MISSION DRIVEN PARTNERSHIPS

THE FLC-TPWG NATIONAL MEETING *MAY 3-6, 2004* *SAN DIEGO, CALIFORNIA*

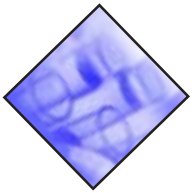
FLC Awards Program

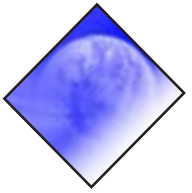
May 5, 2004

FEDERAL LABORATORY CONSORTIUM

FLC

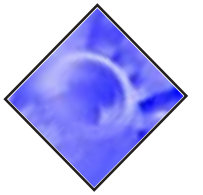
FOR TECHNOLOGY TRANSFER

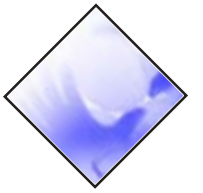




FLC Mission: The FLC shall provide the forum for education, training, and laboratory networking to enhance professional development and recognize excellence in federal technology transfer.

FLC Vision: The FLC membership will be the recognized leaders for the transfer of federal technology to the marketplace.





Welcome to the FLC Awards Program

Thank you for attending the 2004 FLC Awards Program. While we are celebrating the FLC's 30th anniversary, there is another milestone worth mentioning—it was 20 years ago that the first FLC awards were presented. The history of the awards program is essentially a timeline of the success of technology transfer. We can reflect on the accomplishments of past winners when we encounter a technology or product that is such a part of our everyday lives that we wonder how we ever got along without it. Aircraft deicing, digital eye screening, nuclear medicine treatment for cancer, and energy-efficient appliances are among some of the innovations that originated at a federal laboratory.

Victor Chavez
Awards Committee Chair

Tonight's awards presentation recognizes the technologies that will soon make their impact felt in the world around us. But more importantly, the FLC is honoring those individuals who took their vision from the drawing board to the real world, as well as those who played an important part in helping to bring that vision to life.

Since the technology transfer efforts within the FLC are diverse in their scope and large in number, we are pleased to present awards in the following areas:

- **Excellence in Technology Transfer—**Presented to individuals in the FLC who have successfully transferred federally developed technologies.
- **Laboratory Director of the Year—**Recognizes directors of FLC member laboratories for their contributions to the overall enhancement of technology transfer for economic development and their support of the FLC and its activities.
- **Service Awards**—Presented to individuals, inside or outside the FLC, who have provided significant support to the technology transfer process, furthering the FLC's mission.

The FLC awards are considered one of the most prestigious honors in the technology transfer world, with dozens of federal laboratories submitting nominations each year. In their 20-year history, these awards have become both a crowning achievement for the winning laboratories and a great source of pride for their government agencies.

As you read this booklet, you will be impressed with how these individuals worked together to use their experience, expertise, and resources to create such innovative technologies. I am extremely proud and pleased to present the recipients of the 2004 FLC awards.

FLC AWARDS
FOR
EXCELLENCE IN TECHNOLOGY TRANSFER

Department of Agriculture
Agricultural Research Service
Mid South Area

Commercial-Scale Biological Control of Aflatoxin Contamination

This biological control technology reduces a potent environmental carcinogen, thus making crops more valuable and agricultural communities less vulnerable. Aflatoxin contamination has been a concern to the Arizona cotton industry for over three decades. Despite extensive research on contamination in many parts of the U.S. and the world, no practical preventive measure had been developed for any crop or region. Through greenhouse and field-plot experimentation, Dr. Peter Cotty developed a theoretical basis for aflatoxin management using naturally occurring strains of *Aspergillus flavus* that do not produce aflatoxins to competitively exclude aflatoxin-producing strains. The technology uses these "atoxigenic" strains to reduce the incidence of aflatoxin-producing fungi and, thus, aflatoxin in crops and the environment.

Since inventing the technology over 10 years ago, Dr. Cotty has expended considerable time and resources to the transfer of this aflatoxin management tool. He developed collaborations with cotton producers, cotton gins, oil mills, and cotton organizations in the most severely affected portion of the country, and developed a practical basis for implementing this biological control technology. He then established partnerships with the Arizona Cotton Research and Protection Council (ACRPC), the National Cotton Council, Arizona Cotton Growers Association, and Cotton Incorporated, whereby atoxigenic strain use technologies were transferred for practical commercial application.

Dr. Peter Cotty

To further this effort, Dr. Cotty also developed processes for large-scale production of atoxigenic strain material, and assisted in the design and development of a commercial-scale facility operated by ACRPC. The atoxigenic strains are considered to be biopesticides by the Environmental Protection Agency; thus, the technology transfer included partnering with the IR-4 Biopesticide Program to complete the pesticide registration process. A full registration was obtained in 2003.

A result of the technology transfer is that the atoxigenic strain technology has been implemented on an expanding scale. This will result in reduced incidence of aflatoxin-producing fungi in the environment and reduced incidence of potentially carcinogenic aflatoxins in air, soil, food, and the environment in general. This benefits everyone entering or living in or near areas receiving atoxigenic strain treatments by providing a healthier and safer environment. This technology is now being adapted to several regions of the world, including Africa, Australia, and Asia. Dr. Cotty was awarded the 2003 Environmental Technology Award by the Arizona Farm Bureau for his efforts to develop and transfer this important technology.

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Department of Agriculture
Agricultural Research Service
Mid South Area

Novel Value-Added Sunflower Butter from Underutilized Sunflower Seeds

The team of Drs. Isabel Lima and Harmeet Guraya developed a process for making a sunflower butter product that resembles the flavor, texture, and nutty appearance of commercially available peanut butter. The manufacture of sunflower butter was optimized from roasting to ingredient formulation for sensory and physico-chemical parameters to mimic peanut butter. The technology was developed and transferred in cooperation with Red River Commodities, Fargo, North Dakota, under a CRADA.

Drs. Harmeet Guraya and Isabel Lima

After successful development of the product, Red River Commodities created SunGold Foods to commercialize the sunflower butter product. A web site (www.sunbutter.com) was launched, and interviews were given to several newspapers, magazines and radio stations. The product was introduced in various grocery food chains, health food stores, and discount wholesalers, as well as school lunch programs. The largest impact has been made in the industrial utilization of Sunbutter® into food products. Sunbutter® is currently being used in filled pretzels; is added to ice cream as a swirl; and is an ingredient in baked goods, yogurt, nutrition bars, healthy snacks, and extruded corn curls. The product is also being evaluated for international sales in several countries. The development of this technology increases the market value of U.S. sunflower seed, helps the sunflower seeds farmer, and also creates an alternative product for the 8% of children under 4 years of age and the 2% of adult Americans who are allergic to peanuts. Consumption of sunflower butter as an alternative to peanut products from an early age could prevent the development of peanut allergies. Sales during the first production year were in excess of $5 million.

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Department of Agriculture
Agricultural Research Service, Midwest Area
National Center for Agricultural Utilization Research

Seed Oil-Based Hydraulic Elevator Fluid

Across the nation, mineral oil-based fluids are the common choice for hydraulic lubrication in building elevators. Fire, accidental spillage, environmental toxicity, and disposal hazards are major concerns with the use of this existing technology. To address this problem, scientists at the National Center for Agricultural Utilization Research (NCAUR) developed a new vegetable oil-based elevator hydraulic fluid from renewable resources that is nontoxic and biodegradable in nature, has high fire resistance, and meets all industrial performance standards.

Drs. Sevim Z. Erlan

The Statue of Liberty National Monument in New York is currently using this new fluid technology, and the National Park Service Administration has expressed great interest in using it at numerous state and national parks throughout the United States. As a result of this interest, Agricultural Research Service (ARS) personnel and equipment at the NCAUR facility entered into a CRADA with Agri Lube, Inc., of Defiance, Ohio, to provide extensive testing, design, and technology licensing assistance to the company. Agri Lube has since applied for an exclusive license to manufacture the fluid and market the product.

The federal government, through the National Park Service's use and support of this new hydraulic fluid, is engaged in a visible leadership role to increase the use of renewable resources. The product itself offers multiple competitive advantages to industry, and the process of producing and marketing a new bio-based hydraulic fluid generates significant and broad economic benefits. Seed oil-based hydraulic elevator fluid has the potential to be the most widely used technology to come from the Department of Agriculture in recent years.

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Department of Agriculture
Agricultural Research Service
Pacific West Area
U.S. Pacific Basin Agricultural Research Center

Area-wide Integrated Pest Management for Exotic Fruit Flies in Hawaii

Exotic fruit flies have been devastating to Hawaiian agriculture, forcing growers to resort to almost weekly sprayings with chemical pesticides—or even to abandon growing some crops altogether. Estimates are that exotic fruit flies are costing Hawaii more than $300 million each year in lost markets for locally grown produce. That amount does not include potentially high value export markets that Hawaii has foregone as a result of fruit fly quarantine.

A team from the U.S. Pacific Basin Agricultural Research Center has developed the first successful area-wide control program for four exotic fruit fly species in Hawaii. In addition to developing many of the techniques used in the program, the team has led and funded a partnership with the Hawaiian Department of Agriculture and the University of Hawaii to create the Hawaii Area-Wide Fruit Fly Integrated Pest Management Program (HAW-FLYPM), which has carried out extensive efforts to get Hawaiian growers to adopt the new technology.

The depth of cooperation involved in bringing the technology to Hawaiian growers has been remarkable. The program works primarily through a combination of field sanitation**,** protein bait applications, male annihilation, and releases of sterile flies and parasites. The goal was to create a simple, effective, inexpensive program that growers would continue to use after the Center's involvement ended. Growers educated in the program have already been able to cut organophosphate pesticide use by 75% to 90%. By using the integrated pest management program rather than chemical pesticides, growers have still reduced fruit fly infestation from 30% to 40% to less than 5%. The area-wide program is also more environmentally friendly than conventional pesticide use. In addition to growers, the program is now also being taught to home gardeners, whose gardens are major reservoirs for fruit flies. In the long term, area-wide fruit fly approaches in some cases will allow for increased production of organic fruits and vegetables, as well as the production of new fruits previously decimated by fruit flies.

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Dennis Gonsalves
Roger Vargas
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Area-wide Integrated Pest Management for Exotic Fruit Flies in Hawaii
Lyle Wong
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Carroll Calkins

Department of Agriculture
Agricultural Research Service
South Atlantic Area

Improved Citrus Canker and Plum Pox Eradication and Sampling Technologies

Citrus canker (CC), a bacterial disease, has had a tremendous impact on the Florida citrus industry, which has lost 1.77 million commercial and 632,000 dooryard trees to eradication efforts from 1995 to date. Total eradication costs are expected to exceed $500 million in 2004. Dr. Tim Gottwald determined that the eradication policy of removing all potentially infected citrus trees within 125 feet of known infected trees was inadequate to curtail the CC epidemic. Dr. Gottwald conducted a study with the Animal Plant Health Inspection Service, the Florida Department of Agriculture and Consumer Services, and the University of Florida to find a potential solution. According to the study's results, potentially infected trees should be removed within 1,900 feet of known infected trees to achieve eradication.

Dr. Tim Gottwald

The new methodology has been deployed statewide in Florida to detect CC outbreaks prior to disease spread. Less commercial and urban tree destruction will result in an anticipated savings of hundreds of millions of dollars. The outgrowth of this methodology was the International Standards for Phytosanitary Measures, which requires foreign citrus producers to comply for detection of CC and other diseases. This ensures that foreign fruit imported into the U.S. does not carry exotic pathogens and will not contribute to new disease introductions.

In a similar manner, Plum Pox Virus (PPV) threatens the commercial stone fruit industries of the U.S. and Canada. Dr. Gottwald assessed the epidemic in Ontario, Canada, and authored a multiphase threshold-based plum pox eradication protocol, which was adopted as the operational basis of Canada's eradication program. In addition, Dr. Gottwald adapted the hierarchical sampling (HS) method for plum pox, providing the basis for the U.S. and Canadian national survey programs for PPV.

The result of these innovative technologies is the continued and improved protection of American agriculture and, indirectly, the agriculture of other fruit producing countries, and the ensured maintenance of open domestic and international commerce of citrus and stone fruit.

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Cascading Lasers: ARL's Progress Toward High Performance and Entrepreneurship

What if a technology could provide high-bandwidth secure communications from a command unit to a tank or other mobile unit without interception? Suppose that a line-of-sight laser beam could transmit real-time image or voice data in a wireless form in a battlefield environment, using technology that was secure, small, inexpensive, and simple to operate. Such a technology could meet requirements for several military applications and also be available to the private sector for civilian applications. For example, this technology would make it possible to "wire" homes, buildings, or even vehicles with a small, low power unit sitting on a communication tower that beams into a nearby building a voice/data connection with no digging, conduit, or wires.

While working at the Army Research Laboratory's Sensors and Electron Directorate (SEDD), a research group of 12 scientists led by Dr. Donald Wortman developed a new mid-infrared semiconductor diode laser with a distinct market advantage over alternative laser technologies. The newly advanced laser is inexpensive, lightweight, robust and simple to operate, and offers far-reaching possibilities for both military and commercial application. Believing that the opportunity for commercialization was immediate, five members of the research group decided to leave the government, create a new company, raise the necessary venture funding, and license the technology they developed for the Army. This technology transfer effort not only led to the establishment of a growing new private company, Maxion Technologies, Inc., but will also result in the application of funds to an R&D effort of direct interest to the Army. The return on investment is in the work and technical expertise of this team of Maxion employees, and the cost and savings are a result of private funding support in lieu of government salaries. In addition, there is the production of a dual-use technology for civilian use, and material and devices that will also be used in military systems. This technology transfer example serves as a success story and effective template for all federal labs and their scientists who are interested in dual-use technology opportunities.

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Department of Defense – U.S. Navy
Naval Aerospace Medical Research Laboratory

"Body Friendly" RF Diathermy System

A team led by Dr. Richard Olsen of the Naval Aerospace Medical Research Laboratory (NAMRL) has developed and commercialized a novel form of radio frequency diathermy (RFD) that uses a helical coil to deliver uniform, deep-tissue heating for treatment of pain associated with injuries.

When housed in a garment, RFD can be applied in a clinical setting to facilitate core warming to enhance tissue metabolism, vascular blood flow, and physiologic homeostasis without risk of superficial burning. This is particularly critical during the passive phase of rehabilitation from muscular, connective tissue, and skeletal injuries, and provides the impetus for transfer of the Navy-developed technology to the civilian medical community.

Under an exclusive Patent License Agreement, NAMRL transferred this technology to the civilian medical community through a new company formed to commercialize the technology, SeliCor Inc., of Austin, Texas. In support of its activities, SeliCor has outsourced some manufacturing and engineering activities to NASA spacesuit manufacturer ILC Dover of Frederica, Delaware, and an engineering firm, Sense Technologies of San Antonio, Texas, to further develop the technology for future therapeutic uses in neurological, dermatologic, and sports medicine. Sales of SeliTherm units to date are outstripping the ability of SeliCor to manufacture and supply them, and market research indicates that the potential is exceedingly high to attract a significant fraction (on the order of 10%) of the billion-dollar annual market for such devices and related services.

The transfer of this technology from the Navy to the civilian medical community allows for considerable cost savings in research and development, and will ultimately translate into a major impact on occupational medicine, rehabilitative care, and the economic aspects of public health.

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From left: Phil Ketner, Dr. Charles Schlagel, and Joseph Hemby, Jr.

Dr. Richard Olsen

Department of Defense – U.S. Navy
Naval Oceanographic Office

High Volume Data Processing and Validation Improvements for Ocean Bottom Mapping

A team at the Naval Oceanographic Office (NAVOCEANO) has successfully transitioned government-owned software technology to the private sector, creating many new data collection and mapping capabilities that support naval operations, telecommunications, and numerous other commercial applications. Through a pair of well-structured CRADAs, the team transferred NAVOCEANO's unique data structures and software to Science Applications International Corporation (SAIC) in Newport, Rhode Island; and to Interactive Visualization Systems (IVS) in Fredericton, New Brunswick, for integration with the companies' commercial software—an effort that ultimately broadened the scope and use of the technology.

As a result of its mutual software development with IVS and SAIC, NAVOCEANO realized a tenfold improvement in the efficiency of the previously labor-intensive, interactive editing process, and garnered savings of more than $800,000 over the last three years. In addition, the NAVOCEANO team involved two universities in the technology transition effort, which contributed research results that have been incorporated into the CRADA products—further enhancing their value to a broader community. The companies' commercial opportunities have increased considerably, as evidenced by IVS's international marketing and sale of Fledermaus software through a commercial partner and the opening of its first U.S. office. New users of the CRADA-enhanced Fledermaus software include British Petroleum and the National Oceanic and Atmospheric Administration (NOAA).

SAIC's CRADA-enhanced SABER software is used for system configuration in the telecommunications industry and for aiding in the design, installation, and inspection of underwater cables. NOAA recently selected SAIC as the best-qualified supplier of hydrographic surveying services with its SABER capabilities, and awarded the company up to $35 million over a five-year period for services that include direct and important support to U.S. homeland defense missions.

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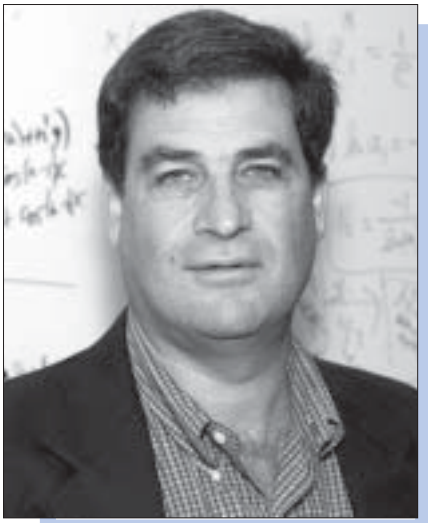
Jan Depner and Barbara Reed

Department of Defense – U.S. Navy
Naval Undersea Warfare Center Division, Newport

Non-Linear Signal Processing for Diagnosis of Sleep Breathing Disorders

Twenty million Americans suffer from sleep breathing disorders, putting them at risk for a number of cardiac and neurological diseases. Approximately half of those sleep breathing disorder cases go undiagnosed and untreated because of lack of access to diagnostic services. To remedy this potentially dangerous situation, the Naval Undersea Warfare Center (NUWC) Division, Newport developed and patented a unique method to diagnose sleep breathing disorders in a short, easy-to-perform test.

The method uses chaos theory, a unique way of mathematically predicting behavior based on sensitivity to small changes, and applies it to signals normally collected during a sleep test. However, instead of an expensive night-long test where the subject is asleep, the new test is performed in five minutes while the subject is awake and sitting up. In addition, the new test costs significantly less than a traditional overnight sleep clinic test.



Dr. Richard Katz

This invention has been licensed to Vanguard Technologies, LLC, of North Attleboro, Massachusetts, a woman-owned startup company formed to commercialize the technology. Under a CRADA between NUWC and Vanguard Technologies, NUWC has supported data analysis of clinical trials and assisted with the commercial development of the Non-Linear Signal Processing for Diagnosis of Sleep Breathing Disorders. Vanguard Technologies expects its product, which screens for sleep apnea and monitors sleep apnea treatment, to be available in doctors' offices within a year.

The benefits of being able to cost-effectively screen the population for obstructed sleep apnea (OSA) will save many lives and prevent many debilitating accidents. A recent report states that the annual direct costs for OSA are estimated to be approximately $16 billion. Untreated OSA patients have hospital stays 2.8 times as long as treated subjects, and incur excess hospital costs of $100,000 to $200,000 plus doubled physician costs. Beyond the apparent cost savings, the Non-Linear Signal Processing for Diagnosis of Sleep Breathing Disorders will positively affect the quality of life for millions of people who will be able to share more productive lives with their families and loved ones.

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Department of Defense – U.S. Air Force
Air Force Research Laboratory, Propulsion Directorate

A U.S.-Manufactured Hall Effect Thruster Satellite Propulsion System

The domestic manufacture of the Hall effect thruster (HET) satellite propulsion system has been created through an Air Force Research Laboratory (AFRL) Propulsion Directorate technology transfer project. A Hall thruster is a small rocket engine that positions and maintains a satellite in the correct orbit. The use of electrical rather than chemical combustion achieves fuel savings in the magnitude of tens to hundreds of kilograms. The diminished fuel demands translate into launch vehicle downsizing, saving millions of dollars per launch.

Daron Bromaghim and Dr. J. Michael Fife

The team of Dr. J. Michael Fife and Daron Bromaghim manage two Hall thruster development programs that have worked synergistically to yield commercially capable HET systems. Technology transfer started with the uptake of research previously performed by Russian scientists. By building on that foundation with a Small Business Innovation Research (SBIR) project, a 200-W HET became viable for the TacSat 2 satellite program. Project data and expertise were shared for the related development of a more high-powered HET to meet a military communications satellite mission. Both projects have required technology exchanges between multiple contractors and federal interests. A CRADA was put in place for the transfer of data and materials between AFRL and a prime contractor.

Development of the 200-W HET and the more powerful 4.5-kW HET has been successful, and funded missions are committed for launch dates in 2004 and 2006, respectively. Both HET systems are expected to become commercially available through the project contractors after the missions are completed.

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Department of Energy
Lawrence Livermore National Laboratory

RadScout Handheld Nuclear Material Identifier

RadScout is a handheld radiation detector that identifies the type of radioisotopes present in a location with the precision that until now was found only in laboratory instruments. A team at Lawrence Livermore National Laboratory (LLNL) developed the detector and transferred it to ORTEC, a business unit of AMETEK, Inc. RadScout is the first commercialized radiation detector manufactured with its capability, and it responds to a critical need of first responders in every field.

Before RadScout was available, first responders encountering a possible radiation source had to experience a potentially deadly time delay as samples containing possibly dangerous radioisotopes were either sent to a laboratory for analysis or isolated while laboratory equipment was shipped to the sample. RadScout provides fire departments, government authorities, and hazard and medical teams with a handheld radiation identifier that distinguishes harmless from dangerous radioisotopes so they can make intelligent, life-saving decisions quickly.

RadScout is self-contained, weighs only 25 pounds, and contains its own battery-operated cooling unit, which allows the detector to operate for several hours before the batteries need to be recharged. RadScout can also operate from various sources, including AC power and car batteries using a cigarette lighter adapter.

An American-owned company, ORTEC is one of the world's leading manufacturers of radiation detectors. Its product line includes over 1600 products. For 40 years, ORTEC has worked with U.S. government agencies and private industries, and with the research and development group of Defense and Nuclear Technologies at LLNL. ORTEC manufactures RadScout under the product names Detective and Detective EX.

The development of RadScout will have a major impact on the security of America's citizens and infrastructure. The greatest tangible benefit of RadScout is that its portability and real-time data analysis allow first responders to know immediately upon inspection if there is a health or safety threat and the magnitude of the threat. Real-time data analysis will allow intelligent decisions to be made much more quickly, which translates into the potential of saving thousands of lives in just one event of a terrorist threat.

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RadScout Handheld Nuclear Material Identifier Team

From left: Mark Rowland, Catherine Elizondo, Ray Pierce, Alicera Aubel, and Mike Dunning

Department of Energy
Argonne National Laboratory

Improved Electrodialysis Operation with Buffer Solution

A novel electrodialysis process for the production of a specialty agricultural chemical has been successfully commercialized by a team at Argonne National Laboratory (ANL). This technology controls the pH in a bipolar electrodialysis stack by using a buffer agent that is regenerated continuously. The technology significantly improves the efficiency of electrodialysis cells and stacks, in particular those used in chemical synthesis. Working with BASF Corp., ANL integrated its technology for process control with BASF's new electrodialysis process.

ANL researchers used their unique pilot-plant facilities to carry the bench-scale work through to commercial production in less than 18 months. Once the viability of the process was confirmed with pilot production runs at ANL's electrodialysis facility, a license was negotiated that transferred ANL technology to BASF.

Agreements were reached that provided training of BASF plant operators at ANL. To provide short-term commercial production to meet market demand for the new chemical, an agreement was also reached that allowed the ANL facility to be operated by BASF personnel as a commercial production plant. The facility operated successfully 24 hours per day, five days per week, for six months, with no unscheduled downtime. During the six months of operation, production exceeded the initial targeted production by almost 25%.

The outcome of this technology transfer effort is expected to advance the use of electrodialysis for applications in the specialty chemical and pharmaceutical industries.

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Department of Energy
Pacific Northwest National Laboratory

Alpha Particle Immunotherapy for Treating Leukemia and Solid-Tumor Metastases

A promising new cancer treatment is the outcome of a successful technology transfer effort at Pacific Northwest National Laboratory (PNNL). Alpha particle immunotherapy (APIT) makes it possible to effectively treat patients with malignancies of the hematopoietic system—such as leukemia—and metastasis from many solid tumors with fewer side effects than other treatments. APIT combines the power of alpha particle-emitting radioactive isotopes (actinium-225 or bismuth-213) with monoclonal antibodies that bind to and destroy specific cancer cells, but not nearby healthy tissue. Early trials at major research centers yielded very encouraging results.

From left: Oleg Egorov, Kenneth Givens, Eric Lund, Darrell Fisher

The primary supplier of APIT is MedActinium, a small radiopharmaceutical firm in Oak Ridge, Tennessee. The company turned to PNNL researchers to solve two obstacles to commercial use of APIT: purifying the isotope, and binding it to the antibody to create a stable product. The nominees transferred a new separations chemistry for generating bismuth-213 and a key enabling technology for placing actinium-225 on monoclonal antibodies. The result is that these powerful new radioisotopes are now available to treat patients with leukemia or fast-spreading solid-tumor cancers.

This technology transfer involved collaborative efforts among private industry, academic research institutions, and U.S. government agencies. In making the transfer, PNNL built on relationships with the pharmaceutical industry dating from 1986. The laboratory's research in APIT-enabling technologies was part of a larger effort to develop beneficial uses for radioactive materials remaining from weapons production during the Cold War. The transfer itself was fast-tracked during planning for initial clinical trials. The effort included exclusive license agreements for five immunology patents, negotiation and conclusion of a separate technology management agreement with an earlier research partner, and establishment of a CRADA for further research. The transfer was completed in January 2003.

The transfer of technologies from PNNL to MedActinium is a contributing factor in the ability of the Memorial Sloan-Kettering Cancer Center and other research medical centers to continue the quest for effective cancer treatments. A second round of clinical trials is scheduled to begin at Sloan-Kettering in fall 2004. According to David A. Scheinberg, M.D., Ph.D, and chairman of the Sloan-Kettering Experimental Therapeutics Center, "You can inject small doses of these [APIT] molecules, which circulate, find their target cells, invade them, and eventually kill the cells. These are extremely potent drugs."

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Lab-on-a-Chip

Oak Ridge National Laboratory (ORNL) has licensed seminal patents for Lab-on-a-Chip technology to Caliper Technologies, Inc., of Mountain View, California. The transfer of the technology contained in these patents was key to Caliper's first products and its rapid transition from a startup to a publicly traded company and world leader in microfluidics technology in less than five years. Microfluidic Lab-on-a-Chip systems enable experiments ordinarily performed in a full-sized laboratory to be conducted on chip devices smaller than a credit card. The chip contains microscopic channels through which fluids and chemicals are moved to accurately perform assays, significantly reducing time and expense. The initial commercial uses have been in the areas of drug discovery and biotechnology. Over 35 lead drug candidates have been discovered with Caliper's technology.

The Lab-on-a-Chip concept was proposed, developed, and patented at ORNL. The laboratory initially funded the effort through its Laboratory-Directed Research and Development Program, first by providing support for a small seed money project and subsequently by funding genetic and protein research. Both the inventors and ORNL technology transfer staff were involved in marketing the technology.

Caliper, with Agilent Technologies, Inc., of Palo Alto, California, introduced the first commercial product in 1999. Caliper has since launched its own product line, and offers complete systems to end users and components to equipment manufacturers. It has installed more than 2000 bioanalyzers and has sales of over 500,000 chips per year. As of March 2003, Caliper had cash and marketable securities of over $140 million and a cumulative R&D investment of $120 million. *MIT Technology Review* (May 2003) ranked it No. 2 for the technological strength of its patent portfolio in the biotechnology/pharmaceutical sector, ahead of major companies such as Pfizer, Eli Lilly, and Roche, and No. 3 across all industries for its "Current Impact Index." Technology transfer from ORNL was crucial in making this phenomenal commercial success possible.

Lab-on-a-Chip won an R&D 100 Award in 1996, was named one of the top 40 technologies over the 36-year history of the R&D 100 Award, and recently received an Honorable Mention in the September 2003 FLC Southeast Region's Excellence in Technology Transfer competition.

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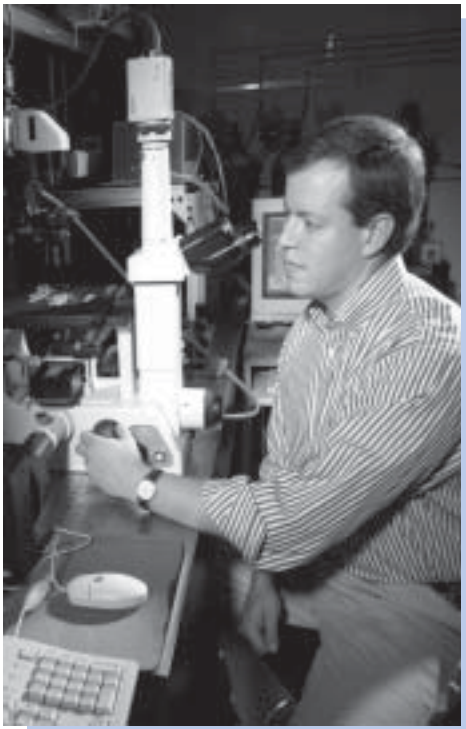
Lab-on-a-Chip Team

From left: Dr. J. Michael Ramsey, Ashok Choudhury and Roswitha Ramsey



Stephen Jacobson

Department of Energy
Oak Ridge National Laboratory

Robust Wireless Technologies for Extreme-Environment Communications

Oak Ridge National Laboratory (ORNL) currently has an intellectual property portfolio for robust wireless communications technologies that includes 11 patents and patent applications. The laboratory has licensed all of these technologies to Tarallax Wireless, Inc., of Salt Lake City, Utah, which is incorporating them into commercial communications devices through a $6.6 million, 100% funds-in CRADA with ORNL. Tarallax has sublicensed specific technologies to Navigational Sciences, Inc., of Charleston, South Carolina, for use in commercial maritime tracking and tagging devices. Navigational Sciences is also funding additional developments through the Tarallax CRADA.

In separate efforts, ORNL licensed these technologies to two startup companies, Graviton and Care Chips. Both have provided CRADA funding to ORNL for further development of their applications.

Wireless technologies enable robust communications in extreme environments, such as metal buildings, urban canyons, mountainous terrain, and underground facilities. Conventional wireless devices are limited in many applications because of their high power consumption, short operating lives, and interference from metal structures and electromagnetic sources. These technologies open a whole new world of wireless applications—industrial measurements and condition monitoring, medical sensors, asset tagging and tracking, and efficient video communication and data transfer.

This effort won “Project of the Year” in the September 2003 FLC Southeast Region Excellence in Technology Transfer awards competition.

Contact: Paul Ewing, (865) 576-5019, ewingpd@ornl.gov

Robust Wireless Technologies for Extreme-Environment Communications Team

Eric Dobson

Roberto Lenarduzzi

Left to right, seated: Michael Emery, Paul Ewing, Gregory Hanson
Left to right, standing: M. Nance Ericson, Stephen Killough, James Moore, Stephen Smith, W. Bruce Jatko, Gary Turner, Mark Buckner, Miljko Bobrek, Michael Moore
Not pictured: John Jones, Jr., Timothy McKnight, Alan Wintenberg

Thin-Film Rechargeable Lithium Batteries

Oak Ridge National Laboratory (ORNL) has licensed its thin-film rechargeable lithium battery technology to six U.S. companies. The licensee companies are developing miniaturized batteries to power various devices, such as medical implants, consumer and military electronics, banking and identification cards, industrial and security sensors and transmitters, and micromachines. Each of the licensees (Teledyne Electronic Technologies; Excellatron Solid State, Inc.; Front Edge Technology, Inc.; Infinite Power Solutions, Inc.; Cymbet Corporation; and Oak Ridge Micro-Energy, Inc.) has expertise in fabricating thin-film devices and is developing partnerships with device manufacturers.

The basic research was initiated through ORNL seed money funds. Support continued under the U.S. Department of Energy (DOE) Office of Science programs. Company representatives initiated technical and business discussions with ORNL after reading published accounts of the basic research. Subsequent collaborative research was supported by a number of mechanisms, including DOE- and industry-funded CRADAs and Work for Others agreements. ORNL granted licenses as the technology matured, and the companies began their own R&D efforts, funded by in-house and venture capital funds, Small Business Innovation Research contracts, and National Institute of Standards and Technology Advanced Technology Program awards.

The thin-film rechargeable lithium battery technology won an R&D 100 Award in 1996 and an FLC Southeast Region Excellence in Technology Transfer Award in September 2003.

Contact: Dr. Nancy Dudney, (865) 576-4874, dudneynj@ornl.gov

Thin-Film Rechargeable Lithium Batteries Team

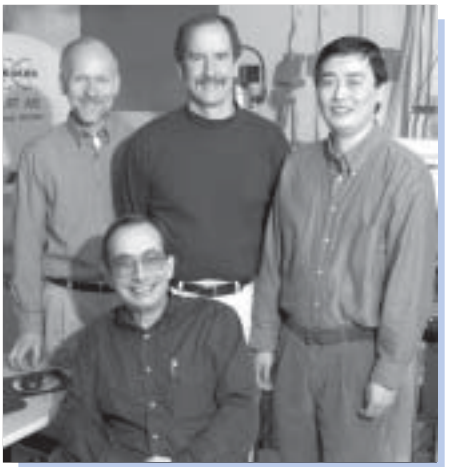
Left to right: John Bates, Thitima Suwannasiri, Nancy Dudney, Ivan Dunbar, Atsushi Ueda, Bernd Neudecker.
Not pictured: Chris Luck

Left to right: Ashok Choudhury, Greg Gruzalski, Dr. Nancy Dudney

Department of Energy
Pacific Northwest National Laboratory

Electrodynamic Ion Funnel

The electrodynamic ion funnel, developed at Pacific Northwest National Laboratory (PNNL), is a revolutionary development that directs ions in gases, greatly improving the sensitivity of analytical devices, such as mass spectrometers, that depend on ion formation and transfer in the presence of gases. The funnel uses a series of ring electrodes of increasingly smaller internal diameters to which radio frequency (RF) and direct current (DC) electric potentials are co-applied. The combination of collisions with neutral gas and the combined RF and DC fields causes the ions to be more effectively focused and transmitted, significantly enhancing the sensitivity of the mass spectrometer. Realization of the ion funnel's potential will benefit a host of important commercial activities, including drug discovery and biotechnology development, where sensitivity is key.



Seated: Dr. Richard Smith
Standing from left: Dr. Harold Udseth, Bruce Harrer, Dr. Keqi Tang

Through a nonexclusive licensing mechanism, the PNNL team successfully transferred the electrodynamic ion funnel to three companies: Micromass in 2001; Biospect, Inc., in 2002; and Bruker Daltonics, Inc., in 2003. Two of these companies are major manufacturers of mass spectrometers, while the third is a startup company developing a new class of instruments for human clinical applications. An innovative aspect of this technology's transfer has been the mass spectrometer instruments (initial market value of less than $750,000) provided at no cost to PNNL in exchange for access to the ion funnel technology and the expertise of its developers.

The ion funnel may help scientists obtain effective, thorough answers to major scientific questions, including how a disease progresses, what causes it and, eventually, how to stop it. This technology also has the potential for uses to determine how the human body responds to certain drugs, cancer progression, and almost any other biomedical or health-related need.

The electrodynamic ion funnel received a 1999 R&D 100 Award, which recognizes the year's most significant advancements in technology.

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Department of Energy
Lawrence Berkeley National Laboratory

Minimizing Casualties from a Chem/Bio Attack: Preparation, Training and Response Resources

In late 2001, terrorists used anthrax to kill several people, disrupt mail deliveries, and render congressional office buildings uninhabitable. The buildings were eventually reoccupied at a cost of well over $150 million and after enormous disruption to their occupants. These relatively limited attacks had huge consequences; a major chemical or biological attack could be much more severe.

Even before the anthrax releases, scientists in the Indoor Environment Department of the Lawrence Berkeley National Laboratory (LBNL) had been conducting research aimed at reducing the effects of a chemical or biological attack. This research builds on a long tradition of work within the department on building airflows, filtration effectiveness, and air quality issues. The anthrax attacks prompted department scientists to ask, "Is there anything we can contribute *right now*?"

The answer was "yes." The researchers identified several target groups that could benefit from increased knowledge. These included building operators who are in charge of the design, maintenance, and operation of building ventilation systems; managers of unique, high-value buildings such as airports; emergency planners and incident commanders who have to decide what areas of a city to evacuate and where to send response teams; and "First Responders" — the firefighters and police officers who are the first trained people on the scene of an attack.

The LBNL team was successful in identifying and meeting the needs of each of these target groups. The team provides advice for building operators through the Secure Buildings web site, which has had thousands of visitors viewing over 40,000 pages since early 2002. The team worked with colleagues at Sandia National Laboratories to provide recommendations to airport managers on preparation, training, and event response. Since people spend the majority of their time indoors, the team worked with the National Atmospheric Release Advisory Center at Lawrence Livermore National Laboratory to predict indoor toxic concentrations from a Bhopal-type emergency — an important addition to the suite of outdoor prediction tools already available. Finally, the team created First Responder training materials for the California Peace Officers Standards and Training Agency, which has used the materials to train police officers in much of the U.S.

These efforts have improved the readiness and safety of the nation's police officers, the security of the nation's buildings and their inhabitants, the effectiveness of local emergency response, and the safety of the U.S. air transportation network. A major attack may still have consequences, but they will be lessened because of the scientific work and outreach of the LBNL team.

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Department of Energy
Pacific Northwest National Laboratory

Inductively Coupled Plasma/Mass Spectrometry Collision/Reaction Cell Technology

The Inductively Coupled Plasma/Mass Spectrometry (ICP/MS) Collision/Reaction Cell (CRC) technology developed at Pacific Northwest National Laboratory (PNNL) has advanced the analysis capabilities of mass spectrometer instruments worldwide. ICP/MS can now detect and measure many important elements that were not detectable with conventional MS. This technology has had a significant and widespread impact in the analytical chemistry world, and has broad applications in environmental monitoring and testing, biotechnology, semiconductor manufacturing, and homeland security.

In inventing this technology, the PNNL team brought to bear their extensive experience using and improving mass spectrometry. The first step in the technology transfer was forming a CRADA with an interested commercial ICP/MS manufacturer. That enabled the team to continue to improve their science. They soon patented their technology and licensed it to ThermoFinnigan. In 2002, through the team's persistence, an amended license was signed that requires and further gives ThermoElectron the incentive to sublicense the CRC technology to other manufacturers of mass spectrometers for wider benefit to the ICP/MS community.

Research at PNNL alerted the mass spectrometer community to the use of ion-molecule reactions for interference reduction and greatly amplified research interest. There were few publications on this subject before 1996, but more than 200 peer-reviewed publications have been issued since the disclosure of this successful technique. The CRC approach to removing mass spectral interferences has been adopted throughout the world. Today, more than 60% of ICP/MS instruments sold incorporate PNNL's CRC technology. The efforts of the team have thus improved scientific analysis and contributed to international commerce for the benefit of the global economy.

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Inductively Coupled Plasma/Mass Spectrometry Collision/Reaction Cell Technology Team

From left: Charles Barinaga, Dr. David Koppenaal, Gregory Eiden, Bruce Harrer

Department of Energy
Oak Ridge National Laboratory

Microcantilever-Based Biosensors

Oak Ridge National Laboratory (ORNL) has licensed the biosensor component of its microcantilever technology to Protiveris, Inc., of Rockville, Maryland. The mission of Protiveris is to commercialize biosensors that will accelerate the drug discovery and development process and thus aid in the launch of new pharmaceuticals. The VeriScan™ 3000, a product developed by Protiveris, uses a 64-cantilever microchip capable of detecting 64 different proteins in a single assay in real time, with unprecedented selectivity and sensitivity.

From left: Dr. Thomas Thundat, Dr. Zhiyu Hu, Russ Miller

Researchers at ORNL conceived, developed, and patented the microcantilever-based biosensors. The microcantilever concept, developed under an ORNL seed money effort, has resulted in 21 patents, with another 10 pending; and, 75 scientific papers have been published so far. The U.S. Department of Energy Office of Biological and Environmental Research directly funded the biosensor project. A CRADA is being negotiated with Proteveris for continued R&D.

The microcantilever sensor is a platform technology. It can be applied anywhere that a miniature sensor can be used. The biosensors, in particular, will have a broad impact. For example, in the United States alone, the market for microcantilever-based biomedical diagnostics is well in excess of $500 million annually. Overall, the microcantilever biosensor will have tremendous industrial, commercial, civilian, and military significance.

The microcantilever-based biosensors recently won an FLC Southeast Region Award for Excellence in Technology Transfer in September 2003.

Contact: Dr. Thomas Thundat, (865) 574-6201, thundatt@ornl.gov

Department of Health and Human Services
Centers for Disease Control and Prevention
National Center for Infectious Diseases

West Nile Virus Recombinant DNA Vaccine and Diagnostic Antigen

In late August 1999, New York City and the surrounding area experienced an outbreak of viral encephalitis that caused seven deaths with 62 confirmed cases. The outbreak was caused by West Nile Virus (WNV), a mosquito-borne flavivirus that is transmitted by various species of Culex mosquitoes. WNV has been found in Africa, Europe, the Middle East, west and central Asia, Oceania, and now North America. The most serious manifestation of WNV infection is fatal encephalitis (inflammation of the brain) in humans and horses, as well as mortality in certain domestic and wild birds. In 2002, there were 4,156 and 14,571 reported cases of WNV human and equine infection, respectively, with the virus reaching 44 states. As 2003 drew to a close, the human case count rose to 8,219.

Faced with the rapid spread of WNV, the Centers for Disease Control and Prevention (CDC) worked quickly with national and state authorities to develop a comprehensive national response plan. Accurate WNV diagnostic tests and preventives are essential tools for the development of effective surveillance, prevention and control of WNV. CDC scientist Dr. Gwong-Jen Chang had for many years been using recombinant DNA techniques to improve vaccines and diagnostic tools for flaviviruses such as dengue, Japanese encephalitis, and St. Louis encephalitis virus. From his library of recombinant DNA constructs, he developed a plasmid expressing a critical WNV antigen that provided the necessary specifications for diagnosing WNV and proved highly effective as a vaccine. CDC has patent applications pending on all of the flavivirus constructs, including the WNV-specific construct.

This antigen was incorporated into a diagnostic test for WNV antibodies in humans and animals. The tests were immediately distributed to national and state public health labs to facilitate the formation of a national surveillance program. The value of this antigen over those currently available for diagnostic testing was quickly recognized by the private sector, and the antigen has now been licensed to ten companies for use in WNV diagnostics worldwide. Within two months of the first license, the WNV recombinant antigen was available as a commercial product and, within one year, a diagnostic test kit incorporating the antigen received FDA approval.

In collaboration with the academic community and the private sector (via the use of a CRADA), CDC facilitated the use of the WNV recombinant DNA as a vaccine in horses and birds. Currently working its way through USDA approval, the horse vaccine will be the first recombinant DNA vaccine approved for commercial use anywhere in the world. In 2002, an emergency effort initiated to evaluate the DNA vaccine for protection of birds on the endangered species list resulted in the vaccination of more than 220 condors in the California condor recovery program.

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Department of Health and Human Services
Centers for Disease Control and Prevention

A Multimedia Educational Tool: Genetics in Clinical Practice – A Team Approach

Genetics in Clinical Practice: A Team Approach is a CD-ROM and Internet-based interactive multimedia educational tool that allows healthcare providers with no formal training in genetics to learn about the subject. It was a joint project developed by the Centers for Disease Control and Prevention (CDC), Public Health Practice Program Office (PHPPO), Division of Laboratory Science (DLS), and the Interactive Media Lab at Dartmouth Medical School. Studies have shown that healthcare providers—physicians, nurses, physician assistants, and public health workers—rarely had the opportunity during their formal training to interact with patients about genetic concerns and that opportunities for post-formal training were limited. Studies also indicated that clinicians did not understand genetic testing and were not able to appropriately order genetic tests or understand genetic test reports. The CDC recognized that additional educational opportunities were needed if primary care providers were to integrate into mainstream healthcare the new genetic tests resulting from the discoveries of the Human Genome Project.

This program uses the Virtual Mini-Fellowships™ for continuing education with a Virtual Clinic™ that is intuitive and easy-to-use. It includes medical conditions seen today for which knowledge of clinical genetics can positively affect outcomes. The program's flow and content center on simulated patients who have, or are at risk of developing, four different diseases. The program contains over ten hours of educational activities. In addition to simulated patients, the program includes case discussions, examples of genetic counseling, genetic laboratory tours, discussion of why genetic testing is different, mini-lectures by leading world experts, patient interviews, and a dedicated web site for additional resources.

The CDC used a two-fold strategy to distribute the program. First, the team demonstrated the program at multiple professional educational forums. Second, a distribution strategy called "co-branding" was developed to allow nonprofit healthcare professional organizations to act as distributors of the program to their membership and others. This concept allowed the program to be endorsed by the CDC, Dartmouth Medical School, and the respective professional organizations. The American College of Medical Genetics (ACMG) and the American Medical Association (AMA) currently are distributing the program. This technology provides a cost-effective system for healthcare professional organizations to educate their members and improve the understanding and use of genetic testing. This will eventually lead to improved use of genetic testing in the healthcare system, which will benefit all Americans.

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Genetics in Clinical Practice Team

Interactive Media Laboratory (IML) team at Dartmouth Medical School

W. Andrew Fawcett

Dr. Joseph V. Henderson

Stacy Howard

Dr. Eunice Rosner

Dr. Ira Lubin

Dr. Rex Astles

Department of Health and Human Services
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

Handwipe Method for Detecting Lead

Lead poisoning is a global problem that has significant public health and occupational health consequences. Worldwide, 240 million people are estimated to have health risks from lead poisoning, and lead is the number one environmental health hazard to children. From a U.S. public health perspective, about 900,000 children from ages 1 to 5 have a blood-lead level of concern. In addition, occupational exposure to lead is one of the most common overexposures found in U.S. industry and a leading cause of workplace illness. The U.S. Occupational Safety and Health Administration (OSHA) deemed that reducing occupational lead exposure is a priority.

The technology developed by the National Institute for Occupational Safety and Health (NIOSH) team involves having a person wipe their hands or a surface suspected of being contaminated with lead. The presence of lead is then disclosed by applying three sprays of an extraction solution, followed by two sprays of a disclosing solution. The method will identify lead in the tens of millionths of a gram. If lead is present, a reddish-purple color results; if not, the wipe remains yellow. The red color is intended to suggest to the user: "Stop! If it's red, there's lead!"

Reducing lead exposure involves awareness of lead contamination, especially lead dust on hands and other skin surfaces, which is an ingestion hazard, a primary route of lead exposure. NIOSH developed the lead handwipe as a cost-effective way to significantly reduce lead exposure in workers and the general public through risk awareness. The technology is novel, sensitive, and specific. The results of the test are immediate: a color change to red indicates the presence of lead.

The technology was awarded U.S. Patent 6,248,593 and is licensed to SKC, Inc., a U.S. company that is a global leader in sampling technologies. The company has since created a web site for this technology (http://www.skcinc.com/prod/550-001.asp), and the product is selling well.

Through its successful technology transfer to SKC, this invention will now help industries meet OSHA's goal of reducing occupational lead exposure and help the U.S. Public Health Service meet its *Healthy People 2010* goal—to reduce the number of persons with elevated blood-lead levels to zero by the year 2010. This invention won a 2003 FLC Southeast Region Excellence in Technology Transfer Award as an outstanding technology that has significant potential to improve the quality of life.

Contact: Eric Esswein, (303) 236-5946, eesswein@cdc.gov

Handwipe Method for Detecting Lead Team

From left: Thomas O'Toole, Capt. Russ Metler, Jacqueline Quay

Kathleen Goedel

National Aeronautics and Space Administration
Glenn Research Center at Lewis Field

PS/PM300 High Temperature Solid Lubricant Coatings and Composites

The Plasma Spray (PS)/Powder Metallurgy (PM) 300 are high-temperature solid lubricants that operate from cryogenic temperatures to over 1200 degrees Fahrenheit. The inventors of the technology, Dr. Christopher Dellacorte and Brian J. Edmonds, used a NASA Space Act Agreement with ADMA, Incorporated, as the vehicle for a commercialization project to reduce the cost of PS/PM300 by 50 percent. As a result, ADMA has licensed the technology and began producing commercial parts in 2002. A second license has been awarded to Hohman Plating and Manufacturing of Twinsburg, Ohio, and several other licenses are currently pending.

PS300 coatings have replaced graphite and ceramic parts in large steam turbine control valves in power plants. The Lincoln Electric Company is using thousands of PM300 bushings in its high-temperature industrial ovens to lubricate conveyor buckets and other components. PM300 bushings replaced bronze bushings, which lasted only a month or less in the 1000 degree Fahrenheit heat. Lincoln Electric estimates it will save more than $1 million over the first five years by using these bushings. A spin-back benefit to NASA is that the agency now has a commercial production source for PS/PM300 material at a substantial cost reduction. NASA is currently evaluating PM300 bushings for variable stator vanes in gas turbine engines and PS300 coatings on foil bearings for oil-free turbomachinery. A comprehensive effort is now underway to develop oil-free turbine engines for aircraft, with half the maintenance costs and 15% lower weight than conventional oil-lubricated engines.

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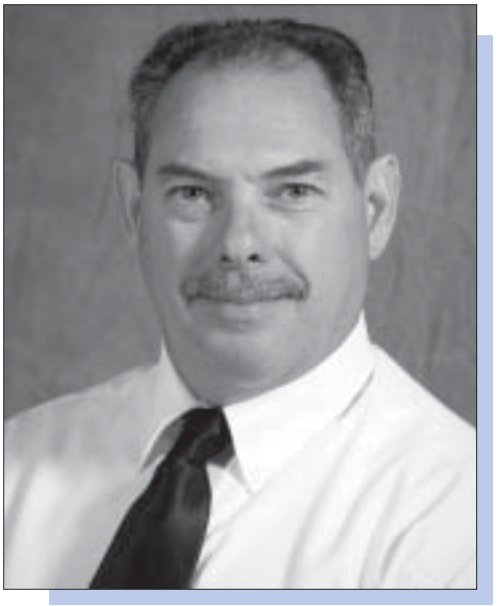
Christopher.Dellacorte@nasa.gov

PS/PM300 High Temperature Solid Lubricant Coatings and Composites Team



Brian Edmonds

Dr. Christopher Dellacorte

National Aeronautics and Space Administration
John F. Kennedy Space Center

Personal Cabin Pressure Monitor and Altitude Warning System

The Personal Cabin Pressure Monitor is a pager-like device that independently warns the user—be it astronaut, pilot, or passenger—that the cabin pressurization of their aircraft or space vehicle has been compromised and that corrective action needs to be taken immediately to avert a dangerous, life-threatening situation.

The significance of this innovation from the Kennedy Space Center (KSC) can only be captured by imagining a scenario in which a business jet is traveling at high altitude. The plane streaks across the sky off-course and nonresponsive, only to terminate thousands of miles from the point of origin when its fuel supply is exhausted. There are no survivors and no conclusive evidence as to what happened. Frosted windows observed by a chase aircraft hint of an unknown cabin pressurization problem. Suffering from high altitude hypoxia, the crew and passengers simply succumbed to total unconsciousness within minutes of the cockpit reaching rarified conditions. Hypoxia, a state of oxygen deficiency in the blood, tissues, and cells sufficient to impair functions of the brain and other organs, is a concern to pilots who fly above 10,000 feet.

Developed in response to the Mir/Progress collision in 1997 and the Payne Stewart aircraft accident in 1999, this personal cabin pressure monitor warns the user of impending danger of hypoxia through audio, vibratory and visual alarms. In addition, a lighted digital screen displays a text message of the warning and the condition causing the alarm. Utilizing its innovative technology transfer network, the NASA/KSC Technology Transfer Office had this technology available for licensing within 10 months of initial development work, then successfully negotiated and signed a license agreement the following year. With technical assistance from NASA/KSC, Kelly Manufacturing Company had a commercial product on the market within a year after the license agreement was signed.

This technology may be expanded beyond aviation and aerospace to include scuba diving, skydiving, mountain climbing, meteorology, space-borne and planetary habitats, hyperbaric pressure chambers, altitude chambers, and positive/negative pressure vessels. The potential to save lives through this technology makes this monitor priceless.

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Personal Cabin Pressure Monitor and Altitude Warning System Team

From left to right: Richard Deyoe, Anthony Eckhoff, Jose Perotti, Jan Zysko, Jeff Rees, Pedro Medelius, John Taylor, Justin Kelly, Lynn Kelly
Not pictured: John Henderson, John Moerk

EVALUATOR PANEL - AWARDS FOR EXCELLENCE IN TECHNOLOGY TRANSFER

Evaluator Panel – FLC Awards for Excellence in Technology Transfer

Representing a cross-section of federal laboratories, industry and academia, the members of the Evaluator Panel enthusiastically devote their time and effort to judging the dozens of nominations submitted for the Awards for Excellence in Technology Transfer. Selecting the winning technologies is a difficult task, but these evaluators admirably rose to the challenge. The FLC recognizes their tireless efforts and expresses its gratitude.

Dr. Tom Anyos, The Technology Group

C. Dan Brand, FLC Chair (1997-2001)

Marv Clement, Pacific Northwest National Laboratory (retired)

Joseph Culver, National Energy Technology Laboratory

Dr. Lynn Davis, Research Triangle Institute

Aaron Diaz, Pacific Northwest National Laboratory

Dr. Margaret Filbert, U.S. Army Medical Research Institute of Chemical Defense

Kathleen Goedel, National Institute for Occupational Safety and Health

J. Terry Lynch, National Institute of Standards and Technology

Joan Miller, Education Consultant

Dana Moran, National Renewable Energy Laboratory

Phil Rodacy, Sandia National Laboratories

Bushan Sopori, National Renewable Energy Laboratory

A. David Spevack, Office of Naval Research

Herbert Spiegel, Applied Science & Technology Associates

Martha Steinbock, USDA, Agricultural Research Service, Pacific West Area

David Swanson, Georgia Institute of Technology (retired)

LABORATORY DIRECTOR OF THE YEAR

Laboratory Director of the Year

The FLC honors these Laboratory Directors who have made maximum contributions to the overall enhancement of technology transfer for economic development. Their accomplishments include support of FLC activities, internal efforts, industry involvement, and community service.

Dr. Peter Berghsey Johnsen
USDA ARS National Center for
Agricultural Utilization Research

Mary Lacy
Naval Surface Warfare Center

Dr. Chris Risbrudt
USDA Forest Service
Forest Products Laboratory

FLC SERVICE AWARDS

FLC Service Awards

Harold Metcalf Award

Presented to an FLC Representative for sustained significant service to the FLC as an organization.

Winner: **Dr. J. Scott Deiter,** Naval Surface Warfare Center - Indian Head Division

FLC Representative of the Year

Presented to the FLC Representative who made the most significant contribution to the FLC program in 2003.

Winner: **Larry Dickens,** Oak Ridge National Laboratory

Outstanding Service Award

Presented to individuals who are not FLC Laboratory Representatives or Alternatives for notable contributions to the FLC in terms of sustained support and/or service.

Winners: **Gib Marguth,** CH2M Hill, Inc.
A. David Spevack, Office of Naval Research

FLC REGIONAL AWARDS

FLC Regional Award Winners

The FLC congratulates the following for outstanding efforts in their respective regions.

Far West Region

Outstanding Laboratory Representative

Cheryl Cejka, Pacific Northwest National Laboratory

Outstanding Technology Development

Naval Facilities Engineering Center – "Port Security Banner"

Mid-Atlantic Region

Award for Excellence in Technology Transfer

Army Research Laboratory – "Cascading Lasers: ARL's Progress Toward High Performance and Entrepreneurship"

Regional Coordinator Award

Dr. Claudia Golenda, Walter Reed Army Institute of Research

Mid-Continent Region

Awards in Technology Development

NNSA Kansas City Plant – "PIRATE Technology"

Dr. Otis Peterson, Los Alamos National Laboratory – "Compact, Self Stabilizing, Nuclear Power Source"

Dr. Mark Smith, Los Alamos National Laboratory – "Light Weight Body and Parcel Protection Armor"

National Renewable Energy Laboratory – “Using Renewables to Safeguard the Energy Infrastructure of the U.S.”

Sandia National Laboratories – “MicroHound Sniffer”

NASA Johnson Space Center – “Rotary Blood Pump for Cardiovascular Applications”

Outstanding Laboratory Award

Northern Great Plains Research Laboratory, Mandan, North Dakota
Northern Plains Agricultural Research Laboratory, Sidney, Montana
Air Force Maui Optical and Supercomputing Site

Outstanding Laboratory Representative

Victor Chavez, Sandia National Laboratories

Midwest Region

Industry/Non-federal Government/University Award

Adica Consulting – “Generation and Transmission Maximization Software (GTMax)”

Northeast Region

Award for Excellence in Technology Transfer

Air Force Research Laboratory, Information Directorate – “Collaborative Enterprise Environment Technology”

Southeast Region

Project of the Year

Oak Ridge National Laboratory – “Robust Wireless Technologies for Extreme-Environment Communications”

Excellence in Technology Transfer Awards

USDA, Agricultural Research Service, South Atlantic Area – “Improved Citrus Canker and Plum Pox Eradication and Sampling Technologies”

Centers for Disease Control and Prevention – “West Nile Virus Recombinant DNA Vaccine and Diagnostic Antigen”

Centers for Disease Control and Prevention – “Handwipe Method for Detecting Lead”
Oak Ridge National Laboratory – “Thin Film Rechargeable Lithium Batteries”
Oak Ridge National Laboratory – “Microcantilever-Based Biosensors”

Laboratory Representative of the Year

Larry Dickens, Oak Ridge National Laboratory

Partnership Award

Rehabilitation Engineering Research Consortium for Augmentative and Assistive Communications (AAC-RERC) – led by Duke University

HONORABLE MENTION:
FLC AWARDS FOR EXCELLENCE IN TECHNOLOGY TRANSFER

Honorable Mention
2004 FLC Awards Program
Awards for Excellence in Technology Transfer

The FLC recognizes the following nominees for their commitment to technology transfer and support of our mission.

Department of Agriculture

Agricultural Research Service, Mid South Area, "Area Wide Management of the Tarnished Plant Bug"

Agricultural Research Service, Midwest Area, "Flavor Delivery in Frozen Seafood Products Using Starch-Oil Composites"

Agricultural Research Service, Midwest Area, "Detection of ALV Contamination of Commercial Live-Virus Poultry Vaccines"

Agricultural Research Service, Midwest Area, "Resolving Controversy over Monarch Butterflies and Bt Corn"

Agricultural Research Service, Northern Plains, "Dissemination of Effective, Affordable, and Sustainable Leafy Spurge Management Technologies"

Agricultural Research Service, Pacific West Area, Bioproduct Chemistry and Engineering Research Unit, "Wheat Starch-Based Biodegradable Food Packaging"

Agricultural Research Service, Pacific West Area, Water Management Research Laboratory, "Environmentally Sound Application of Soil Fumigants through Drip Irrigation Systems"

Agricultural Research Service, South Atlantic Area, "Development and Implementation of a Rapid Test for Avian Influenza"

Agricultural Research Service, South Atlantic Area, "Conservation System Technologies for Improved Soil Management"

Forest Service, Forest Products Laboratory, "Improving the Durability and Environmental Performance of Our Nation's Housing"

Forest Service, Forest Products Laboratory, "Biomass Energy Demonstration Project"

Systematic Entomology Laboratory, "Interactive Database of Scale Insect Pests of the World"

Agricultural Research Service, Pasture Systems and Watershed Management Research Unit, "Development and Implementation of Phosphorus Indices to Protect Water Quality"

Department of Defense – U.S. Army

Army Engineer Research and Development Center, Construction Engineering Research Laboratory, "Design Review and Checking System (DrChecks)"

Army Engineer Research and Development Center, Construction Engineering Research Laboratory, "Electro-Osmotic Pulse Technology to Control Groundwater Intrusion in Concrete Structures"

Army Engineer Research and Development Center, Construction Engineering Research Laboratory, "Treatment of Pinkwater in a Two-Step, Environmentally Friendly Process"

Edgewood Chemical and Biological Center, "A Self Contained, Portable and Disposable Biological Sampling Kit (BISKit)"

Edgewood Chemical and Biological Center, "Enzyme-Based Decontamination Technology for Organophosphorus Nerve Agents"

Department of Defense – U.S. Navy

Naval Undersea Warfare Center Division Newport, "Cost Effective Silencing Upgrade Kits for MK 48 Torpedoes"

Naval Undersea Warfare Center Division Newport, "Robust Dimension Decision Support Tool for Large, Complex Datasets"

Department of Defense – U.S. Air Force

Air Force Research Laboratory, Electro-Optical Countermeasures Technology Branch, "Counter-MANPADS Technology Assessment"

Air Force Research Laboratory, Information Directorate, "Collaborative Enterprise Environment"

Air Force Research Laboratory, Propulsion Directorate, "Oil and Industrial Chemical Analyzer – the World's Smallest Infrared Spectrometer"

Air Force Research Laboratory, Propulsion Directorate, "Silicon Carbide Schottky Diodes: Improved Operational Efficiency for Electronic Devices"

Air Force Research Laboratory, Sensor ATR Technology Division, "PROFGEN Computer Program: Trajectory Generator for Simulating Vehicle Motion"

Department of Energy

Argonne National Laboratory, "Access Grid: Enabling Group-Oriented Collaboration on the Grid"

Argonne National Laboratory, "The GREET Model for Evaluating Energy and Emission Impacts of Vehicle/Fuel Systems"

Lawrence Berkeley National Laboratory, "A New Generation of Flat Panel Displays Based on Nanotechnology"

Lawrence Berkeley National Laboratory, "Hybrid Solar Cells Utilizing Nanotechnology and Polymer Electronics"

Lawrence Berkeley National Laboratory, "Rapid Thermal Cycler for High-Throughput PCR"

Lawrence Livermore National Laboratory, "Inductrack Magnetic Levitation System"

Lawrence Livermore National Laboratory, "Thin-Film Transistors on Plastic for Durable, Flexible, Electronic Displays"

National Renewable Energy Laboratory, "ADVISOR (Advanced Vehicle SimulatOR) 2003 Software"

National Renewable Energy Laboratory, "NanoCeram Fibers – for Filtering of Viruses, Microbial Pathogens and Heavy Metals"

Pacific Northwest National Laboratory, "Millimeter Wave Holographic Screening Device"

Princeton Plasma Physics Laboratory, "High Energy Ion Surface Sterilization"

NASA

George C. Marshall Space Flight Center, "High-Strength, Wear-Resistant Aluminum Alloy for High-Temperature Applications"

George C. Marshall Space Flight Center, "Auto-Adjustable Pin Tool for Friction Stir Welding"

George C. Marshall Space Flight Center, "Generalized Fluid Systems Simulation Program"

HONORABLE MENTION:
FLC SERVICE AWARDS

Honorable Mention
FLC Service Awards

The FLC recognizes these nominees for their longstanding service and support.

Representative of the Year Award

Victor Chavez
Sandia National Laboratories

Dr. J. Scott Deiter
Naval Surface Warfare Center, Indian Head

Dr. Claudia Golenda
Walter Reed Army Institute of Research

Dr. Charles Schlagel
Naval Medical Research Center

FLC Awards Program Calendar

The calendar year for the FLC's awards program runs from June to May. The timeline below reflects the awards program's activity as of press time. Please refer to the FLC web site (www.federallabs.org) for updates.

June / July

Criteria for Awards for Excellence in Technology Transfer, Laboratory Director of the Year, and FLC Service Awards are reviewed and revised as necessary.

August / September

Nomination forms for Awards for Excellence in Technology Transfer, Laboratory Director of the Year, and FLC Service Awards are mailed.

October

Completed nomination forms for Awards for Excellence in Technology Transfer, Laboratory Director of the Year, and FLC Service Awards are submitted to the FLC Management Support Office for processing.

November / December

Judging period for submitted award nominations in all categories.

January

Notification of award winners and non-winners in all categories.

February / March / April

Award winners register for FLC national meeting; non-winners of the Awards for Excellence in Technology Transfer receive written feedback from award evaluators.

May

Awards presented at FLC national meeting; awards and photos from award ceremony mailed to award winners.


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