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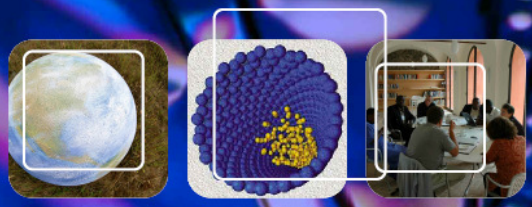

nanotechnology & development news

water and development summary compilation

Nanotechnology and Development News is a free daily news service covering the most important global developments at the nexus of nanotechnology, poverty alleviation, and the role of science and technology in development. Nanotechnology and Development News is available via e-mail, RSS newsfeed, and the Internet. More information is available at: http://www.merid.org/ndn/. Nanotechnology and Development News is an example of the tools and strategies developed by Meridian Institute to help people solve problems and make informed decisions. Support for Nanotechnology and Development News is provided by the United Kingdom's Department for International Development (http://www.dfid.gov.uk/).

Nanotechnology and Development News provides a compilation of all our water-related news summaries. This compilation is intended as a resource for people interested in applications and implications of using nanotechnology to improve access to clean water and basic sanitation in developing countries. Please check the Nanotechnology and Development News homepage periodically for updated versions of this compilation (http://www.merid.org/ndn). The water-related news summaries are provided in chronological order. In order to facilitate searches for specific types of applications and implications, or relevant developments in specific geographic regions, we provide a categorized index.

The Nanotechnology and Development News Water Compilation is a preview of the topic-specific sorting capabilities that we will soon be offering through the Advanced Search Function. This function will allow users to perform customizable searches of Nanotechnology and Development News' archive of summaries according to geographic region, stakeholder group, applications, implications, and nanomaterial type. Please check our website again soon to explore news on the topics that interest you using the Nanotechnology and Development News Advanced Search Function.

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BOC Edwards Installs Innovative Water Treatment System at UAlbany Nanocollege's Albany Nanotech Complex

Source: AzoNano
Author: n/a
9/11/2006

UK advanced technologies manufacturer BOC Edwards has installed its novel Electrochemically Regenerated Ion Exchange (ERIX) wastewater treatment system at the University of Albany's NanoTech complex in the U.S. The article says that ERIX's ion exchange media can be electrically regenerated, eliminating the need for hydrofluoric acid. The article says that ERIX recovers 90 percent of scrubber water and provides higher flow rates, which can reduce maintenance costs and interruptions in operation. Nigel Hunton, director of semiconductor equipment at BOC Edwards, said: "This is an important step in our development program for ERIX. It will give us real world experience in a facility developing state of the art processes for the 45nm technology node and beyond." The article can be viewed online at the link below.
http://www.azonano.com/news.asp?newsID=2999

Long Beach Nanofiltration Technology to Receive U.S. Patent Protection

Source: AzoNano
Author: n/a
9/8/2006

The Department of Water in Long Beach, California in the U.S. has been issued patent protection for its low-pressure nanofiltration process for desalinating seawater. The article says that this process has been shown to be 20-30 percent more energy efficient than reverse osmosis. The article says that high energy and operating costs associated with existing technology have made desalination prohibitively expensive for Long Beach. The article says that Long Beach is now testing its technology at a fully operational facility that produces 300,000 gallons of water a day. The article can be viewed online at the link below.
http://www.azonano.com/news.asp?newsID=2992

Nanotechnology Offers Solutions for Cheap and Effective Supply of Fresh Drinking Water

Source: AzoNano
Author: n/a
9/6/2006

Australia's Nanotechnology Victoria, Ltd. (Nanovic), a venture between universities, industry, and government, has committed US$254,000 to developing and building prototypes of ultra-sensitive biosensors for detecting and monitoring phosphate and nitrate in water and sediment. The article says that nanostructured materials can be incorporated into portable sensor devices to enable on-site, rapid, and accurate detection of contaminants such as metals, bacteria, and toxins. The article says that nanomaterials can also potentially improve the cost-effectiveness of drinking water treatment technologies such as flocculation, filtration, and disinfection, and nanomembranes can potentially be used on a large scale to minimize evaporation from reservoirs and water storage. The article says, "Nanotechnologies offer opportunities for cheap and effective solutions for some of the major problems facing water supplies." The article can be viewed online at the link below.
http://www.azonano.com/news.asp?newsID=2973

Using Gold to Trap Pesticides in Water

Source: The Hindu

Author: Karthik Subramanian
8/31/2006

Researchers from the Indian Institute of Technology, Madras have developed a technology that uses gold and silver nanoparticles to filter pesticides from water. The article says that the new technology will be manufactured by water filtration company Eureka Forbes. In a recent paper, researcher T. Pradeep said, "Water purification systems equipped with nanomaterials and using new kinds of membrane technologies with variable pore sizes as filters could provide people in any area with safe drinking water." The article says that tests have shown that the nanoparticles are able to adsorb pesticides, reducing their presence to acceptable levels. Pradeep also said, "If any village panchayat approaches us with a demand to fabricate a filter for the community we can even waive the royalty." The article can be viewed online at the link below.
http://www.hindu.com/2006/08/26/stories/2006082601362000.htm

MetaMateria Acquires Porous Ceramic Shapes Water Filtration Technology

Source: AzoNano
Author: n/a
8/25/2006

MetaMateria Partners, a subsidiary of U.S. nanomaterials manufacturer NanoDynamics, Inc., has acquired Porous Ceramic Shapes, LLC, the owner of a manufacturing technology for lightweight ceramic products that can be used for making efficient, low cost water filtration and remediation devices. The article says this ceramic technology is already commercialized for small applications and is undergoing development for nanotechnology-enabled bioremediation, chemical absorption, and filtration applications. The article says that the ceramic products are ideal for use in clean water technologies aimed at removing phosphates in agricultural run-off, organic waste products in fish farmers, and lead and arsenic in municipal water systems. The article says that the ceramic could replace expensive and difficult to manufacture chemical adsorbents such as activated alumina and charcoal and offer an efficient and cheaper alternative to conventional reverse osmosis. The article can be viewed online at the link below.
http://www.azom.com/details.asp?newsID=6462

Nanowire-Paper Offers Strength, Flexibility

Source: PhysOrg
Author: n/a
8/25/2006

Researchers from the University of Arkansas in the U.S. have developed a strong and flexible paper-like material made of titanium dioxide nanowires that could have applications in armor, flame-retardant fabrics, bacteria filters, drug delivery systems, pollutant decomposition, and others. The article says that the paper can be folded, bent, cut, used as a filter, and heated to over 700 degrees Celsius but is also chemically inert. The article says that the researchers are looking for industrial partners to license and market different applications using the paper. The article can be viewed online at the link below.
http://www.physorg.com/printnews.php?newsid=75471274

South Africa's National Nanotechnology Strategy

Source: Republic of South Africa - Department of Science and Technology
Author: n/a
8/24/2006

This South African national strategy for nanotechnology research and development says that nanotechnology could "create opportunities for human capital development, particularly for historically disadvantaged individuals, women, and people with disabilities" and allow the nation to further develop its research infrastructure, build a workforce for advanced technology businesses, improve its economic competitiveness, and enhance its citizens' quality of life. The strategy's main objectives are to provide support for long-term nanoscience research, to create novel nanotechnology applications, to develop human and capital infrastructure needed for technology development, and to stimulate new technology research in advanced materials. The strategy says that these objectives will be met though the establishment of a dedicated fund for the nanotechnology strategy, interdisciplinary and inter-institutional postgraduate programs, new legislation to ensure responsible industrial and environmental practices, public access to information, and public debates. The strategy says that nanotechnology application areas that can benefit South Africa the most are water, energy, healthcare, chemical and bio-processing, mining and minerals, and advanced materials and manufacturing. The strategy can be viewed online at the link below.
http://www.dst.gov.za/publications/reports/Nanotech.pdf

Nanotechnology Worth Its Salt

Source: The Engineer Online
Author: n/a
8/22/2006

Researchers from Flinders University in Australia have been awarded funding from the Australian Research Council to research nanotechnology applications for desalination of seawater. The article says that reverse osmosis, an existing method of desalination, requires a lot of pressure to push water through a porous membrane, which makes it energy and cost intensive and, therefore, generally only affordable for wealthy countries. The article says that the improving the permeability of the membrane could decrease the amount of pressure, and consequently energy, required. The article says that one solution may involve a membrane made of a matrix of carbon nanotubes encased in a polymer matrix. The article says that once such a membrane is developed, it could be incorporated into filter units and marketed commercially. The article can be viewed online at the link below.
http://www.e4engineering.com/Articles/295813/Nanotechnology%20worth%20its%20salt.htm

Continent's Nano Revolution

Source: allAfrica
Author: John Etkind
8/18/2006

This article says that sub-Saharan Africa is currently involved in developing nanotechnology applications for materials, energy storage, water treatment, and other areas, but says that some members of the scientific community are concerned that manufacturers may be pushing for commercialization of products without adequately researching potential side effects. The article says that a South African strategy document indicates that nanotechnology could be valuable for sub-Saharan Africa by adding value to minerals mined there, such as gold, titanium, palladium, and platinum. The article says that nanotechnology may also be useful for combating poverty through low-cost electronics, efficient drug delivery systems, energy storage, and water treatment. According to the article, one group of scientists at South Africa's University of Zululand is investigating methods to achieve high yields of nanomaterials at low costs while preserving quality. The article says that some scientists are concerned that nanoparticles could have adverse environmental and human health effects that are not being researched. The article can be viewed online at the link below.
http://allafrica.com/stories/printable/200608180122.html

NJIT Researchers Seed, Heat and Grow Carbon Nanotubes in Long Tubing: Will Lead to Cheaper Ways to Clean Air and Water

Source: MediLexicon
Author: n/a
8/10/2006

Researchers from the New Jersey Institute of Technology (NJIT) in the U.S. have developed a method to seed, heat, and grow carbon nanotubes in under 20 minutes by using 10 foot long hollow steel tubing. The article says that this new method could pave the way for improvements in clean energy and food processing and decrease the cost of cleaning air and water. The article says that researchers currently purchase nanotubes as a powder which can be blended with polymers and chemicals to create novel composite materials. Researcher Mahesh Mitra said that this method limits the amount of these materials that researchers can produce. The article says that the new method uses a catalyst either prepared on the steel surface or activated through a chemical deposition process to create nanotubes that stick to the walls of the steel tubing. The article can be viewed online at the link below.
http://www.pharma-lexicon.com/medicalnews.php?newsid=48828

At $19 Billion by 2010, Filter Cartridge Market to be Third Industrial

Source: WaterWorld
Author: n/a
7/28/2006

U.S. market research firm the McIlvaine Company has released a report entitled "Cartridge Filters World Markets" that predicts that the market for liquid filtration cartridges will reach US$19 billion by 2010, largely driven by increased demand in residential and commercial sectors and increased industrial sector demand due to strong growth in biotechnology, electronics, power, desalination, and nanotechnology. The report predicts that the strongest growth will be in cartridges made of carbon followed by those made of synthetic fibers combined with other materials. The report predicts that the third largest segment in 2010 will be membranes, which are used for water purification in pharmaceutical and semiconductor labs and blood filtration in healthcare. The report says that more than 50 percent of filtration materials will be produced in Asian facilities by 2015. The article can be viewed online at the link below.
http://ww.pennnet.com/Articles/Article_Display.cfm?Section=ARTCL&SubSection=Display&PUBLICATION_ID=41&ARTICLE_ID=261077

Carbon Nanotubes Enlisted to Reduce Waste in Cleanup of Toxic Chemicals

Source: Nanotechwire
Author: n/a
7/27/2006

Researchers from the U.S. Pacific Northwest National Laboratory have developed an environmentally safe method to treat perchlorate contaminated water by trapping perchlorate ions in a porous, conductive nanocomposite. The article says that perchlorate is a toxic chemical used in rocket fuel, fireworks, and defense manufacturing that has been found in drinking water in 35 states. The article says that high levels of perchlorate have been linked to thyroid disease, cancer, and other illnesses. The article says that conventional perchlorate treatment uses an ion exchange resin that needs to be flushed with an acidic solution in order to be regenerated, resulting in significant secondary waste. The new method uses a conductive polymer to attract negatively charged perchlorate ions. An electrical current is applied to render the polymer neutral so that the trapped ions can be released, eliminating the need for flushing. The article says that the scientists used carbon nanotubes, which have high surface area, as the matrix for the polymer so that more perchlorate could be caught. The article says that the porous surface created by the nanotubes also increases the life of the technology by adding stability to the polymer. The article can be viewed online at the link below.
http://nanotechwire.com/news.asp?nid=3537

Nanotech Debate "Must Involve Poor Communities"

Source: SciDev.Net
Author: Tawanda Majoni
7/24/2006

A series of "nano-dialogues" on whether nanotechnology can contribute to social and economic development was held this month through collaboration between charity Practical Action, think-tank Demos, and the University of Lancaster, all based in the UK. The article says that the meetings focused on how nanotechnology could be used to solve Zimbabwe's water problems. The article says that the last meeting was attended by Zimbabwean scientists and members of local communities, who discussed the involvement of poor communities in debates about nanotechnology and its implications for social and economic development. The article says that delegates also discussed a recent South African trial of nanotechnology-based filtration for decontaminating drinking water. Practical Action's new technologies program leader David Grimshaw said, "Zimbabwe's water needs are unlikely to be met with nanotechnology until we can prove it is cost effective and sustainable." Grimshaw also said that Practical Action is interested in learning "how nanotechnology could be made to address what people need, rather than what the market dictates." The article can be viewed online at the link below.
http://www.scidev.net/gateways/index.cfm?fuseaction=printarticle&rgwid=2&item=News&itemid=3002&language=1

Super Plastic Both Attracts and Repel Water

Source: MIT Technology Review
Author: Prachi Patel-Predd
7/24/2006

Researchers from the Massachusetts Institute of Technology (MIT) in the U.S. have developed a material that exhibits water-attracting (hydrophilic) and water-repelling (hydro-phobic) characteristics on a single surface, a discovery which they say could be used for collecting water in arid regions of the world. The article says that the material consists of a nano-structured film with alternating layers of positively and negatively charged polymers and silica nanoparticles. This film is coated with waxy fluorinated silane, which causes water to bead on it and easily roll off. The article says that the materials could be used to attract moisture from the air, collect water droplets, and accumulate them through a series of channels. Oxford University biologist Andrew Parker said that this new technology could "provide a more than tenfold increase in water capture compared to the inefficient nets that are used currently." Parker also said that if

the new material "could be added simply to the roofs of houses in areas subjected to desert fogs, then a water supply could be gained with little effort." The article says that the researchers are now working on building antibacterial agents directly into the film so that the water collected is also decontaminated. The article can be viewed online at the link below.
http://www.techreview.com/read_article.aspx?ch=biotech&sc=&id=16933&pg=1

Nanoscience and Nanotechnology Research and Development in South Africa

Source: Nanotechnology Law & Business
Author: Christina H. Claassens and Molefi Motuku
7/20/2006

This article discusses nanotechnology research and development in South Africa, which it describes as "a policy framework for social and economic development through a science and technology knowledge base". The article says that South Africa's initiatives to stimulate nanotechnology development account for the general difficulties facing the nanotechnology research community at large, as well as the economic, social, and political changes that South Africa is experiencing. The article says that nanotechnology could be beneficial for South Africa by stimulating economic growth and alleviating social problems through applications such as nanofiltration systems for improving water quality, targeted drug delivery systems, and sustainable energy from photovoltaics and fuel cells. The article says that there is also a risk that nanotechnology could disrupt and destabilize South Africa's socio-economic system by improving the efficiency of processes that use materials such as gold and platinum, resulting in less of those materials being needed and jeopardizing the country's mining industry. The article says that the South African government is proactively addressing these risks by developing two clusters of nanotechnology: an industrial cluster aimed at generating economic growth through material, chemical, and mining application development and a social cluster concerned with solutions for health, water, and energy problems. The article outlines specific industrial and social cluster applications that South Africa is developing and discusses the nature of government funding, private investment, international collaborations, and the intellectual property environment. The article can be viewed online at the link below.
http://www.nanolabweb.com/index.cfm/action/main.default.viewArticle/articleID/139/CFID/103006/CFTOKEN/88476757/index.html

New Lab Tackles Tainted Groundwater with Nanotechnology

Source: Lab Canada
Author: n/a
7/17/2006

The University of Western Ontario (UWO) in Canada has established a new research facility to develop nanotechnology applications for treating contaminated groundwater. UWO professor of civil and environmental engineering Denis O'Carroll said: ""There is considerable interest in pumping nanomaterials into the ground where they can flow with groundwater to a contaminated region and convert hazardous chemicals into benign products like ethane and butane. Current remediation technologies are rarely able to reduce contaminant concentrations below drinking water limits, but nanomaterials hold significant promise in achieving these goals." O'Carroll also said that the experimental conditions the researchers will use are "more representative of actual field conditions." He says that the research results are expected to be ready for field use in five years. The article can be viewed online at the link below.
http://www.labcanada.com/issues/PrinterFriendly.asp?story_id=&id=57675&RType=&PC=&issue=06282006

Israeli, US Water Researchers to Collaborate on Four Nanotech Projects

Source: Israel21c
Author: n/a
7/12/2006

Researchers from Israel and the U.S. are collaborating on four nanotechnology-based water treatment projects focused on membranes and membrane processes, biofouling and disinfection, contaminants removal, and environmental monitoring and sensors. The article says that water purification is one of "the most challenging health, social, and technological issues facing the world today." It article also says that the U.S. and Israel are leaders in water purification and management systems. The projects are focused on developing nanotechnology applications including: porous polymer-based ultra-filtration membranes with high resistance to contamination; antimicrobial coatings for use on existing filtration membranes; mixed metal oxide nanoparticles for the elimination of biological toxins from surface and groundwater; and whole-cell microbial biosensors for the detection of biological and chemical toxins. The article can be viewed online at the link below.
http://www.israel21c.org/bin/en.jsp?enScript=PrintVersion.jsp&enDispWho=Articles^l1355

Desalination a Dud? Ridding Ocean Water of Salt Still Costly

Source: The Sacramento Bee
Author: n/a
7/5/2006

This article says that two different reports, one from the U.S. Lawrence Livermore National Laboratory and the other from the Pacific Institute also in the U.S., disagree as to whether breakthrough technologies such as nanotechnology-based membranes can make desalination of seawater feasible. The article says that such a breakthrough would be good news for arid regions of the world that lack access to drinking water. The article says that one obstacle is the large amount of electricity that is needed for desalination through traditional methods such as reverse osmosis. Researchers from Lawrence Livermore say that membranes made from carbon nanotubes are able to separate salt using a quarter of the energy of the current industry standard. These researchers say that the nanomembranes could have a historic impact if scaled up. The article says that the Pacific Institute has concluded from its survey of over 20 desalination projects that such techniques are unfeasible without significant subsidies. They indicate that "desalination can cost four times that of other 'new' supplies, such as conserving or reclaiming existing water sources." The article says that desalination could be a political compromise to the many different water solutions favored by politicians. The article can be viewed online at the link below.
http://www.sacbee.com/user_registration/login/?goto=http%3A//www.sacbee.com/content/opinion/story/14274314p-15084153c.html

Nano-Scientists Call for Greater Understanding

Source: The University of Warwick
Author: n/a
6/28/2006

Researchers from the University of Warwick in the U.K. are holding a conference next week to initiate a campaign intended to increase public understanding and acceptance of nanotechnology. The article says that the conference will be attended by schoolchildren and members of the public interested in science. Industry and academic experts will provide presentations on nanochannels, nanofluidics, nanobots, nanotubes, nanodots, and nanoimaging. The article says that the campaign is a response to recent concerns that British science will decline without a change in the attitudes of policy makers and media. European

Nanotechnology Trade Alliance CEO Del Stark said: "Policy makers must recognise the benefits of nanotechnology and that unnecessary regulation could stifle growth and innovation and journalists must understand that the nanotech industry is committed to safety. . . We must be responsible custodians of this exciting branch of science and ensure a fair framework which enables the EU to compete effectively on the world stage." The article says that nanotechnology may have applications that can benefit developing countries in such areas as water treatment, medical diagnosis, food processing, pollution control, and energy production, storage, and conversion. The article can be viewed online at the link below.
http://www2.warwick.ac.uk/newsandevents/pressreleases/NE1000000213210/

National Labs Pursue Green Uses of Technology

Source: Mercury News
Author: Dean Takahaski
6/19/2006

This article says that representatives from U.S. government research laboratories presented their environmentally-friendly inventions to venture capitalists at a recent conference hosted by non-profit research institute SRI International. The article says that the labs are hoping to license their technologies to start-up companies interested in green technologies that minimize or prevent pollution. The article says that the labs believe licensing the inventions would be beneficial for start-ups because it would save them the research and developments costs incurred by the labs. The article says that the technologies presented included nanotechnology-based water purification, compact solar power dishes, aerodynamic truck designs, and carbon dioxide sequestration technologies. The article can be viewed online at the link below.
http://www.mercurynews.com/mld/mercurynews/business/technology/14853629.htm?template=contentModules/printstory.jsp

NanoDynamics to Present on Clean Water Via Nanotechnology at Melbourne, Australia Conference

Source: AzoNano.com
Author: n/a
6/15/2006

Australia's Global Access Partners (GAP) is holding a conference today and tomorrow in Melbourne entitled "Commercialising Nanotechnology in Water." The article says that this event brings together important decision makers and industry representatives to discuss potential nanotechnology applications for water treatment and management. Keith Blakely, CEO of U.S. nanotechnology manufacturer NanoDynamics, will present a keynote address discussing "near term opportunities for addressing critical clean water needs by employing advanced nanomaterials." The article says that nanotechnology pollution detection, filtration, and decontamination applications could help address some of the world's pressing water issues. Blakely said: "Roughly one sixth of the world's population lacks access to drinkable water, and our increasingly limited water resources at home are vulnerable to both natural emergency and national security threats. The solution lies in offering engineers and scientists critical new nano-scale materials and tools for developing more effective, lower-cost products for efficient resource use and environmental remediation." The article says that NanoDynamics has recently received federal funding to develop a fuel cell system that alleviates the high cost of providing energy to water treatment facilities. The article says that NanoDynamics is also scaling up manufacturing of carbon nanotubes for use in filtration membranes. The article can be viewed online at the link below.
http://www.azonano.com/news.asp?newsID=2460

Cheap Drinking Water from the Ocean

Source: MIT Technology Review
Author: Aditi Risbud
6/12/2006

This article says that new carbon nanotube-based membranes developed by researchers at the U.S. Lawrence Livermore National Laboratory (LLNL) could reduce the cost of desalinating ocean water by 75 percent, providing a potential solution to the global lack of clean water, a problem that is a major cause of disease. The article says that the new membranes use electrostatic forces to sort molecules by size and can also separate some gases, potentially providing an

economical way to capture and prevent the atmospheric release of carbon dioxide from power plants. The article says that the smooth interior of the nanotubes composing these new membranes allows water to flow through at the same rate as membranes with larger pores, requiring less pressure to force water through than reverse osmosis or conventional membranes, resulting in energy and cost savings. The membranes are made with a small silicon wafer coated with a metal nanoparticle catalyst that helps with the growth of the nanotubes. Once grown, the spaces between the nanotubes are filled with silicon nitride to provide stability. LLNL chemical engineer Jason Holt said that the membranes could reach the market within the decade. He also said that, while challenging, fabrication of the membranes is "inherently scalable." The article can be viewed online at the link below.
http://www.technologyreview.com/read_article.aspx?ch=nanotech&sc=&id=16977&pg=1

Bar-Ilan Opening $130m. Nanotechnology Center

Source: The Jerusalem Post
Author: Judy Siegel-Itzkovich
6/6/2006

Bar-Ilan University in Israel is planning to invest US$100 million in a new Nanotechnology Center, slated to open in 2008. The Israeli government will provide an additional US$30 million in funding for the center. The article says that 50 Israeli and foreign researchers will work at the center, with special emphasis on attracting Israeli expatriates with US$1 million research grants. The article says that the interdisciplinary center will house scientists in the fields of chemistry, physics, medical imaging, energy storage, water desalination, and drug delivery, who will work on establishing start-up companies to operate pilot projects to speed up commercialization of applications. The new center will be a branch of Bar-Ilan's Center for Advanced Materials and Nanotechnology Research. The article can be viewed online at the link below.
http://www.jpost.com/servlet/Satellite?cid=1149572623710&pagename=JPost%2FJPArticle%2FPrinter

Water, Water Everywhere

Source: ScienceNOW Daily News
Author: Susan Brown
5/26/2006

Scientists from the Massachusetts Institute of Technology in the U.S. have created a nanomaterial that removes moisture from the air and could be used to increase water supplies in dry regions of the world. The article says that the scientists were inspired by the Stenocara beetles of the Namib Desert. The article says that these beetles collect water droplets from the fog on smooth bumps that appear on their backs, until the droplets spill into waxy grooves that deliver the water from the their shells to their mouths. To replicate this process, the scientists created water-repellent polymer films that they wrinkled onto glass to create microscale hills and valleys. To keep the water flowing, they covered the surface of the film with Teflon-coated glass nanoparticles. To force the material to capture rather than repel water, they used charged polymers perforated with holes to create hydrophilic bumps that absorb water. The article says that the polymers can be attached to surfaces such as fabrics to remove water from fog. Oxford University zoologist Andrew Parker says that this new material is significantly more efficient that existing mist-catching nets, with which most water flows through uncollected. The findings are published in the June 14 issue of the journal Nano Letters.
http://sciencenow.sciencemag.org/cgi/content/full/2006/525/1

World's First Plant Using Non-Diluting Treatment for Nitrogen in Semiconductor Plant Wastewater

Source: AzoNano.com
Author: n/a
5/25/2006

Sharp Corporation is building a treatment plant that will use a combination of its proprietary treatment technique and micro-nano-bubble technology to treat wastewater containing nitrogen from its semiconductor facility in Fukuyama, Japan. The article says that the treatment plant, slated to begin operation in July, will remove at least 90 percent of the nitrogen in wastewater without diluting. The article says that there is urgency for such actions in semiconductor plants because advances in micro-processing technologies require an increase in the use of nitrogen-containing ammonia. The article says that regulations on nitrogen emissions have recently become stricter to protect against eutrophication in lakes and inner bays. The article says that conventional wastewater treatment for

nitrogen includes vaporizing the wastewater by heating it and using catalysts to decompose the nitrogen, or concentrating the wastewater and disposing of it as industrial waste. According to the article, these methods are expensive and energy consumptive. The article says that using microorganisms for treatment involves diluting the wastewater, a process that requires large treatment facilities and large quantities of water. The micro-nano-bubble technology optimizes the quality and condition of the microorganism culture, raising treatment capacity and eliminating the need for dilution. The article can be viewed online at the link below.
http://www.azonano.com/news.asp?newsID=2337

A VC Sees Green

Source: The Associated Press
Author: Terence Chea
5/25/2006

U.S.-based venture fund Kleiner Perkins Caulfield & Byer is planning to allocate US$100 million for investments in technologies that provide cleaner energy, transportation, air, and water. The article says that these are technologies related to water purification, air quality, nanotechnology, alterative fuels, manufacturing, recycling, and renewable energy. Kleiner Perkins partner John Doerr said: "This field of greentech could be the largest economic opportunity of the 21st century. There's never been a better time than now to start or accelerate a greentech venture." The article says that trade organization Cleantech Venture Network predicts capital investments in green technology to double over the next three years. The article says that the rising cost of fuel, concerns about global warming, and the economic expansion of China, India, and other Asian nations are driving forces for green technology investments. Doerr also said: "As those Asian economies rise, people will move from rural to urban settings. All those people will want the same things that you and I want -- clean water, power and transportation." The article can be viewed online at the link below.
http://www.canada.com/ottawacitizen/news/story.html?id=61760ebc-006b-44ee-9772-6ab3a9222681&k=41909

'Mercury Sponge' Technology Goes from Lab to Market

Source: Pacific Northwest National Laboratory
Author: n/a
5/24/2006

U.S.-based Battelle, which operates the U.S. Department of Energy's (DOE) Pacific Northwest National Laboratory, has licensed to Steward Environmental Solutions a technology called SAMMS™ that can capture and remove mercury and other toxins from industrial waste streams. The article says that SAMMS™, or Self-Assembled Monolayers on Mesoporous Supports, can be customized to selectively remove metal contaminants without creating hazardous waste. Steward plans to use SAMMS™ to treat stack emissions from coal fired power plants, process industry plants, and municipal facilities. The article says that tests have indicated that SAMMS™ removes 99.9 percent of mercury in simulated waste water, producing mercury levels significantly below the U.S. Environmental Protection Agency's (EPA) requirements. The article says that SAMMS™ can be adapted to recover lead, chromium, arsenic, radionuclides, and other toxic substances as well. Steward spokesperson Robert E. Jones said that SAMMS™ will benefit the pulp, paper, chemical, mining, and municipal waste industries. The article can be viewed online at the link below.
http://www.pnl.gov/news/release.asp?id=159

Carbon Nanotubes May Offer a Cheap Technique for Desalination

Source: AzoNano.com
Author: n/a
5/22/2006

As reported last week, researchers from Lawrence Livermore National Laboratory in the U.S. have developed a membrane made of carbon nanotubes and silicon that could provide many applications including cheaper desalination. The article says that the membrane is created by filling the gaps between aligned carbon nanotubes with a ceramic matrix material. The smooth interior of the nanotubes allows liquids and gases to flow through faster than ever before, while larger particles are blocked. The article says that membranes could be used for desalination and demineralization, which are commonly done through reverse osmosis, an expensive process that requires large amounts of pressure. The article says that these new membranes could reduce the energy costs of desalination by up to 75 percent. Another potential application for the membranes is in lower-energy, industrial gas separation. The research is described in the May 19 issue of the journal Science. The article can be viewed online at the link below.
http://www.azonano.com/news.asp?newsID=2322

Nanoporous Membranes for the Filtration of Viruses

Source: Nanowerk
Author: Michael Berger
5/19/2006

Researchers from Pohang University of Science and Technology in South Korea and the University of Massachusetts at Amherst in the U.S. have developed a new method for preparing double-layered nanoporous membranes suitable for virus filtration. The article says that current microfiltration devices and ultrafiltration membranes are not effective for virus filtration because the viruses can permeate larger pores. The article says that purification and concentration of viruses is crucial to identifying pathogenic viruses in patients' samples and measuring viral concentrations in drinking water. The article says that developing a device that allows for such measurements would improve public hygiene and prevent water-borne pathogens. Professor Jin Kon Kim said that the new method also makes it possible to develop virus-proof filters for haemodialysis of high-infection risk patients with renal failure. The article can be viewed online at the link below.
http://www.nanowerk.com/spotlight/spotid=377.php

Carbon Nanotube Membrane Filters Fast

Source: Nanotechweb
Author: n/a
5/18/2006

Researchers from Lawrence Livermore National Laboratory and the University of California, Berkeley, both in the U.S., report that membranes containing carbon nanotube pores could be useful for energy-efficient desalination or gas separations. The article says that the researchers created the membranes from vertically-aligned arrays of double-walled carbon nanotubes surrounded with a matrix of silicon nitride. The researchers removed excess silicon nitride with a process known as ion milling and used reactive ion etching to open the ends of the nanotubes. The article says that in their experiments, transport of gas and water through the nanotubes was higher than predicted by existing hydrodynamics models, a phenomenon the researchers attribute to the smoothness of the nanotubes' interiors. The article says that nanotube membranes could provide a combination of higher selectivity and higher flow rate than conventional polycarbonate membranes. The researchers' work is reported in the journal Science. The article can be viewed online at the link below.
http://nanotechweb.org/articles/news/5/5/11/1?rss=2.0

Global Market for Nanotechnology in Environmental Applications Worth $6.1 Billion by 2010

Source: BCC Research
Author: n/a
5/16/2006

A new market research report entitled Nanotechnology in Environmental Applications from U.S.-based BCC Research predicts that the total market for nanotechnology-based environmental applications will reach US$6.1 billion by 2010, achieving an average annual growth rate of 75.2 percent. The report indicates that remediation is the fastest growing sector of the market, followed by protection, maintenance, and enhancement. The press release says that conventional remediation methods have been mostly ineffectual and will be overtaken by more effective and economical nanotechnology solutions in the near future. The press release also says that once these technologies' safety and performance is verified, there will be the potential for a "radical spike" in demand. According to the press release, "This demand may be driven by the shared acknowledgement of the obviously dire condition of many of our waterways and oceans, increasingly unhealthy urban air and reduced atmospheric quality in general, as well as the pervasive infusion and permeation of soils and groundwaters with deadly concoctions of toxic poisons." The press release and order forms for the report can be viewed online at the link below.
http://www.bccresearch.com/editors/RNAN039A.html

Nanoforce Incorporates Wholly Owned Subsidiary Energy Farms in New Mexico

Source: Nanoforce, Inc.
Author: n/a
5/11/2006

Nanoforce, Inc., a U.S.-based nanomaterials developer, has announced the incorporation of a new subsidiary in New Mexico called Energy Farms, Inc., which will develop methods to "harvest small photosynthetic organisms in refinery waste for the production of biodiesel, a cleaner burning diesel replacement fuel made from natural, renewable sources". The article says that Energy Farm plans to sell Energy Farm Franchise Units that can produce biodiesel, electricity, and fresh water from "otherwise unusable land, sunlight, and brackish water." The article says that U.S. Department of Energy (DOE) predicts that the global biodiesel market will be worth US$70 billion by 2010. The article can be viewed online at the link below.
http://www.primezone.com/newsroom/news.html?d=98883

The (Needed) New Economics of Abundance

Source: KurzweilAI.net
Author: Steve Burgess
5/10/2006

This article says that molecular manufacturing could bring about "personal nanofactories" that would result in "an era of abundance" that would be highly disruptive to existing economies that are based on scarcity. The article says that molecular manufacturing is "the automated building of products from the bottom up, molecule by molecule. . . [making] products that are extremely lightweight, flexible, durable. . . and cheap." The article predicts that molecular manufacturing will become a reality in the coming decades and says that personal nanofactories will drive the cost of non-food commodities to near zero. The article says that if this happens, information would become the most expensive resource and, empirically, laws, regulations, and protections will be made to direct most of the profits from this information to a small portion of the population. The article says that, concurrently, molecular manufacturing could provide basic building materials, medicines, food, and clean water for the world's poor, and eliminate the impetus for scarcity wars. The article says that corporate leaders, legislators, and regulators should create incentives for the broad sharing of early molecular manufacturing advances so that the maximum number of stakeholders can reap its benefits. The article says, "This discussion needs to happen now, before entrenched interests develop protections and harden regulations adapted for maximum short-term profits while stifling innovation." Additionally, the article recommends broad and inexpensive licensing to encourage early breakthroughs in molecular manufacturing. The article can be viewed online at the link below.
http://www.kurzweilai.net/articles/art0671.html?printable=1

Cornell Signs Pact with Paris Institution on Environmental Research

Source: CheckBiotech
Author: Susan S. Lang
5/10/2006

Cornell University's College of Agricultural and Life Sciences in the U.S. has signed an agreement with Ecole Normale Superieure (ENS) in Paris to facilitate academic exchange and collaboration on research activities related to the environment. The article says that both institutions promote interdisciplinary environmental research in the areas of new materials and nanotechnology, earth and atmospheric sciences, conservation, geography, social sciences, hydrology and water resources, genomics, and others. The article says that the agreement

will strengthen the teaching and research occurring in the environmental field, and increase the international experiences of faculty at both facilities. According to the article, the agreement has four objectives: scholarly exchanges and visits, cooperative research, student exchange, and exchange of research materials. The article can be viewed online at the link below.
http://www.checkbiotech.org/root/index.cfm?fuseaction=news&doc_id=12754&start=1&control=203&page_start=1&page_nr=101&pg=1

Nano and Environment Workshop Report

Source: Nanoforum
Author: n/a
5/5/2006

Nanoforum, a pan-European nanotechnology network funded by the European Union, and the E.U. Institute for Environment and Sustainability have released a report outlining the conclusions from their workshop called "Nano and the Environment" held in Brussels on March 30-31, 2006. The workshop brought together different nanotechnology stakeholders from academia, environmental organizations, governments, industry, industrial associations, and regulatory agencies to discuss key issues surrounding implementing nanotechnologies for the environment, specifically monitoring, remediation and pollution, and resource saving. The report details the discussions that occurred at the workshop on the following topics: solid state and biosensors for the detection of air and water pollutants; life-cycle analysis that takes into account all raw material and energy consumption needs of new products and materials; nanotechnology applications for energy sustainability such as solar power, materials recycling, and rechargeable power cells; environmental and health risk assessment of nanomaterials; nanotechnology applications for remediation of environmental toxins; challenges facing nanotechnology commercialization; stakeholder communication challenges; regulatory policy initiatives; public education; and societal and ethical implications of nanotechnology. The report can be viewed online at the link below.
http://www.nanoforum.org/nf06~modul~showmore~folder~99999~scid~383~.html?action=longview_publication&

Lebanon Announces US$33 Million Science Plan

Source: SciDev.net
Author: Wagdy Sawahel
5/2/2006

Lebanon has unveiled a national plan to spend US$33 million over the next five years to develop science and technology by increasing graduate and postgraduate training opportunities, establishing new research centers, and promoting scientific collaboration between public institutions and industry. Priority research areas include biotechnology for health and agriculture, information and communication technologies, Arabic software, coastal and marine resource management, and water and energy. The article says that Lebanon's plan was developed in collaboration with the UN Educational, Scientific, and Cultural Organization (UNESCO), the Arab League Education, Cultural, and Scientific Organization, and the UN economic and Social Commission for Western Asia. The article can be viewed online at the link below.
http://www.scidev.net/news/index.cfm?fuseaction=printarticle&itemid=2812&language=1

Can Nanotechnology Make Saltwater Drinkable?

Source: Earth and Sky
Author: Deborah Byrd and Joel Black
5/1/2006

This radio segment says Kamalesh Sirkar from the New Jersey Institute of Technology in the U.S. is using nanotechnology to develop desalination methods to help cities in California, the Middle East, and the coastal regions of many nations that lack sufficient freshwater to sustain population growth. The segment says that the nanotechnology method is more expensive than conventional desalination techniques, but also faster. Additionally, Sirkar says that he is working to make the system more energy efficient and eliminate the problem of scaling, a process in which salts and minerals clog the system. According to the segment, Sirkar says that the nanotechnology devices will be on the market within three years. The segment can be heard online at the link below.
http://www.earthsky.org/shows/show.php?date=20060503

South Africa: Thinking on a Grand Scale to Harness the Minuscule

Source: Business Day
Author: n/a
4/25/2006

This article says that South Africa may build a US$57 million nanotechnology plant at Rand Refinery, the world's largest gold refinery, if ongoing experiments prove that gold nanoparticles can be used as catalysts to detoxify air in mines. The article says that if the plant is built, an unnamed foreign buyer plans to purchase 20 percent of the gold produced by South Africa to produce a new product, which has also not yet been disclosed. The project is being led by a consortium of gold and mineral processing companies called AuTek. The article says that AuTek wants to establish a "viable industry by manufacturing new products using home-grown technologies," but that this is only possible if scientific infrastructure, such as equipment and personnel, is available. In order to develop such infrastructure, the South African government is planning to invest US$74 million in nanotechnology equipment, laboratories, and university curricula. The article says that the Science and Technology Department believes that some of the first commercial nanotechnology applications may be water purification systems, cost-effective solar power systems, soil fertility treatments, and drug delivery methods. The article says that South African paper manufacturer Sappi is already researching whether nanotechnology can be used to monitor temperature, termites, and fungus in its forests. Derek Hanekom, the deputy minister of the Science and Technology Department, said that the government is committed to creating an attractive political and regulatory climate for nanotechnology because it could attract international investment. The article can be viewed online at the link below.
http://allafrica.com/stories/200604200315.html

Australian Nanotechnology Water & Environment

Source: Australian Government
Author: n/a
3/24/2006

This report by the Australian Government outlines some of the Australian nanotechnology projects related to the environment and water-treatment. The report says that Australia's fast-growing nanotechnology sector is the ideal place for investment in environmental nanotechnology because of "the nation's natural resource-based industries, water scarcity challenges, experience working across

a diverse range of environmental conditions and industries, outstanding science and research base, and proximity to fast-growing Asian markets." Some examples of environmental nanotechnology products described in the report include: NanoChem Pty Ltd.'s MesoLite water treatment technology that removes ammonia from waste water and concentrates it into commercial fertilizer; the Cooperative Research Center (CRC) for Microtechnology's BioSenZ technology that uses nanotechnology-based biosensing to detect chemicals and organic materials in water at a sensitivity of some parts-per-billion; and the CRC for International Food Manufacture and Packaging Science's cornstarch-based nano-polymer for environmentally-friendly plastic bags. The report can be viewed online at the link below.
http://www.investaustralia.gov.au/media/IS_NA_Nano_Water.pdf

UC, India Ink New Research Pact

Source: The CalTrade Report
Author: n/a
3/20/2006

The University of California system has signed a five-year Memorandum of Understanding with some of India's science and technology organizations to collaborate on research in the areas of biomedical and digital healthcare technologies, drug design and delivery systems, disaster warning technologies, nanomedicine and nanotechnology, solar energy and bio-fuels, water quality, and several others. The Memorandum establishes a bi-national Joint Steering Committee to implement the terms of the agreement. The collaboration is being funded by a US$10 million grant from the University of California, with India matching funds. The article can be viewed online at the link below.
http://www.caltradereport.com/eWebPages/page-two-1142828692.html

Water, Poverty, and Nanotech

Source: The Center for Responsible Nanotechnology
Author: Mike Treder
3/20/2006

This blog entry says that advanced nanotechnology can potentially improve the efficiency of water distribution in developing countries, specifically in agriculture. The entry quotes an article from the Associated Press entitled Water Problems May Be Solved in Farms

(http://www.forbes.com/home/feeds/ap/2006/03/18/ap2604848.html), as saying, "With 525 million small farms in the world -- and 2.5 billion people living off the land -- farmers suffer the most from . . . poverty, disease, and the lack of sanitation and clean water." The blog entry says that molecular manufacturing may be able to provide cheap, customizable, and onsite irrigation systems, water filtration and desalinization equipment, solar power collectors, and storage and distribution solutions. The entry says that the low cost of these devices could overcome the political barriers that often prevent the growth of infrastructure in developing countries. The blog entry can be viewed online at the link below.
http://crnano.typepad.com/crnblog/2006/03/water.html

EPA Wants Nanotechnology Studied

Source: TMCnet
Author: n/a
3/17/2006

The U.S. Environmental Protection Agency (EPA) awarded US$5 billion in grants today to studies of the health and environmental impacts of nanotechnology. The EPA says that it would like to learn if nanoparticles in manufactured products can enter the human body, and if so, how long it takes until they are expelled. They are also interested in research related to the transport and hazards of nanoparticles in the environment. The research will also look nanotechnology applications that could improve environmental protection. Such applications include the use of iron nanoparticles to remove pollutants from large volumes of groundwater more cheaply and effectively than with existing methods. The article can be viewed online at the link below.
http://www.tmcnet.com/scripts/print-page.aspx?PagePrint=http%3a%2f%2fwww.tmcnet.com%2fusubmit%2f2006%2f03%2f16%2f1465671.htm

6 Saudi-Built Satellites to Be Launched

Source: Arab News
Author: M. Ghazanfar Ali Khan
3/15/2006

This article says that Prince Turki ibn Saud, the vice president of the research institutes at the King Abdul Aziz City for Science and Technology (KACST) in Saudi Arabia, has indicated that KACST is developing projects in the areas of water desalination, petroleum, IT, aerospace, biotechnology, and

nanotechnology. He said: "We have government approval for a 20-year strategic development plan. The Kingdom is keen to develop nanotechnology, which holds immense potential in the future. The KACST under this initiative [sic] had recently set up a National Nanotechnology Center and most of the research work is directed toward this area of technology." The article can be viewed online at the link below.
http://www.arabnews.com/services/print/print.asp?artid=78988&d=10&m=3&y=2006&hl=6%20Saudi-Built%20Satellites%20to%20Be%20Launched

Supercomputer Study of Water

Source: PhysOrg
Author: n/a
2/28/2006

Researchers from the University of California, Davis, Livermore National Laboratory, and the University of California, Berkeley will begin running experiments on water using the IBM Blue Gene supercomputer at Argonne National Laboratory to learn about the structure of water molecules and about how water behaves when it is squeezed through carbon nanotubes. The use of the supercomputer was made possible by a grant of 2.5 million hours of computer processor time, roughly two months, awarded through the U.S. Department of Energy's Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program. The article says that the information learned may hold implications for using nanotechnology to build structures that can hold liquids. The article can be viewed online at the link below.
http://www.physorg.com/printnews.php?newsid=11220

President's Address at the Inauguration of the Indo-US Nanotechnology Conclave

Source: Government of India
Author: A.P.J. Kalam
2/22/2006

In his address at the inauguration of the Indo-US Nanotechnology Conclave earlier today, Indian President A.P.J. Kalam said that nanotechnology research, development, and commercialization will be important in achieving India's national missions to improve the efficiency of agriculture and food processing, expand infrastructure development in urban and rural areas, achieve energy independence, produce clean drinking water, and provide adequate healthcare.

Kalam said that nanotechnology-based fertilizer and pesticide delivery systems and nanocomposites for food packaging may allow India to produce more food on less land, with fewer resources. He also pointed out that India is planning to build a hundred million homes in the next ten years, build all-weather roads in rural areas, and build new airports, bridges, and industrial complexes. He said that new nanomaterials could make building materials cheaper, stronger, and heat resistant. He highlighted nanotechnology-based solar photovoltaic cells and nanostructured hydrogen storage systems as two potential novel methods of alternative energy. Kalam said that scientists at Banaras Hindu University have developed nanofilters that can remove contaminants from drinking water and are also cheap to manufacture, easy to clean, durable, and heat resistant. Additionally, he said that India's Defence Research and Development Establishment (DRDE) has developed a typhoid detection kit using recombinant DNA technology that can detect typhoid bacteria directly from a single blood serum sample in under three minutes. The Indo-US Nanotechnology Conclave is a joint meeting of nanotechnology stakeholders including scientists, engineers, academics, industry members, government, and funders. President Kalam's address can be viewed online at the link below.
http://pib.nic.in/release/rel_print_page1.asp?relid=15766

New Green Nanotechnology Initiative Launched 'It's Not Easy Bein' Green,' or Is It?

Source: PRNewswire
Author: n/a
2/8/2006

The Woodrow Wilson Center for Scholars' Project on Emerging Nanotechnologies has announced GreenNano, a series of meetings and a symposium to address how to apply the principles of green chemistry and engineering to nanotechnology. The article says that this series intends to minimize the health and environmental risks of manufacturing and using nanotechnology-based products by promoting the development of green technologies and the use of nanotechnology products that are cleaner throughout their lifecycle. David Rejeski, director of the Project on Emerging Nanotechnologies, said: "Nanotechnology holds tremendous potential for pollution prevention and sustainability, especially in the areas of clean water, energy, and efficient sensors. We are interested in bringing together stakeholders from government, industry, the research community, and citizen organizations who are committed to ensuring that nanotechnology helps create a new, more sustainable economy." The first meeting will be held on Thursday,

February 16 at 2 PM at the Wilson Center in Washington, DC. The article can be viewed online at the link below.
http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/02-08-2006/0004277512&EDATE=

NSF Awards First Partnership for International Research and Education Grants

Source: NSF
Author: n/a
2/1/2006

The U.S. National Science Foundation's (NSF) Partnership for International Research and Education program (PIRE) has awarded its first grants to U.S. scientists and engineers for collaborations with researchers in other countries. The grants, which average about US$2.5 million over five years, support research projects such as nanoscience for clean drinking water, computer speech recognition and language translation, seismic activity under Africa, and many others. Kathryn Sullivan, acting director of NSF's Office of International Science and Engineering, said, "PIRE activities highlight the fact that many important research questions can best be addressed within an international collaboration and that for the United States to retain its strengths in science and engineering, scientists and engineers must work with colleagues across the globe." The article can be viewed online at the link below.
http://www.nsf.gov/news/news_summ.jsp?cntn_id=105766&org=NSF&from=news

Nanocontainers Show Potential for Delivering Drugs to Organs or Tissues

Source: AzoNano.com
Author: n/a
1/19/2006

Researchers at Rutgers University in New Jersey have released a study that shows that nanocontainers, also called nanoscale capsules, may be able to deliver targeted drugs to organs and tissues without affecting other areas of the

body, as well as make pesticides safer to handle, filter out toxic materials from wastewater, and regulate the pace of reactions in chemical processes. Ralf Warmuth, the lead researcher, said, "We've shown a way to securely link molecules together in a cage using an efficient, one-step process." The article says that past methods for assembling nanocontainers involved either a simple process resulting in a loosely bound capsule or a lengthy process that created tighter bonds. The Rutgers capsules are octahedral and securely hold two cubic nanometers of medicine, pesticide, or other chemical. The atomic structure of the molecules used in the Rutgers process ensures that they will self-assemble into capsules and produce high yields. The study will be featured in the upcoming issue of the chemistry journal Angewandte Chemie International Edition and is currently available on the journal's website through subscription. The article can be viewed online at the link below.
http://www.azonano.com/news.asp?newsID=1781

Nanoparticles Allow More Reliable Water Testing

Source: Chemical & Engineering News
Author: Steve Ritter
1/6/2006

Yukiko Takahashi and Toshishige M. Suzuki, scientists from the National Institute of Advanced Industrial Science and Technology in Sendai, Japan, have developed nanoscale dye particles that are expected to significantly improve the accuracy and sensitivity of colorimetric test strips used to screen for toxic heavy metals water contaminants. They developed the dye by dissolving ordinary dyes in an organic solvent and then injecting the solution into vigorously stirred water. The dyes precipitate as nanocrystals and are filtered out. Currently used paper strips tend to bleed dye, which reduces their effectiveness. The article also says that stricter environmental and drinking-water standards are requiring levels of detection too precise for current test strips. Takahashi said, "The key features of this technique are its simplicity, high sensitivity, and applicability to a wide variety of functional reagents." The article can be viewed online at the link below.
http://pubs.acs.org/cen/news/84/i02/8402notw3.html

U.S. Firm Creates Water Toxin Test System

Source: Small Times
Author: Jon Van
12/14/2005

U.S.-based Nanosphere, Inc. has developed a system that can quickly detect ten biological toxins in a water supply sample. The bioterrorism-alert product was developed with funding from U.S. federal defense agencies. The product is a microarray containing different nanoparticles that can detect biological toxins in a water sample by targeting genetic material, even if the amount of the material is very little. The microarrays are also disposable. The company is planning to launch the product next year. The article can be viewed online at the link below.
http://www.smalltimes.com/document_display.cfm?document_id=10508

UK to train 20 Iranians in nanotechnology

Source: Mehr News Service
Author: n/a
12/13/2005

According to the Iranian Mehr News Service, the Iranian Agricultural Ministry will be sending scientists abroad for nanotechnology training while the United Kingdom sends experts to Iran to train twenty ministry staff members. The move is part of Iran's twenty-year Outlook Plan for economic and social development. Ali Morad Sarafrazi, secretary of the Nanotechnology Committee of the Agricultural Ministry, said: "Nanotechnology is an indispensable part of any country's advancement in all aspects of social and economic life. It is no longer a choice. It is a global necessity." He specifically mentioned nanotechnology's potential impact in the areas of plant diseases, water management, and sustainable agriculture. Also, Iran's Chamber of Commerce has established a Nanotechnology Desk, which dispatches nanotechnology news between foreign research centers and Iranian universities, government offices, and private companies. The article can be viewed online at the link below.
http://www.mehrnews.ir/en/NewsDetail.aspx?NewsID=247652

Middle Eastern Scientists Meet to Forge Collaborations

Source: Chemical & Engineering News
Author: Stephen K. Ritter
12/9/2005

Scientists from twelve Middle Eastern nations and the Palestinian Authority met at a conference in Malta last month to spur regional scientific cooperation to aid economic development and promote political reconciliations. The meeting was organized by the American Chemical Society, the Royal Society of Chemistry, the German Chemical Society, and the International Union of Pure and Applied Chemistry. The scientists discussed environmental air and water quality, medicinal chemistry, nanotechnology, science education, and solar cells. Working groups were also established to find international funding sources for research. The article can be viewed online at the link below.
http://pubs.acs.org/cen/news/83/i46/8346enotw8.html

Israel Says It's a Nanotech Powerhouse

Source: Israel National Nanotechnology Initiative
Author: n/a
12/8/2005

The Israel National Nanotechnology Initiative (INNI) website says that Israel is, and will continue to be, at the forefront of nanotechnological innovation. The website says: "Nanotechnology is a natural enabler for Israel. In fact, our small size is also our advantage - it means sharper focus, more efficient use of funds, fewer commercial obstacles, rapid prototyping and testing, and high quality standards." INNI also points out Israel's popularity as an R&D center with global technology firms, its large educated workforce, and the large number of nanotechnology patents it has produced in recent years. Israel's research areas include nanomaterials (nanostructures, solid nanomaterials, and nanochemistry), nanobiotechnology (biotech engineering, applied biosciences and medicine), nanoelectronics, and "nanowater" (nanomembranes, nanofiltration, and other water remediation techniques). INNI's website can be viewed online at the link below.
http://www.nanoisrael.org/default.asp

Nanoparticles May Slow the Growth of Plants

Source: AZonano
Author: n/a
11/23/2005

A report by an environmental scientist at the New Jersey Institute of Technology in the U.S. indicates that alumina, a nanoparticle commonly used in scratch-resistant surface coatings and sunscreens, can be damaging to plant life. The report indicates that alumina nanoparticles slowed root growth in corn, cucumber, cabbage, carrot, and soybean. Similar results were not found for other popular nanoparticles. The scientists conducted the test by growing some seeds in alumina suspended water and others in regular water, and then comparing the difference in root growth. This difference was found to be statistically significant. The scientists speculate that the surface characteristics of the nanoparticles are responsible for the slower growth, but are not certain as to the nature of the interaction between the root and the nanoparticles. In the real world, nanoparticles could enter plant life through air and rainwater transport. The report is published in the August 2005 issue of Toxicology Letters journal. The article can be viewed online at the link below.
http://www.azonano.com/news.asp?newsID=1674

Energy and Nanotechnology: Strategy for the Future

Source: Baker Energy Forum
Author: n/a
11/21/2005

A science policy study recently released by the Baker Institute of Rice University indicates that nanotechnological innovation could alleviate the United State's dependence on foreign petroleum and provide efficient, environmentally-safe energy to the poorest sections of the world. The study is based on the contributions of over 50 nanotechnology and energy scientists, policy experts, and industry leaders who convened two years ago at the Baker Institute. The goal of the project was to investigate the role of nanotechnology developments in solving global energy problems on the heels of rising oil prices, shrinking reserves, the War in Iraq, and the passage of new energy legislation. In addition to ambitions of strengthening US technological competitiveness, participating scientists stressed that moving away from fossil fuel energy is of the utmost importance because of energy's "ability to provide solutions to many of the other societal problems, such as water, environment, and poverty." Professor Richard Smalley projected that we will need twice as much energy in the next 50 years,

yet even a doubling of current resources would leave many areas underdeveloped. The group called for a larger governmental financial commitment to the research and development of technologies such as carbon nanotubes, which can conduct electricity without loss and increase the efficiency and affordability of hydrogen, geothermal, coal sequestrated, nuclear, and solar powers. The study can be viewed online at the link below.
http://www.rice.edu/energy/publications/energynanotechnology.html

Nano-Sponges for Toxic Metals

Source: Physorg.com
Author: n/a
11/17/2005

Scientists at Pacific Northwest National Laboratory (PNNL) in the U.S. have developed particles with nanoscale pores called self-assembled monolayers on mesoporous supports (SAMMS), which can purify and remove toxins from industrial run-off, coal plant emissions, crude oil, and drinking water. The particles act as sponges, absorbing metal toxins. Once disposed, the particles are too big to be digested by microbes, ensuring that the toxins do not enter the ecosystem. Scientists can coat the particles with a variety of materials to target specific toxins. PNNL is partnering with a coal plant in Tennessee to remove mercury from their gas emissions. It is also working with an oil refinery in Texas to remove naturally occurring mercury from water in offshore oil wells, and with various companies on crude oil purification. PNNL civil engineer Richard Skaggs notes that this technology "can be used to address a large number of emerging water treatment problems, with arsenic and mercury as just a couple of examples." The article can be viewed online at the link below.
http://www.physorg.com/news8131.html

A Call to Develop Nanomembranes for Contaminated Water

Source: Canada.com
Author: Peter A. Singer
11/17/2005

In this article, Peter A. Singer, the director of the University of Toronto Joint Centre for Bioethics, calls for a greater commitment to developing nanotechnology water filters to provide one billion people with access to safe drinking water. Singer indicates that people lack access to safe water abroad in

places like Pakistan and Bangladesh, and also in North America, for instance in the northern Ontario community of Kashechewan. He says that nanotechnology has the potential to create cheap, portable "nanomembranes" with pores small enough to remove bacteria and toxins from water. Though Singer points out that longer term solutions for water shortage should be developed concurrently, he advocates that Canada lead an international initiative to use nanotechnology to treat contaminated water.
http://www.canada.com/national/nationalpost/news/issuesideas/story.html?id=d916b69e-07eb-472f-b81c-0d461cf756b7

10 Ways Nanotechnology Could Save Your Life

Source: Nanotechnology.com
Author: Nathan Tinker
11/11/2005

U.S.-based Nanotech Company, LLC has produced a white paper that lists the top ten existing and emerging nanotechnological applications that may "save your life". Citing specific studies and products, the list includes: faster and more accurate disease diagnosis through new diagnostic equipment and systems; treatments that target only the disease and not the body through new drug delivery methods; safer and more accurate magnetic resonance imaging (MRI); improved protection from infection through new wound dressing materials and white blood cell imitators; more effective antibiotics; less invasive surgery through methods that allow doctors to target diseased cells only; safer drinking water through nanofiltration systems; better nutritional supplements through nano-drug delivery systems; better protection from ultra violet light with sunscreens containing nanoparticles and nano-coated outdoor clothing; and bacteria repellant surfaces through nano-coated materials. The article indicates that some of these applications, like UV-protecting cosmetics and clothing, are already available to consumers, while other applications are still being developed in laboratories. The white paper can be viewed online at the link below.
http://www.nanotechnology.com/papers/index.php?a=view&id=WP43459B74AA901