

# NEWSLINK

## Technology to Protect/Save Public Safety Officials

The newspaper photo shows the scorched, crumpled, pup-tent fire shelters of the firefighters who died in a raging blaze in the North Cascades Mountains of Washington—the shelter tents didn't work in this case. Yet again, more young, selfless men and women volunteers lost their lives in a fire. With improved shelter design and protective materials technology, they might have been saved.

News of these needless deaths reconfirms the dedication of the Fire Fighting Task Force (FFTF) and its commitment to develop technologies that can assist and protect firefighters on the job. In March, under the sponsorship of **FLC Mid-Atlantic Region, NASA Northeast Regional Technology Transfer Center, the Center for Technology Commercialization (CTC), and the Office of Law Enforcement Technology Commercialization (OLETC)** in Wheeling, W. Va., the scope of the FFTF expanded to



Congressman Rodney P. Frelinghuysen (R-NJ), with Robert B. Saba, FFTF Coordinator, tests the firefighter hands-free, helmet-mounted, head contact microphone communication device.

address the needs of both firefighters and law enforcement officials.

### *Hear Over Noise Device*

FFTF Coordinator **Robert Saba** says the objective is to identify technologies in federal labs, academia, and industry that can be further developed into commercially affordable products and devices that enhance the safety of public safety officials.

One priority area concerns improved hands-free communications technology that enables firefighters to talk to each other at very high noise levels. A head contact microphone developed at the **Naval Coastal Systems Station** (Panama City, Fla.) has been licensed to **Sensory Devices (Radioear)** in New Eagle, Pa., and this technology is close to commercialization.

### *See-through Smoke Technology*

Greater visibility for firefighters on the job is another key area. The FFTF is monitoring the development of a technology from the **Night Vision & Electronic Sensors Directorate** at Ft. Belvoir—a lightweight, low power, low cost, helmet-mounted infrared imaging system for seeing through dense, heavy smoke. This technology could have helped to locate one of the firefighters trapped in a warehouse fire last April in Queens, N.Y.

At prototype demonstrations around the U.S., representatives from fire service and law enforcement agencies (e.g., metropolitan fire chiefs and prison officials) heartily endorse these technologies. In April, to signify the intent to continue developing these safety technologies, a Memorandum of Understanding was

## NIJ-AFRL Cyber Crime Lab Prevents/Protects/Detects

Just when you thought it was safe to go back online, there's another cyber crime, much more cunning and invasive—and damaging—than the Code Red worm or the Love Bug virus. But for **Jim Riccardi**, Electronic Crime Specialist at the **CyberScience Laboratory (CSL), National Law Enforcement & Corrections Technology Center, Northeast (NLECTC-NE)** in Rome, N.Y., it's all in a day's work.

"I always think nothing will surprise me, and then something new pops up," Riccardi said, relating a couple of electronic crimes—restaurant busboys with small credit card swipers

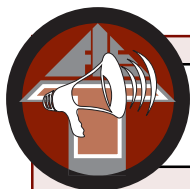
hooked up to a video camera that read the pin number entered by the customer, and the department store salesperson with a Palm Pilot-attached card swiper that read credit cards. Identity theft is rampant, and instant stolen numbers mean fast, wild shopping sprees at the victim's expense.

### *"Wrap Music"*

There are also hard-to-detect child pornography rings on the Internet—courtesy of digital cameras. Pictures can be embedded in music

Please see *CRIME*, p. 3

Please see *FFTF*, p. 2



## FED LABS FLASH

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

### **Bush Nominates Marburger to Head OST**

President George W. Bush intends to nominate **John H. Marburger, III** as Director of the **Office of Science and Technology**. He is currently director of the **Department of Energy's Brookhaven National Laboratory** and president of Brookhaven Science Associates. Marburger is on a leave of absence from the **State University of New York at Stony Brook**, where he served as president and professor from 1980 to 1994 and as a university professor of physics and electrical engineering from 1994 to 1997. Marburger served as Dean of the College of Letters, Arts and Sciences at the **University of Southern California** from 1976 to 1980. He has been a

member of numerous professional, civic and philanthropic organizations, including the Universities Research Association, the Advisory Committee to the New York State Senate Committee on Higher Education, and the Board of Directors of the Museums at Stony Brook. A graduate of **Princeton University**, Marburger received a Ph.D. in applied physics from **Stanford University**.

### **FLC Mid-Atlantic, Northeast Regions Announce Meeting**

The FLC's Mid-Atlantic and Northeast Regions will hold a joint annual meeting October 16-17 in Cape May, N.J.

New FLC Chair **Ann Rydalch** will share her ideas for the future of the FLC, and all attendees will join in

a networking session. Other activities include an excursion to Coast Guard Training Center Cape May for a search and rescue simulation. **Robert Saba** of the FTF (see cover story) will also be a presenter. New technology transfer legislation and the benefits of licensing technology from the government will also be discussed.

Additionally, the operations of the **Department of Defense** Technology Transfer Program will be summarized, as will the relationship between the FLC and the Regional Technology Transfer Center (RTTC).

Although the meeting is geared to members of the two regions, anyone can attend.

**For more info:** Sherry Nacci, 856-667-6770, [snacci@utrsmail.com](mailto:snacci@utrsmail.com)

## **NewsLinkONLINE to Debut January 2002**

### **Paper Version of NewsLink to Be Discontinued**

The November/December 2001 *NewsLink* will be the last hard-copy edition. However, *NewsLink* will continue to be published—as *NewsLinkONLINE*, a new and improved electronic newsletter.

Debating with the January 2002 edition, *NewsLink* subscribers will be e-mailed a postcard link that will take you directly to the latest *NewsLinkONLINE* issue.

Why the change? With the introduction of *NewsLinkONLINE*, we will be able to publish a newsletter in FULL COLOR and expand the number of pages per issue. This means more news, more announcements, and more technologies available for transfer. To do this with a printed version would have required charging a subscription fee—something we didn't want to do.

#### **So what's required of you?**

Well, obviously we'll need your e-mail address. Simply send an e-mail to [flcnews@utrsmail.com](mailto:flcnews@utrsmail.com), with "Subscribe ONLINE" in the subject line. You'll receive a confirmation, and the premier edition of *NewsLinkONLINE* will be on its way beginning in January.

And, of course, the larger edition means more opportunity to share your own news and technologies—lab news, success stories, T2 web sites, and technologies available for transfer. Send them all to [flcnews@utrsmail.com](mailto:flcnews@utrsmail.com).

### **FFTF** *from p. 1*

signed between the Metro Fire Chiefs and the FLC. At the event, a tracking system developed by IIT, Inc. of Clifton, N.J., under a Defense Advanced Research Projects Agency (DARPA) contract was demonstrated.

### **Development in a "Holding Pattern"**

"Until there are products in the catalog they can buy, we haven't done anything yet," said **Rich Dimmick**, FLC FTF Task Leader. "We're successful only when firefighters can buy the lifesaving devices."

FFTF hopes to develop next-generation prototypes for firefighters and law enforcement officials to test and evaluate—but that takes money. The fire fighting community is often ignored, unsupported, and unfunded, Dimmick said. Funding for additional R&D may be possible from the Advanced Fire Protection Consortium, but it is difficult to find investors for better technologies that benefit only a small, specialized segment of the population. Generally, volunteer firemen rely on fund raisers to purchase their equipment.

In the meantime, work continues on finding solutions for tracking and monitoring, the next-generation fire apparatus, and wildland fires. Saba, who has talked with NASA and others about possible materials for safer fire shelters, said, "New, improved devices and products can save the lives of many public officials—but that will only happen with patience, diligence and perseverance."

**For more info:** Robert Saba, 412-630-8962, [rbsaba@home.com](mailto:rbsaba@home.com) **NL**

### ***“People and the River” Reports on ChicagoRivers Demonstration Project***

A report from the ChicagoRivers Demonstration Project is available online at the web site of the **USDA Forest Services’s North Central Research Station** (St. Paul, Minn.). A grass-roots movement to improve the Chicago River resulted in a collaborative effort to develop an action plan for river enhancements, the initiation of community-based activities, and an application as a national “model” for revitalizing degraded urban rivers.

**For more info:** [www.ncrs.fs.fed.us/epubs/chicagoriver/people/pdf/prfront.pdf](http://www.ncrs.fs.fed.us/epubs/chicagoriver/people/pdf/prfront.pdf)

### ***Expanded Telescience Support Center Monitors First Local Experiments***

Science teams at **NASA Glenn Research Center (GRC)** and their university partners can now monitor

and command their own International Space Station experiments for the first time. GRC’s newly renovated Telescience Support Center (TSC), a NASA telescience ground facility, provides the capability to execute ground support operations of on-orbit space station and space shuttle payloads. “We are excited to be conducting science in space once again,” said **Diane Malarik**, Telescience Operations Manager. “Glenn’s science and engineering teams have been anxiously awaiting the beginning of space station payload operations so that we can get back in the business of doing cutting-edge research in the microgravity environment of space.”

The TSC will soon be enlarged to include up to 20 consoles, which will accommodate 50 people working the consoles simultaneously. This space will also support the nearly continuous operations of the Fluids and Combustion Facility, which is being designed to conduct a minimum of 10 science experiments a

year. The TSC acts as a control center—users can either locate their operations staff within its walls at Glenn or request that TSC operation capabilities be extended to a more convenient location, such as a university.

**For more info:** Barbara L. Kakiris, 216-433-2513, [barbara.l.kakiris@grc.nasa.gov](mailto:barbara.l.kakiris@grc.nasa.gov)

### ***FLC-MC to Co-sponsor Conference***

The FLC Mid-Continent Region has put together a dynamic conference on “Lean & Clean Manufacturing.” The event, co-sponsored by the **New Mexico Manufacturing Extension Partnership (MEP)** and the **NASA Mid-Continent Technology Transfer Center (MCTTC)**, combines lab technologies with programs and resources from MEP and MCTTC.

Registration is \$275 for this event, which will be held October 29-November 1, with an optional training session on Monday, October 29.

**For more info:** [www.federalabs.org](http://www.federalabs.org) **NL**

## **CRIME** *from p. 1*

files, and when opened, it’s possible not only to hear the music but, once the contact reverses the method to get into the file, the illegal photos can be seen as well. Following the concept of file sharing—like Napster, Gnutella, and others—comes Wrapster, which allows child porn to be disguised as MP3 files. Other clever methods can hide spreadsheet data on drug money or other illegal information in, for example, an innocent photo of a Little Leaguer at bat.

The technique of embedding data online is called steganography, one of many areas in which CSL concentrates. Other specialties include media analysis, forensic analysis, and recovery of data. CSL’s mission includes providing technical assistance regarding electronic crimes, building a forensic tool knowledge base, and heightening the awareness of cyber crime issues among federal, state, and local law enforcement agencies.

### ***Lack of Awareness***

“There’s a huge awareness problem,” Riccardi said. From police to court judges to parents, many don’t understand the intangible theft of databases or financial fraud, for example, or the potential for e-crime. With more funding, CSL plans to establish a resource center to assist with its outreach and training programs. CSL also offers an active, hands-on intern program for college students.

Established in March 2000, CSL also focuses on computer forensics—recovering old files, obtaining potential

evidence from the media in a crime, copying hard drives and making duplicate images from which to work, all done using forensic methods to preserve original evidence.

Funded by the **National Institute of Justice (NIJ)** and co-located at the **Air Force Research Laboratory (AFRL) Information Directorate** (formerly Rome Labs), NLECTC-NE is one of several law enforcement and corrections technology centers in the U.S. Via the NIJ and AFRL agreement, partnerships, and Memoranda of Understanding, NLECTC-NE serves the law enforcement and corrections agencies of 16 states. The Rome facility also deals with secure communications, concealed weapon detection, audio/video processing and enhancement, speaker identification, and other areas.

### ***Halting Hackers***

Addressing computer crime at the NLECTC-NE began three years ago on a small scale, but it expanded rapidly—in areas of prevention, detection, and enforcement. The field grows, even *changes*, daily around the world. “Cyber crime is a full-time focus, and resources need to be expanded—financially, physically and technologically,” Riccardi said.

To anticipate, outwit or halt greedy hackers, software pirates and cybercrooks, more sophisticated technical tools and software are needed. Although CSL carries out large-scale R&D for new preventive/protective/detective devices, innovative related technology or partnering is welcome.

**For more info:** Jim Riccardi, 315-339-6184, [cybercrime@adelphia.net](mailto:cybercrime@adelphia.net) **NL**





## TECHNOLOGY WATCH

*Federal laboratory technologies available for technology transfer*

### AGRICULTURE

#### Scientists Develop More Potent Chromium Supplement

Studies indicate that daily chromium supplements may improve glucose tolerance in people with blood sugar levels ranging from slightly elevated to full-blown diabetes. A new chromium formulation, a complex of chromium and the amino acid histidine, has been developed by scientists at the **USDA's Agricultural Research Service Human Nutrition Research Center**. The new chromium is absorbed 50% better than the best-absorbed and most popular chromium supplement sold today, chromium picolinate, which ARS also patented nearly 30 years ago.

A key component in the new chromium is histidine, an "essential amino acid" not manufactured by the body. It is found in all meats and foods that contain protein.

In tests at the center, men and women absorbed an average 3.1 micrograms (mcg) of chromium from the chromium-histidine complex, compared with 1.8 mcg from chromium picolinate, 0.4 mcg from chromium chloride, and 0.2 mcg from chromium polynicotinate. The latter two formulations are popular supplements.

Typical Western diets barely supply an adequate intake of chromium—35 mcg daily for men, 25 mcg for women. And, high sugar intakes, trauma and hard exercise can increase chromium excretion.

In studies worldwide, supplemental chromium has improved blood sugar levels or other symptoms in people with glucose intolerance, Types 1 and 2 diabetes, steroid-induced diabetes, and gestational diabetes. However, chromium supplements won't help people who have high blood sugar in spite of getting adequate dietary chromium.

**For more info:** Judy McBride, 301-504-1628, [jmcbride@ars.usda.gov](mailto:jmcbride@ars.usda.gov)

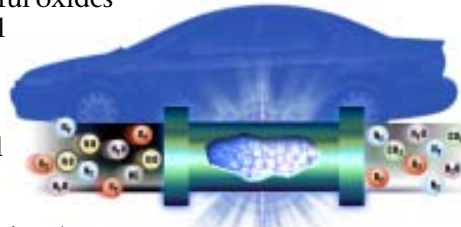


### ENVIRONMENT

#### New Technology Reduces No<sub>x</sub> Emissions

By combining an electrically charged gas with a specialized catalyst, researchers at the **Department of Energy's Pacific Northwest National Laboratory (PNNL)** have successfully reduced by half harmful oxides of nitrogen in a diesel engine. These reductions are critical to meeting emissions requirements and fuel economy goals in diesel vehicles.

The foundation for this research began several years ago when PNNL scientists showed that an electrically charged gas, called plasma, along with a catalyst, could convert nitrogen oxides to nitrogen—a component of clean air. They developed a small reactor to house the plasma reaction and quickly discovered



that the packing material used in the reactor affected the chemical reaction.

"Our scientists began looking at various materials and found a specialized catalyst that selectively reduces oxides of nitrogen," said **Chuck Peden**, principal investigator for the project. Those initial laboratory studies showed that the process

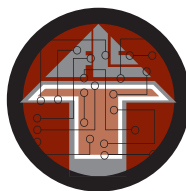
reduced NO<sub>x</sub> by 70%.

"But our lab results over the past six months now show that greater than 90 percent reduction can be achieved.

"We continue to make progress toward

achieving the goals with this technology," said Peden. "There is more work to be done to reduce the amount of electrical power required to operate the reactor and to increase the overall NO<sub>x</sub> reduction from 50 to 90% on a real engine."

**For more info:** Dawn White, 509-375-3688



### ELECTRONICS

#### Transition from TV to HDTV Made Easier

High definition television (HDTV) doubles the resolution of today's analog television while providing a wider screen image close to the horizontal "letterbox" dimensions of a motion picture. Adding the potential of six separate tracks of Dolby digital Surround Sound and you'll agree that this is the best way to watch everything from "The Sopranos" to the Super Bowl.

However, those involved in the transition from analog to HDTV are worried that when the federally mandated time to convert broadcast formats arrives in 2006, a large

percentage of the population will not be ready.

A scientist at **Los Alamos National Laboratory** has developed a technology that could make the transition from the nation's existing television infrastructure to the 21<sup>st</sup> century a little easier—a signal transition algorithm capable of compressing an HDTV datastream so both HDTV and analog signals can be broadcast over the same channel. This would, in effect, allow broadcasters to reach both sets of consumers during the transition period, and analog owners could still use their old TV sets... for a while, anyway. At the end of the transition period, broadcasters would stop using the algorithm and HDTV receivers would then receive the digital signal only.

**For more info:** Kathleen Herrera, 505-667-5844, [kaherrera@lanl.gov](mailto:kaherrera@lanl.gov)



**ASSISTIVE TECHNOLOGY**  
**More Than the Bare Bones for Implant Patients**

Children may sing about how “the hip bone’s connected to the leg bone,” but for patients with hip replacements, this connection could cause implants to fail in less than 10 years.

**Pacific Northwest National Laboratory (PNNL)** researchers developed a unique bone-like coating process that addresses the problem of poor bonds between artificial joints and real bone. It could potentially increase the useful life of hip, knee and other joint replacements, as well as dental implants.

In recent tests, a promising antimicrobial compound was added to the coating to fight infection. This addition would be especially beneficial for patients with external fixator pins that penetrate the skin to temporarily hold a mending bone in place.

“To put it simply, our Biomimetic Coating Process makes the body believe that the implant is actually bone,” said **Allison Campbell**, who developed the process. As a result, the body creates a strong bond between the implant and the bone during the natural process of breaking down old bone and building new.

The PNNL process begins with pretreating the implant with a tether molecule and then soaking the implant in a solution of calcium phosphate. “The tether acts as a template for the calcium phosphate crystals that grow on the implant surface,” Campbell said. “The resulting coating mimics that of natural bone.”

The water-based soaking process takes place at room temperature and can fully coat the surfaces of crevices and cavities—both advantages over vapor-based techniques that require high temperatures and do not cover intricate implant features as well.

**For more info:** 888-375-7665, [inquiry@pnl.gov](mailto:inquiry@pnl.gov)



**BIOTECHNOLOGY**  
**Diving Algorithm Seeks to Eliminate the “Bends”**

How deep divers can go and how long they can stay at a given depth are two of the cardinal rules of diving. Recreational sport divers use standard self-contained underwater breathing apparatus (SCUBA) equipment to



generally make what are known as non-decompression dives, meaning they can only go as deep and stay as long as allowed to keep their nitrogen levels below the danger zone. If divers surface too fast without decompression stops, nitrogen and/or helium bubbles may develop in their blood, tissue, or nervous system.

**Bruce Wienke of Los Alamos National Laboratory** has developed a new dive algorithm based on the physics of bubble formation. The table, known as the Reduced Gradient Bubble Model (RGBM), is already used in commercial diving and has applications in other diving situations. The benefits of RGBM are that divers can go deeper, stay longer, and spend less time decompressing than with the Haldane table, its predecessor.

The advantages of RGBM stem from its use of various gas mixtures and a different approach to determining the depth and timing of decompression stops upon ascent.

RGBM has been successfully used in the commercial and technical diving communities and is now having a similar effect on sport diving.

**For more info:** Bruce Wienke, 505-667-1358, [brw@lanl.gov](mailto:brw@lanl.gov)



**COMPUTERS**  
**Real Power Found in Power Plant Simulation Software**

**Argonne National Laboratory’s (ANL) GCTool** software package lets engineering designers “try out” different system configurations without the expense and delay of actually building numerous prototypes. GCTool was developed specifically for designing, analyzing, and comparing fuel cell and other power plant configurations, including automotive, space-based, and stationary systems. Its strength lies in its ability to perform dynamic, total fuel cell system modeling. Models for four different fuel cell types are available: polymer electrolyte, phosphoric acid, molten carbonate, and solid oxide fuel cells.

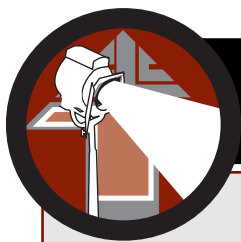
GCTool provides a convenient, flexible framework for integrating various component models into simple or complex system configurations. Operating in the Windows/95/98/NT environment, the simulated systems can have equality or non-equality constraints, as well as recycle loops. An optimizer facility allows the user to define an objective function to be minimized subject to real-life nonlinear constraints. A library of subcomponent models and properties is available, and users can easily add their own models as needed. With its tremendous adaptability, ANL’s GCTool can be applied to a broad range of energy conversion systems.

The GCTool software is highly user-friendly. System configurations are set up using an interpreted C-like language. Different pop-up windows show the system diagram, all model parameters (which can be altered interactively, if desired), and the simulation output.

**For more info:** [www.techtransfer.anl.gov/software/gctool.html](http://www.techtransfer.anl.gov/software/gctool.html)

**FLC Web Site**

We continually update our web site with new technologies categorized into 15 industry topic areas. Simply go to [www.federallabs.org](http://www.federallabs.org) and click on TECHNOLOGIES. New entries are added weekly!



## SPOTLIGHT ON SUCCESS

*Success stories from the federal lab community*

# Berkeley/Sunsoft CRADA May Lead to Continuous-Wear Contact Lenses

Imagine being able to wear your contact lenses for a month at a time—no more worries about infection, eye damage, or drying out...Leave them in while you sleep, swim, bathe, or put on makeup...That day may not be far off.

Operating under a Cooperative Research and Development Agreement (CRADA) between Lawrence Berkeley National Laboratory (LBNL) and Sunsoft Corporation of Albuquerque, N. Mex., a research team led by Carolyn Bertozzi of the Materials Sciences Division has developed two new biocompatible materials for contact lenses.

The first is a coating that will decrease protein binding (reducing the growth of bacteria) and increase water binding on the surface of the contact lens (allowing for necessary oxygen flow).

The second is a contact lens design that resembles the carbohydrate-coated surface of a human cell.

This is a big step in the development of materials with surfaces that must interact with living cells. The artificial material must “look” like, or mimic, those cells. The possibilities for such biomimetic coatings are enormous, including biomedical implants such as pacemakers and artificial organs, and electronic devices that can warn of dangerous chemical or biological toxins in the environment.

Biology inspired Bertozzi to develop two new materials for soft contact lenses that mimic the strategies living cells use to communicate with their environment. Both start with a material known as HEMA (2-hydroxyethyl methacrylate), which is used in many ordinary contact lenses.

Most standard soft contacts are composed of more than half water. A high proportion of water facilitates oxygen exchange with the eye; lack of oxygen is a principal cause of corneal damage.

“We thought we could improve (contact lenses) by incorporating the kinds of sugars found on the surfaces of living cells,” said Bertozzi.

In one approach, she and her colleagues set out to create a hydrogel with bulk properties similar to natural mucin. This would not only lubricate contact with the

cornea but repel proteins as well, preventing the “biofouling” that can cause allergic reactions and bacterial infections in contact-lens wearers.

When the gel was dry, the surface was dominated by water-repelling methyl groups (consisting of a carbon and three hydrogen atoms), not water-loving sugars. But when the gel was hydrated, many of the carbohydrates, arranged

as side groups on the polymer chains, rotated and emerged on the surface.

Indeed, lenses with only 20 percent carbohydrate can absorb so much water that the resulting hydrogel is 70 percent water by weight.

And the water is bound tightly, requiring temperatures of over 100 degrees Fahrenheit to drive it out.

Says Bertozzi, “This will help with the dry-eye problem.”

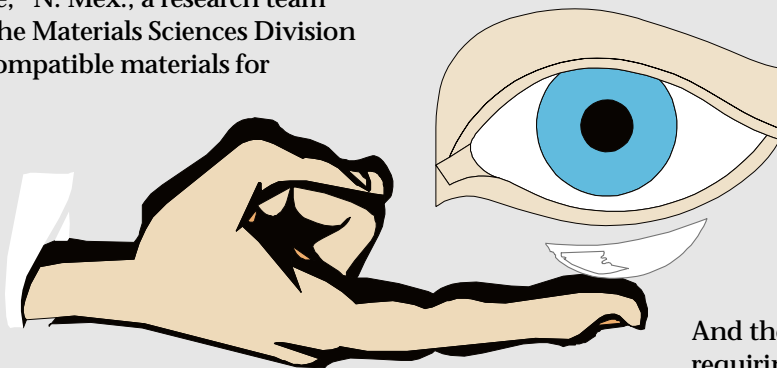
For a different approach to creating a lens surface that would resist binding to proteins while absorbing water, Bertozzi and her colleagues made use of published reports that a monolayer of sulfoxide on a gold substrate repels proteins.

High water content, good oxygen transfer, low protein binding, and low cost add up to attractive commercial potential. Under the CRADA between LBNL and Sunsoft, the new sulfoxide copolymer lenses will soon be tested.

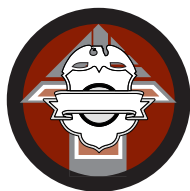
Bertozzi sees lots of other uses for artificial materials that mimic the properties of biological materials, “ranging from something as simple as epidermal patches for drug delivery, which could be worn without irritating the skin, to entire artificial organs. There are environmental uses, too, such as biosensors for detecting dangerous chemical and biological agents in air or water, and industrial uses such as bioreactors to produce tailored chemical products in bulk.”

Safe, inexpensive materials for comfortable, continuous-wear contact lenses are a small step toward a healthier, safer world made possible by biology-inspired synthetic organic chemistry, a field in which Bertozzi excels.

**For more info:** LBL Technology Transfer Department, 510-486-6467, [ttd@lbl.gov](mailto:ttd@lbl.gov) **NL**







## LAW ENFORCEMENT

### Wireless Subsystem to Offer Communications Flexibility

NASA's Universal Interface Adapter (UIA) is a wireless subsystem that provides push-to-talk signals to a communications system as if the user were directly wired to the system.

The user wears a commercial off-the-shelf (COTS) wireless headset and a signaling transmitter with optional keypad that can be hand-held and/or fastened to a belt. The headset provides a full duplex voice connection to the headset system base, while the transmitter provides an encoding signaling message to the UIA. The UIA connects to any communications system to provide the functional link between the headset-transmitter pair and the communications system. The UIA can be configured internally or externally to the communications system.

The prototype includes a push-to-talk unit (i.e., a low-power auxiliary radio transmitter) carried by the user and an auxiliary radio receiver. Upon receiving this signal, the base auxiliary radio generates a control signal that turns on audio circuits at a base station. NASA is using this prototype interface successfully in its launch operations.

Any job that requires frequent verbal communication, wireless mobility, and freedom from a handset or wired headset—such as call centers, emergency response teams, or law enforcement agencies—would benefit from this invention.

Operating in the 900-MHz and 2.4-GHz ISM frequency band, the technology permits multiple wireless users to operate independently in the same environment without interference. The technology can be used with any COTS wireless headset and communications system without modification, or it can be directly integrated into headsets and expanded to perform various telephone functions, such as dial-tone-multifrequency (DTMF) delivery and on/off hook signals.

**For more info:** Wendy Mizerek, 321-867-4879, [wendy.mizerek-1@ksc.nasa.gov](mailto:wendy.mizerek-1@ksc.nasa.gov)



## MANUFACTURING

### New Chromatography Column Design Uses Standard Lab Glassware

A scientist at **Westinghouse Savannah River Company (WSRC)** has designed an innovative method for constructing a chromatography column using standard laboratory glassware. The invention includes a device inserted into a hollow glass tube to support a chromatography resin or other matrix. When used with a graduated volumetric glass cylinder, the supporting device may be aligned with the "0" volumetric indicator on the glass cylinder to enable accurate adjustments in volumetric measurements.

Chromatography is a commonly employed technique used to separate a biological or chemical material based on the material's physical or chemical properties. Standard sizes of traditional chromatography columns and accessories are not compatible with other standard lab glassware. Existing resin supports can be used only with a traditional chromatography column. With conventional membrane or single-use resin supports, fine particles of the matrix gel often may filter down, reducing the flow rate and/or separation efficiency of the column. These supports may rupture or lose their desired integrity if subjected to a back flushing or back pressure.

In the new column design, the resin-supporting device provides a fluid-tight (liquid and gas) seal around the periphery of a standard glass tube to create an effective and inexpensive chromatography column.

Back pressure may be applied to back flush a packed resin bed and reestablish the desired column flow rate. The column also is easily cleaned, which greatly shortens the time of preparing the column for an additional run.

The dimensions of the chromatography resin-support device can be modified as needed to fit a variety of standard glass cylinders.

**For more info:** Eric. M. Frickey, 803-725-0406 or 800-228-3843, [eric.frickey@srs.gov](mailto:eric.frickey@srs.gov).



## CHEMICAL ENGINEERING

### Threatening Chemical Agents Easily Neutralized

The U.S. Army's **Edgewood Chemical Biological Center (ECBC)** has patented a technology designed to neutralize chemical agents that may be used in terrorist attacks. The technology consists of neutralizing enzymes that can be added to water or any water-based application system, e.g., fire-fighting foams and sprays, aircraft de-icing solutions, aqueous degreasers or laundry detergent.

In an incident where chemical agents may have been released, these enzymes can be used by first responders—

such as firefighters, police, bomb squads, and hazardous material response teams—to quickly neutralize the agents before they to contaminate a wider area. The catalytic enzymes can neutralize a wide range of chemicals, including organophosphorus nerve agents and pesticides. In addition, the technology is nontoxic, noncorrosive, environmentally safe, and affordable.

The U.S. Army is now looking to enter into licensing agreements with fire-fighting foam manufacturers and research and development firms to make this technology available for commercial use.

**For more info:** Jim Allingham, 410-436-4347, [james.allingham@sbc.com.apgea.army.mil](mailto:james.allingham@sbc.com.apgea.army.mil) **NL**

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**Upcoming focus issues include:  
Environmental and Information  
Technologies.**

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## COMING ATTRACTIONS

September 10-13, 2001  
**Instrumental, Systems and  
Automation Conference and  
Exhibition (ISA)**  
Houston, Texas

More than 30,000 visitors are expected to attend this exhibition on industrial measurement and control events. The technical conference is included at no extra cost.

Carol Schafer, 919-549-8411,  
[info@isa.org](mailto:info@isa.org)

September 12-13, 2001  
**Small Business Innovation Research &  
Development Workshop**  
Charlottesville, Virginia

This conference is designed to enable those interested in sources of funding for high risk, innovative ideas in defense, health, energy, transportation, commerce, agriculture, environment, basic science, and space-related research and technology to apply for SBIR/STTR/ATP funding for research and development.

[www.sotech.state.va.us/OST/events.htm](http://www.sotech.state.va.us/OST/events.htm)

September 19-21, 2001  
**State Science & Technology Institute**  
Pittsburgh, Pennsylvania

Offers exposure to the top thinking and practices in tech-based economic development. With 20 sessions being presented by individuals with practical experience in building tech-based economies, the conference is sure to have something for all attendees. The FLC will be represented as a participating sponsor.

[www.ssti.org](http://www.ssti.org)

October 24-26, 2001  
**2001 Environmental Technology Conference**  
Atlanta, Georgia

ETE connects buyers and sellers in the environmental management, equipment upgrade, and plant engineering marketplace. The show features an exposition, as well as conference and seminar sessions. Concurrent programs include the Plant & Facilities Expo, World Energy Engineering Congress, and the Generation Congress.

[www.aeecenter.org/Shows/](http://www.aeecenter.org/Shows/)

November 4-7, 2001  
**Geological Society of America  
Annual Meeting and Exposition**  
Boston, Massachusetts

For geoscience professionals, this show has an anticipated attendance of over 7,000 geology professionals whose interests are dedicated to the earth, education, and environment. Meet face-to-face with influential and key decision makers.

Brenda Martinez, 800-472-1988,  
[bmartinez@geosociety.org](mailto:bmartinez@geosociety.org)

December 2-5, 2001  
**National Commercialization  
Conference**  
Mobile, Alabama

This conference brings together law enforcement, technology innovators, and manufacturers to understand the needs and requirements of the law enforcement and corrections community. Includes networking opportunities, interaction with developers, and the chance to further refine technologies.

Everett Smith, 888-306-5382,  
[www.oletc.org](http://www.oletc.org)