

Center for Nanotechnology in Society
University of California, Santa Barbara

www.cns.ucsb.edu

WEEKLY CLIPS

January 26 - March 22, 2010

Top Deck

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

[How Obama's budget would affect each agency](#)

February 2, 2010

The Washington Post

"FDA ...

FDA officials say they need new resources to be able to scrutinize and set standards for drugs and medical devices that spring from nanotechnology and other modern scientific advancements."

[Nanobubbles 'jackhammer' cancer cells](#)

"HOUSTON, Feb. 5 (UPI) -- Scientists at Rice University say they've used nanobubbles to target and explode individual diseased cancer cells. Physicists Dmitri Lapotko and Jason Hafner created the nanobubbles by placing gold nanoparticles in cancer cells and then zapping them with short laser pulses, the university said in a release."

[Nanotechnology could help Arab world](#)

Feb. 24, 2010

"SAN DIEGO, Feb. 24 (UPI) -- The president of the African Academy of Sciences says nanotechnology could aid in the development of the world's Arab countries. Mohamed Hassan, who also serves as executive director of TWAS, the academy of sciences for the developing world, said the Arab region of the world faces a host of 'daunting development challenges.'

'Three of the most fundamental involve ensuring adequate supplies of water, energy and food,' he said. 'Advances in nanotechnology could help achieve progress by helping to address each of these challenges.'"

[FDA creates partnership to boost regulatory science](#)

Feb. 25, 2010

Los Angeles Times

Andrew Zajac

"The Food and Drug Administration and the National Institutes of Health on Wednesday announced a plan to help the FDA make swifter decisions about the safety and effectiveness of new products and procedures that flow from advanced research.

The new partnership will promote the development of testing and other tools that FDA regulators need in order to assess drugs and other products coming from fields such as genomics, nanotechnology and stem cell therapy."

[Scientists urge nanotechnology vigilance](#)

March 8, 2010

"CALGARY, Alberta, March 8 (UPI) -- A Canadian scientist says he and his colleagues have developed a way to measure nanomaterials in blood vessels.

University of Calgary Professor David Cramb says his team's achievement means science is a step closer to helping solve a complex problem in nanotechnology: identifying the impact nanoparticles have on human health and the environment."

[MIT researchers discover new energy source](#)

March 12, 2010

CNN.com

Shelby Lin Erdman

"It's so tiny, you can't see it with the naked eye.

Scientists at the Massachusetts Institute of Technology have discovered an energy source that you can see only through a microscope.

The researchers devised a process for generating electricity using nanotechnology. They plan to refine the process in hopes of creating a new environmentally friendly battery, among other products.

It works like this: Researchers used tiny wires, known as carbon nanotubes, to create a powerful wave of energy, according to Michael Strano, and MIT associate professor of chemical engineering. He is also the senior author of a paper on this new phenomenon, published in this week's Nature Materials journal.

After coating these tiny wires with a layer of fuel, Strano said his team generated a so-called thermopower wave and stumbled across a reaction that may eventually be used to power electronics, computers and cell phones."

[Tiny Technology Holds Big Economic Potential](#)

March 19, 2010

PBS NewsHour

Paul Solman

?In the latest in a series of reports making sense of the economy, economics correspondent Paul Solman examines the small scale of nanosciences and the big impact they could have on the economy ...

PAUL SOLMAN: Maintaining America's position in the world's economic networks, it turns out, depends more and more on smaller and smaller.

GEORGE WHITESIDES: A hair is about 100,000 nanometers in width. So, if you want to think about a nanometer, think of a hundred-thousandth of a hair.

PAUL SOLMAN: And if you don't want to think about a nanometer, says Whitesides, who runs one of America's top research labs at Harvard, with more than a little help from his government, it could cost the American economy, because what the public doesn't understand, it might no longer support, while other countries invest in the next phase of technology.

GEORGE WHITESIDES: The United States has had a long history of economic prosperity, which has come, in part, from innovation.

We have been very good at taking science which comes out of the research universities and out of industry, and converting that into new ideas, new devices, and then commercializing those, and taking advantage of the fact that the new part of it gives us a proprietary advantage in the technology. And nano is one of the areas in which this kind of innovation is taking place and has the potential to take place in the future.?

On Deck

What local sources are reporting

[Obama's EPA Poised To Crack Down On Nanotech](#)

Feb 25, 2010

New Haven (CT) Independent

Alex Halperin

"The world's smallest materials are going under the government's microscope.

Under agency chief Lisa Jackson ... the Obama Administration's Environmental Protection Agency has promised to tighten regulations on nanomaterials, particles as small as molecules which are used by companies working in fields as varied as cosmetics and advanced materials.

At atomic levels many materials take on unique characteristics. Surface areas relative to mass can increase and often a material's conductivity or water solubility changes. These properties make nanoparticles the basis for powerful new medical and consumer products. But some nanomaterials have also raised worries from environmental and health watchdogs."

[Inside Nanotech Lab, Cancer Is The Target](#)

March 8, 2010

New Haven (CT) Independent

Alex Halperin

"Ithaca, N.Y. - Michael King is going to trick the cancer cells into showing him how they work.

An associate professor at Cornell, King heads a lab focused on cell adhesion. He is one of a group of scientists across the country who are using nanotechnology, the manipulation of particles as small as molecules, to investigate how and why cancer cells in the bloodstream adhere to blood vessel walls.

While the phenomenon may sound highly specific, King's quest tackles a broader question about the process by which cancers - especially the breast and prostate varieties - can metastasize. In order for many tumors to form, a cancer cell has to attach itself to the wall of a blood vessel, where it will escape the bloodstream to feed and grow."

[Fargo researcher pursues less toxic way to treat cancer](#)

March 9, 2010

Minnesota Public Radio

Dan Gunderson

"Fargo, N.D. - A Fargo researcher is using nanotechnology to develop a cheaper, less toxic way to detect and treat cancer, and the concept could someday replace treatments like chemotherapy.

Cancer cells produce a higher level of certain enzymes than normal cells.

Sanku Mallik at North Dakota State University thinks those enzymes are a key to detecting and killing cancer cells.

Mallik has created microscopic nanoparticles that react to two of those enzymes.

While many researchers are experimenting with gold nanoparticles to deliver drugs to cancer tumors, Mallik is using nontoxic materials."

[Nanosilver: Do We Know The Risks?](#)

March 17, 2010

New Haven (CT) Independent

Alex Halperin

?In ancient Rome, tipplers lined jars of wine with the precious metal to keep it from going bad. Millenia later we are buying refrigerators and socks, with microscopic silver particles to keep them fresh. The particles are called ?nanosilver,? and they?re seeping into more and more consumer products.

Now the Environmental Protection Agency (EPA) says it plans to announce formally, in the federal registry, that it will take a look at its regulatory procedures for nanosilver. The announcement follows calls by health and environmental watchdog groups for a crackdown.

Nanosilver appears on shelves in hundreds of guises (such as Maha Corporation?s ?shoe sanitizer,? pictured, which treats shoes for athlete?s [sic] foot). The question is whether escaped

nanosilver particles pose a threat to human health or the environment, especially the water supply.?

Researchers fight infections with nano-particles

March 22, 2010

The Brown Daily Herald

Margaret Yi

?Associate Professor of Engineering Thomas Webster and Erik Taylor GS have created nanoparticles to fight implant infections.

According to the American Academy of Orthopaedic Surgeons, about a million people receive implants to replace a hip, shoulder or knee each year.

Over 11 percent of these implants become infected with bacteria, Webster said. The bacteria that cause these infections can be found on most surfaces, including human skin. But if they enter the body and colonize, the bacteria can cause severe damage to tissue, especially in people with compromised immune systems, he said.

But the nanoparticles that Webster and Taylor have created ?penetrate the biofilm, start manipulating bacteria, decreasing bacteria function,? Webster said in a March 15 interview with KFSN-TV. In lab tests, these nanoparticles killed 74 percent of bacteria in 48 hours, Webster said.?

Nano Press

What nano-centered publications are reporting

[Australia Government Introduces Comprehensive National Framework to Guide Safe Development of Nanotechnology](#)

Feb. 22, 2010

Azonano.com

"The Rudd Government is introducing a comprehensive national framework to guide the safe development of new technologies such as nanotechnology and biotechnology as part of a \$38.2 million National Enabling Technologies Strategy released today."

[Stanford Researchers Re-Conceptualizing Batteries using Nanotechnology](#)

Feb. 20, 2010

Azonano.com

"By dipping ordinary paper or fabric in a special ink infused with nanoparticles, Stanford engineer Yi Cui has found a way to cheaply and efficiently manufacture lightweight paper batteries and supercapacitors (which, like batteries, store energy, but by electrostatic rather than chemical means), as well as stretchable, conductive textiles known as 'eTextiles' - capable of storing energy while retaining the mechanical properties of ordinary paper or fabric."

[Nanotechnology Risks - The Bigger Picture for Business and the Importance of 'Due Diligence'](#)

Feb. 8, 2010

Azonano.com

Dr. Steven M. Hankin

"There is increasing consensus that for nanotechnology to reach its maximum potential, we must work not only to understand the hazards and exposure routes in order to minimise the risks, but to employ responsible and reasonable protective measures whilst there is still uncertainty. Amongst the many lessons which the asbestos legacy provides nanotechnology, arguably one of the most important is need to adopt and document the implementation of safe practice(s) in the light of new evidence confirming the existence of a risk ..."

[Legislation to Address Potential Health and Safety Risks About Products Containing Nanotechnology Materials](#)

Jan. 26, 2010

Azonano.com

"U.S. Senators Mark Pryor (D-AR) and Benjamin L. Cardin (D-MD) recently introduced legislation to address potential health and safety risks about products that contain nanotechnology materials.

'Nanotechnology is one of the most important and enabling technologies being developed right now, and it has hundreds of promising applications - from new cancer treatments to improved military machinery to stain-resistant pants,' Pryor said. 'As these products are developed and used, we must understand any potential risks to human health, safety or the environment. My legislation will help ensure public safety and confidence in the marketplace, and it will support companies that employ nanotechnology materials.'

[Nanotechnology discovery may green chemical manufacturing](#)

Feb. 16, 2010

Nanowerk

"A new nanotechnology catalyst developed by McGill University Chemists Chao-Jun Li, Audrey Moores and their colleagues offers industry an opportunity to reduce the use of expensive and toxic heavy metals. Catalysts are substances used to facilitate and drive chemical reactions. Although chemists have long been aware of the ecological and economic impact of traditional chemical catalysts and do attempt to reuse their materials, it is generally difficult to separate the catalyzing chemicals from the finished product. The team's discovery does away with this chemical process altogether." (Source: McGill University)

[New study show that silver nanoparticles can cause toxicity in fish](#)

March 2, 2010

Nanowerk

"A nanoparticle growing in popularity as a bactericidal agent has been shown to be toxic to fish, according to a Purdue University study.

Tested on fathead minnows - an organism often used to test the effects of toxicity on aquatic life

- nanosilver suspended in solution proved toxic and even lethal to the minnows. When the nanosilver was allowed to settle, the solution became several times less toxic but still caused malformations in the minnows.

'Silver nitrate is a lot more toxic than nanosilver, but when nanosilver was sonicated, or suspended, its toxicity increased tenfold,' said Maria Sepúlveda, an assistant professor of forestry and natural resources whose findings were published in the journal *Ecotoxicology* ("[The Effects of Silver Nanoparticles on Fathead Minnow \(*Pimephales Promelas*\) Embryos](#)"). 'There is reason to be concerned.'

[Nanotechnology: exploiting the fourth independent degree of freedom](#)

March 8, 2010

Small Times.com

Nicholas V. Coppa

"Nanotechnology is the science and engineering of manipulating size independent of temperature, pressure and composition to yield materials that express size-dependent effects or properties. Independent is the key word - it conveys the enormous scientific, technical and commercial opportunity, while *nano* merely describes the length scale at which such size manipulation results in measurable and exploitable effects."

[Battery, Nanotechnology Partnership Launched by EPA to Protect Environment](#)

March 9, 2010

Meridian Institute - Nanotechnology & Development News

Source: The Bureau of National Affairs' Daily Environment Report

Pat Rizzuto

"The United States Environmental Protection Agency (EPA) has announced a partnership that will focus on bringing manufacturers of various types of lithium-ion batteries together with EPA and university scientists, non-governmental organizations, and other relevant parties, to help the manufacturers make environmentally sound manufacturing and material choices. This Design for the Environment partnership (DfE) is the first that has addressed an application of nanotechnology, by targeting companies that make lithium-ion batteries with carbon nanotubes."

[Some Laws are Made to be Broken and Others are Made to be Followed](#)

March 10, 2010

Azonano.com

"Some laws are made to be broken, and others are made to be followed. A team of IBM researchers in collaboration with two Swiss partners are looking to keep one law in particular alive and well for another 15 years: Moore's Law. The law states that the number of transistors that can be placed inexpensively on an integrated circuit will double every 18 months. More than 50 years old, this law is still in effect, but to extend it as long as 2020 will require a change from mere transistor scaling to novel packaging architectures such as so-called 3D integration, the vertical integration of chips.

The end result is a diamond-like carbon material that virtually doesn't wear, mass-produced at the nanoscale. The new nano-sized tip, researchers say, wears away at the rate of only one atom per micrometer of sliding on a substrate of silicon dioxide, much lower than that for a silicon oxide tip which represents the current state-of-the-art. Consisting of carbon, hydrogen, silicon and oxygen molded into the shape of a nano-sized tip and integrated on the end of a silicon microcantilever for use in atomic force microscopy, the material has technological implications for atomic imaging, probe-based data storage and emerging applications such as nanolithography, nanometrology and nanomanufacturing."

[U.S. senators introduce bill to train nanotech workers](#)

March 17, 2010

Small Times

?Two U.S. senators from opposite coasts are introducing legislation to help schools from universities to high schools better educate students and train workers in nanotechnology fields.

The ?Promote Nanotechnology in Schools Act? (Bill S.3117) directs the National Science Foundation (NSF) to establish a grant program providing educational institutions -- schools, community colleges, 2- and 4-year colleges, universities, etc. -- with up to \$400,000 to purchase nanotechnology equipment and materials, with participating institutions required to match 25% of their grant amount. Such equipment must also be manufactured in the US or with at least 50% of its composition sourced from the U.S. Reports from the participating institutions are due back in one year to report how the funds were used.?

[Nanotechnology artificial leaves for hydrogen production](#)

March 18, 2010

Nanowerk

Michael Berger

?Artificial photosynthesis, using solar energy to split water generating hydrogen and oxygen, can offer a clean and portable source of energy supply as durable as the sunlight. Natural photosynthesis uses chlorophyll to absorb visible light and many solar hydrogen cells are imitating this process by using light-sensitive organic dye molecules as light absorbers and then transfer the absorbed energy to a catalyst that reduces protons to hydrogen[.]

Today, over 130 materials and derivatives are known to facilitate photocatalytic splitting of water to produce hydrogen. Many efforts have been made to design new photocatalysts of different materials such as transition-metal oxides or metal oxynitrides or in nanotechnology research to design photocatalysts with various nanoscale morphologies such as nanoparticles, nanosheets, nanowires, etc for enhanced light-harvesting and catalytic efficiency.

?Using sunlight to split water molecules and form hydrogen fuel is one of the most promising tactics for kicking our carbon habit,? Di Zhang tells Nanowerk. ?Of the possible methods, nature provides the blueprint for converting solar energy in the form of chemical fuels. A natural leaf is a synergy of the elaborated structures and functional components to produce a highly complex machinery for photosynthesis in which light harvesting, photoinduced charge separation, and catalysis modules combined to capture solar energy and split water into oxygen and hydrogen efficiently.??

[Nanotechnology Unlocking Tumor Identity](#)

March 19, 2010

Azonano.com

NCI Alliance for Nanotechnology in Cancer

?Using nanoparticles designed to recognize specific sugar-binding molecules on the surfaces of cells, a team of investigators at Michigan State University has developed a process that uses

magnetic resonance imaging (MRI) to unlock the sugar-based code that identifies different types of cancer and normal cells. This work, led by Xuefei Huang, Ph.D., was published in the Journal of the American Chemical Society.?

Precautionary Principle: 1, Innovation Economy: 0

March 19, 2010

Nanotech Now.com

Skip Rung

?It happened quietly: antimicrobial silver is now the first nanomaterial to be governed by irrational and vague fear, with the tragic consequence that new US innovators are shut out of the market by the EPA while previously (to the clampdown) certified foreign suppliers continue to ship without interference. This is a sad time for US innovation, manufacturing and jobs at the hands of an EPA that has chosen not to consider benefits vs. costs. The following is adapted from testimony given to the US International Trade Commission on March 12, 2010.

I am concerned that the last ten years of excessive solicitude toward expressed concern (first from someone who should have known better, then from NGOs including - to be frank - many of the usual technophobic suspects) about the safety of nanotechnology (an issue not even mentioned in the Executive and Technical Summaries of the 1999 International Working Group on Nanotechnologies report) is hampering the commercialization/business development climate for nanotechnology (read: nanostructured materials and devices) companies in the US and Europe. This is not primarily a trade issue, but I believe it will have an important effect on exports and the high-wage manufacturing American jobs they support in one of the most strategic areas of technology and industry in this new century.?

Nanotechnology makes portable seawater desalination device possible

March 22, 2010

Nanowerk

Michael Berger

?Freshwater could become the oil of the 21st century ? scarce, expensive and fought over. While over 70 per cent of the Earth's surface is covered by water, most of it is unusable for human consumption. Technological advances have made desalination and demineralization feasible ? albeit expensive ? solutions for increasing the world's supply of freshwater. However, nanotechnology-based water purification devices have the potential to transform the field of desalination (read more: [?Nanotechnology and water treatment?](#)).

Researchers have now demonstrated a new, efficient and fouling-free desalination process based on the ion concentration polarization (ICP) phenomenon ? a fundamental electrochemical transport phenomenon that occurs when an ion current is passed through ion-selective membranes ? for direct desalination of sea water.?

Other science issues related to nanotechnology

[Slack nano safety](#)

Jan. 31, 2010

RSC

"Many researchers working with nanomaterials use inadequate protection, if any at all, and most don't use special disposal methods for nanomaterials, claims a new study.

As most nations don't have specific regulations for nanomaterials, rules to protect researchers fall to individual institutions. Nearly half of the 240 respondents to a survey analysed by a team at the Nanoscience Institute of Aragon at the University of Zaragoza in Spain reported that no regulations were enforced by their institutions, and another 27 per cent were not sure."

[The toxicity of antimicrobial silver in products can be reduced](#)

Feb. 24, 2010

EurekAlert

"Chemists at the University of Helsinki have managed to manufacture new polymer-stabilised silver nanoparticles. The result is significant because the antimicrobial characteristics of silver are used in textiles, floor coatings and paints even though the impact on health of silver nanoparticles are not entirely known. Finnish researchers now think that exposure to silver can

be reduced by chemically binding the nanoparticles to polymers. The research results will soon be published in a leading journal in the field, *Colloid and Polymer Science*.

Nanoparticles (a nanometre is equal to one billionth of a metre) are a topic of debate both in research and everyday life. The antimicrobial characteristics of silver, on the other hand, have been well-known for a long time and it has numerous commercial applications. Supermarkets carry an abundance of products with added silver or silver nanoparticles. These include antimicrobial textiles, containers, shower curtains, tabletops, floor coatings, paints and glues. Colloidal silver water for internal use as well as creams and deodorants, and even wound dressing products, containing silver that are used externally are also available."

[Study examines how nanoparticles affect marine organisms](#)

Feb. 22, 2010

Nanowerk

"Manufactured nanomaterials can be found in such diverse applications as electronics, cosmetics, paints, and even medicines, but their effects on the environment remain largely unknown. In a new laboratory study, scientists have found that saltwater oysters and mussels take up and retain significant amounts of manufactured nanoparticles from seawater in clumps of so-called 'marine snow.'

'Nanomaterials are being used in increasing amounts, and it's likely they're being released in increasing amounts into the environment, including the ocean,' says Evan Ward, professor of marine sciences at UConn's Avery Point campus. 'As we develop these technologies, we need to be cautious, we need to know where the particles are going, and we need to know how they affect marine organisms.'"

[Vigilance needed in nanotechnology](#): University of Calgary chemist finds right mix of tools to measure nanomaterials in blood vessels

March 3, 2010

EurekAlert

"University of Calgary chemistry professor David Cramb is a step closer to helping solve a complex problem in nanotechnology: the impact nanoparticles have on human health and the environment.

Cramb, director of the Faculty of Science's nanoscience program, and his researchers have developed a methodology to measure various aspects of nanoparticles in the blood stream of chicken embryos. Their discovery is published in the March online edition of [Chemical Physics Letters](#).

'With the boom in nanomaterials production there is an increasing possibility of environmental and/or human exposure. Thus there is a need to investigate their potential detrimental effects,' says Cramb. 'We have developed very specialized tools to begin measuring such impacts.'

[Nanoparticles in sunscreens raise questions of safety](#)

March 3, 2010

Cosmos

Aaron Cook

"SYDNEY: Zinc from sunscreens can penetrate healthy adult skin, according to two Australian studies. The results raise questions over the safety of sunscreens containing zinc oxide nanoparticles - which may be dangerous in the body if still in a nanoparticle form.

Zinc oxide and titanium dioxide block UV light across a wide spectrum of wavelengths, making them suitable for use in sunscreens. Sunscreens containing large bulks of these particles of the metal oxides reflect light and appear white on the skin, and so they are not popular with consumers.

Many sunscreens for sale in Australia now contain nanoparticles of zinc oxide and titanium dioxide, measuring just 20 to 30 billionths of a metre across. The nanoparticles don't reflect sunlight, making the lotion appear clear when rubbed into the skin.

While such particles have the potential to cause damage to DNA and cells, scientists have been unsure until now whether the particles were penetrating through the skin."

[FDA Faulted for Giving Additives a Free Pass](#)

March 8, 2010

AOLNews.com

Andrew Schneider

"A new report from federal investigators says the Food and Drug Administration has failed to ensure the safety of thousands of additives manufacturers put in what we eat.

The Government Accountability Office [GAO], the congressional watchdog agency, singled out a longstanding and controversial exception to FDA rules that for decades has concerned consumer and public health advocates. Substances 'generally regarded as safe' by food companies' own scientific panels are immune from rigorous FDA analysis, meaning that manufacturers that want to include an additive in a product are often spared having to spend hundreds of thousands of dollars in safety tests and can save years in getting the product to market.

The GAO determined that ... [t]he FDA generally doesn't know about most of these determinations of 'generally regarded as safe,' or GRAS, because companies are not required to inform the agency ...

The GAO expressed added concern over two specific areas -- imported additives, where the level of safety consideration is often completely unknown, and the growing use of GRAS designation in engineered nano-material in food."

[Nanomaterials and the Move Toward Regulation](#)

March 10, 2010

Industry Week

B. David Naidu, Esq., Partner, K&L Gates LLP

"With applications across industries as wide-ranging as drugs, consumer products, and chemicals, nanotechnology has the potential to radically impact manufacturing. Already, nanomaterials have been applied or embedded to make sneakers with increased flexibility, clothing that is stain-resistant, refrigerators that are designed to prevent the growth of bacteria, car paint that is more scratch resistant than conventional paint, airplanes that are made from lighter material, chemotherapy drugs that are less toxic, and flat-panel screens that are lighter and use less power.

Nonetheless, there is not one single law that regulates the manufacture of nanomaterials. Moreover, the laws that could be used to regulate nanomaterials were written years -- or even decades -- before nanomaterials entered the marketplace. This may soon be changing, however, as recent developments with the United States Environmental Protection Agency (EPA) suggest

that the agency is moving in the direction of specifically regulating certain types of nanomaterials, and it is critical that manufacturers stay abreast of the regulatory changes that may be forthcoming."

[EPA scrutinizing nanotech due to mesothelioma fears](#)

March 12, 2010

Mesothelioma.com

"U.S. Environmental Protection Agency head Lisa Jackson has announced that she intends to tighten regulations on nanomaterials and nanotechnology. Nanomaterials is a blanket term that is used describe very small particles, often invisible to the naked eye, that have been developed for use in a variety of industries, from advanced medical technology to cosmetics. The National Institutes of Health and the Department of Defense are both pioneering new uses for nanotechnology.

While there are many ways that nanomaterials may benefit society, some critics argue that environmental and health risks associated with the particles are not well understood. Because of their miniscule size, they could easily lodge themselves in tissues of the body and be almost impossible to remove."

[Metal Nano-Particles Suspend Human Cells In Magnetic Scaffolding For Easy Organ Manufacturing](#)

March 16, 2010

Popular Science (popsci.com)

Stuart Fox

?While scientists have become rather adept at transforming generic skin cells into specialized organ cells, crafting the organs themselves has proven far more difficult. Since the 3-D architecture of most organs is as important to their function as their cellular makeup, 2-D cell cultures are not very useful for building a replacement heart from scratch. To solve that problem, most organ makers create a scaffolding for the cells to grow on.

For a team of researchers at Rice University, even a biodegradable scaffolding wasn't good enough. By injecting cells with a metallic gel, the researchers have succeeded in suspending cultured cells in a three-dimensional magnetic field. With this magnetic scaffolding, organs can be grown in the right shape, and with no foreign material.?

[Light Twists Rigid Structures in Unexpected Nanotech Finding](#)

March 19, 2010

Science Daily.com

?In findings that took the experimenters three years to believe, University of Michigan engineers and their collaborators have demonstrated that light itself can twist ribbons of nanoparticles.

The results are published in the current edition of *Science*.

Matter readily bends and twists light. That's the mechanism behind optical lenses and polarizing 3-D movie glasses. But the opposite interaction has rarely been observed, said Nicholas Kotov, principal investigator on the project. Kotov is a professor in the departments of Chemical Engineering, Biomedical Engineering and Materials Science and Engineering.

While light has been known to affect matter on the molecular scale -- bending or twisting molecules a few nanometers in size -- it has not been observed causing such drastic mechanical twisting to larger particles. The nanoparticle ribbons in this study were between one and four micrometers long. A micrometer is one-millionth of a meter.?

[Scientists investigate transport of nanoparticles in the human body](#)

March 19, 2010

PhysOrg.com

?The question of whether or not nanoparticles have an effect on the human body - and if so, how - is still largely unanswered. There is little information, for instance, on whether pregnant women exposed to these minute particles pass them on to their unborn babies. Scientists from Empa and the University Hospital Zurich (Switzerland) now show first results.

Nanotechnology is not only expected to help overcome existing challenges in the realms of medicine, energy supply and environmental protection; it is also considered one of the motors of innovation for the Swiss economy. This new technology will, however, only be able to establish itself in the long run if potential risks associated with it - such as those posed by free nanoparticles - are fully investigated and understood.?

Light Improvement: Could Quantum Dots Boost the Quality of Cell Phone Pix?

Start-up InVisage says its QuantumFilm helps camera pixel sensors absorb nearly four times as many photons as current sensors do

March 22, 2010

Scientific American

Larry Greenemeier

?Semiconductor crystals known as quantum dots have long held the promise of improving solar cells, lasers and lighting fixtures, but the reality is that integrating these fluorescent nanoparticles into existing technologies has proved difficult. One Silicon Valley start-up now aims to change this by the end of next year using quantum dots to vastly improve the picture-taking quality of cell phone cameras.

The secret, according to Menlo Park, Calif.-based InVisage Technologies, Inc., is a new material called QuantumFilm, which the company introduced Monday at the DEMO Spring 2010 conference in Palm Desert, Calif. QuantumFilm is an extremely light absorbent coating, according to InVisage, that will enable pixel sensors to capture about 95 percent of an image, nearly a fourfold increase over current image sensors. QuantumFilm exists today as a working prototype, with InVisage planning to have production-quality samples ready by year's end.?

Gene-Targeted Cancer Fix Could Be a Breakthrough

For first time in humans, scientists used RNA to stop production of protein driving malignancy

March 22, 2010

BusinessWeek.com/HealthDay News

Amanda Gardner

For the first time in humans, scientists have successfully used a gene-manipulation therapy to enter tumor cells and block the production of toxic proteins that are causing cancer, researchers report.

They're basically putting an instruction booklet into the cell saying, We don't want this protein expressed for now, explained Gregory Adams, co-leader of the developmental therapeutics program at Fox Chase Cancer Center in Philadelphia. It's pretty amazing. It's potentially huge.

The team, from the California Institute of Technology (CalTech), devised a super-small nanoparticle system that, when injected into the body, would make its way to the tumor, deposit the siRNAs into the tumor cell and leave them to their assigned task.

This early-phase clinical trial involved actual patients with melanoma, a particularly virulent form of skin cancer.

The experiment proceeded just as planned, as biopsies later showed.

The Humorous, Fascinating & Unique

[It's Valentine's Day - and the Best Presents Come in Nano-Size Packages](#)

Feb. 14, 2010

Azonano.com

" ... Scientists at Birmingham University's Nanoscale Physics Research Lab have taken this message to heart - their Valentine card, made of pure palladium, is only 8 nanometres in size; you can even see the atoms."

Material tested that could guarantee body prostheses for more than 150 years

Feb. 23, 2010

EurekAlert

"Current body prostheses do not last more than 10-15 years. After this time, the operation has to be repeated in order to change prosthesis. It is usually problematic as, in general, it is elderly people that use the procedure. Researcher Nere Garmendia, based in the Basque city of Donostia-San Sebastián, has just published her PhD, a thesis which may well mean the first step to solving this problem. According to Ms Garmendia, using a ceramic material called zirconia (ZrO_2), carbon nanotubes and nanoparticles of zirconia, a prosthesis that will last more than 150 years can be produced.

The PhD thesis is titled *Development of a new nanocompound material made of zirconia with coated carbon nanotubes, for orthopaedic applications*. Ms Garmendia wished to show that the ageing and cracking of prostheses could be avoided. To begin with, carbon nanotubes were added to the zirconia matrix - a technique that greatly strengthens its resistance. With this composite material as a base research was initiated.

The researcher reinforced the connection between the zirconia matrix and the nanotubes, with the intention of improving the transfer/distribution of loads. The nanotubes were coated with nanoparticles of zirconia and, in order for this to be effected, the nanoparticles were heated beyond their boiling point (hydrothermal synthesis). This coating functioned as a bridge between the zirconia matrix and the nanotubes."

Nanotech May Tap Into Your Mind: New sensors built using nanotechnology could read and write information directly into the brain.

Feb. 25, 2010

Discovery.com

"Telecommunications researchers in Japan are attempting to create electronic sensors that can not only receive information from the brain, but could manipulate our neural pathways.

While the concept might conjure science-fiction images of half-human, half-machine cyborgs, Dr Keiichi Torimitsu of Nippon Telegraph and Telephone (NTT), says the research is more likely to provide relief for people with Parkinson's disease or overcoming a stroke.

Torimitsu presented his team's work on the development of bionic, or bio-mimetic, brain sensors at this week's International Conference on Nanoscience and Nanotechnology (ICONN) in Sydney."

[New pet beds that clean themselves](#)

March 2, 2010

petproductmarketing.co.uk

Neil Pope

"A new range of pet beds and blankets that are self-cleaning will be launched at Crufts at the NEC, Birmingham, next week.

The innovative technology behind the range mimics the leaves of certain plants like the lotus leaf that stays clean naturally because dirt cannot stick to its finely-structured surface and is easily washed off by rain.

NanoSphere, a certified nanotechnology, is impregnated into the fabric of the pets beds and blankets, producing a surface that dirt cannot stick to. Residue can easily be rinsed off with water or machine washed.

The new 'Dog Gone Smart' beds are being shown at Crufts by the Company of Animals, who are working in partnership with US-based manufacturers Nano Pet Products."

[Two high-tech approaches to restoring sight](#): Nano Retina, Second Sight develop implants for people blinded by disease

March 2010

Robert Daniel

"TEL AVIV (**MarketWatch.com**) -- Two companies, one in Israel and one in the U.S., are taking different high-tech approaches to restoring sight to millions of people who've gone blind from disease.

Herzliya, Israel-based Nano Retina's key project is the Bio-Retina, an implant and a set of glasses that together are designed to replace the function of a retina destroyed by diabetic retinopathy, macular degeneration and other diseases.

After two years of study and testing, the company's founders claim to have proven their concept. With the help of a recently grant from the Bi-National R&D Foundation, a U.S.-Israeli industrial-cooperation group, Nano Retina's managers hope to put the product in trials with patients in 2013."