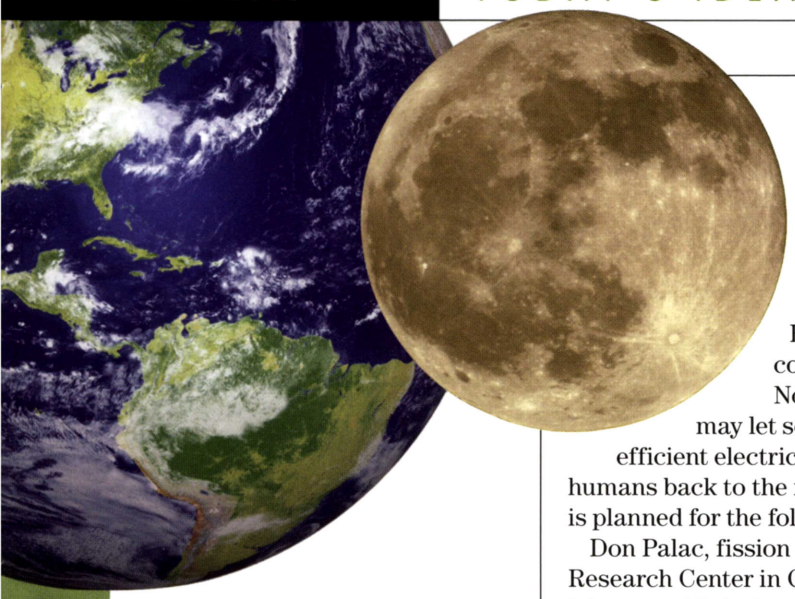
SUSAN COMBS
Texas Comptroller of Public Accounts

# TEXAS Innovator

FALL 2009

TODAY'S IDEAS FOR TOMORROW'S TEXAS



ENERGY/UTILITIES

## NASA may put nuclear energy on the moon

Nuclear energy has long been used as a power source on Earth. Efforts to replace foreign-sourced fuels mean that U.S. energy policy continues to see nuclear initiatives as part of the power generating mix. Now NASA and the Department of Energy are testing technology that may let scientists build a nuclear fission reactor — viewed as the most mass-efficient electricity supply for a future lunar or Mars outpost. NASA is aiming to send humans back to the moon in the decade beginning 2020, while Mars surface exploration is planned for the following decade.

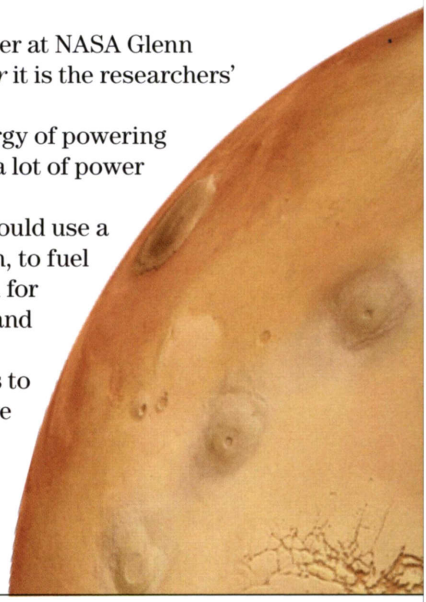
Don Palac, fission surface power system project manager at NASA Glenn Research Center in Cleveland, Ohio, told *Texas Innovator* it is the researchers' job to establish that the technology is feasible.

"We're only looking for 40 kilowatts, the equivalent energy of powering about eight houses in the United States," he says. "That's a lot of power on the moon."

According to NASA, the fission surface power system could use a small nuclear reactor, about the size of an office trash can, to fuel power generators. The electricity produced could be used for life support, performing experiments, recharging rovers and mining resources.

"We feel very strongly that we owe it to future explorers to provide reliable power," Palac says. "We don't want to have them end up like the folks on Apollo 13 searching for that last amp of power."

*To read this story in its entirety, and to see details on how NASA scientists have been testing the project, visit* www.texasinnovator.org.



*"Pain is temporary. Quitting lasts forever."*

— Lance Armstrong

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EMERGING TECHNOLOGIES

## Using virtual reality to view patients' organs

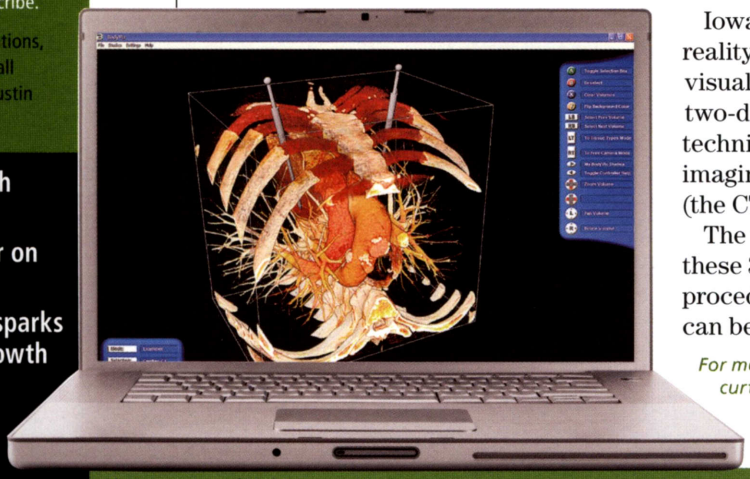

*Photo courtesy of BodyViz*

Iowa-based BodyViz has created virtual-reality software that lets doctors create 3-D visualizations of their patients' organs from two-dimensional images created through techniques such as magnetic resonance imaging (MRI) or computed axial tomography (the CT scan).

The "voyage through the body," enabled by these 3-D images, will let doctors plan surgical procedures more accurately; the software also can be used for patient and medical education.

*For more information, contact Curt Carlson, BodyViz, curtcarlson@bodyviz.com.*

Inside

FALL 2009

# TEXAS Innovator TODAY'S IDEAS

## A Message from Comptroller Susan Combs

*When new ideas are developed and applied to a problem, everyone benefits. Many new solutions to the world's problems are under development right here in Texas. This issue of* Texas Innovator *highlights some of these advances. You'll see how one Texas university is working to boost the quality of Texas cotton. See how researchers in Houston are making progress toward the treatment of stroke patients, and how parking in Austin just got greener.*

*I urge you to visit our online edition at* www.texasinnovator.org *and view exclusive online content, including a story about a barcode technology that will help keep your purchases fresh, and how one Texas corporation is advancing telehealth.*

*For up-to-the-minute updates on news and events, follow us on Twitter at* www.twitter.com/txcomptroller.

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DENOTES A TEXAS INNOVATOR

BIOSCIENCES

## Treating stroke with stem cells

A joint team from Memorial Hermann-Texas Medical Center and the University of Texas Medical School at Houston recently made medical history by treating a stroke patient with his own stem cells, in the nation's first such procedure.

The medical team is investigating the use of adult stem cells in stroke treatment under a grant from the National Institutes of Health. The procedure, conducted in March 2009, involved extracting stem cells from the patient's bone marrow, purifying them and then injecting them back into the patient. Research has shown that stem cells will gravitate toward the site of injury in the brain and support healing by reducing inflammation and aiding repair processes.

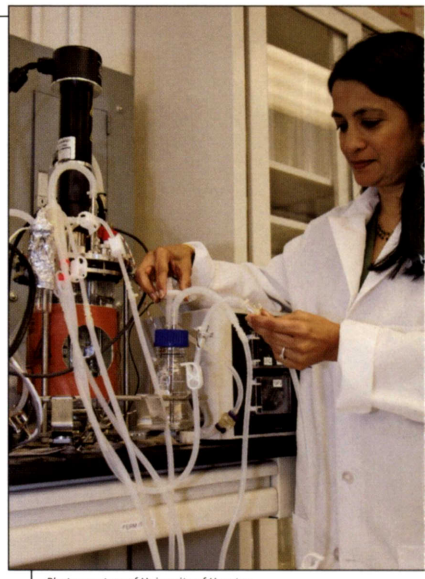
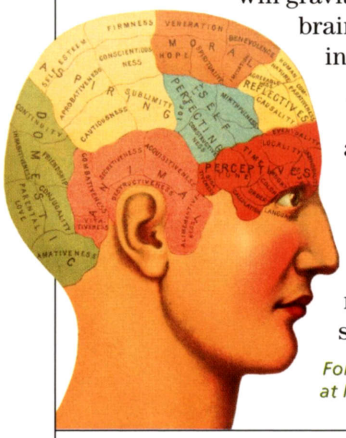


Photo courtesy of University of Houston



The patient, a 61-year-old painter and farmer from Liberty in East Texas, is recovering well and without paralysis. While the team cautions that it is too soon to attribute his recovery to the stem cell treatment, the technique holds promise of becoming a useful new therapeutic tool for treating stroke victims.

According to the American Stroke Association, stroke is the third most-common cause of death in the U.S. Nearly 800,000 Americans suffer a stroke each year.

*For more information, contact Dr. Sean Savitz, University of Texas Medical School at Houston, Sean.I.Savitz@uth.tmc.edu.*

BUSINESS

## Texas firms popular on *Inc.* 500 list

Texas landed 45 companies on the *Inc.* 500 list of the top growing private businesses in the United States, second only to California's 83. Technology firms were well represented, including Austin Internet marketing firm Adlucent at 73; The Woodlands health monitoring business eCardio Diagnostics at 117; and Austin-based custom software management company Headspring Systems at 127. Others in the top 250 include orthodontic technology firm OraMetrix (Richardson, 159); sales technology company Smiley Media (Austin, 168); Internet firm HostGator (Houston, 239); and business technology business ePsolutions (Austin, 244).


*For more information contact* Inc. *at* www.inc.com.

GOVERNMENT

## TWC blog keeps tabs on job market

A new blog from the Texas Workforce Commission provides up-to-date information on the state work force. *Texas2Work.com* will initially focus on statistics, policy issues and other economic data but is expected to include more information and tips. Early entries have addressed health care, Internet employment fraud and employee training. Job seekers and employers can sign up for RSS feeds and request e-mail alerts for new posts.

*Check out the Texas Workforce Commission's blog at* www.Texas2Work.com.

BIOTECHNOLOGY

## UH biotech center sparks critical industry growth

The University of Houston's Center for Life Sciences Technology is spurring education and research in hopes of making Texas one of the frontrunners in a high-growth industry.

Established in 2006 with about $372,000 in seed money, the program teaches fledgling scientists and gives others faced with a lack of capital a chance to test new ideas. It now boasts $1.6 million in funding from the Texas Workforce Commission, the National Science Foundation and other corporate sources.

*For more information contact the Center for Life Sciences Technology, (713) 743-2255, or visit* www.texasbiotech.org.

AGRICULTURE

## Not your average cotton

A new technology from Texas Tech University could boost the quality of West Texas cotton.

Developed by Thea Wilkins, director of the university's International Center for Excellence in Agricultural Genomics and Biotechnology, this new cotton variety produced longer, stronger fibers — the hallmarks of the commodity's quality — in the experimental stage.

California-grown cotton currently leads the nation in cotton quality, says Thomas Thompson, chair and professor of the Soil Science Department.

"In years past, West Texas cotton has not had the best reputation," he says. "This is another advance in the search to produce longer, stronger, finer cotton fiber."

Instead of being used to make T-shirts, this new cotton variety could be used to make high thread count, premium cotton sheets, Thompson explains. Such commercial potential has prompted Texas Tech's System Office of Technology Commercialization to contract with Bayer CropScience for an exclusive licensing agreement to use the new technology.

*For more information, visit the Texas Tech System Office of Technology Commercialization at* www.texastech.edu/otc.



# The In Crowd

*Innovations and innovators come in all forms. In each issue of* Texas Innovator, *The In Crowd will help bring you a little closer to some of Texas' brightest innovators, their perspective on why Texas is ideal for new approaches and even tips on fueling the creative mind inside us all.*

## Benjamin Flores, Ph.D.

University of Texas at El Paso

It's no surprise that a team of Texans is behind the latest research in military radar technology, considering the state's deep ties to aerospace and defense. It may, however, be a little surprising that a self-described "plain-clothes civilian" leads the charge.

"I've always marveled at the workings of radars and lasers," says Benjamin Flores, a professor at the University of Texas at El Paso.

Flores' Radar Systems and Signal Processing Group's unique work is largely classified, but deals with processing the radar signal. The radar uses microwaves and can identify the size and shape of high-speed military aircraft and missiles, and even determine if missiles have deployed warheads.

In addition to the technical challenges, today's economy stretches research budgets thin, even at the defense level.

"Funding is never easy to come by," Flores says. "One has to have the right ideas at the right time to capture the attention of potential sponsors."

Texas has the industry and infrastructure — as well as diverse people and minds — for researching and building these types of systems, Flores says. The skill and talent of its students will make Texas a strong player for years to come.

"One of the reasons we have been funded is that we are able to recruit highly qualified graduate Texan students who can ultimately revitalize and diversify the technical work force of the U.S. Army research labs," Flores says. "If you want to see what the U.S. melting pot will look like in the future, look at Texas now."

*For more information, visit UTEP's College of Engineering department online at* http://engineering.utep.edu.

ENERGY

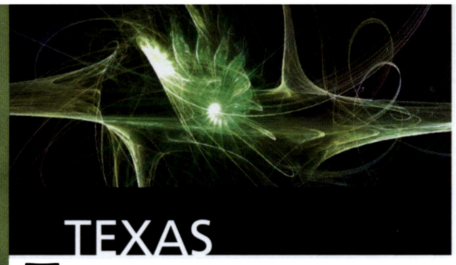
## Solar-powered parking meters

Energy efficiency, reliability and customer convenience — although drivers have to walk a few extra yards — are among the benefits from Austin's new solar-powered parking meters.

The city of Austin is installing 500 solar-powered meters that accept credit cards or cash and replacing 3,800 coin-fed meters that were years beyond their 10-year expected life. The Plano-manufactured meters have a three-year battery-life and a 15-year lifespan.

Fixed-length parking bays will be eliminated as drivers pay for time, not a specific place, and capacity will potentially be added from smaller vehicles parked closer together. Drivers running errands can pay once for a block of time and move their car without having to feed a second meter.

*For more information on Austin's solar-powered parking meter initiatives, visit* www.ci.austin.tx.us.



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## A WORLD OF INNOVATION

### United States

At the University of Texas in Austin, chemical engineering professor Brian Korgel is leading a research team focused on the challenge of developing solar energy technology that can create electricity more efficiently and economically. Their technique relies on a light-absorbing liquid that is spray-painted onto plastic and metal to create solar panels as thin as a sheet of paper. This thin-film technology — which Korgel envisions being mass-produced on huge printing presses — could lower the cost of a solar roof installation by as much as 90 percent. The trick is to achieve sunlight-to-energy conversion rates high enough to make the process commercially feasible.

*For more information, contact Brian Korgel at korgel@che.utexas.edu.*

### Northern Ireland

Researchers at the Astrophysics Research Centre are taking steps to avoid a collision involving Earth and space objects. Under the initiative, a 10-ton "gravity tractor" spacecraft would arrive at the object (for instance, an asteroid) and hover close enough to alter its trajectory.

*For more information, visit the Astrophysics Research Centre online at* http://star.pst.qub.ac.uk.

### Germany

Germany's largest solar park was added to the country's electrical grid in August. The park, which consists of 400 acres of solar panels, is located in Southern Bandenburg within an area that used to be the largest military training facility in East Germany. The facility, operated by Juwi Solar, is expected to offset about 35,000 tons of greenhouse gasses each year.

*For more information on the project, visit* www.juwi.com.

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