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T² FACT

While serving as the Director of Agriculture at the Tuskegee Normal and Industrial Institute for Negroes, George Washington Carver developed his crop rotation method, which revolutionized southern agriculture. He educated southern farmers to alternate the soil-depleting cotton crops with soil-enriching crops such as peanuts, peas, soybeans, sweet potato, and pecans.

- Mary Bellis, About.com



T² EVENTS

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

ISPE Washington Conferences
Arlington, Va.
June 5-8, 2006

BIPARTISAN S&T LEGISLATION GETS GOOD START IN SENATE

by Neil MacDonald
Federal Technology Watch

Three bipartisan bills—S.2197, S.2198 and S.2199—designed to help maintain the U.S. leading edge in science and technology were introduced in the Senate on Jan. 26 by Sen. Pete Domenici (R-NM) with 46, 44, and 45 cosponsors, respectively.

Named collectively the Protecting America's Competitive Edge (PACE) Act, the three bills aim to implement 20 recommendations of the National Academies' "Rising Above the Gathering Storm" report.

- PACE - Energy Act (S.2197): Seeks to improve the global competitiveness of the U.S. in science and energy technology; strengthen basic research programs at DOE, including its national labs

- PACE - Education Act (S.2198): Aims to ensure that the U.S. competes successfully in the 21st century global economy

- PACE - Finance Act (S.2199): Seeks to amend the Internal Revenue Code of 1986 to provide tax incentives to promote R&D, innovation, and continuing education.

Each bill was read twice and referred to Senate committees: S.2197 to Energy & Natural Resources; S.2198 to Health, Education, Labor & Pensions; and S.2199 to Finance.

The Gathering Storm report is also known as the Augustine Report because former Lockheed Martin chief Norman Augustine chaired the National Academies' panel.

Sens. Domenici, Jeff Bingaman (D-NM), Lamar Alexander (R-TN), and Barbara Mikulski (D-MD) talked about the legislative proposals with reporters Jan. 25.

Augustine attended the briefing, as did Sen. Kay Bailey Hutchison (R-

See PACE, page 5

NASA DEVELOPS CATALYST FOR NASCAR

The low-temperature oxidation catalyst (LTOC) was originally developed as part of a NASA atmospheric monitoring project that used CO₂ lasers.

For that mission, the catalyst would have recycled and re-captured carbon dioxide. The system had to be foolproof and failsafe.

Any application that requires the regeneration of carbon dioxide or the removal or conversion of toxic carbon monoxide and/or formaldehyde can make use of this advanced technology. NASA Langley Research Center (LRC) developed a family of catalysts for low-temperature oxidation of carbon monoxide and other gases.

These oxidation catalysts have high activity at low temperatures. Both carbon monoxide and formaldehyde can be readily oxidized in air at typical room temperatures without requiring any energy input, provided a suitable gas flow through the catalyst is maintained. This new class of low-temperature oxidation catalysts consists of combinations of a noble metal and one or more reducible oxides.



The NASA catalyst originally developed for space-based lasers now cleans carbon monoxide out of NASCAR drivers' breathing air.

These noble-metal/reducible-oxide (NMRO) catalysts have significantly higher catalytic activities than noble metal or reducible oxide catalysts alone. Even though the system was not used in space, it has been used in earth-based systems throughout the world. The NASA Mid-Atlantic Regional Technology Transfer Center (MA-RTTC) marketed the commercial catalyst and recommended possible licensing terms to LRC for Penske

Racing's license application.

Penske Racing has a non-exclusive license to apply this technology to its air purifying system for race cars.

The Penske INCAR Air Purifying System uses the LTOC developed by NASA to remove CO and other contaminants from the air breathed by NASCAR drivers during a race.

See NASA, NASCAR, page 4

DOD SEEKS PROPS FOR ENVIRO-TECH FUNDING

The Department of Defense (DOD), through the Environmental Security Technology Certification Program (ESTCP), supports the demonstration and validation (dem/val) of environmental technologies that address priority DOD environmental requirements.

The goal of ESTCP is to transition mature environmental science and technology projects through the dem/val phase, thereby enabling promising technologies to receive regulatory and DOD end user acceptance and to be fielded and commercialized more rapidly.

ESTCP is seeking pre-proposals from DOD organizations as well as non-DOD federal organizations and the private sector as described below.

Pre-proposals are due March 9, 2006.

Detailed instructions for DOD, non-DOD federal, and BAA proposers (i.e., details regarding the program's objectives, proposal submission requirements, the evaluation of proposals, and the individual topic areas) are available on the ESTCP website at <www.estcp.org/opportunities>.

DOD organizations (service and defense agencies) may submit pre-proposals for demonstrations of innovative environmental technologies in the following topic areas:

- Environmental Restoration — Innovative technologies for the detection, char-

See DOD Seeks Proposals, page 4

DC ON T²

by Gary Jones
FLC Washington, DC Representative

Greetings from DC. Are the Department of Energy's (DOE) national laboratories still as relevant today as when they

were established, many over a half decade ago, particularly in light of the U.S. efforts to remain globally competitive? Put another way, "[a]re they the proverbial 'hammer for which everything looks like a nail,' or would they



now have to be invented, had they not [already] existed?"

This was the fundamental question posited by Dr. Robert Rosner, Director, Argonne National Laboratory, in a January 10 talk sponsored by the Washington Science Policy Alliance, in conjunction

See DC on T², page 5

LANL'S HANDS-OFF SAMPLER GUN ESTABLISHES CHAIN OF CUSTODY

Nationally televised criminal trials have made us aware that forensic evidence must go through a "chain of custody." Forensic investigators have the burden of proving that samples were taken properly, that there was no contamination, and that the evidence was handled properly thereafter. At Los Alamos National Laboratory (LANL), researchers are developing a Hands-Off Sampler Gun that would automate the otherwise expensive and time-consuming process of maintaining a proper chain of custody, truly guilty criminals will be less able to argue that evidence was mishandled.

With the Hands-Off Sampler Gun, investigators have the entire contents of a trunk-load of sampling kits and record keeping in one device. When an investigator locates evidence such as a bloodstain, the Hands-Off Sampler Gun collects the sample with its universal



Hands-off Sampler Gun being used to scan a barcode.

sample-media adaptor. The universal adaptor collects the sample without the investigator having to touch and potentially contaminate the sample.

Once the sample has been collected, the investigator knows immediately and can prove in court that the sample was collected properly. An onboard, 3-D accel-

See LANL's Hands-off Sampler, page 4

FED LABS FLASH | TECHNOLOGY TRANSFER NOTES

SANDIA WORKS TO BETTER BATTERIES FOR HYBRID VEHICLES



SNL researcher Brad Hance examines a lithium-ion battery that may someday be put in a hybrid car.

As part of the Department of Energy-funded FreedomCAR program, Sandia National Laboratories' (SNL) Power Sources Technology Group is researching ways to make lithium-ion batteries work longer and safer.

The research could lead to these batteries being used in new hybrid electric vehicles (HEVs) in the next five to ten years.

"Batteries are a necessary part of hybrid electric-gasoline powered vehicles and someday, when the technology matures, will be part of hybrid electric-hydrogen fuel cell powered vehicles," said Dan Doughty, manager of SNL's Advanced Power Sources Research and Development Department. "Current hybrid vehicles use nickel-metal hydride batteries, but a safe lithium-ion battery will be a much better option for the hybrids."

He noted that a lithium-ion battery has four times the energy density of lead-acid batteries and two to three times the energy density of nickel-cadmium and nickel-metal hydride batteries.

It also has the potential to be one of the lowest-cost battery systems.

Doughty's department receives about \$1.5 million a year from the FreedomCAR program to improve the safety, lengthen the lifetime, and reduce the cost of lithium-ion batteries.

LLNL PUTS NAME TO AWARDS

The California Section of the American Physical Society has named a student award for noted Lawrence Livermore National Laboratory (LLNL) physicist Kennedy Reed.

During the 2005 fall meeting of the California Section of APS, the Kennedy Reed Award for Best Theoretical Research was given to three graduate students and/or postdoctoral researchers. The award consists of three different cash prizes.

"I'm pleased to have my name associated with an award that encourages students who have an interest in physics," Reed said. "This prize will recognize students who have excelled in physics."



Kennedy Reed

NASA SELECTS SUPPORT FOR LANGLEY SIMULATION FACILITIES

NASA has selected Unisys Corporation, Reston, Va., to provide simulation and flight information technology services.

The cost-plus-fixed-fee contract is valued at more than \$49 million over five years.

Awarded as a task order under the General Services Administration Information Technology Omnibus Procurement II contract, the activity will support the Simulation and Software Branch of the Flight Research Services Directorate at NASA's Langley Research Center, Hampton, Va.

Unisys will provide analysis, design, development, verification, validation, operations, maintenance, modification and systems integration for the center's flight simulation facilities. The work will be performed at Langley.

For information about NASA and agency programs on the web, visit <www.nasa.gov/home>.

PNNL AWARDS CONTRACTS FOR HOMELAND SECURITY

Pacific Northwest National Laboratory (PNNL) has awarded contracts to four university teams to support the Department of Homeland Security's mission with the National Visualization and Analytics Center (NVAC).

These contracts will establish regional visualization centers and bring academic expertise to the nation's efforts to discover information that may warn officials of a terrorist attack before it can be carried out.

PNNL, which leads NVAC, announced the teams this week. They are: University of North Carolina at Charlotte and Georgia Institute of Technology; Purdue University and Indiana University School of Medicine; Pennsylvania State University; and University of Washington.

Jim Thomas, PNNL's chief scientist for information technologies and NVAC director, said, "Beyond developing innovative technologies, NVAC and the RVACs also have the responsibility to stimulate the next generation of talent that's required for both invention and operation of the field's new suite of tools."

This means a steady flow of staff exchanges, building new curriculums, and hosting interdisciplinary workshops and conferences among academia, industry and other laboratories."

NWRC ASSISTS FARMERS

Two researchers from the National Wildlife Research Center's (NWRC) Hilo, Hawaii, field station consulted with an organic farmer in the Kona district on rodent damage management in macadamia nut orchards.

Many established macadamia nut and fruit orchards in Hawaii have reported significant nut losses to rats (>10% of crop) in past seasons. Field station staff demonstrated various integrated pest management techniques, including cultural methods to reduce harborage for rats and in-tree rat trapping.

NREL SECURES LICENSE AGREEMENT WITH GENENCOR INTERNATIONAL

A new genus and species discovered by National Renewable Energy Laboratory (NREL) scientists has the potential to change the biomass industry. The biomass industry is aimed at changing the way many industrial chemicals are produced today through the promotion of the "biorefinery" concept.

A biorefinery is a facility that integrates processes and equipment to produce fuels, power, and chemicals from organic materials such as corn or wheat.

The biorefinery concept is analogous to today's petroleum refineries, which produce multiple fuels and products from petroleum. Industrial biorefineries have been identified as the most promising route to the creation of a new domestic biomass industry.

The scientists behind this exciting discovery are Bill Adney, John Baker, Steve Thomas, Yat-Chen Chou, Mike Himmel, Melvin Tucker, and Ali Mohagheghi.

NREL packaged this exciting discovery into a cutting-edge enzyme technology that has the potential to improve productivity for the biorefinery.

This technology, known as the E1 Thermostable Endoglucanase (E1), allows manufacturers to create industrial chemicals at a greatly reduced temperature, as well as at a greatly accelerated process, which translates into cost savings for the biomass industry.

This platform technology is designed to utilize a renewable technology based on enzymes to convert organic materials into sugars for further development of ethanol/fuel, as well as other chemicals and products.

In the early 1990s, there was speculation regarding the patentability of biological compositions of matter, including discoveries such as NREL's E1. NREL took on

the challenge and worked closely with U.S. Patent Office examiners to demonstrate that cellulase enzymes displaying thermal tolerance and hyperactivity were indeed patentable.

NREL succeeded in this challenge and secured four patents that comprise NREL's E1 technology.

The primary use for enzyme technology worldwide is for the active biological component of detergents and cleaning products. Enzymes are also used in the textile industry, mainly in the finishing of fabrics and garments for manufacturing processes such as desizing, bio-polishing, and bio-stoning.

Enzymes are also used in recycling/reprocessing operations for cellulosic materials, as well as food and animal feed, pulp and paper, brewing, and grain feedstock processing.

The worldwide market value for this technology is estimated to be \$500 million and growing.

NREL secured a license agreement with Genencor International for the E1 suite of patents. NREL was pleased to partner with Genencor because they hold many patents and applications worldwide and have demonstrated results in successful biotechnology commercial applications.

Genencor believes that the production of a wide array of industrial products through biotechnological methods is imminent.

This new license agreement between NREL and Genencor is an opportunity for the biotechnology industry to begin production from plants and other renewable resources, which promotes both environmental and industrial sustainability in addition to being cost competitive with, or even less expensive than, those synthesized through traditional chemistry.



NREL pursues enzyme development critical to market viability for biofuels, chemicals, and other products.

FLC NEWSLINK

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TECH WATCH | LABORATORY TECHS READY FOR TRANSFER

SRL's RadRope™ NUCLEAR MATERIAL DETECTION

Researchers at Savannah River National Laboratory (SRL) have developed a lightweight, portable system that rapidly detects the presence of nuclear materials in sealed containers without using harmful x-rays.

Using sensors arrayed linearly and encased in fabric, the RadRope system can be dangled in the 2 to 4 inch gap between stacked shipping containers on a cargo ship by a customs inspector.

As the inspector walks along the top containers, a hand-held PDA shows an alarm when any sensor in the array detects radiation levels above background radiation.

The RadRope system can be used in a straight line, a curved line, or at an angle, and the length of the system can be easily customized for a variety of different uses.



Geiger Muller tubes comprise the sensor nodes.

Many independently operated sensor nodes can be strung together in any length with analog-to-digital converters attached to each sensor to send data to the PDA or to a CPU. A user interface receives and displays

the data. The Geiger Muller tubes can be configured to detect both gamma and neutron radiation.

This system has been successfully beta-tested for the U.S. Coast Guard on ships entering port in Charleston, S.C., and was pre-selected for presentation at World's Best Technologies Showcase 2006, as one of the top 25 entries in this year's competition.

A patent application has been filed with the U.S. Patent and Trademark Office for the RadRope Portable Nuclear Material Detection System.

More info: Dale K. Haas, Savannah River National Laboratory, Westinghouse Savannah River Company, 803-725-4185, dale.haas@srl.doe.gov.

MINERALIZATION OF BIOCOMPATIBLE SCAFFOLDS

Carolyn Bertozzi and colleagues at Lawrence Berkeley National Laboratory (LBNL) have developed a technique to produce bone-like composite materials by promoting high-affinity integration of hydroxyapatite (HA), the main mineral component of natural bone, with poly (2-hydroxyethyl methacrylate) or PHEMA hydrogel polymers.

Unlike the bioinert materials currently used in the fabrication of orthopedic implants (metals, ceramics, polymers or a coarse combination of these components), the LBNL composite displays robust incorporation of osteophilic HA with the hydrogel polymer, hence encouraging tissue attachment and ingrowth. In addition, the polymer-mineral adhesion strength of the new composite is significantly greater than that of existing polymer-HA materials.

This improved adhesion strength prevents rapid disintegration of the two components, both during surgical handling and upon implantation.

The LBNL technology encourages these functional improvements through controlled integration of the two materials.

Applications for the technology

- Artificial bone implants
- Dental implants
- Spinal cord injury repairs
- Soft-tissue engineering
- Bioceramics
- Structural materials.

Advantages of the technology

- Rapid mineralization
- Tunable mineralization and crystallinity
- Improved fracture resistance.

More info: LBNL Technology Transfer Office, 510-486-6467, TTD@lbl.gov

LIVERMORE SEEKS PARTNER FOR COMMUNICATION



communications system based on the transmitted reference technique.

This UWB transceiver provides through-the-wall communications capability in heavy metallic and heavy concrete indoor channels.

A hardware prototype of the TR-based UWB transceiver has been successfully built and extensively evaluated in several field scenarios for harsh propagation environments such as cargo ships, where narrowband communications usually fails due to reflection from metallic surfaces.

Benefits of the Technology

- High performance in multi-path channels results in reliable communications in harsh indoor and urban environments

- Low transmit power provides low probability of detection and intercept (LPI/D)

- The transmitted UWB signal is capable of penetrating multiple 12 inch-thick concrete walls.

- This feature provides real-time seamless video communications inside buildings

- High performance in heavy metallic environments

- Tradeoff between communications range, power, and data rate offers variety of applications.

Applications Envisioned

- Communications for various military operations such as voice, data, and image transfer

- Wireless sensor networks for medical and military applications.

LLNL is seeking industrial partners with a demonstrated ability to develop and mature early-stage technology for military and government use.

More info: http://www-eng.llnl.gov/uwb_comm/uwb_comm.html

Lawrence Livermore National Laboratory (LLNL), operated by the University of California under contract with the Department of Energy (DOE), is seeking one or more industrial partners to help further develop LLNL's ultra wide band (UWB) radar communication systems for military and government applications.

LLNL researchers have invented and developed a state-of-the-art UWB

FROM INNOVATION TO ENTERPRISE



MINNEAPOLIS, MINNESOTA MAY 1-4, 2006

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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.

FLC AWARDS PROGRAM

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

FLC TECH FAIR

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

More info

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NASA, NASCAR, from page 1

In race cars, at very high speeds and temperatures the catalyst must constantly remove carbon monoxide and other harmful gases.

Cleaner air virtually eliminates the flu-like symptoms, including headaches, fatigue and dizziness, that have traditionally lingered for days after races.

When drivers close that helmet visor and hook up the cooling system, they breathe good, clean air. They're going around the track at more than 190 miles per hour, and the air is sterile. That really helps the drivers.

This application is scheduled to be published in an upcoming NASA



Cleaner air virtually eliminates the flu-like symptoms, including headaches, fatigue and dizziness, that have traditionally lingered for days after races.

Spinoff magazine article.

Penske Racing applied the LRC catalyst to an air purifying system that may have applications other than auto racing. Kustom Components of Temple, Pa., manufactured the filters to a Penske Racing design.

The catalyst is supplied to Penske's supplier by STC Catalysts, Inc. (SCi), a subsidiary of Science and Technol-

ogy Corporation in Hampton, Va., which has an exclusive license with LRC to sell carbon dioxide-recovering catalysts for laser-power systems.

SCi adapted the original NASA research to land-based applications and developed the capability to produce the catalyst in large quantities.

They developed an international market for the product, primarily overseas to laser makers in Italy and South Africa.

The LRC contact is Marisol Garcia at 757-864-5355, and the Penske Racing contact is Don Miller at don.miller@prs.penskeracing.com.



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LANL's Hands-off Sampler, from page 1

ometer records the sampling pattern, which proves that the sample was blotted, wiped, or scraped properly.

The gun's force detector measures and records the pressure the investigator applies—force that is critical to proper collection of some biological materials.

The Hands-off Sampler Gun automatically records the sample's location with internal GPS, measures the ambient temperature, and takes a digital picture of the sample being collected.

Investigators use the incorporated barcode reader and audio recorder to further establish proper chain of custody.

The information collected by the Hands-off Sampler Gun can be easily downloaded to the desktop through a standard interface.

The forensics market for the Hands-off Sampler Gun has been estimated at between \$50 million to \$100 million. Forensic biology is the obvious first market, but the gun is also a valuable potential contributor to counterterrorism.

In any potential terrorist event such as a putative bio-weapons attack, an early step will be to determine the identity of the possible bio-agent. Sampling is the first step in such an assessment. In another use, anti-doping agencies could use the Hands-off Sampler Gun to automate the same plugging process of testing athletes for performance-enhancing drugs and National Capital Chapter of the Society of Toxicologists. The Hands-off Sampler Gun "truly impressive" also saved the Maryland State Board of Health \$100,000 annually in hours of time and the Frederick Humblative Technology Center in that state. A Hood College person has helped preserve two companies started by Army medical contractors.

The Hands-off Sampler Gun was invented by an LANL team led by Dr. Torsten Staab.

Staab is a team leader for Homeland Security Technologies at LANL and currently serves as the president of the Association for Laboratory Automation.

His Hands-off Sampler Gun was awarded a patent in September 2005.

FROM INNOVATION TO ENTERPRISE



MINNEAPOLIS, MINNESOTA
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DOD Seeks Proposals, from page 1

acterization, containment, and remediation of a wide range of contaminants in soil, sediments, and water.

- Munitions Management — Advanced geophysical sensor and signal processing technologies for the detection, discrimination, and remediation of unexploded ordnance (UXO) and technologies for range clearance and reduced generation of UXO.

- Sustainable Infrastructure — Natural resources management (e.g., ecosystem management, threatened and endangered species, facilities management (e.g., solid waste, noise, water/air quality), and detection and evaluation of cultural resources.

- Weapons Systems and Platforms — Advanced alternative environmentally benign technologies and materials that reduce, control, or eliminate waste and emissions as-

See DOD Seeks Proposals, page 6

Is your platform technology

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This elite, national event showcases new, cutting-edge, first-in-market technologies before the world's leading seed investors, venture capitalists and corporate licensing experts. Participants in previous years have raised millions in venture capital, been featured in magazines such as Fortune and Time, and succeeded in selling or licensing their platform technologies.

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FLC DC REP RELOCATES

The FLC is pleased to announce the relocation of its Washington, D.C. office. Now more centrally located in downtown Washington, the new office and facilities provide several advantages over the former location for FLC D.C. office staff and visiting FLC members.

Situated across from Farragut Square (and within two blocks of both the Farragut North or Farragut West Metro stations), the new location offers more efficient access to many FLC constituents in the D.C. area.

This includes improved access to the many federal agency headquarters staff and FLC agency representatives, as well as trade associations, institutions, organizations and other groups essential to the FLC's mission.

Further, the new location is also more convenient to the activities on Capitol Hill, including hearings and other events vital to monitoring and tracking current legislative trends and initiatives affecting FLC interests.

In addition, the new facilities also offer an improvement in office space for visiting FLC members, and enhanced meeting room capability for FLC committee and other meetings.

The new address is:

Federal Laboratory Consortium for Technology Transfer, 1629 K Street, NW, Suite 220, Washington, DC 20006, 202-296-7201, 202-296-7203 (fax)

Feel free to stop by when you are in D.C.

Gary Jones, the FLC DC Rep, can still be reached at gkjones@flcdc.cnchost.com.

INVENTOR OF SEGWAY™ AND MORE TO KEYNOTE FLC MEETING

The agenda has been set for the upcoming FLC and TPWG (Technology Partnerships Working Group) national meeting, "From Innovation to Enterprise," in Minneapolis, May 1-4, 2006.

Segway™ inventor Dean Kamen will present the keynote address on Wednesday, May 3.

As an inventor and physicist, Kamen has dedicated his life to developing technologies that help people lead better lives. As an inventor, he holds more than 200 U.S. and foreign patents, many for innovative medical devices that have expanded the frontiers of healthcare worldwide.

While still a college undergraduate, he invented the automatic, self-contained, ambulatory designed to deliver precise doses of medication to patients with a variety of medical conditions. In 1976 he founded AutoSyringe, Inc., to manufacture and market the pumps. At age 30, he sold that company to Baxter International Corporation.

By then, he had added a number of other infusion devices, including the first wearable insulin pump for diabetics.

Following the sale of AutoSyringe, Inc., he founded DEKA

Research & Development Corporation to develop internally generated inventions as well as to provide R&D for major corporate clients.

The array of products and technologies invented and developed by Kamen and the DEKA engineering team is extremely broad.

Two notable breakthrough medical devices invented and developed by DEKA are the HomeChoice™ portable dialysis machine, marketed by Baxter Healthcare, and the Independence™ iBOT™ 3000 Mobility System, a sophisticated mobility aid developed for Johnson & Johnson. With his latest creation, the Segway™ Human Transporter (HT), Kamen aspired to improve upon the most basic form of transportation—walking—by allowing people to go farther, move more quickly, and carry more without separating them from their everyday walking environment.

Among Kamen's proudest accomplishments is his 1989 founding of FIRST (For Inspiration and Recog-



Dean Kamen of DEKA
Research and Development

inition of Science and Technology), an organization dedicated to motivating the next generation to understand, use, and enjoy science and technology.

Kamen remains the driving force behind FIRST, recruiting titans of American business, government, and education to invest time and resources in the initiative.

The FIRST Robotics Competition, an annual competition teaming professional engineers with high school students nationwide, attracts hundreds of teams, breaks participation records every year, and inspires students to pursue careers in science and technology.

Kamen has received numerous awards and accolades for his innovative inventions that have revolutionized healthcare technology, including the National Medal of Technology in 2000 and the Lemelson-MIT Prize in 2002 for Invention and Innovation. Kamen was inducted into The National Inventors Hall of Fame in May 2005.

PACE, from page 1

TX), chair of the Commerce Subcommittee on Science & Space, and a cosponsor of the bills.

Sen. Domenici was adamant that the PACE legislation remain bipartisan.

The bills contains these key provisions:

- More research opportunities for scientists and engineers
- Targeted research grants for 200 early career scientists and engineers each year
- New federal funds to buy equipment and upgrade research labs
- A new DARPA-like agency for transformational energy research in DOE
- Development of a strategy by which federal agencies allocate 8% of their R&D budgets to high-risk, high-payoff research
- Scholarships for future math and science teachers
- Math and science teacher training programs
- Summer academies for teachers
- Advanced placement courses in math and science

- Specialty math and science high schools
- Internships and summer programs for middle and high school students
- Scholarships and fellowships for future scientists
- Attracting the brightest foreign students to U.S. universities
- Doubling the R&D tax credit to encourage innovation
- Creating a tax credit to encourage employers to invest in employees' education
- Development of science parks.

Sen. Domenici estimates the measures in the bills would cost \$9.5 billion the first year.

The National Science Foundation's research and related activities budget would be increased 10% per year through 2013, and NASA's basic research would also rise by 10% per year through 2013.

The R&D tax credit would rise from 20% to 40% and be expanded to permit 100% of the cost of all

research conducted by consortia, small businesses, federal labs and universities.

Technology Assessment of the U.S. Assistive Technology Industry

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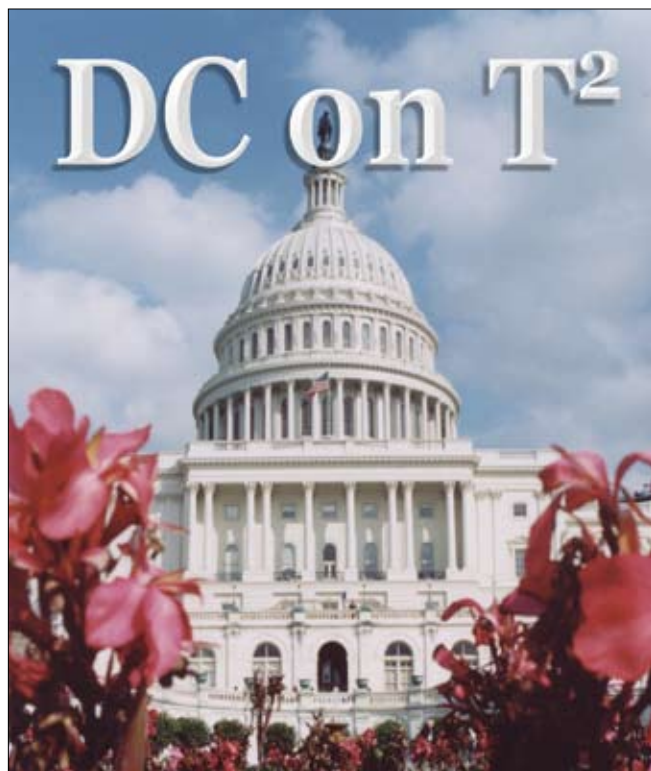
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with the American Association for the Advancement of Science. Dr. Rosner made the case that indeed the national labs are not only relevant, but fill a particularly important—and potentially neglected—role in the U.S. R&D enterprise, serving as a vital component of U.S. global technological competitiveness. [It is important to note that Dr. Rosner's comments were focused primarily on DOE Office of Science laboratories].

After identifying the readily recognizable obstacles to retaining U.S. economic and technological leadership in a highly competitive global environment (i.e., general U.S. scientific illiteracy and antipathy to science, industrial focus on shorter term results, and underinvestment in human capital in the sciences), Dr. Rosner keyed in on a particular concern of those in the S&T arena, the increasing gap between research and development; the "valley of death"—that "applied" link between pure basic research and product development and market introduction.

The challenge, according to Dr. Rosner, is while "the industrial sector abandons basic research [e.g., Bell Labs], and focuses R&D (especially 'D') primarily on near-term objectives, who will serve to carry out the 'missing' basic research and who will

cross the 'valley of death'?" He suggests that is precisely one of the salient benefits that the national science



labs can bring to the U.S. R&D enterprise, helping bridge the gap between research and development—where precompetitive research still entails high risks, resulting in a "very small

exploitation rate" of basic research ideas, leading to potentially missed opportunities.

The requirements for meeting this challenge, according to Dr. Rosner, are 'motivated' basic research, with a long-range vision for R&D, consistent funding, and the capability for sustained and focused long-term research.

He argues that national labs are well suited for this task. For example, as a 'line organization', national labs can reconfigure more readily than typical research universities to meet research needs, their reward system is not mainly focused on publication, they are able to take on longer term projects (as opposed to the

typical grant renewal cycles academia faces), and have had relative consistency in funding.

Dr. Rosner cites Argonne National Laboratory as an example of how a

national lab can support this effort, conducting both basic (e.g., computer sciences, nuclear physics, material sciences, genomics, etc.) and applied research (e.g., environmental technology, transportation technology, etc.), utilizing large and expensive facilities (e.g., the Argonne Tandem-Linac Accelerator System), within the general theme of "basic sciences coupled to applied science and technology, with facilities as enabling cornerstones."

But, Dr. Rosner makes clear that the labs cannot do it on their own, highlighting collaboration with academia and industry (and with other federal agency sponsors) as essential to their success.

As he summarized, "[w]e are in a global battle to remain 'healthy, wealthy and wise'. The National Laboratory System, which developed to serve national (military) defense needs, has evolved to serve national (economic) defense needs in a way that complements the academic and industrial research sectors....The key necessary ingredient is collaboration between labs, academia and industry."

Dr. Rosner's presentation can be found on the WSPA website at www.aaas.org/spp/wspa.

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DOD Seeks Proposals, from page 4

sociated with the manufacturing, maintenance, and use of DOD weapons systems and platforms.

The Broad Agency Announcement (BAA) is seeking proposals from non-DOD federal organizations and the private sector for environmental technologies in the following topic areas only:

- Military Munitions (formerly UXO) Detection, Discrimination, and Remediation — Technologies that can detect and discriminate munitions ranging from 20-mm projectiles to 2000-lb. bombs from other items in the subsurface; and that can cost-effectively remediate single munitions items whose location and depth have been identified; clear heavily con-

taminated areas where identification of individual isolated items is not feasible or cost effective; or treat scrap material, particularly in daily production quantities on ranges, to make it safe for disposal.


- Range Sustainment — Treatment and control technologies that specifically address the remediation or containment of range-related contaminants and residue such as metals, energetics, and propellants (e.g., perchlorate); control technologies for land rehabilitation to control erosion, excess sediment loading and offsite sediment movement due to training activities; remedial and control technologies that allow for continued range operation during technol-

ogy implementation, are deployable over large areas, or can serve to sustain areas subject to continued use; and characterization technologies to cost-effectively detect and delineate range contaminants in surface soils and groundwater.


- Remediation of Contaminated Groundwater — In situ remediation technologies that specifically address the cleanup of groundwater contaminated with chlorinated solvents, metals, energetic compounds, propellants, or mixtures of these contaminants; optimization and/or assessment tools related to remediation of contaminated groundwater; and technologies for the cost-effective treatment of either aqueous

phase plumes or nonaqueous phase liquids (NAPLs) in the source zone. Both passive treatment approaches (e.g., treatment barriers or walls) and active treatment approaches will be considered.

- Remediation of Contaminated Sediments — In situ remediation technologies that specifically address the remediation of sediments contaminated with polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), heavy metals, or mixtures containing these contaminants. Contaminated marine, estuarine, brackish, and fresh water sediments are of interest. Projects proposed to address sediments contaminated with radionuclides will not be considered.



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