



WINTER 2008

TEXAS Innovator

SUSAN COMBS
Texas Comptroller of Public Accounts

TODAY'S IDEAS FOR TOMORROW'S TEXAS

"Don't be afraid to fail. Get out there and experiment and learn and fail and get a rate based on the experiences you have. Go for it and when you go for it you'll learn what you're capable of, what the potential is, where the opportunities are, but you can't be afraid to fail because that's when you learn."

— Michael Dell, CEO, Dell

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♥ MEDICAL INNOVATION

Sink your teeth in



People who lose their natural teeth lose 80-90 percent of their biting power, according to Dr. Lily Garcia, professor and chair of the University of Texas Health Science Center in San Antonio

(HSC) Department of Prosthodontics. Ceramic and titanium implants are giving some of that back.

HSC dental resident students perform the implant procedure. Patients are carefully screened, Garcia says, to ensure their treatment needs meet the educational needs of the students.

Each implant includes a one-piece ceramic arch supported by titanium posts. It is the first use for a one-piece ceramic prosthesis.

"[The implant] offers a patient the best possible result intra-orally, in that after oral rehabilitation, the patient can function as close to normal as possible," Garcia says.

Lengthy, traditional treatments leave patients with longer rehabilitation times, often stretching into months, Garcia says. Those are reduced with the implant.

"Using computer-assisted design and manufacturing technology, the patient can function soon after the combined surgery and implant crown placement," she says.

Patients are then able to eat and chew their food but must still be cautious in their eating to avoid chipping or fracturing the prosthesis.

A patient requiring one surgery and the implant from a private practice can expect to pay more than \$3,500, Garcia says. Through the UTSA program, it typically costs about 30 percent less than the private practice fee.

Dental services account for more than \$200 billion in annual economic impact, according to the American Dental Association.

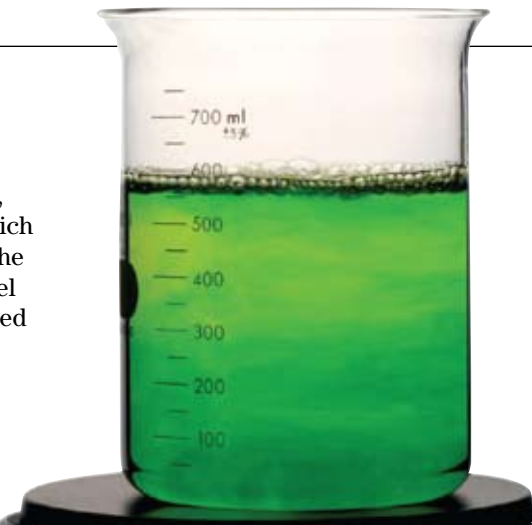
For more information, contact Dr. Lily Garcia, garcialt@uthscsa.edu

MATERIALS SCIENCE

Microwave meltdown

Global Resource Corp. of West Berlin, N.J., has introduced a machine, the HAWK 10, which uses microwaves to break down or "crack" the hydrocarbons in plastic waste, yielding diesel oil and a combustible gas. The gas is then used as fuel for the machine's operation.

For more information, contact Jerry Meddick, Global Resource Corp., jmeddick@globalresourcecorp.com



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TEXAS Innovator TODAY'S IDEAS

A Message from Comptroller Susan Combs

Innovators don't follow; they blaze their own trail and make the most of their opportunities. That spirit is captured in this issue's collection of breakthroughs from Texas and the world. From Texas dental students giving some bite back to their patients, olive oil's growing place in the Texas agricultural market or a new tool for fighting those pesky fire ants, this issue of Texas Innovator delivers these stories and more. In keeping with that innovative thinking, we're proud to introduce "The In Crowd," a new feature that will introduce you to some of the people behind the stories in Texas Innovator. And for the first time, we've added exciting Web-only content that offers our readers a closer look at other fascinating topics, including research on a blindness cure, heart-powered robots and even a hotel in space. You'll find all of this online at www.window.state.tx.us/txinnovator/.

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AGRICULTURAL SCIENCE

Ants be gone

People and fire ants do not like each other, and apparently neither likes manure. Dean Holz' Stet Corp., based near Salado, Texas, turns Stephenville dairy cow manure into True Stop®, an all-natural liquid fire ant killer.

"It's a mound-to-mound drench product," Holz said. "Fire ants can detect the poison in everything that's on the market now. Once they do that, they're gone."

Holz says True Stop® works in a way that mimics natural death in the ants, rather than signaling alarms that a poison is afoot.

True Stop® was ready for the world in the late 1990s, Holz says, but Mother Nature had other ideas. A severe drought starting in 2000 drove the ants, which have caused more than \$236 million in damage in Texas, deep underground and temporarily put the stop to True Stop®.



"We just elected to close the doors and go back to the drawing board," he says. "When the drought hit, the fire ant product was the only thing we had."

Now that rains and ants have returned, Stet has resurrected True Stop® and also now has a product for whiteflies, insects similar to aphids, as well as a compost and root stimulator.

For more information, contact Dean Holz, d.holz@stetcorp.com

PHARMACEUTICALS

Pill-based cancer treatment

Liver cancer patients may have a prolonged lease on life after results of a two-year study showed that pill therapy — with the drug sorafenib — slowed or stopped the growth of tumors within the liver.



While the treatment did not eliminate or shrink tumors, patients in the study survived an average of three months longer than those on a placebo pill. A three-month difference in survival is thought by doctors at Johns Hopkins University to be a significant gain in liver cancer. More than \$88 million in research is spent annually on liver cancer, which affects 19,000 Americans.

For more information, contact Dr. Josep Llovet, Josep.Llovet@mssm.edu, (212) 241-3923

AEROSPACE

Big sky diving

Orbital Outfitters, a company designing spacesuits for the burgeoning private space industry, is developing a life jacket for future space travelers. The spacesuit and parachute system would allow an astronaut in trouble to survive the 60-mile fall from the edge of space. The company hopes the system also could be used for recreational jumps, or "space diving" — what it describes as "the most extreme sport in human history."

For more information, contact Jonathan B. Clark, [Orbital Outfitters](http://OrbitalOutfitters.com), (202) 546-8074



CONSTRUCTION

Complete rubbish

Hoping to replace the 350 million or so concrete blocks manufactured each year in England, British engineers with the University of Leeds are using trash and other waste materials to form "Bitublocks" as an alternative.

The Bitublocks are made from crushed glass, pulverized fuel ash, steel slag and other waste products that would normally wind up in landfills or, worse, wherever they happen to be discarded. Further, less energy is required to make the Bitublocks than is needed for concrete, according to John Forth with the Leeds School of Engineering.

Bitumen, a sticky organic substance used widely in road construction, is the binding agent for Bitublocks, which are molded and then heated to oxidize the mixture into a hardness that rivals concrete.

For more information, contact Dr. John Forth, j.p.forth@leeds.ac.uk



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.

Kris Looney – Emergent Technologies Inc.

Vice President, Strategic Asset Planning



Innovation often requires the combination of multiple efforts. And sometimes those putting forth the effort need some help finding one

another. That's where venture capital groups like Emergent Technologies Inc. (ETI) enter the picture.

"We're focused on commercializing early-stage biotechnology," says ETI's Kris Looney, vice president of strategic asset planning.

One such project for the Austin-based group is Selenium Ltd., founded in 2004 based on discoveries by Dr. Julian Spallholz and Dr. Ted Reid at Texas Tech University. They discovered that the natural element selenium had antimicrobial properties that could benefit patients who wear braces and other orthodontic appliances by eliminating the primary plaque-causing bacteria.

"In orthodontics, this will assist in preventing the plaque buildup caused by bacteria that can lead to costly extended wear and cavities," says Looney.

To market the technology, called SeLECT™, ETI created the WestTech

Venture Fund to provide funding for the research and to bring it together with industry.

"In the case of Selenium Ltd., we were able to partner with ClassOne Orthodontics, a world-class leader in new products for the orthodontia industry, to develop the antimicrobial benefits of our selenium compound [for that market,]" he says.

Lubbock-based ClassOne's work will be featured in the January/February issue of the Comptroller's newsletter, *Texas Rising*, which is online at www.window.state.tx.us/texasrising/archives.html.

SeLECT technology could also have uses in other medical devices and ophthalmics such as contact lenses, Looney says.

Texas' strength at the university-research level and commitment to technology transfers with private industry add to its reputation as an innovation center.

"Texas is a great place for innovators and is growing in its infrastructure and support for all aspects of innovations," Looney says.

For more information on Selenium Ltd., visit www.seleniumltd.com

AGRICULTURAL SCIENCE

A green oil boom

Texas may be at the dawn of another oil boom — but this oil is emerald-green and delicious.

Parts of southern Texas are suitable for the cultivation of olive trees, and a small but growing industry hopes to bring Texas olive oil to market shelves.

According to Olive Oil Source, an industry Web site, Texas has at least nine olive oil companies. One firm, The Texas Olive Ranch, has 40,000 trees planted near Carrizo Springs. The group expects its first commercial harvest to hit store shelves in spring 2008, and touts its product as 100-percent Texas olive oil.

And Texas has attracted the attention of foreign producers as well. The Spanish food company Grupo SOS, which produces about 15 percent of the world's olive oil, recently announced plans to establish olive groves in the state. Once planted, these olive trees should yield oil in commercial quantities within three years. Grupo SOS will bottle the oil at a facility in Brazoria County, company officials say.

Americans spent \$894.1 million on olive oils in 2005, according to the market research firm Packaged Facts.

For more information, visit the Grupo SOS Web site at www.gruposos.com/web/uk/latencion/usuario.asp#





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A WORLD OF INNOVATION

Japan

Toyota, the world's largest automaker, plans to test a plug-in hybrid car — called Plug-in HV — on public roads in Europe and the United States. Different from Toyota's popular Prius hybrid, the Plug-in HV will charge from a standard electrical outlet and run on its electric motor for short trips.

For more information, visit www.toyota.com

United States

A new technique called bronchial thermoplasty uses radio waves that emit heat to burn off some smooth muscle in the airways. This will help asthma sufferers breathe more easily, have fewer symptoms and use less medication. It will be the first non-drug treatment for asthma developed recently.

For more information, contact Dr. John Miller, jmiller@mcmaster.ca, (905) 521-6515

Russia

Millions of trees have been cut down by illegal logging in Siberian forests — known to ecologists as the “green lungs of the planet” — since the Soviet Union's 1991 collapse. Starting in January 2008, satellites will help Russia's forest agency monitor and, perhaps, catch illegal logging operations.

For more information, visit www.forestrycenter.org

Germany

Solar panels dot the skyline of Freiburg, a German city of about 200,000 residents, topping houses, the city's soccer stadium and various other homes and buildings. Renewable energy makes up more than 5 percent of Germany's energy supply. The city's commitment to renewable energy helped make it an ideal home to the Fraunhofer Institute for Solar Energy Systems, which employs more than 500 people in the area.

For more information, contact the Fraunhofer Institute for Solar Energy Systems, info@ise.fraunhofer.de, www.ise.fraunhofer.de

South Korea

Researchers at Chonnam National University in South Korea have developed a tiny, crab-like robot powered by energy from the heart.

The team created...

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