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Providing information on technological advances, applications, and business news to nanotechnology professionals across the globe

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- **The Institute for the Humanities at Salado - The Human Edge**

Texans and tourists who are lucky enough to spend time in the small town of Salado, just off IH-35 between Waco and Austin in Central Texas, know it as a picturesque, historic village nestled on Salado Creek. In days of yore, Salado provided a haven for stagecoaches on the network of cattle trails moving cowboys and cattle from San Antonio to Missouri and beyond. The recently incorporated village of 2,350 people is famous for its laid back atmosphere enriched by the charm of its history. The town's innkeepers, restaurateurs, artists, shopkeepers, retirees, and long-time residents give the village its unique and delightful character.



Salado is also home to The Institute of the Humanities at Salado, a non-profit organization that offers educational programs and conferences in the disciplines of the humanities. The Institute provides life-long learning opportunities to explore the ideas, history, literature and values that make up the human story. The purpose of the Institute is to increase knowledge, to stretch minds and to foster compassion in light of this rapidly changing world. The goals of The Institute are to promote the exchange of ideas and the search for wisdom.

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NanoExpress Masthead

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Each Spring and Fall, The Institute of the Humanities produces a series of seminars that include lectures and discussions organized around a distinct theme. The theme around the Spring 2005 seminar this past March was "The Human Edge: Technology, Mankind, and the Future". The event drew five nationally recognized experts in some aspect of the rapidly changing technologies that will impact lives in the 21st century.

[To Read About The Institute for Humanities at Salado, Click Here](#)

- **Proposed Fund Could Result In Millions For Texas Economy**

March 5, 2005

Texas Governor Rick Perry was in Lubbock Saturday. He visited the Texas Tech Health Science Center and the Engineering Technology Nano Tech Center. The purpose of his trip was to help promote his \$300 million Emerging Technology Fund.



He says the fund will allow top researchers from across the country to collaborate with Texas institutions of higher learning. It will give these researchers the money they need to get their inventions to consumers sooner. At the same time, it will set Texas apart from other states and provide thousands of jobs to Texans.

"This technology is going to occur and the wealth is going to develop somewhere and I think it needs to be in Texas," says Governor Perry.

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- **Nano World: Nano Patents in Conflict**

By Charles Q. Choi - United Press International

Entrepreneurs are striving to claim patents over as many key nanotechnologies as possible. This gold-rush mentality could lead to a frenzy of lawsuits involving overlapping claims, but a new report reveals unexpected opportunities exist, too.



"The conventional wisdom, for instance, is that everything is patented when it comes to carbon nanotubes, and that's actually incorrect," Matthew Nordan, vice president of research for Lux Research in New York City, told UPI's

Austin Texas

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Nano World.

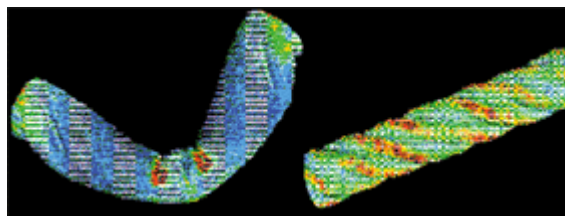
The ideas behind nanotech inventions lie at the very heart of the field, and that intellectual property is most often defended with patents. As of late March 2005, a total of 3,818 U.S. patents had been issued in the field, beginning in 1985, with another 1,777 applications awaiting judgment.

To analyze this technology landscape, Lux Research and the law firm Foley & Lardner LLP reviewed 1,084 U.S. patents relating to five key nanomaterials: dendrimers, quantum dots, carbon nanotubes, fullerenes and nanowires.

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- **Why Nanotech Holds the Key to Future**

R. Subramanyam
- Times News Network
(Wednesday, March 23, 2005)



BANGALORE: Nanotechnology, the most promising technology in the 21st century, can have a far reaching impact on science, technology and industrial sectors.

Nanotechnology is that branch of engineering, which deals with things smaller than 100 nanometers (especially with the manipulation of individual molecules). Nanotechnology and nanosciences are concerned with materials science and its application at the nanometer scale (1 billionth of a meter).

Faster computers , advanced pharmaceuticals, controlled drug delivery, biocompatible materials, nerve and tissue repair, better skin care and protection are some of the areas where nanotechnology is expected to have a major impact.

President of India, A P J Abdul Kalam is a firm believer in the benefits that nanotechnology can provide. He has repeatedly stressed on the need for India to focus on nanotechnology and nanosciences.

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- **Canon to Branch Out Into Biotech Business**

By Yuka Obayashi

TOKYO (Reuters) - Japanese office equipment and camera maker Canon Inc. plans to branch out into biotechnology by commercializing DNA chips for use in medical diagnosis, aiming to build a new pillar for future growth.

The move comes on the heels of plans by Canon, the world's largest office machine maker, to enter the flat-television market by launching advanced flat panel displays as part of efforts to widen its business portfolio.

Canon will seek approval at its shareholders meeting on Wednesday to include "production and sales of pharmaceutical products" in its operational objectives, getting ready for the commercialization of biotechnology products, a spokesman said.

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- **Nanotech Is Booming Biggest in U.S., Report Says**

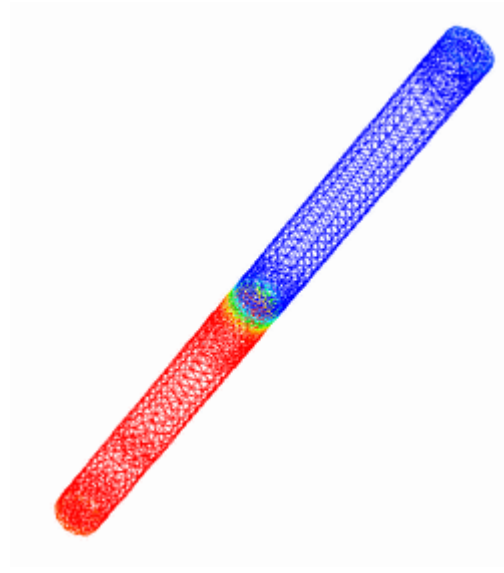
By Rick Weiss -
Washington Post
Staff Writer

The science of the very small is getting big in the United States. Americans are investing more money, publishing more scientific papers and winning more patents than anyone else in the quickly growing field of

nanotechnology, according to the first comprehensive federal report on the science of things only a few hundred millionths of an inch in size.

But the nation's lead may be short-lived, the report warns, as Europe and Asia show evidence of gaining.

Moreover, important questions about the technology's safety and oversight remain unanswered and understudied, the report concludes. Research on the health effects of nanomaterials -- and necessary revisions in the way they are regulated -- are lagging, government officials said, even as the novel materials find their way into an ever-widening spectrum of products, including clothing, cosmetics and computer hard drives.



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The toxicity studies now underway are "a drop in the

bucket compared to what needs to be done," John H. Marburger III, science adviser to President Bush and chief of the White House Office of Science and Technology Policy, said at a media briefing last week.

Nanotechnology, which deals with materials and devices manufactured on the scale of billionths of a meter, is widely touted as the engine of the next industrial revolution. The promise is not so much its ability to produce ever smaller and more efficient machines -- although that is certainly one aspect of its attraction. The main benefit of gaining control over such tiny bits of matter is that ordinary materials behave in extraordinary ways when shaved down to the scale of atoms and molecules.

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- **Nanotechnology Could Promote Hydrogen Economy**

New Brunswick / Piscataway, NJ

Say "nanotechnology" and people are likely to think of micro machines or zippy computer chips. But in a new twist, Rutgers scientists are using nanotechnology in chemical reactions that could provide hydrogen for tomorrow's fuel-cell powered clean energy vehicles.



In a paper to be published April 20 in the Journal of the American Chemical Society, researchers at Rutgers, The State University of New Jersey, describe how they make a finely textured surface of the metal iridium that can be used to extract hydrogen from ammonia, then captured and fed to a fuel cell. The metal's unique surface consists of millions of pyramids with facets as tiny as five nanometers (five billionths of a meter) across, onto which ammonia molecules can nestle like matching puzzle pieces. This sets up the molecules to undergo complete and efficient decomposition.

"The nanostructured surfaces we're examining are model catalysts," said Ted Madey, State of New Jersey professor of surface science in the physics department at Rutgers. "They also have the potential to catalyze chemical reactions for the chemical and pharmaceutical industries."

A major obstacle to establishing the "hydrogen economy" is the safe and cost-effective storage and transport of hydrogen fuel. The newly discovered process could

contribute to the solution of this problem. Handling hydrogen in its native form, as a light and highly flammable gas, poses daunting engineering challenges and would require building a new fuel distribution infrastructure from scratch.

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- **Nanotech: Huge Focus on a Small Science**

By Kevin Kelleher -
TheStreet.com Senior
Writer

TheStreet.com

Nanotechnology, the practice of manipulating matter on the atomic scale, may demand an exact science. But so far, nanotech investing has not.

A few short years after Wall Street's first flirtation with the science routinely touted as the next big wave of innovation, there is more misunderstanding about nanotechnology among investors -- and more confusion than information. And it's not just the little guys who get befuddled; it's also big investment banks like Merrill Lynch.

On April 1, 2004, Merrill and its highly respected tech analyst, Steve Milunovich, launched the Merrill Lynch Nanotech Index, injecting a jolt of volatility into many of the 25 small-cap components. A week later, the firm quietly swapped out Cabot Microelectronics (CCMP:Nasdaq) for Cabot Corp. (CBT:NYSE) . A week after that, Merrill pulled six companies out of the index after some of them -- including Applied Film (AFCO:Nasdaq) , Emcore (EMKR:Nasdaq) and Three- Five Systems (TFS:NYSE) -- complained that they didn't see themselves as nanotech plays. It also added three others.

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- **Nanotechnology Colloquium Series**

A cutting-edge educational series presenting and discussing issues related to the development, application and commercialization of nanotechnology, held every other Monday at the offices of Winstead Sechrest & Minick, P.C.

Sponsored by

- Winstead Sechrest & Minick P.C.
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- **New Nanotech Discovery Pushes Packaging Potential**

Researchers in the US have discovered a novel method of changing the chemical characteristics of carbon nanotubes, which could have implications for future packaging applications.



Somenath Mitra, professor of chemistry and environmental sciences and Zafar Iqbal, also a professor of chemistry and environmental sciences at the New Jersey Institute of Technology (NJIT), found that by heating them in a closed vessel microwave oven, the tubes can be chemically modified without damaging their essential structure.

"A carbon nanotube is just carbon," said Mitra. "The surprise for us is that it's difficult to make nanotubes react with anything. They are like diamonds - very, very inert. They don't react and they don't dissolve in water. But, if you can change their chemical characteristics as we have done using our method, we see them transform right before our eyes."

Once the tiny, microscopic tubes are chemically altered, they become soluble in common solvents like water and alcohol, and new kinds of films or coatings can be produced. The functionalised nanotubes become more useful than the pristine ones because the functionalised groups can be tailored for specific applications.

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- **DNA Molecules Used to Assemble Nanoparticles**

University of Michigan researchers have developed a faster, more efficient way to produce a wide variety of nanoparticle drug delivery systems, using DNA molecules to bind the particles together.

Nanometer-scaled dendrimers can be assembled in many configurations by using attached lengths of single-stranded DNA molecules, which naturally bind to other DNA strands in a highly specific fashion.

"With this approach, you can target a wide variety of

molecules-drugs, contrast agents-to almost any cell," said Dr. James R. Baker Jr., the Ruth Dow Doan Professor of Nanotechnology and director of the Center for Biologic Nanotechnology at U-M.

Nanoparticle complexes can be specifically targeted to cancer cells and are small enough to enter a diseased cell, either killing it from within or sending out a signal to identify it. But making the particles is notoriously difficult and time-consuming.

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- **Flat Panels Go Nanotech**

TFT LCD looks firmly entrenched as the dominant flat-panel technology, but in fact the displays industry is keen to find a technology that delivers better performance - and, crucially, at lower cost.



One promising technology is the carbon-nanotube field-emission display (CNT-FED). In Taiwan, key development work on CNT-FEDs is ongoing at the Electronics Research and Service Organization of the Industrial Technology Research Institute (ERSO/ITRI). Recently, following ITRI's announcement of the development of a 20-inch CNT backlight unit (CNT-BLU), DigiTimes.com had the opportunity to talk with Dr. CC Lee, deputy director of flat-panel development at ERSO/ITRI.

Source: digitimes

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