# Center for Nanotechnology in Society

# University of California, Santa Barbara

# www.cns.ucsb.edu

## WEEKLY CLIPS

July 27 - August 2, 2010

10 YEARS AGO IN NANO NEWS . . .

China Develops Anti-Radiation Garment
*People's Daily* (China)
July 28, 2000

"Chinese scientists have developed a new garment which is able to prevent human body from ultraviolet and electromagnetic waves radiation."

**Top Deck**

What the nation's (& world's) top papers, news wires and sources have been saying about nanotechnology.

Ask Not for Whom the Bell Tolls in Nanotech

IEEE Spectrum Nanoclast blog
July 27, 2010
Dexter Johnson

"Tim Harper has been covering what he describes as the 'Death of UK Nanotech' over at his TNTLog and I hope it serves as a cautionary tale to other regions of the world on the pitfalls of certain nanotechnology development strategies.

Harper quotes a recent assessment of UK Science Minister David Willets who commented that it would be 'most unlikely' that the UK's 24 nanotech centers will still be open in 18 months."

Vaccine patch could come in mail: scientist
CBC (Canada)
July 27, 2010

"Australian researchers have developed a needle-free, dissolving vaccination that they say could be mailed to households during a pandemic.

Unlike other next-generation vaccinations, the Australian development uses micro-projections made from dried vaccine."

Beyond Flip-Of-A-Coin Breast Cancer Diagnosis
*Forbes*
July 27, 2010
Edward Flynn, Ph.D

"An article last week in *The New York Times*, 'Prone to Error: Earliest Steps to Find Cancer,' stated some disturbing facts about the detection-and misdiagnosis-of an early form of breast cancer called ductal carcinoma in situ (DCIS). According to the piece, a study by the breast cancer survivors' organization, Susan G. Komen for the Cure, estimated that in 90,000 cases, women who receive a diagnosis of DCIS either did not have the disease or their pathologist made an error that resulted in incorrect treatment. Worst of all, prominent experts went on the record in characterizing the diagnosis of certain breast lesions as a 'flip of a coin.' . . .

Another interesting approach involves using nanotechnology. This work - which I've become involved with over the last 10 years - was in part motivated when my wife was diagnosed with breast cancer, as well as my strong belief that there are better technologies available than mammograms."

Regulation for Nanotech an Absolute Must
*The Epoch Times* (New Zealand)
July 29, 2010
Diane Cordemans

"AUCKLAND, New Zealand - Nanotechnology is rapidly becoming pervasive reality in New Zealand, but where are the checks and balances to protect consumers, workers and the environment, asks the Sustainability Council.

The council, which monitors issues that affect the health of New Zealanders and the environment, said in a press release last month that the novel technology is currently racing ahead of adequate government regulation."

Futurologist defends 'malevolent dust' warning

*The Register* (U.K.)
July 30, 2010

John Leyden

"A futurologist has defended his controversial warning that 'smart dust' is liable to become a future information stealing threat.

Ian Pearson outlined the supposed threat in a recent study *Life and How We'll Live It* Futurizon report, commissioned by IT giant Fujitsu. 'Tiny specks of smart dust dropped through ventilation grills on office equipment will allow interception of data before it even gets to an encryption device,' according to one section of the much larger study."

Quantum electron 'submarines' help push atoms around
*New Scientist*
July 30, 2010
Eugenie Samuel Reich

"IMAGINE a machine that can assemble an object atom by atom. That may be a step closer with the demonstration of electrons moving like a 'quantum submarine' inside a material.

Manipulating atoms directly is a major goal of nanotechnology, but remains a long way off. The best that has been achieved so far is to push individual atoms around using a scanning tunnelling microscope (STM), a device which can obtain images at the atomic scale using electrons emitted from a stylus just one atom wide at its tip."

Making Paper That Can Stop Bullets
*Forbes*
August 2, 2010
Karl Burkart

"A company called Nanocomp is producing textiles from carbon nanotubes.

*I recently sat down for an e-chat with John Dorr, vice president of Nanocomp, a new and exciting company that has taken nanotechnology out of the laboratory and into production, manufacturing new materials with strange and almost unbelievable properties.*"

'Beam pen' may produce more powerful processors
MSNBC.com
August 2, 2010

"Nanolithography, the process of carving circuits into computer chips far smaller than the electronic components currently embedded in digital devices, could produce faster, more powerful processors. Unfortunately, every process of nanolithography remains too expensive and too slow for commercial applications."

Decontaminating Dangerous Drywall
*U.S. News and World Report*
August 2, 2010

"A nanomaterial originally developed to fight toxic waste is now helping reduce debilitating fumes in homes with corrosive drywall.

Developed by Kenneth Klabunde of Kansas State University, and improved over three decades with support from the National Science Foundation, the FAST-ACT material has been a tool of first responders since 2003."

## On Deck

What Local Sources are Reporting

An Asphalt Pact Cut Fumes - & Created A Model

*New Haven* (CT) *Independent*
July 27. 2010
Melissa Bailey

"Keystone, Colo. - Workers rolling asphalt on city streets complained they were inhaling irritating fumes. Others worried the asphalt might cause cancer.

Dr. Jim Melius shared how labor pressured industry to do something about the problem - and ended up forming a partnership that made the workplace safer."

Exposed to Nano? Exhale
*New Haven* (CT) *Independent*
July 28, 2010
Melissa Bailey

"Keystone, Colo. - As more workers get exposed on the job to tiny new nanomaterials with unknown medical risks, government watchdogs are looking at ways to keep tabs on their health. One solution may lie in the breath.

Emerging technology, still under development, examines exhaled breath to look for indicators of early stage lung problems - problems that scientists think could be caused by exposure to nanomaterials."

Full Steam Ahead! ... & Hit The Brakes
*New Haven* (CT) *Independent*
July 29, 2010

David Funkhauser

"You may already be carrying quantum dots, carbon nanotubes and nano-silver around in your pocket: They're all around us, part of a new industrial revolution that feeds a market for products like cell phones and bug-repellent clothing that could reach $2.6 trillion worldwide by 2015.

The federal government is trying to drive this runaway train with one hand on the throttle and another on the brakes. One agency is calling for a greater push to get nano-based products to market, while another says the government needs to put more emphasis on developing health and environmental standards."

Wisconsin Says: 'Know Nano'

*New Haven* (CT) *Independent*
August 2, 2010
David Funkhauser

"When Wisconsin lawmaker Terese Berceau first learned about nanomaterials a few years ago, she found there were many nano-based products on the market, but little research into their possible health effects. 'The horse was already out of the barn,' she said, but she found it hard to get anyone interested. 'It is a difficult subject to get people feeling that, "Geez, we should do something now." ' "

UC Davis scientist wins grant to develop nanoparticles to fight breast cancer
*Sacramento Bee*
August 2, 2010
Lulu Liu

"Tiny cancer-fighting agents are poised to play a big role in the future of chemotherapy.

The breast cancer foundation Susan G. Komen for the Cure has awarded a UC Davis researcher $450,000 for the development of nanoparticles capable of effectively targeting and destroying tumor cells while leaving healthy cells unharmed."

## Nano Press

What nano-centered publications are reporting

What Drives the Regulation of Nanomaterials?
Nanotechnology Now
July 27, 2010
John DiLoreto

"I see the issue in a rather simple formula: Safe Products plus Government Oversight equals Public Confidence. This is a bit simplistic but it highlights a very important point. When products are inherently safe, government regulation and oversight can be minimized because the public, or consumers if you wish, can feel confident about safety. This approach can work regardless of the industry or product. If nanotechnology-related products can be made safe, there will be little need for regulatory intervention and the marketplace will decide which products become a success. Conversely, when nano-enhanced products represent a hazard to workers or consumers, regulations will play a more important role in establishing product safety. Failure on the part of manufacturers in developing safe products or failure by regulators to effectively monitor and evaluate product safety diminishes public confidence and often results in political solutions rather than those based on sound science."

Nanotechnology materials poised for big impact in construction
Nanowerk
July 28, 2010

"Bricks, blocks, and steel I-beams - step aside. A new genre of construction materials, made from stuff barely 1/50,000th the width of a human hair, is about to debut in the building of homes, offices, bridges, and other structures. And a new report is highlighting both the potential benefits of these nanomaterials in improving construction materials and the need for guidelines to regulate their use and disposal. The report appears in the monthly journal *ACS Nano* ('Nanomaterials in the Construction Industry: A Review of Their Applications and Environmental Health and Safety Considerations')."

Convergence, Disruption, and Resilience
Institute for Ethics and Emerging Technologies
July 29, 2010
Mike Treder

"Recently I was contacted by a reporter for a major newspaper and asked to answer a few questions about 'future trends in emerging technologies.' Here is what I said.

**Generally, what trends/innovations will there be in nanotechnology in the next 10 to 20 years?**

A trend to watch in technology over the next decade is convergence at the nanoscale (the scale of individual atoms and their combinations into molecules). As techniques and tools are improved, as scientific knowledge of what actually happens at the nanoscale increases, and as researchers learn better ways to control and manage the construction of molecules, we could see information technology, biotechnology, and nanotechnology converge to create a new discipline of molecular engineering."

Novel buckypaper device converts light into electricity
Nanowerk

July 29, 2010

"Previous studies have revealed that single-walled carbon nanotubes (SWCNTs) strongly absorb light, especially in the near-infrared (NIR) region, and convert it into heat. There even has been a report that fluffy SWCNTs can burst into flames when exposed to a camera flash, which means the local temperature has reached 600-700°C. This effect has already been used to develop effective CNT-based cancer killers or extremely dark materials.
In a new twist, researchers in China have now discovered that SWCNT buckypapers have a large Seebeck coefficient, indicating a strong capability to convert heat into electricity. Based on this, they have designed an opto-electronic power source which converts the incident light into electricity. While this has been discussed as a theoretical mechanism, the team at Tsinghua University in Beijing has actually fabricated an integrated device that outputs a macroscopic voltage, moving forward towards practical applications."

Humble protein, nanoparticles tag-team to kill cancer cells
PhysOrg
July 30, 2010

"A normally benign protein found in the human body appears to be able - when paired with nanoparticles - to zero in on and kill certain cancer cells, without having to also load those particles with chemotherapy drugs.

The finding could lead to a new strategy for targeted cancer therapies, according to the University of North Carolina at Chapel Hill scientists who made the discovery."

Nanoparticle-coated pavement that cleans the air
Nanowerk
August 2, 2010

"The concentrations of toxic nitrogen oxide that are present in German cities regularly exceed the maximum permitted levels. That's now about to change, as innovative paving slabs that will help protect the environment are being introduced. Coated in titanium dioxide nanoparticles, they reduce the amount of nitrogen oxide in the air.

In Germany, ambient air quality is not always as good as it might be - data from the federal environment ministry makes this all too clear. In 2009, the amounts of toxic nitrogen oxide in the atmosphere exceeded the maximum permitted levels at no fewer than 55 percent of air monitoring stations in urban areas. The ministry reports that road traffic is one of the primary sources of these emissions."

## Other (science) issues related to nanotechnology

Nanoparticles reveal then kill cancers - maybe
Cancer Network.com
July 27, 2010
Greg Freiherr

"Go back to the beginning of MRI, in the early and mid-1980s, and you'll find an almost rabid adoption of the modality, despite scant evidence of its clinical value. MRI has since done much to gain the trust of the medical community, opening a diagnostic cornucopia in the process. But the future has to bring more if MR is going to extend this legacy. Researchers at Wake Forest University Baptist Medical Center are working on it.

In research announced July 21 and presented at the American Association of Physicists in Medicine meeting in Philadelphia, they have created iron-containing multiwalled carbon nanotubes that, thanks to their ferrous character, show up beautifully on MRI."

**Nanotechnology for Water Purification**
*Science Daily*
July 28, 2010

"Nanotechnology refers to a broad range of tools, techniques and applications that simply involve particles on the approximate size scale of a few to hundreds of nanometers in diameter. Particles of this size have some unique physicochemical and surface properties that lend themselves to novel uses. Indeed, advocates of nanotechnology suggest that this area of research could contribute to solutions for some of the major problems we face on the global scale such as ensuring a supply of safe drinking water for a growing population, as well as addressing issues in medicine, energy, and agriculture."