where he established and directed research on the effects of radiation on complex behavioral performance and cognition. From 1995 to 1999 he worked at the Walter Reed Army Institute of Research technology transfer office as chief.

An avid Yankees fan, Dr. Mele can often be caught in the break room pour-

ing his third cup of coffee for the day or joking with his colleagues in the hallway.

In his spare time he mentors advanced placement and honor students at Sherwood High School in Montgomery County, helping to design science projects for the school and county science fairs.

Mele is also an active member of the Maryland High-Tech Council, Frederick County Office of Economic Development, Association of Government Toxicologists, Behavioral Pharmacology Society, Behavioral Toxicology Society, and National Capital Chapter of the Society of Toxicology.

He has also served on the editorial board of *NeuroToxicology*, currently serves as an advisor to the Frederick Innovative Technology Center incubator at Hood College, and has helped spin out two companies started by Army medical inventors.

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Advanced Technology Research Center, United States Department of Defense, United States Department
of Energy Inventions & Innovation Grant Program

FLC 2006 MEETING TO SHOWCASE TECH TRANSFER TRAINING

The FLC Education and Training Committee will be offering technology transfer training during the FLC and TPWG national meeting, *From Innovation to Enterprise*, in Minneapolis, Minnesota, May 1-4, 2006.

The program will be offered at three levels and is designed to meet the training requirements of all T² professionals—from beginners to experienced practitioners.

The training program will be presented in three concurrent sessions on Monday, May 1, 2006. Continuing education units (CEUs) will be offered for each course.

Technology Transfer Fundamentals Training will be moderated by Nancy Moore of the Pacific Northwest National Laboratory.

Ideal for newcomers to the technology transfer field or as a refresher for T² veterans, the day-long course provides a basic foundation in the background, concepts, and practical knowledge required to transfer federally funded technologies from the laboratory to the marketplace.

This year, the Fundamentals course will feature an in-depth view of the Cooperative Research and Development Agreement (CRADA), which will include an introduction to intellectual property issues. Fundamental training topics include:

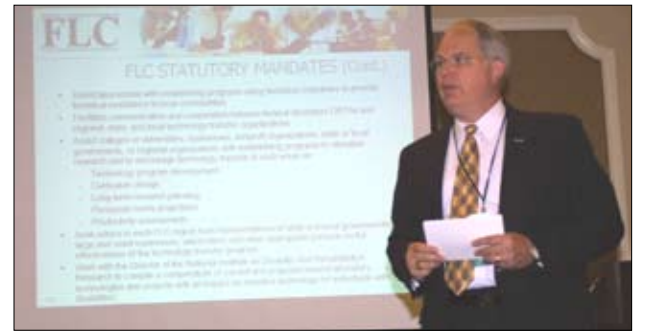
- Introduction to the FLC
- Technology Transfer 101—An Introduction
- CRADA Workshop

The Technology Transfer Intermediate Training session will be moderated by Laurie Arrants of the National Institutes of Neurological Disorders and Stroke.

Designed for technology transfer professionals who have a basic foundation in the background, concepts and processes of technology transfer or who have completed the T² Fundamentals Training course, this day-long course will be presented by a team of technology transfer veterans and industry professionals, and will feature an examination of technology transfer partnerships—both successful and unsuccessful—with the private sector. Intermediate training topics include:

- Introduction to Intermediate Training—Now You Know Something About T², What Do You Do Next?
- How to Manage a Technology Transfer Office
- How to Perform a Technology Survey at Your Lab
- Intellectual Property Protection and Rights in Government Inventions
- T² Partnerships: How Industry and Academia Partner with Government

Along with moderator Gib Marguth of the National Renewable Energy Laboratory, a team of seasoned professionals with extensive experience in patenting, licensing, and negotiating will present a day-long session for federal technology transfer



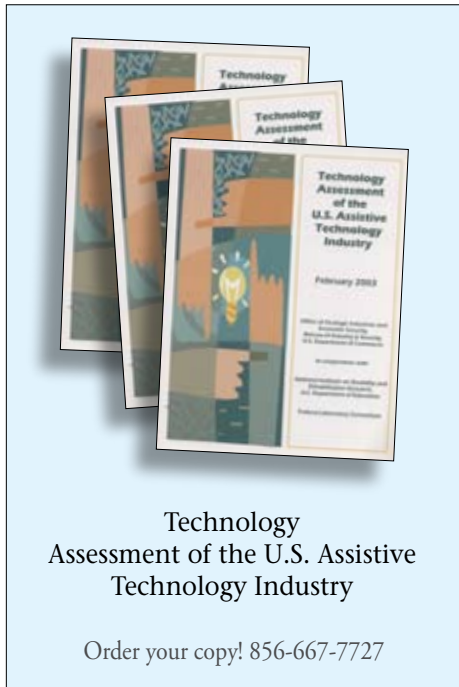
Larry Dickens of Oak Ridge National Laboratory presents during the FLC's Intermediate training at the 2005 national meeting in Orlando, Fla.

specialists and anyone seeking to improve his or her negotiating, patenting, and licensing skills.

This year, the Advanced training course will have an international flavor. The topics are:

- Cooperative Research and Development Agreements: Successes and Otherwise
- Licensing and International Intellectual Property Issues
- Licensing and Export Control
- License Agreements
- Negotiating Techniques
- Time to Ask the Experts.

For more information about the training, contact Dr. Steve Boardman of the FLC Management Support Office at 856-667-7727 or at sboardman@utrs.com.



Technology Assessment of the U.S. Assistive Technology Industry

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Sandia Brings Light, from page 2

ganization that installs PV units at homes in remote areas off the grid.

She spent 11 years there, first as an electrician and later as a program manager, bringing electric light to people who never had it before.

One of the people she helped with her first PV system was her aunt, who quickly adapted to the new technology.

"She's had her system for 12 years now and just changed the battery for the first time," Tewa said. "She's happy with the system."

Tewa spoke with her customers in their Hopi language and helped them understand what was involved in having a PV unit.

After 11 years, she went back to school and earned a BS in Applied Indigenous Studies with a minor in

Environmental Science. Begay-Campbell recruited her as a student intern three years ago to assist her with the tribal energy work.

Her current job has given her some interesting experiences, she said. For example, she's been working with the Ramona Band of Cahuilla Indians in southern California. They are developing an ecotourism business that brings ecologists to learn about the local flora and fauna. They were not hooked up to the electric grid. Tewa works with their electrical contractor to set up a hybrid system that consists of a small wind unit, PV system, and backup diesel generator.

She also gives PV workshops to women, most recently in August at the American Solar Energy Society

Conference in Florida. As part of the workshop, the 20 participants installed a PV unit at an elementary school in Orlando, Fla. Helping with instruction were Marlene Brown of SNL and Lori Stone of Solar Energy International.

Soon Tewa will be back working with her native Hopi people. The tribe recently received a DOE grant to develop a wind turbine program.

"I'll be offering them technical assistance as a part of my job with Sandia," she said. "It'll be good helping people at home again."



DC on T², from page 1

this area.

The October/November "DC on T²" column highlighted a recent National Academy of Sciences study undertaken at the request of the Senate Committee on Energy and Natural Resources to "identify and prioritize those actions that federal policy makers should take to enhance the U.S. science and technology enterprise."

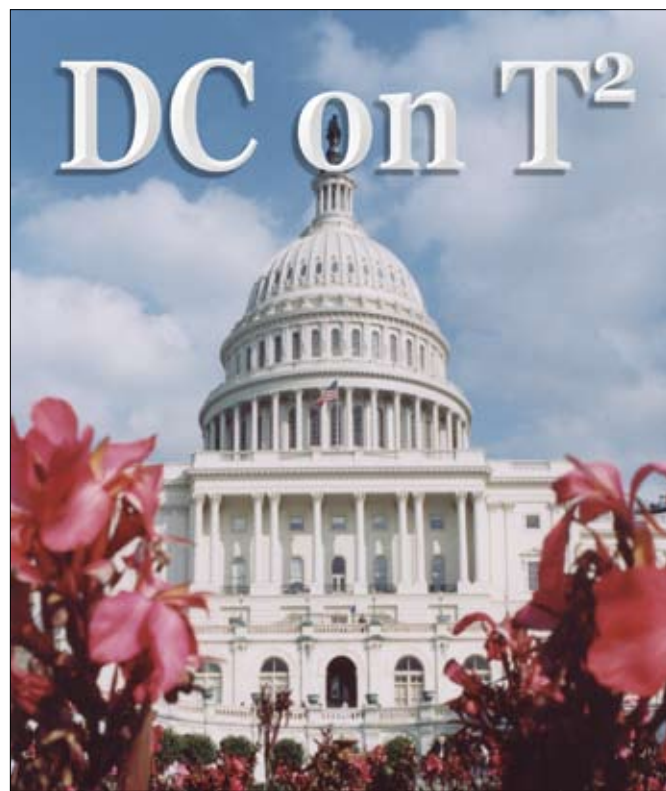
Since that report was published in October, there has been a flurry of activity on this front, including House Democrats unveiling their Innovation Agenda (November 15); a hearing on the subject by the Senate Commerce, Science and Transportation Committee (November 18); and a National Innovation Summit convened at the Department of Commerce (December 6).

The NIA focuses on the three areas of concern most often cited in these and other discussions on U.S. technological competitiveness: the level of research investment, the S&T talent pool, and the state of the national innovation infrastructure.

As noted by Sen. Ensign, "In an increasingly global marketplace and an age of ever-evolving technological advances, we must give American entrepreneurs and leaders in technology every opportunity to excel."

On the issue of "research investment," the legislation would establish an Innovation Acceleration Grants Program, encouraging those agen-

cies with an R&D budget to allocate 3% of that budget to fund high-risk research. It would also nearly double



the research funding levels at the National Science Foundation (NSF) by FY 2011 and make the research and experimentation (R&E) tax credit permanent, with some modifications.

With the goal of "increasing science and technology talent" in the U.S.,

the NIA proposes increased funding for several educational programs, notably NSF graduate research fellowship programs and DOD science and engineering scholarship programs.

Moreover, it would create a competitive traineeship program within the DOD for students in defense science and engineering, and authorize funding for professional science master's degree programs.

"Our legislation will significantly increase federal support for graduate fellowship and traineeship programs in science, math, and engineering fields in order to attract more students to these fields and to create a more competitive and innovative American workforce," said Sen. Lieberman.

The issue of "U.S. innovation infrastructure" is addressed in the NIA by authorizing the Department of Commerce to promote the development and implementation of state-of-the-

art advanced manufacturing systems by encouraging regional technology innovation clusters ("hot spots") and facilitating improvements in the defense manufacturing base via transition of advance manufacturing technologies.

Finally, the legislation proposes establishing a President's Council on Innovation to develop a comprehensive agenda "to promote innovation in the public and private sectors." This council will, among other responsibilities, help coordinate "the various federal efforts that support innovation, and use metrics to assess the performance of the federal innovation programs located in different administrative agencies..."

As previously noted, this is the latest, but not necessarily the final, input into the policy debate on U.S. technology competitiveness.

On the same day that the NIA was introduced, Senators Domenici (R-NM), Bingaman (D-NM), Alexander (R-TN), and Mikulski (D-MD) met with the president to discuss the same issues raised in the NAS report.

They too indicated their intention to consider introducing legislation next year on this same topic. Stay tuned.

For more information on the NIA, go to www.lieberman.senate.gov or www.ensign.senate.gov.

Gary can be reached at gkjones@flcdc.cnchost.com.

from DMEA Partnership, from page 1

business, Isothermal Systems Research (ISR); of Liberty Lake, Washington, to embed COTS technology in sealed boxes containing an array of miniature atomizers. The environment inside the sealed box is constantly misted with a dielectric perfluorocarbon fluid that absorbs heat—maintaining a constant component working temperature.

The resulting heated mist is condensed and circulated to a heat exchanger that safely releases the energy to the air. The closed loop system is recirculated using miniature brushless DC coolant pumps. This keeps the temperature inside the box constant.

Benefits

- Compact size

- Shock and contaminant protected
- Flexible system that can be reconfigured quickly
- Elimination of redesigning at the system level saves time and money.

“This technique creates a safe commercial grade environment...reduces the development time and cost in comparison to traditional methods of ruggedization,” said Donald E. Tilton, founder and vice chairman of ISR.

Case Study

An evaporative cooling packaging was tested on the Marine Corps' Expeditionary Fighting Vehicle.

A compact chassis held advanced command, control, communications, computers and intelligence (C4I) electronics that can be used with Pen-

tium and SPARC processors.

The operation of the chassis was virtually silent, and the electronics were further protected from shock.

“We can increase the number of channels on a board by five times,” said Dr. Gary Gaugler, DMEA technical advisor. “That becomes more important as technology gets more powerful and more heat-producing.”

The system also furthers the goal of interoperability because chassis and cards can be switched out to fit a new purpose—marine or land vehicle, or airplane—quickly.

And it makes replacing obsolete cards and upgrading the electronics easy and less expensive.

More info: Tom Trimble, tom2@theftc.org

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Prepared for the 2005 Technology Transfer Summit
Federal Laboratory Consortium for Technology Transfer
May 2005

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