

Center for Nanotechnology in Society

University of California, Santa Barbara

www.cns.ucsb.edu

WEEKLY CLIPS

March 23 - April 5, 2010

Top Deck

[The Nanotech Gamble - Bold Science. Big Money. Growing Risks](#)

AN AOL NEWS SPECIAL REPORT

March 24, 2010

Andrew Schneider

"Nanotechnology has long been hyped for its potential to cure diseases, ease energy problems, supercharge our computers and more. But increasing evidence shows that the engineered particles could pose a giant risk to the environment and human life. Learn how AOL News correspondent Andrew Schneider got the story and see his most surprising findings."

Part 1: [Amid Nanotech's Dazzling Promise, Risks Grow](#): A mounting body of research shows nanoparticles can cause disease and death. But regulators are doing little to respond.

Part 2: [Nano-Foods Coming to a Store Near You](#): To the industry, they're the ultimate secret ingredient. And scientists say nanomaterials are already in the U.S. food supply.

Part 3: [Obsession with Nanotech Growth Stymies Regulators](#): No U.S. agency leads the charge on nanotech safety, and companies can stonewall reform efforts. Other countries do things differently.

Other stories associated with this series:

- [How Nanotechnology Works](#)
- [Timeline: Nanotech's Evolution](#)
- [Gallery: Nano-Products are Everywhere](#)
- [Why Nanotech Hasn't \(Yet\) Triggered 'the Yuck Factor'](#)
- [Chart: Federal Nanotech Funding Shortchanges Safety Efforts](#)

[U.S. lead in nanotech eroding, report finds](#)

The Washington Post (Reuters)

March 25, 2010

Julie Steenhuysen

"CHICAGO - The United States urgently needs to invest more in nanotechnology if it is to maintain its global lead in the emerging field, according to a report issued on Thursday to U.S. President Barack Obama.

Between 2003 and 2008, U.S. public and private investments in nanotechnology grew at 18 percent a year against 27 percent a year throughout the world, the President's Council of Advisors on Science and Technology reported . . .

The group found that in 2005, the European Union outspent U.S. government investments in nanotechnology research and development. And in 2008, Asian countries -- mainly Japan, China and South Korea -- spent more."

[Big issues with small science: nanotechnology](#)

The Australian
March 27, 2010

"IT WAS all happening this month in the Paris of the south. As designer-clad models strutted down the catwalks, celebrities smiled, cameras flashed, fashionistas dispensed air kisses and protesters waved placards. Protesters? At the 2010 L'Oreal Melbourne Fashion Festival?

Indeed so. Environmental group Friends of the Earth was out in force, targeting cosmetic giant L'Oreal for incorporating nanoparticles in its up-market products. According to FOE spokeswoman Georgia Miller, the world's largest purveyor of posh potions and lotions is also the top nanotechnology patent holder in the US and that's cause for concern.

"The problem is, more and more scientific research is emerging that nanoparticles commonly used in cosmetics and sunscreens could present serious new health and environmental risks,' Miller says. 'For over five years FOE has called for a halt to sales of nano-products until legal gaps are closed and regulations are introduced to ensure safety and public choice.'"

[Scientists create self-powered nanosensor](#)

March 29, 2010

"ATLANTA, March 29 (UPI) -- U.S. scientists say they've combined a new generation of piezoelectric nanogenerators with nanowire sensors to create a self-powered sensing device.

Georgia Institute of Technology researchers say their self-powered nanometer-scale sensing device is believed to be the world's first that draws power from the conversion of mechanical energy.

The scientists led by Professor Zhong Lin Wang said the new device can measure the pH of liquids or detect the presence of ultraviolet light using electrical current produced from mechanical energy in the environment."

[Charging Ahead: Carbon Nanotubes Could Hold Long-Sought Battery Technology Breakthrough](#)

Scientific American

April 1, 2010

"Dear EarthTalk: What is the potential for carbon 'nanotubes' in battery technology? I heard them referred to as the biggest battery breakthrough to come along in years. And what else can we expect to see in terms of new battery technology in coming years?"

R. M. Koncan, via e-mail."

[Nanoscale cell 'stealth' probe is created](#)

April 1, 2010

"STANFORD, Calif., April 1 (UPI) -- U.S. nanotechnology engineers say they have created a nanoscale probe that can slide through a cell wall without damaging it and fuse with the membrane.

Stanford University researchers said their probe offers scientists a portal for extended eavesdropping on the inner electrical activity of individual cells. Everything from signals generated as cells communicate with each other to 'digestive rumblings' as cells react to medication could be monitored for up to a week, the engineers said. Current methods of probing a cell are destructive and usually allow a few hours of observation before the cell dies.

The researchers said they are the first to implant an inorganic device into a cell wall without damaging it."

[A Tiny Defect That May Create Smaller, Faster Electronics](#)

U.S. News and World Report (National Science Foundation)

April 1, 2010

"When most of us hear the word 'defect', we think of a problem that has to be solved. But a team of researchers at the University of South Florida (USF) created a new defect that just might be a solution to a growing challenge in the development of future electronic devices.

The team lead by USF Professors Matthias Batzill and Ivan Oleynik, whose discovery was published yesterday in the journal *Nature Nanotechnology*, have developed a new method for adding an extended defect to graphene, a one-atom-thick planar sheet of carbon atoms that many believe could replace silicon as the material for building virtually all electronics.

It is not simple to work with graphene, however. To be useful in electronic applications like integrated circuits, small defects must be introduced to the material. Previous attempts at making the necessary defects have either proved inconsistent or produced samples in which only the edges of thin strips of graphene or graphene nanoribbons possessed a useful defect structure. However, atomically-sharp edges are difficult to create due to natural roughness and the uncontrolled chemistry of dangling bonds at the edge of the samples."

[Nanotech film protects against dirt, germs and spills](#)

Ethiopian Review (Deutsche Welle)
April 2, 2010

"It's flexible, thinner than a human hair and protects everything from cups to concrete against liquids, dirt and germs. It's called 'Liquid Glass,' and is the latest trend in the world of nanotechnology.

Liquid Glass works by merging with the treated material and becoming an impenetrable barrier - impervious even to UV-radiation. Although it hardens within half an hour, the glass remains flexible so it can also be sprayed on textiles, such as carpets, in order to make them dirt- and smell-resistant.

At the same time, the layer acts just like a membrane, allowing the surface underneath to breathe; from the inside, water and oxygen can diffuse through the barrier.

Nanopool, a family-owned company in Germany, holds patent rights on the widely-praised technology. Dieter Schwindt, who established the company in 2001, told Deutsche Welle that the product is based on SiO₂, known as silica, which is the second most common compound on Earth and the main component of glass."

[Scientists Build World's Smallest Superconductor](#)

Project Seen As Breakthrough for Producing Nanoscale Electronic Devices

CBS News (Discovery)
April 4, 2010
Smriti Rao

"Scientists have created the world's smallest superconductor, made out of just four molecule-pairs and less than a nanometer wide. That's far smaller than the head of a pin - which stretches across a million nanometers - and more on the order of a DNA molecule, which is about 2 nanometers wide.

The invention, described in the journal *Nature Nanotechnology*, provides the first evidence that nanoscale molecular superconducting wires can be fabricated, which could be used for nanoscale electronic devices and energy applications.

Superconductive materials allow electrical currents to pass through with zero resistance, making them potentially useful to a wide variety of industries."

[On Deck](#)

[Maine Voices: Dealing with the dark side of technological innovation](#)

The harmful effects of common building materials only became clear belatedly, and that needs to change.

The Portland (ME) Press Herald

April 3, 2010

Ivan G. Most, Ph.D.

"OLD ORCHARD BEACH - Question: Why is it that year after year some new device or process becomes part of our way of life and we discover later that this great new innovation is actually quite harmful and needs to be discontinued?"

If you had gone into a theater in 1910, most likely you would have found the word 'asbestos' emblazoned on the theater curtain in large print. The theater owner was being responsible in using this material, since theater fires were common at the time . . .

An example of an innovation that is getting this kind of examination is nanotechnology developed for advanced materials and medical applications. The risks involved in manufacturing products that measure in the microns are being evaluated by the National Institute for Occupational Safety and Health as part of its manufacturing sector research agenda."

[Conference sees big future for nanotechnology](#)

Greensboro (NC) News & Record
Richard M. Barron

April 4, 2010

"GREENSBORO - Paul Clayson's slide of a stripped-down automobile, showing only its wheels and power train, looked like the bones of a child's plastic model before the body had been glued on.

Some of Clayson's technology, however, may be better suited for Elroy Jetson's toy box because of its revolutionary properties.

Nanotechnology - the science of making materials really, really small - helps create coatings for this car's working parts that give it more horsepower and better gas mileage by reducing heat and friction in strategic areas.

Clayson is chairman and CEO of nCoat Inc., the Whitsett company that makes this and other products for diesel trucks, aircraft, motorcycles and performance racing.

Many of its 70 workers don't need specialized degrees to work with nanotechnology, he said. They need training, but their work requires only advanced manufacturing skills because his company's coatings are relatively simple - from a nanotech point of view."

[Little products; large potential](#)

Microscopic batteries on horizon

The Keene (NH) Sentinel (McClatchy News Service)
April 4, 2010

Robert Evatt

"MIDWEST CITY, Okla. - A University of Tulsa researcher says he's working on a new battery that could make the tiny power packs inside wristwatches seem gigantic.

'About 240 of them could fit in the diameter of a human hair,' Dale Teeters told an audience Thursday at the Reed Center in Midwest City.

Teeters was a speaker at NanoFocus 2010. The annual conference showcases the latest developments and applications of microscopic science in technology and manufacturing.

This year's focus on nano-applications for energy included talks on solar energy research, petroleum detection, storage, batteries and heat management, along with nonenergy nanotech applications, such as carbon nanotubes, medicine and nano analysis."

[Nano-What?](#)

New Haven (CT) Independent

April 5, 2010

Alex Halperin

"Nanotechnology might change James Eastwood's life. Pouring green-algae extract into a beaker with salt water might help him understand why.

At least that's what organizers of a 'Nanodays' festival thought.

The idea is that people need to understand what nanotech - which is revolutionizing consumer and medical products - is all about. But usually scientists write and talk in something approaching their own language, not something that 10-year-olds like James Eastwood or even the average adult can understand.

Conducting his experiment at the recent 'Nanodays' fest at Boston's Museum of Science, Eastwood looked nonplussed when the water turned light green as if someone had dropped in food coloring. Eastwood then combined the algae with another liquid, a calcium chloride solution. The algae congealed into a green gelatinous snake as the surrounding solution remained clear. Eastwood pronounced it 'cool.'"

Nano News

[The world's smallest microlaser](#)

Nanowerk.com

March 23, 2010

"ETH-Zurich physicists have developed a new kind of laser that shatters the boundaries of possibility: it is by far the smallest electrically pumped laser in the world and one day could revolutionize chip technology ('Microcavity Laser Oscillating in a Circuit-Based Resonator').

It took a good one and a half years from the idea to its inception; a time when Christoph Walther, a PhD student in the Quantum Optoelectronics Group at ETH Zurich, spent days and nights in the FIRST lab. This was because ETH Zurich's state-of-the-art clean-room facility provided him with the ideal conditions to set a new record in laser technology: the physicist teamed up with four colleagues and developed the smallest electrically pumped laser in the world to date."

[Nanotech for pharma packaging to top \\$8B in 2014](#)

ElectroIQ.com (Small Times)

March 25, 2010

"Major changes in pharmaceutical products -- from drug delivery systems to new biochemical compounds -- are giving rise to new applications for nanotechnology not only in their creation and capabilities, but also how they are packaged, according to a new report from Innovative Research and Products Inc.

The advent of drug delivery systems and new compounds have resulted in a need not only for enhanced protection against various environmental factors (moisture, heat, light, oxygen, mechanical forces) but also opens the door for packaging to play a more integral role in drug delivery, e.g. stability and shelf life, the firm says. Basic categories of nanotech applications and functionalities appear in development of pharmaceutical packaging in several ways: enhancing plastic material barriers, incorporating active components to deliver functional attributes beyond conventional active packaging, and sensing/signaling relevant information."

[Gold nanoprobes give scientists a sense of how disease develops](#)

Nanowerk.com

March 29, 2010

"Tiny chemical sensors implanted into patients could help diagnose disease and track its progress, following a development by scientists. Researchers have developed tiny probes comprising gold-coated particles. These can be inserted into cells, enabling diseases to be detected and monitored remotely using light from a laser. Once the probe is inside a cell, laser light shone on to it is absorbed then re-emitted, causing nearby proteins in the cell to vibrate according to their shape. Because molecules change shape as disease progresses, they give rise to different vibrational frequencies. Scientists can measure and interpret these vibrations, to understand how the cell is responding to disease."

[Using Nanotechnology in Cancer Research](#)

Science Daily

March 29, 2010

"Biomedical researchers in Bergen are applying nanotechnology to mimic the body's natural processes, create new blood vessels to supply engineered tissue, and deepen our understanding of cancer.

They receive funding for this valuable work under the Research Council programme Nanotechnology and New Materials (NANOMAT). Seven per cent of the NANOMAT programme's budget is allocated to health-related projects . . .

Biomedical researchers around the globe are going all-out to induce cells to create new tissue. But all living tissues require a supply of blood to survive. Professor James Lorens and his team at the University of Bergen's Department of Biomedicine are using nanotechnology to study how to make cells form new blood vessels, both within the patient's body and in the laboratory. In the next phase the team will use this knowledge to investigate the molecular mechanisms that govern the progression of cancer."

[Nanotechnology Projects Seeking to Turn Carbon Dioxide into Useful Products](#)

Azonano.com

March 30, 2010

"Professor Nora De Leeuw (UCL Chemistry) has won £1.1 million from the Engineering and Physical Sciences Research Council (EPSRC) to lead a project that aims to produce a catalytic reactor that can convert carbon dioxide into useful chemicals for applications such as fuel cells in laptops and mobile phones, by mimicking biological systems.

The project is a collaboration between the UCL Departments of Chemistry, Chemical Engineering and Science & Technology Studies, and chemicals company Johnson Matthey."

[French Agency Seeks Revision of REACH to Cover Manufactured Nanomaterials](#)

Meridian Institute

March 30, 2010

Rick Mitchell

"The French Agency for Environmental and Occupational Health Safety (AFSSET) has issued a report calling for the European Union's REACH (Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals) legislation to be rewritten to specifically address manufactured nanomaterials. AFSSET's report, 'Evaluation of Risks Linked to Nanomaterials for the General Population and for the Environment', recommends acting immediately to require all nanomaterials to be traceable, require labeling of products containing nanomaterials, and ban nanomaterials for uses in which their utility is outweighed by potential risks."

[A promising nanotube coating for solar cells has turned up a few unexpected wrinkles](#)

Nanowerk.com

March 31, 2010

"A closer look at a promising nanotube coating that might one day improve solar cells has turned up a few unexpected wrinkles, according to new research ('Wrinkling and Strain Softening in Single-Wall Carbon Nanotube Membranes') conducted at the National Institute of Standards and Technology (NIST) and North Dakota State

University (NDSU) - research that also may help scientists iron out a solution. The scientists have found that coatings made of single-walled carbon nanotubes (SWCNTs) are not quite as deformable as hoped, implying that they are not an easy answer to problems that other materials present. Though films made of nanotubes possess many desirable properties, the team's findings reveal some issues that might need to be addressed before the full potential of these coatings is realized."

[Carbon Nanostructures - Elixir or Poison?](#)

Nanotechnology & Development News (Meridian Institute)

Los Alamos National Laboratory

April 1, 2010

"Researchers at the United States Los Alamos National Laboratory (LANL) have documented potential cellular damage from 'fullerenes', or 'buckyballs' - the ball-shaped molecules composed of 60 carbon atoms - but have also noted that this particular type of damage might hold hope for treatment of Parkinson's disease, Alzheimer's disease, or even cancer. The researchers exposed cultured human skin cells to several different types of buckyballs and found that one distinct type, the 'tris' configuration, which has three molecular branches off the main structure on one hemisphere, was toxic to human skin cells. The tris-fullerenes were unique, however, in that they induced molecular level responses, such as senescence in cells, that suggest they may potentially interfere with normal immune responses induced by viruses."

[Government of Greece files trademark claim for the term nanotechnology](#)

Nanowerk.com

April 1, 2010

"Taking the patent land grab to a new level, the government of Greece today, April 1, filed a patent and trademark application for the term nanotechnology with the European Patent Office. The country is thereby seeking the right to prevent third parties from commercially exploiting these and related terms without paying royalties. 'Quite honestly, we are sick and tired at the world's incessant exploitation of our country's cultural heritage and the fact that people make billions on the back of our amazing cultural achievements and the inventive talents of our great ancestors' said a spokesperson for the Hellenic parliament.

Notwithstanding the moral high ground the Greek government is trying to occupy, observers note that the real reason for this surprising move is very simple and very down-to-earth: money. Cash-strapped Greece, on the brink of bankruptcy, is desperate for revenues. Greece's massive debt problem has shaken the entire euro zone and undermined the shared currency. Greece's public debt is so high that the country could default - with potentially dire results for the Euro.

Lawyers and consultants have advised the Greek government that royalties from the term nanotechnology and related 'nano' terminology could raise billions every year."

[Scientists discover world's smallest superconductor](#)

Nanotechwire.com

April 4, 2010

"Scientists have discovered the world's smallest superconductor, a sheet of four pairs of molecules less than one nanometer wide. The Ohio University-led study, published today as an advance online publication in the journal Nature Nanotechnology, provides the first evidence that nanoscale molecular superconducting wires can be fabricated, which could be used for nanoscale electronic devices and energy applications."

Other Nano Issues

[Work, studies continue to determine safety of nanotechnology](#)

Plastics Today.com

March 23, 2010

Matt Defosse

"A recent poll at our website (results [here](#)) revealed that processors expect nanotechnology to be among the technological developments which will most impact the plastics processing industry, ahead of machinery developments and even legal issues. But in fact, nanotechnology remains a legal gray zone for many applications, which is why industry is working overtime to study these tiny particles' affects.

'Currently in Germany, micro-sized silver particles are allowed in food-contact applications,' explained Rüdiger Baunemann, managing director, in a presentation earlier this month at the PlasticsEurope headquarters in Frankfurt, Germany. PlasticsEurope is the trade group representing the continent's plastics suppliers - BASF, Bayer, Solvay, and Arkema are just some of the major industry players in this group. Baunemann spoke on the current state of investigations into nanoparticles and specifically their use in plastics applications. 'The use of nanotechnology is a hot topic and it is only going to get hotter,' he said, with lawmakers in Europe and beyond all eyeing the materials.' "

[Nanoparticles Switch Off Cancer Genes In Human Tumors](#)

Medical News Today.com

March 26, 2010

"US scientists have successfully completed a study where they showed targeted nanoparticles injected directly into a patient's bloodstream navigated into tumors, delivered double-stranded small interfering RNAs and turned off a gene that drives cancer growth.

You can read about the study, by researchers from the California Institute of Technology in Pasadena (Caltech), the University of California, Los Angeles (UCLA), and others, in the 21 March advance online issue of Nature."

[New Tools For Nanoscience](#)

RedOrbit.com

April 1, 2010

"In nanoscience, researchers are truly limited by the technology of their field, needing increasingly more advanced tools for studying, analyzing and manipulating objects and systems at the scale of individual molecules and atoms.

Directors of the Kavli Institute at Cornell for Nanoscale Science, Paul McEuen and David A. Muller, talk about their mission to push the technology of observation, measurement and control to ever-smaller dimensions."

[Nanotech: big-picture fail?](#)

Plastics Today.com
April 2nd, 2010
Clare Goldsberry

"While the U.S. government's 10-year-old program for nurturing the young science of nanotechnology has been highly successful, the nation's leadership in this nascent industry is being threatened by several aggressively investing competitors such as China, South Korea, and the European Union. That's according to a new report by an independent research firm prepared for the president and Congress.

The report concludes that the National Nanotechnology Initiative (NNI) - which has supplied \$12 billion in investments from 25 federal agencies over the past decade - has had a 'catalytic and substantial impact' on the growth of U.S. nanotechnology innovation and should be continued. However, the report warns, the United States stands to surrender its global lead in nanotechnology if it does not address some pressing needs.'

[New Study on Carbon Nanotubes Gives Hope for Medical Applications](#)

Nanotechnology & Development News (Meridian Institute)
April 5, 2010
Karolinska Institutet

"Scientists from the Karolinska Institutet, Sweden, the University of Pittsburgh and the National Institute for Occupational Safety and Health (NIOSH), both in the United States, have shown, for the first time, that carbon nanotubes can be broken down by an enzyme found in white blood cells, contradicting the widespread belief that carbon nanotubes are not broken down in the body or in nature. The enzyme, myeloperoxidase (MPO), converts carbon nanotubes into water and carbon dioxide - biologically harmless components."

Unique, Humorous, & Fascinating

[Nanotechnology-enabled pill signals it has been swallowed](#)

Nanowerk.com
March 31, 2010

"Seeking a way to confirm that patients have taken their medication, University of Florida engineering researchers have added a tiny microchip and digestible antenna to a standard pill capsule. The prototype is intended to pave the way for mass-produced pills that, when ingested, automatically alert doctors, loved ones or scientists working with patients in clinical drug trials."

[Of Van Gogh nanotubes and nano-witches - winning nanotechnology images](#)

Nanowerk.com

April 1, 2010

"During the 2009 MRS Fall Meeting in Boston, MA last year, the MRS conducted the eighth installment of the popular 'Science as Art' competition ([View winners from past competitions](#)). Here are the six first-place and second-place winners."