

Wednesday, September 6, 2006

Container transport on a nano scale

Lock one or more molecules up within a cage of nanometer dimensions. Take this 'nanocontainer' to the desired spot and free the molecules. Or keep them locked up for a while and introduce other molecules into the container, for chemical reactions inside. By using polymers containing iron, it is possible to make intelligent containers of which the access of molecules can be regulated in a chemical way. A research team led by prof Julius Vancso of the MESA+ Institute for Nanotechnology has succeeded in fabricating these nanocontainers. The scientists foresee exciting applications in e.g. medicine, in adding additives to food or in ultrafast reactions in nano chemistry. They present their results in the September issue of Nature Materials. A true breakthrough in this research is the use of polymers having iron in their main chain. This is the material the containers are made of. By using iron, for the first time it is possible to adjust the permeability of the material via oxidation and reduction reactions. Scientist Mrs. Yujie Ma and Dr. Mark Hempenius, both of the group of Julius Vancso, succeeded in creating containers that can be opened and closed in this 'chemical' way. Oxidants or reductants take care of the access: an oxidant can be ironchloride, for example, a reductant could even be Vitamine C. Chemical doormen

This selective access – one molecule gets in, the other won't – is the result of the layered structure of the wall of the container. Polymer chains are layered on top of each other and an electrostatic charge keeps them together. Influencing this charge with redox reactions, immediately influences the permeability of the wall. The container can contain a limited number of molecules, a soluble is already present inside. As oxidation and reduction steps take part in numerous biochemical processes in water, the nanocontainers are useful for a variety of biological and biomedical applications. The scientists foresee applications in 'green' areas like food additives, medicine and cosmetics. In a more fundamental way, nanocontainers could be used in biochemistry to study large numbers of enzyme reactions at the same time and with high throughput. The research, led by prof. dr. Julius Vancso of the MESA+ Institute for Nanotechnology of the University of Twente, has been done in close cooperation with the Group of prof. Helmuth Möhwald of the Max Planck Institut für Kolloid- und Grenzflächenforschung in Golm. The article 'Redox-controlled molecular permeability of composite-wall microcapsules' is published in the September issue of Nature Materials, www.nature.com/nmat More information about the research of prof. Vancso's Group can be found at <http://mtp.tnw.utwente.nl/> Source: Universiteit Twente

Posted by Nano News at 12:42

Tuesday, September 5, 2006

Berliner Nanotechnology Company Doubles Turnover

The Berlin Capsulation NanoScience AG completed the first half of 2006 by doubling the previous year's turnover in the same period, while at the same time Capsulation's EBIT increased to more than TEUR 200. Capsulation was able to enter a positive overall result in the ledger and is looking forward to an auspicious future. By the end of 2006 sales revenues of well over 1 million EUR are expected. Alexander Hermann, chief financial officer, states: "We are pleased to have surpassed the goals we aspired to, for this generates a high degree of confidence in the company's growth forecasts among all involved: customers, staff and investors. In the coming months the result will be impaired by high advance costs in the R & D area, especially due to scheduled pre-clinical experiments. However, the successful conclusion of these tests promises a considerable increase in turnover in the next fiscal year, as a large number of potential pharmaceutical customers hold them to be an important milestone for expanding and intensifying business relations with Capsulation." Capsulation NanoScience AG is a leading nanotechnology company focusing on the development of tailor-made drug delivery systems and other innovative life science products based on tunable nano-sized capsules. The company applies its worldwide-patented so-called LBL-Technology®. Based on their minute size, their functionality and their highly reproducible production process the tunable capsules can be used for a multitude of different applications. Accordingly, the precisely sized capsules can be made to function in a manner to suit the intended application, and can be given the appropriate biochemical, electrical, optical and magnetic properties as required by the customer. In order to meet customers needs for complete product solutions Capsulation has recently designated EBARA Corp. as the preferred developer, manufacturer and distributor for automated LBL-units. Only six month after the signing of the licence agreement, EBARA has started operation of the first prototype plant (LBL-Unit®) for the manufacture of Capsulation's LBL capsules. In 2005, renowned growth consultants Frost & Sullivan have awarded the year's "Product Differentiation Innovation Award" in the global nanobiotechnology market to Capsulation NanoScience AG, Berlin. The company has received the award for the innovative and diverse use of their proprietary nanobiotechnology product platform, which can be implemented in various life sciences applications. Source: Verivox

Posted by Nano News at 11:39

Monday, September 4, 2006

Trends in Nanotechnology - TNT2006

One of the main objectives of the Trends in Nanotechnology conference is to provide a platform where young researchers can present their latest works and also interact with high-level scientists. For this purpose, 76 grants (travel bursaries) were available in 2005. In addition 28 prizes (around 8000 Euros) to best student posters were awarded. More than 60 senior scientists were involved in the selection process. Grants and awards were funded by the TNT Organisation in collaboration with an increasing number of Research Institutions and Industrials involved in Nanotechnology. TNT2006 is being launched following the overwhelming success of earlier Nanotechnology Conferences. The TNT2006 edition will be organised out of Spain for the first time - Grenoble (France) - to emphasise the importance at the European level of the launch of the Centre of Innovation in Micro and Nanotechnology, MINATEC. This centre, to be inaugurated in June 2006, came into existence at the instigation of CEA-LETI Grenoble and Institut National Polytechnique Grenoble and its ambition is to become Europe's top centre for innovation and expertise in micro & nanotechnology. TNT2006 "Trends in Nanotechnology" (04-08 September, 2006) will be held in the brand new congress facilities of the Micro & Nanotechnology House within the MINATEC complex. The TNT2006 structure will keep the fundamental features of the previous editions, providing a unique opportunity for broad interaction. TNT2006 will be organised by the following institutions: Phantoms Foundation, Universidad de Oviedo, Universidad Autónoma de Madrid, Consejo Superior de Investigaciones Científicas, Universidad Carlos III de Madrid, Universidad Complutense de Madrid, Donostia International Physics Center, NIMS, University of Purdue, Georgia Tech. and CEA-LETI-DRFMC. Organiser: Phantoms Foundation Contact details: Dr. Antonio Correia Phantoms Foundation UAM - Campus de Cantoblanco Madrid 28049 Spain E-mail: antonio@phantomsnet.net Fax: +34 91 4973471

Posted by Nano News at 10:04

Tuesday, August 8. 2006

The ethics and politics of nanotechnology

UNESCO has published a report that assesses the ethical, legal and political aspects of nanotechnology. It attempts to separate the realistic potential of nanotechnology from some of the more fanciful headline-grabbing claims. It outlines what the science of nanotechnology is, and presents some of the issues facing the international community in the near future. Chapters cover the current status of nanotechnology and where nanotechnology will intersect with existing policy issues and ethical dilemmas. It assesses the top ten applications of nanotechnology and lists their relationship to the UN Millennium Development Goals (MDGs). The report says that the most pressing current issues are toxicity and exposure to humans and the environment. This produces ethical issues due to the new forms of hazard or exposure risks, which create new questions about how to deal with them. Current means of risk assessment do "not address any wider issues of the ethical or political meaning of this risk — such as who will bear it, how it will be distributed internationally, and who will be given the power to make decisions based on these analyses." It covers measures in the EU and the USA to deal with safety aspects and lists the twelve recommendations from from the European Commission’s Consumer Protectorate Directive. Under ethical issues, the report highlights the potential use and abuse of scientific information by governments and organisations. It sees the over-liberal granting of patents as a current problem "which can curtail even the most innocuous basic research by introducing prohibitive costs". In particular, it warns about business-method patents, which are "a good example of overzealous expansionism in intellectual property". These patents give broad rights to corporations that convert established processes into computerised processes — such as online auctions and online shopping. A short section covers "ethical issues that aren't" such as the "grey goo" scare of recent years. The report urges policy-makers, elected and appointed officials, non-governmental and advocacy organizations to look beyond these distractions and concentrate on the most pressing issues, which include potential hazards, consumer awareness, product regulation, intellectual property, secrecy, the reliability and legitimacy of international scientific research, and, most importantly, the promotion of uses for nanotechnology that help solve the most pressing needs for the greatest number of people. The report can be downloaded (as a PDF file) from: [REPORT](#)
Source: MTB Europe

Posted by Nano News at 10:04

Monday, August 7, 2006

Slaying myth about unsafe 'grey goo' nanotechnology

Nanotechnology is developing at an astonishing rate, with an increasing number of products coming to market that take advantage of modified material properties. Nevertheless, concerns persist over the risks associated with nanotechnology. For many journalists in the popular press and, therefore, members of the public, the main threat comes from self-replicating biological nanomachines widely referred to as 'grey goo'. Eric Drexler, who has been called the 'father of nanotechnology', first wrote about grey goo in his book *Engines of Creation*, published in 1986, though Richard Freyman pointed out as early as 1959 that nanometre-scale machines could be built and operated. Drexler wrote that, with the precision inherent in molecular construction, it would be easy to build multiple identical copies, which raises the possibility of exponential manufacturing, in which production systems could rapidly increase their productive capacity and, ultimately, lead to destructive runaway self-replication. In June 2004, however, Drexler, together with Chris Phoenix, published a paper¹ that largely dismissed the threat posed by grey goo. This paper explains that self-replicating machines are still possible, but not with current technology. Moreover, self-replicating machines are denounced as unnecessary, requiring additional complexity and cost compared with more efficient nanofactories that can produce nanodevices using production line principles (Fig.1). The authors therefore state that the construction of anything resembling a dangerous self-replicating nanomachine can and should be prohibited (though prohibition cannot prevent development by determined, unscrupulous individuals, organisations or states). However, having slayed the grey goo myth, Phoenix and Drexler go on to draw attention to other areas of concern. In particular, a convenient manufacturing capacity could be used to make powerful -- albeit non-replicating -- weapons in vast quantities, leading to an arms race, war, terrorism or oppression. Although such manufacturing equipment could potentially be compact due to the nature of the raw materials and the products, a large number of such nanofactories would be required to produce macroscopic quantities; a single molecular fabricator working at one million cycles per second would take around one year to generate one nanogramme of product. Other potential problems relating to nanotechnology highlighted by Phoenix and Drexler include radical shifts in economic and political power, and aggregate environmental risks from novel products and large-scale production. Top-level concerns about nanotechnology have been raised at all levels. In the UK, the Prince of Wales has spoken about his fears, and the UK government was moved to commission a study in June 2003, the report of which was published at the end of July 2004. *Nanoscience and nanotechnologies: opportunities and uncertainties* was prepared by the Royal Society and the Royal Academy of Engineering and is available via a website created specifically for the study (www.nanotec.org.uk). This is probably one of the most thorough independent studies into nanotechnology and, most importantly for this fast-moving field, one of the most up-to-date. A substantial amount of the report covers the wide-ranging applications and benefits offered by nanotechnology, but it also looks in detail at the associated risks. While self-replicating grey goo has been the biggest fear for many people, the truth is that there are other more pressing concerns. For example, toxicologists have reported examples of particles being inhaled, absorbed into the blood and then being transported to the brain. Although no adverse reactions have been seen, it is possible that nanoparticles may be developed in the future that do have adverse effects. Similarly, nanoparticles are already being commonly used within sunscreen products and it is not yet known for certain whether these may be absorbed through the skin and go on to cause problems -- especially if the skin has been damaged, perhaps through sunburn or eczema. The fact is there are still some unknowns, and the opportunities and uncertainties report stresses that data needs to be collected over the long-term to enable the situation to be monitored. Inhalation and absorption through the skin are possible for nanoparticles and nanotubes that exist in a free form, and particular care needs to be taken in production environments where concentrations might be greater. And there is also a greater risk of explosion if dust clouds of combustible materials form, especially considering the larger ratio of surface area to volume, compared with bulk materials. Because of the additional risks to human health and the environment posed by materials when they are present as nanoparticles or nanotubes rather than in their bulk condition, one of the report's recommendations is that materials in these forms should be classified and treated differently. But it is expected that most applications for nanotechnology will make use of nanoparticles as coatings or fixed within bulk materials. When firmly attached in this way, nanoparticles and nanotubes clearly present a much reduced risk, though the report warns that the product's complete lifecycle, including disposal, needs to be considered carefully, especially in view of the unknown way in which nanoparticles and nanotubes will persist in the environment and bioaccumulate. Nanotechnology certainly offers huge benefits but with some unquantified and unknown risks, so the best approach seems to be to proceed with development and for researchers, manufacturers and regulators to take sensible measures to manage the risks. Source: Engineer Live!

Posted by Nano News at 16:01

Friday, August 4, 2006

Nanotechnology maker NanoHorizons to participate at Techtexsil

NanoHorizons announced that Dennis Schneider, Director of Marketing and Sales, will present "Nanotechnology Applications in Fibers and Fabrics" at this year's Techtexsil North America Symposium, on March 29th. The Techtexsil North America Symposium, in its fourth year, is an internationally recognized and attended trade show and symposium for the technical textiles and nonwovens industry. The event brings together the industry's leading companies for education, networking and business development. Schneider's company, NanoHorizons, recently launched its line of nanoscale-engineered SmartSilver permanent anti-odor/antimicrobial additives, offering a safe and cost-effective method to enhance fibers and fabrics in a manner compatible with existing manufacturing processes. SmartSilver-modified fibers can be used to create odor-resistant shoe linings, T-shirts, socks, gloves, carpets and more. Coating and solids applications of SmartSilver are available directly from NanoHorizons. Schneider's presentation at Techtexsil, "Nanotechnology Applications in Fibers and Fabrics" will address how nanotechnology is rapidly changing the nature and capability of fibers and fabrics for a wide range of applications. "Nano" has become perhaps the most misused prefix in common usage. A Google search for the term "nanotechnology" results in 47 million Web pages (compared to only 15 million Web pages for polyester, which was introduced in 1941). Only a very small percentage of these Web pages refer to materials which represent genuine applications of nanotechnology. "Real" nanotechnology applications entail the creation of engineered structures with features smaller than 100 nanometers (1nm = billionth of a meter). Like the term "nano," "antimicrobial" has become part of the common vernacular, particularly in the textile industry. Applications touting antimicrobial capabilities do not generally follow specific criteria for evaluation and quality assessment. Such criteria should include permanence, effect on fibers and fabrics, design limitations, manufacturability and cost. Schneider will address the latest technology developments in these areas, particularly with respect to fibers and fabrics. Techtexsil brings together highly-seasoned executives, designers and developers who bring a great deal of expertise to the table," said Dennis Schneider. "An in-depth explanation of nanotechnology and antimicrobial protection will assist them as they evaluate product development and introductions in the marketplace. The overuse and misuse of the terms 'nano' and 'antimicrobial' makes it difficult for lay-persons to distinguish real applications of each." NanoHorizons Inc focuses on nanotechnology applications in the fiber and textile, healthcare and microelectronics industries. The company's research and development team addresses real-world problems with applied nanoscale engineering. Source: Fibre2fashion

Posted by Nano News at 14:50

Thursday, August 3, 2006

French Researchers Developing Key NanoArrayer(TM) Applications

BioForce Nanosciences, manufacturer of the NanoArrayer(TM) System for enabling new nanotechnology applications, has announced the placement of a NanoArrayer in Paris at the Universite Pierre & Marie Curie (UPMC) for technology evaluation by CNRS (Centre National de la Recherche Scientifique), the French National Center for Scientific Research. The NanoArrayer was installed in May in the laboratory of Dr. Fatiha Nothias who noted, "Our plan is to use the unique printing capabilities of the NanoArrayer to pattern proteins associated with cell morphology establishment and migration." Dr Nothias said, "Our end goal is to determine the consequences of the interactions of neurons and glial cells with these patterned proteins." Other French research groups in the same institute have expressed interest in utilizing the NanoArrayer to study how cells sense their environment during the organization of the embryonic tissue. Michael Lynch, Product Manager for the NanoArrayer, assisted with the installation and training process. He noted that, "The NanoArrayer enables protein patterning in the significantly small dimensions required to study single cell growth and development important in Neuroscience, Cancer Biology, Stem Cell Research, Genetic Disease and more." Lynch added, "This installation also provided an opportunity to introduce NanoAndMore, our European distributor for the NanoArrayer product line, to these new and exciting markets." "This technology agreement partnership with UPMC and CNRS provides BioForce with valuable new market applications of the NanoArrayer," noted Kerry Frey, BioForce COO. "Our goal is continued growth into emerging new bionanotechnology markets in Europe and this placement, our second overseas this year, continues our progress." About BioForce Nanosciences, Inc. BioForce Nanosciences is a nanotechnology tools and applications Company, providing innovative and practical products that support the growth of the nanotechnology industry. The Company has spent more than a decade of invention, research and development on patented and patent-pending nanotechnology products. The core technology is the NanoArrayer(TM) Benchtop Molecular Printer, a portal to new opportunities in nanotechnology. The NanoArrayer opens the door to new and important applications in the biomedical and life sciences markets that lead to improved quality of life. BioForce continues to target inventions that further expand the reach of its proprietary technology and expand its robust patent, trademark and IP portfolio. BioForce Nanosciences, Inc., the Practical Nanotechnology(TM) company brings inventions to the marketplace that complement existing innovations, licensing and acquisitions. BioForce is a wholly owned subsidiary of BioForce Nanosciences Holdings, Inc.. For more information, visit <http://www.bioforcenano.com> or contact BioForce at info@bioforcenano.com or 515-233-8333. This news release contains forward-looking information that may be affected by certain risks and uncertainties, including those risks and uncertainties described in the company's most recent filings with the Securities and Exchange Commission. The company's actual results could differ materially from such forward-looking statements. We assume no duty to update these statements at any future date. Source: BioForce Nanosciences, Inc.

Posted by Nano News at 15:10

Wednesday, August 2, 2006

Recent developments in Saxs seminar

Seminar on the recent developments in small angle X-ray scattering (Saxs) analysis of proteins, nano-particles and nano-structures. Anton Paar, in conjunction with the chemistry department of the University of Bath, UK, will be hosting a seminar on the recent developments in small angle x-ray scattering analysis of proteins, nano-particles and nano-structures. The seminar will be held at the chemistry department of the university of Bath on Friday, 22 September 2006. The themes for discussion include aggregation of proteins, nano-structure analysis, DNA-lipid interactions and Nanoporous materials. The agenda includes viewing some of the latest technology available and registration for the seminar is free. Anton Paar, 13 Hardforde Court, John Tate Road, Hertford, SG13 7NW United Kingdom, Telephone: +44 1992 514730. Source: Laboratorytalk

Posted by Nano News at 10:56

Tuesday, August 1. 2006

Nanotechnology passes first toxicity hurdle

Scientists in Mexico have found a way to reduce the toxicity of carbon nanotubes, paving the way for the use of the technology in food packaging. Nanotechnology has been touted as the next revolution in many industries, including food manufacturing, where there may be applications to improve food quality and produce pathogen resistant packaging. However, carbon nanotubes (CNT), the basis for nanotechnology, have been found to be toxic in certain applications. There has been no long term study on the impact of CNTs on human health. Concerns that the use of nanotechnology in food packaging products could harm consumers has spurred scientists from the Advanced Materials Department at IPICYT in Mexico to develop a way to reduce the toxicity of CNTs. Manufacturers and scientists are concerned that CNTs could affect human health by infiltrating the body through contact with the skin or by ingestion or inhalation of commercial products. Professor Mauricio Terrones headed the team that discovered that doping CNTs with nitrogen reduced the risk of death or severe respiratory reactions to CNTs in mice. The research found that CNTs did not harm mice when directly inhaled or ingested. However, pure CNTs administered to a mouse's trachea caused death while nitrogen doped CNTs produced an acute respiratory inflammation. "Because none of our studies with nitrogen-doped CNTs resulted in the death of the mice, we believe that nitrogen-doped CNTs would be more biocompatible when compared to other types of CNTs," said Terrones. "We need to carry out a lot more research, but have very encouraging results." The research will come as promising first step toward the full-scale introduction of nanotechnology in processing and manufacturing. Nanotechnology has become a hotly debated consumer issue due to fears over the unknown consequences of digesting CNTs that are designed to behave in a specific way in the body. Earlier this month, consumer pressure led the UK Council for Science and Technology to review the government's nanotech safety policies. Even the EU is busy creating a standardized system for assessing nanotechnology toxicity. The Registration, Evaluation and Authorization of Chemicals (REACH), when passed, will hold businesses responsible for chemical safety and addresses the creation of a standardized test for assessing the toxicity of nonmaterial. Source: FoodProductionDaily - USA

Posted by Nano News at 14:10

Wednesday, July 26, 2006

Intel, Micron claim first for 50 nano flash

IM FLASH TECHNOLOGIES, a joint venture between Micron and Intel, said they've produced the first NAND flash memory using 50 nanometre process technology. IM is sampling four gigabit devices and mass production isn't likely until next year. The samples are from Micron's Boise and Manassas fabs. A factory in Lehi Utah dedicated to the joint venture will start production of NAND in the beginning of next year. Source: The Inquirer

Posted by Nano News at 10:48

Friday, July 21. 2006

UNESCO on nanotechnology ethics & politics

UNESCO's Division of Ethics of Science and Technology has taken a shot at writing about The Ethics and Politics of Nanotechnology. Brochure describing the science of nanotechnology and presenting some of the ethical, legal and political issues that face the international community in the near future. Brochure: The Ethics and Politics of Nanotechnology

Posted by Nano News at 12:54

Iran does not fear embargo - diplomat

Iran does not fear any embargo that might be imposed on it over its nuclear program, Iranian Ambassador to Azerbaijan Afshar Suleymani has said. "There is nothing new for us in the imposition of an embargo on us: the U.S. imposed an embargo on Iran a long time ago, and all our development, especially regarding the nuclear program, fell exactly on the embargo period," Suleymani told journalists on Friday. Progress that Iran made in the development of the defense area, the military-industrial complex, nanotechnology, biotechnology, and the nuclear program coincided with the embargo period, Suleymani said. "In other words, the embargo benefited us," he said. Source: Interfax

Posted by Nano News at 09:59

Thursday, July 20, 2006

Trinity and UCC in fourth-level R&D pact

Dublin's Trinity College and University College Cork (UCC) have announced they intend to work together to research neuroscience, food science and nanotechnology. The heads of the universities said on Friday 15th July that they have identified a number of research areas in which they have complimentary strengths and that they wish to develop these areas in tandem to ensure the maximum intellectual and educational benefits for the two universities. Trinity Provost Dr John Hegarty and UCC president Prof Gerry Wrixon said that at a time of unprecedented investment by the State in science and technology research, the institutions should work together to deliver greater efficiencies at fourth level. In addition to the research themes of nanotechnology, food, health and neuroscience, UCC and Trinity College will also collaborate in the implementation of institutional research strategies, management-information systems, benchmarking, institutional repositories, technology transfer initiatives and in the procurement of equipment and materials for research. The universities will also exploit opportunities for the introduction of joint postgraduate programmes at masters and PhD levels and will work to develop a system of credit recognition that facilitates the transfer of students between the institutions. 'We see this as the first step on the road to increased collaboration between all universities on the island, moving from competition to collaboration through multiple partnerships across the entire academic spectrum, from the humanities to the sciences,' said Dr Hegarty. 'It doesn't make sense for us to do exactly the same things,' said Prof Wrixon. 'We are a small country competing in an increasingly competitive global market for research.' Citing their successful collaboration in nanotechnology over the past five years, Prof Wrixon noted that UCC and Trinity College have worked extremely effectively together, making significant but complementary investments in infrastructure at the Tyndall National Institute in Cork and CRANN (Centre for Research in Adaptive Nanostructures and Nanodevices) in Dublin. 'In some fields, such as nanotechnology, we are both strong,' added Dr Hegarty. 'In others, one of us will take the lead and the other will work in partnership. For example, UCC is an international leader in food and health, Trinity College in neuroscience.' Source: BiotechnologyIreland.com

Posted by Nano News at 13:08

Wednesday, July 19, 2006

Nanotechnology risk research demanded

The US government should act fast, and invest significantly, to make sure that nanotechnology and its related products are safe. The call comes from the Project on Emerging Nanotechnologies, a think-tank that advises on ways to develop policy alongside this burgeoning science. The report – Nanotechnology: A research strategy for addressing risk – spells out a two-year roadmap for assessing the risks of nanotechnology. “This is really a plan for getting some strategic research done in the short term that needed to be overseen by the US federal government,” said Andrew Maynard, chief science advisor for the project, which is based at the Woodrow Wilson International Center for Scholars in Washington, DC. Maynard wants to change the way risk research is carried out, directing it in a more strategic manner. “There is not a clear research strategy in any region in the world,” Maynard told Chemistry World, “and people desperately see the need for a strategy if we’re going to come up with some of these answers.” The plan, of course, requires large amounts of money. Maynard wants \$100 million (£55 million) to be spent in risk assessment research over the next two years. This is a low estimate, he said, “but it is a significant jump compared to current research funding.” Rob Aitken, director of strategic consulting at the Institute of Occupational Medicine, Edinburgh, UK, agrees that this report will have international significance. “The research needs that the report identifies are universal,” said Aitken. “I don’t know if the US government will take note, but they should.” The UK government has already embarked on its own process towards identifying risk research priorities currently being monitored by the Council for Science and Technology. Maynard’s report was also welcomed by semiconductor giant Intel. “We believe there is a need for a more strategically-focused federal effort devoted to studying the environmental, health, and safety dimensions of nanotechnology,” said Paolo Gargini, Intel’s director of technology strategy. Maynard stressed that without nanotechnology risk research, the industry will grind to a halt. “If the research is not done, we are not going to see safe acceptable nanotechnologies be developed,” he said. Source: Royal Society of Chemistry

Posted by Nano News at 15:14

Putting the right spin on nano-electronics

Thanks to a quantum physics breakthrough, European and American physicists are, electron-by-electron, pushing back the resistance barriers stifling current generation computers and high-speed, high-powered electronics. But as fundamental researchers, they say their work is not about end products, but the thrill of discovery. Today, all electronics are based on transistors, and they are getting smaller, faster and more powerful – a trend likely to continue in light of recent news reported in a July issue of Nature Physics. Two Danish physicists at the Copenhagen University (CU) have mastered a technique for migrating electrons in a nano-transistor. Using quantum physics, the scientists have got the electrons at either end of a carbon nano-tube ‘talking’ to each other in perfect pitch. Jens Paaske of the Nano-Science Centre and Niels Bohr Institute at CU, who was responsible for the theoretical part of the experiment, said the breakthrough was made possible thanks to excellent collaboration with his experimental colleague Jesper Nygård of the Niels Bohr Institute and colleagues at Universität Karlsruhe, Germany, and Harvard University, USA. A relationship borne out of friendship and international training. “I first started working with tiny molecular transistors and theories for how to push electrons through single-walled carbon nanotubes about four years ago in Germany where I was doing postdoc work,” Paaske told Headlines. But there was only so far he could go with his ideas without input from experimental physicists who could help with the cooling of the electrons – entering the quantum realm. Basically, he explains, at temperatures near absolute zero (–270°C), the so-called ‘spin’ of the electrons gets each one acting like a little magnet, jumping one-by-one from one end of the nanotube to the other and building up momentum until they reach ‘quantum mechanic cohesion’ – technically known as a Kondo resonance. “By this stage, we’re getting clean communication between the two poles with perfect flow of electrons, lowering resistance and heat build up,” he notes. “The electrons are actually helping each other through the molecule in the nano-transistor.” It’s still fundamental, though. This achievement is not only a breakthrough in the fundamental research of nanotechnology, the Niels Bohr Institute notes in a statement, “it also influences the development of tomorrow’s electronics, such as future super-fast quantum computers.” But Paaske still stresses the fundamental nature of the demonstration. “We’re looking at the result in two ways,” he says. First, it is a fundamental building block in molecular electronics, with the idea of one day mixing transistors in a test tube, pouring them out and letting them organise, or ‘talk’, amongst themselves. “This would make them not only cheaper but also faster, as they self-organise,” he adds. The second factor is that, by controlling the spin over the electrons – pure quantum electronics – you are then

controlling it well enough to manipulate a "quantum bit", which is the basic building block in a "quantum computer". Significant research efforts worldwide are being put into the quest to develop this quantum computer. While it is still at the vision stage, the result from Copenhagen shows that the necessary quantum properties can be realised in a nanotube transistor at low temperatures. Nygård says discovering how to control the way electrons move through nano-transistors is all the more satisfying as it is a shared experience built on years of work spanning two continents. Guided by the work of Harvard professor Charlie Marcus in the field of quantum electronics, Nygård returned to Denmark and began what turned out to be a very successful partnership with Paaske, resulting in a worldwide breakthrough in quantum nano-electronics. In another example of international collaboration, Paaske has also been taking part in the EU-funded CANEL project, which is a three-country – Sweden, Denmark, the Netherlands – tie up to integrate carbon-based nano-electromechanical devices into silicon technology. The 36-month project, funded to the tune of €1.8 million by the EU's Information Society Technologies programme, kicked off in 2004 and is focusing on applications in information technology, such as switches and memory elements. Source: European Commission

Posted by Nano News at 10:17

Tuesday, July 18, 2006

NanoBioNexus Expands International Presence with Oxford NanoLabs Letter of Intent

NanoBioNexus (NBN) will announce a recently signed Letter of Intent (LOI) to provide professional services to UK-based Oxford NanoLabs at NBN's second anniversary gala being held Tuesday, July 18, 2006 at San Diego's Salk Institute. Also unveiled at the event will be a new membership program. Nanobiotechnology and NanoBioNexus (NBN) will take center stage with the announcement of a recently signed Letter of Intent (LOI) to provide professional services to UK-based Oxford NanoLabs. The announcement will be made at the NanoBioNexus's second anniversary gala being held Tuesday, July 18, 2006 at San Diego's Salk Institute. Also unveiled at the event will be a new membership program that is sure to draw attention and additional international membership from the nanobiotechnology community. Industry thought leaders will join NBN to recognize its 2005 accomplishments, including a review of the group's well-respected educational series. Among the accomplishments is the expansion of the professional services division which includes clients such as the "Center for Nanotechnology for Treatment, Understanding and Monitoring of Cancer" (NanoTUMOR), one of the Centers of Cancer Nanotechnology Excellence (CCNE) funded by NIH. "We're honored to announce our agreement with Oxford NanoLabs -- highlighting our credibility on the global stage -- in addition to kicking-off our unique membership program," said Adriana Vela, NanoBioNexus' founder and chair. "Our commercial and academic constituencies have validated our philosophy and the quality of work we do on the educational front as well as our professional services." The LOI agreement is a business instrument outlining terms already agreed upon and is a precursor to a formal contractual agreement with a commercial company. "After a thorough evaluation we selected NanoBioNexus because of their in-depth understanding of the nanotechnology commercialization process and for their business and scientific expertise," commented Gordon Sanghera, CEO of Oxford NanoLabs. "We look forward to NanoBioNexus assistance in establishing a corporate presence in the United States and helping us to reach our goals for our Nanopore Technology." Companies and individuals in the nanotech sector regularly seek ways to expand their businesses, relationships and knowledge. The NBN membership program uniquely addresses those needs by serving as a vehicle by which they can expand their reach, share information and network in order to promote and grow their business. "NanoBioNexus listened to its constituents' requests and has developed a membership program that offers excellent benefits for small businesses and individuals", says Vela. "In addition to discounts for seminars, webcasts, and other services, we will also provide small business members brand building and public relations opportunities as well as access to nanobiotech thought leaders and the opportunity to forge powerful relationships." Companies that already joined include Oxford NanoLabs and nanoComposix Inc with many more expected to sign up. NanoBioNexus will soon begin providing the second year activities of the educational service component for the NCI funded Cancer Center of Nanotechnology Excellence (CCNE) partnership that includes the University of California, San Diego, UCSD Moores Cancer Center, the Burnham Institute, NanoBioNexus, and the University of California campuses at Irvine, Riverside and Santa Barbara. The upcoming educational seminars of the NanoTUMOR are slated for both the general public and the healthcare communities in nanotechnology. Additionally, NBN staff is designing the concept, content and scope of the CCNE's educational website and will oversee the launch of that website at the end of August. NanoBioNexus will continue its ongoing series of events that are open to the general community. The next NBN seminar, "Canada's Nanotech Innovation and Commercialization Models" begins September 14, 2006. Other educational activities include providing bylined content to NanoBiotech News and yearly subscriptions to this leading-edge publication. Other editorial submissions include a feature article discussing "NBN's Community Building" in the May issue of NanoNews-Now written by Julian Zegelman, NBN's Director of Corporate Partnerships and Alliances. That same issue of NanoNews now included an interview with the CCNE and NBN principals. Additionally, the NBN executive team authored Drug Delivery Technology's cover feature on "Nanodrugs" for the May issue. About NanoBioNexus NanoBioNexus is the only San Diego organization exclusively dedicated to nanobiotechnology with a growing international constituency. It is a non-profit corporation that showcases applications of nanotechnology in the Life Sciences. The NanoBioNexus mission is to provide a community service by building awareness and understanding of nanotechnology and by fostering business opportunities in the application of nanotechnology in the life sciences. Source: PRWeb Press

Posted by Nano News at 17:51

Monday, July 17. 2006

Two universities forge closer ties on research projects

Two of the State's leading universities have agreed to greater collaboration on research projects and to facilitate the introduction of joint postgraduate programmes facilitating the transfer of students between institutions. The announcement by Trinity College Dublin (TCD) and University College Cork (UCC) that they are to collaborate in the areas of science and technology follows the recent announcement of a multi-billion euro budget for the research and development sector. The move is designed 'to focus on research areas where both institutions have complementary strengths and thereby reduce duplication of research projects and provide value for money', according to Trinity's dean of research, Dr David Lloyd. 'We are actively pursuing collaborations with other universities in other areas . . . competition with other universities is not the intention of this collaboration. We are not drawing a line in the sand and will be talking to other universities,' he said. Over the past five years, UCC and TCD have collaborated in the field of nanotechnology, making complementary investments in infrastructure at the Tyndall National Institute in Cork and the Crann Centre in Dublin. Under the new relationship, the two universities will work in partnership in the implementation of institutional research strategies, management information systems, benchmarking, institutional repositories, technology transfer initiatives and in the procurement of equipment and materials for research. UCC president Prof Gerard Wrixon said it made no sense for two universities to tackle the same research areas in a small country competing in an increasingly competitive global market for research. 'UCC and TCD are probably the most research intensive universities and together account for 50 per cent of the total research funds out there,' said Prof Wrixon. Source: Biotechnology Ireland

Posted by Nano News at 22:24

Trinity and UCC in fourth-level R&D pact

Dublin's Trinity College and University College Cork (UCC) have announced they intend to work together to research neuroscience, food science and nanotechnology. The heads of the universities said on Friday that they have identified a number of research areas in which they have complementary strengths and that they wish to develop these areas in tandem to ensure the maximum intellectual and educational benefits for the two universities. Trinity Provost Dr John Hegarty and UCC president Prof Gerry Wrixon said that at a time of unprecedented investment by the State in science and technology research, the institutions should work together to deliver greater efficiencies at fourth level. In addition to the research themes of nanotechnology, food, health and neuroscience, UCC and Trinity College will also collaborate in the implementation of institutional research strategies, management-information systems, benchmarking, institutional repositories, technology transfer initiatives and in the procurement of equipment and materials for research. The universities will also exploit opportunities for the introduction of joint postgraduate programmes at masters and PhD levels and will work to develop a system of credit recognition that facilitates the transfer of students between the institutions. 'We see this as the first step on the road to increased collaboration between all universities on the island, moving from competition to collaboration through multiple partnerships across the entire academic spectrum, from the humanities to the sciences,' said Dr Hegarty. 'It doesn't make sense for us to do exactly the same things,' said Prof Wrixon. 'We are a small country competing in an increasingly competitive global market for research.' Citing their successful collaboration in nanotechnology over the past five years, Prof Wrixon noted that UCC and Trinity College have worked extremely effectively together, making significant but complementary investments in infrastructure at the Tyndall National Institute in Cork and CRANN (Centre for Research in Adaptive Nanostructures and Nanodevices) in Dublin. 'In some fields, such as nanotechnology, we are both strong,' added Dr Hegarty. 'In others, one of us will take the lead and the other will work in partnership. For example, UCC is an international leader in food and health, Trinity College in neuroscience.' Source: SiliconRepublic.com

Posted by Nano News at 10:37

Thursday, July 13. 2006

Russia opens new nanotech center

A multimillion dollar nanotechnology development center here funded by the Russian Federation expands on anticipated \$400 million overall Russian investment in nanotechnology development by 2007. The Pilot Scientific and Technical Center of Excellence for Nanotechnology Development opened in June 3. Robert Cresanti, U.S. undersecretary of commerce for technology, and Bob Gregg, executive vice president at FEI, participated in the opening ceremonies. Global public investment in nanotechnology development is expected to reach \$5 billion in 2006. Corporate investment is expected to exceed government funding this year, reaching nearly \$6 billion. "Government nanotechnology investments were initially led by Europe, North America and Japan," Sean Murdock, executive director of the U.S.-based NanoBusiness Alliance, said in a statement. "Now countries such as Russia, China, Brazil and India have joined the trend and are making significant investments." Source: EE Times

Posted by Nano News at 18:26

Tuesday, July 11. 2006

Scientists research nanotechnology use for chilled, frozen sectors

Scientists at the University of Kent in the UK have received €800,000 to study ways nanotechnology can improve the safety and quality of chilled and frozen foods. Nanotechnology has been touted as the next revolution in many industries, including food manufacturing. It holds the promise of helping manufacturers produce novel products and improve their processes and packaging. However it is also a sector that has become a hot consumer issue due to fears over the unknown consequences of digesting nano-scale particles designed to behave in specific way in the body. The EU grant was given to the university's nanobiotechnology research group. They are part of a wider EU consortium tasked with developing and integrating novel technologies to improve safety and quality assurance for the chilled and frozen food supply chain. "New materials and chemistry being developed at the University of Kent will significantly improve the efficiency of food testing for identity and therefore improve consumer confidence and choice," stated Ian Bruce, a professor of nanobiotechnology and leader of the research group. Professor Bruce joined the University of Kent from the University of Urbino, Italy, in 2004. Since then he has won grant funding of about €2m from the European Commission for research. The nanobiotechnology research group conducts work in the general area of nanotechnology. The group project includes collaborating with mainstream process engineers, biochemists, molecular biologists, geneticists, microbiologists, software engineers and statisticians. Source: Food Production Daily

Posted by Nano News at 12:36

Nanowires in the Brain - Making brain implants safer, cheaper

To treat severe cases of Parkinson's disease, surgeons implant electrodes deep in the brain, where they deliver high-frequency electrical pulses that shut down neural systems responsible for the disease's characteristic tremors. But this expensive treatment, called deep brain stimulation, is risky: the patient's skull must be opened, and the electrodes can damage blood vessels in the brain. A new type of polymer nanoelectrode, however, could make brain implants far safer and less costly. Rodolfo Llinas, a professor of neuroscience at New York University, has worked with Ian Hunter, a professor of mechanical and biological engineering at MIT, to develop a nano-wire electrode just 600 nanometers across -- so thin that it could be inserted through an artery in the arm or groin, threaded up to the brain, and snaked through the smallest blood vessels, getting close enough to neurons to detect and deliver electrical signals. Before the technology can be used in humans, the researchers will have to demonstrate that the nanowires do not cause complications, such as blood clots. But Joseph Pancrazio, a program director at the National Institute of Neurological Disorders and Stroke, says, "There may be payoffs in terms of safety, efficacy, robustness, and biocompatibility.... This is a completely out-of-the-box way to think about enabling deep brain stimulation." Source: Technology Review

Posted by Nano News at 12:22

Monday, July 10, 2006

Microchip miniaturisation barrier could be broken by nanotechnology

A project that could remove the electrical wiring in microchips, allowing denser circuitry, could result in computers with 500 times the power of present day technology. The University of Bath is to lead an international £555,000 three-year project to develop the wireless silicon chip system. As microchip circuits are made smaller to increase processing power they approach a limit imposed by the need to use electric wiring, which weakens signals sent between computer components at high speed. Wireless systems are in widespread use in mobile phones, Bluetooth gadgets, Wi-fi computers etc, but the electronics that create and use wireless signals are too large to be used within individual microchips successfully. The research project, which involves four universities in the UK and a university and research centre in Belgium and France, will look at ways of producing microwave energy on a small scale by firing electrons into magnetic fields produced in semi-conductors that are only a few atoms wide and are layered with magnets. The process, called inverse electron spin resonance, uses the magnetic field to deflect electrons and to modify their magnetic direction. This creates oscillations of the electrons which makes them produce microwave energy. This can then be used to broadcast electric signals in free space without the weakening caused by wires. The possibility of using the special semi-conductors in this way was first pointed out by Dr Alain Nogaret, of the University of Bath's Department of Physics, in an important scientific paper in 2005 (Electrically induced Raman Emission from planar spin oscillator, in Physical Review Letters). The latest research is the first attempt to turn theory into practice. "The work could be very important for the creation of faster, more powerful computers," said Dr Nogaret. "We can only go so far in getting more power from silicon chips by shrinking their components — conventional technology is already reaching the physical limits of materials it uses, such as copper wiring, and its evolution will come to a halt." But if this research is successful, it could make computers with wireless semi-conductors a possibility within five or ten years of the end of the project. Then computers could be made anything from 200 to 500 times quicker and still be the same size. "This research may also improve the accuracy and speed of medical diagnostics by gathering data from health monitoring sensors. The microwave emitters are small enough to be integrated on portable biological sensors which feed information out on faulty biological processes." The research is not only practical, but beautiful in its theoretical simplicity, which is one of the big attractions for the physicists working on it. "The project is the only one which aims to create wireless emitters and receivers that fit on semi-conductor wafers, where individual devices are one ten thousandth of a millimetre in size. It will also allow the creation of integrated circuits which will still continue to work properly even if some of its connections fail — the system can be programmed to reroute itself so that it can continue working. At present a failure in a connecting wire can put an integrated circuit out of action. In the manufacture of today's integrated circuits there is no room for error, and so manufacturers must spend large amounts of money to build dust-free clean rooms. The advantage of the new more flexible system is that only 95% or so of the electronic components would need to work for the chip to work properly. Such chips would be many times cheaper to produce. Dr Nogaret is working with colleagues Professor Simon Bending and Professor John Davies in the University's £2m laboratory dedicated to nanotechnology. The University receives £463,000 for the project, which begins in October. The University of Nottingham receives £65,000, and the University of Leeds £27,000, all from the Engineering and Physical Sciences Research Council. The University of St Andrews in Scotland, and the University of Antwerp, Belgium, will also take part, as will the Centre National de la Recherche Scientifique in Grenoble, France. Source: MTB Europe

Posted by Nano News at 18:46

Friday, July 7. 2006

UK launches review of nanotechnology policy

The UK government has launched a review of its nanotechnology policy, part of a move to assess the implications of current developments in the emerging science of tiny dimensions. Nanotechnology has been touted as the next revolution in many industries, including food manufacturing. It is a sector for which the topic has become a hot consumer issue due to fears over the unknown consequences of digesting nano-scale particles designed to behave in specific way in the body. In May the country's Food Standards Agency (FSA) said gaps existed in EU legislation in regulating the future uses of nanotechnology. The gaps include those relating to particle size, the use of nano versions of already approved ingredients, and to packaging, according to the FSA's legislative review of the food sector. In addition the government's Department of Environment, Food and Rural Affairs (Defra) on 23 June completed a consultation on a proposed voluntary reporting scheme for engineered nanoscale materials. Defra's proposed voluntary reporting scheme is part of the government's programme to build the evidence on any potential risks posed by nanotechnologies. Other regulators worldwide are also in the process of reviewing policy and regulations relating to the technology. Yesterday the UK Council for Science and Technology (CST) said it had been asked by government to review progress of its commitments on nanotechnology policy, and called for input from the public and industry, among others. The independent review will cover the Government's actions in the two years since their The CST wants comments on the extent to which the government has taken forward the commitments it agreed to in its response to a study by the Royal Society and the Royal Academy of Engineering. The report, "Nanoscience and nanotechnologies: opportunities and uncertainties", was issued two years ago. The government made its response in February 2005. The CST will also be examining whether new issues have arisen since due to significant developments in nanoscience and nanotechnology. "How the government is handling issues of nanotechnology and nanoscience will influence the UK's competitiveness in this rapidly growing field, and the public's confidence in government science policy," stated John Beringer, the scientist charged with leading the CST review. "We will be taking a close look at what the government has done, whether it has responded quickly enough, and how well prepared it is for new developments in nanotechnology," he added. The CST is the UK government's advisory body on science and technology policy issues. Members are appointed by the prime minister. The CST plans to publish its review in spring 2007. The deadline for submissions is 2 October 2006. The Royal Society and the Royal Academy of Engineering report on nanotechnologies considered the possible health, social, ethical, safety and environmental questions that could be raised by nanotechnologies. The scientific bodies stated that while nanotechnologies offer many benefits, more public debate is needed about their development. It called for research to address uncertainties about the health and environmental effects of nanoparticles — one area of nanotechnologies. Among the 21 recommendations was a call for regulation to control exposure to nanoparticles. A nanometre (nm) is one billionth of a metre. Industry is interested in the nanoscale because it is at this size that the properties of materials can be very different from those of the same material at a larger scale. The report defines nanotechnologies as the design, characterisation, production and application of structures, devices and systems by controlling the shape and size at the nanometre scale. The report recommends that manufactured free nanoparticles and nanotubes should be treated as new chemicals under UK and EU legislation, in order to trigger appropriate safety tests and clear labelling. It also recommends that industry should publish details of safety tests showing that the novel properties of nanoparticles have been taken into account. The government said it agrees that ingredients in the form of manufactured free nanoparticles should undergo a safety assessment by the relevant scientific advisory body before they are used in a consumer product. A proposed EC regulation covering the registration, evaluation and authorisation of chemicals, called REACH, is currently under consideration by the bloc's legislators. Whilst any new legislation is being developed, at national or the EU level, the government said it will work with industry to restrict releases of nanoparticles into the environment. The current use of free nanoparticles in consumer products is limited to a few cosmetic products. It is probable that in future they will be used in consumer areas such as food and pharmaceuticals. Government responded to the recommendation by saying it believes in consumers being able to make informed choices. No mention was made specifically for food products. "Existing labelling requirements on cosmetic products would need to be revised to accommodate this," it said in response last year. "The feasibility of labelling needs to be fully investigated and we will work with the public and other interested parties to consider whether manufactured free nanoparticles contained in consumer products should be identified as such on lists of ingredients and under what circumstances." A public survey taken last year by the European Commission across the EU found widespread support for medical and industrial biotechnologies. While there is opposition in most European countries to agricultural biotechnologies, such as genetically-modified (GM) food, the European public mainly supports the development of nanotechnologies, pharmacogenetics and gene therapy, the survey found. All three technologies "are perceived as useful to society and morally acceptable", the Eurobarometer survey found. "Neither nanotechnology nor pharmacogenetics are perceived to be risky." So far nanotechnology has made minor inroads in the food and drink industry, mainly due to consumers' fears about the unknown risks the

technology poses to their health. However food companies see great opportunity in the technology as a means of introducing innovative products to the market. Nanoscale technology also offers new opportunities for the packaging industries, and various potential food contact applications have been suggested, including improved barrier properties, better temperature performance, thinner films for flexible packaging, and nanoscale pigments for inks. Other countries are also determining how to approach the technology. Last month Germany's food safety risk assessment agency commissioned a study on the risks of nanotechnological applications in food, cosmetics and other everyday items. Source: Food Production Daily

Posted by Nano News at 18:22

Nanowerk – Who Really Cares About Nanotechnology

You might think that with all the buzz that nanotechnology creates among insiders (mostly scientists) there would be a rising awareness and interest among the general public. Apparently not so. If internet search engines are an indication for the general interest then nanotechnology is not a big issue yet. If you have no idea what nanotechnology is and wanted to find out about it, chances are you start by typing the word into your favorite search engine. Google[®]; just rolled out a new toy called Google Trends. It allows you to check the relative popularity of a search term and how often it has been searched for on Google over time. Google Trends also displays how frequently the search term has appeared in Google[®]; News stories, and which geographic regions have searched for them most often. Comparing the search term "nanotechnology" with "biotechnology" provides an interesting result: There has been, and still is, much more interest in biotechnology than nanotechnology. For the search term "nanotechnology" the trend seems to be downward, not upward as you might expect. And in 2006, as for the most part of 2005, there clearly has been more interest in even something as narrow as "solar energy" than in "nanotechnology". In addition to the search volume trend Google provides a trend of how often the search term was referenced in Google news. As a neat detail, it associates spikes in that trend curve with individual news topics. Maybe indicative for the things to come, three of the six highlighted news spikes for nanotechnology deal with risks and concerns. Google Trends also gives a geographical breakdown of where searches originate. As for the question "who really cares about nanotechnology?" – take a look at this chart (the geographical breakdown for the search term "nanotechnology"): This was by no means a scientific analysis but it certainly is an interesting observation. Way to go, nanotechnology ... Source: Newswire Today

Posted by Nano News at 12:35

Arrowhead Research Chairman & CEO to Speak at NanoEquity 2006

Arrowhead Research Corporation (Nasdaq:ARWR), announced today that its Chairman & Chief Executive Officer, R. Bruce Stewart, will present at the NanoEquity 2006 conference in Frankfurt, Germany on Tuesday, July 11. The presentation will cover the company's business model and investment strategies. Mr. Stewart founded Arrowhead Research in 2003 to bring university innovations in nanotechnology to market and has guided its growth to the present. Arrowhead is now operating four majority-owned subsidiaries commercializing nanotechnologies in the fields of nanomedicine, nanoelectronics, and nanomaterials. In addition, Arrowhead is sponsoring nanotechnology development at the California Institute of Technology, Stanford University and Duke University. Previous to Arrowhead, Mr. Stewart's thirty year entrepreneurial career included founding Acacia Research Corporation, now comprised of Acacia Technologies (Nasdaq:ACTG) and CombiMatrix (Nasdaq:CBMX). About Arrowhead Research Corporation Arrowhead Research Corporation is a diversified nanotechnology company structured to commercialize products expected to have revolutionary impacts on a variety of industries, including materials, electronics, life sciences, and energy. There are three strategic components to Arrowhead's business model: Outsourced R&D Program: Arrowhead identifies patented or patent-pending technologies at universities or government labs and funds additional development of those technologies in exchange for exclusive rights to commercialize the resulting prototypes. Leveraging the resources and infrastructure of these institutions provides Arrowhead with a cost-effective development pipeline. Currently, Arrowhead is supporting efforts in drug discovery tools, stem cell technology and nanoelectronics at the California Institute of Technology, Stanford University and Duke University, respectively. Commercialization Program: After prototypes have been sufficiently developed in the laboratories, Arrowhead forms or acquires majority-owned subsidiaries to commercialize the technology and provides the subsidiaries with strategic, managerial and operational support. By doing so, each research team is able to maintain focus on its specific technology and each management team can focus on specific markets, increasing the likelihood of successful technological development and commercialization. At present, Arrowhead owns majority interest in subsidiaries commercializing diverse technologies, including anti-cancer drugs, RNAi therapeutics, compound semiconductor materials and nanotube technology. The Patent Toolbox: Arrowhead has acquired or exclusively licensed patents and patent applications covering a broad range of nanotechnology. The Company actively adds to its intellectual property portfolio. Safe Harbor Statement under the Private Securities Litigation Reform Act of 1995: This news release contains forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. These statements are based upon our current expectations and speak

only as of the date hereof. Our actual results may differ materially and adversely from those expressed in any forward-looking statements as a result of various factors and uncertainties, including the recent economic slowdown affecting technology companies, the future success of our scientific studies, our ability to successfully develop products, rapid technological change in our markets, changes in demand for our future products, legislative, regulatory and competitive developments and general economic conditions. Our Annual Report on Form 10-K and 10-K/A, recent and forthcoming Quarterly Reports on Form 10-Q and 10-Q/A, recent Current Reports on Forms 8-K and 8-K/A, our Registration Statements on Form S-3, and other SEC filings discuss some of the important risk factors that may affect our business, results of operations and financial condition. We undertake no obligation to revise or update publicly any forward-looking statements for any reason. Source: Finanzen.net

Posted by Nano News at 11:17

NANO-EM blends water, diesel for a cleaner nano-fuel

Water instead of gas? It seems the somewhat far-fetched concept might be possible after all. Israeli company NANO-EM, a product of the Yozmot HaEmek Technological Incubator, has come up with nano-diesel, a blend of water and diesel at a concentration of 15 percent, which reduces diesel consumption and cuts down on the pollution emitted by the engine. According to NANO-EM, nano-diesel does not harm the engine in any way, since the size of the water drops are reduced to a nano-metric level, creating a stable mixture. Consumption of diesel rises steeply every year, primarily because of the increasing number of private and commercial vehicles running on diesel. Diesel is becoming increasingly popular because of its advantages over benzene: not only is it cheaper per liter, but vehicles that run on diesel also run further on one liter of the fuel than those fueled by benzene. Researchers, aware that diesel's tendency to pollute is one of its main flaws, generally focus their attention on upgrading the engine, at a huge expense and by using up many resources. Several large companies in the petrochemical industry are now trying to solve that problem. According to NANO-EM, producing stable water emulsions in diesel is a solution that has already been discussed in the past, but the biggest obstacle to production is instability caused by the size and dispersion of the water drops. NANO-EM claims that its product is a safe and efficient solution to the problem. Zvia Blanc-Baron, CEO of NANO-EM, says that nano-diesel has other useful applications, such as fuel for mass transit, private and commercial vehicles and even ships; it can be used to produce electricity; and can be used to heat private and commercial premises. The company has so far raised \$200,000 and is currently looking for a strategic partner. Source: Haaretz

Posted by Nano News at 10:04

Thursday, July 6, 2006

Nano watchdog tracks policy progress

The Council for Science and Technology (CST) has been asked by Government to review progress of its commitments on nanotechnology policy, and has issued an invitation for written evidence. The independent review will cover the Government's actions in the two years since their response to the Royal Society/Royal Academy of Engineering report "Nanoscience and nanotechnologies: opportunities and uncertainties". Professor Sir John Beringer will lead the review. "How the Government is handling issues of nanotechnology and nanoscience will influence the UK's competitiveness in this rapidly growing field, and the public's confidence in Government science policy," said Prof. Beringer. "We will be taking a close look at what the Government has done, whether it has responded quickly enough, and how well prepared it is for new developments in nanotechnology." The review will seek feedback on the extent to which the Government has taken forward the commitments described in its Response. It will also examine the timeliness and effectiveness of the actions taken by Government and whether there have been significant developments in nanoscience and nanotechnology since the initial report. Source: The Engineer Online

Posted by Nano News at 23:38

UK. Nanotechnology policy review announced

The Council for Science and Technology (CST) has been asked by Government to review progress of its commitments on nanotechnology policy, and has issued an invitation for written evidence. The independent review will cover the Government's actions in the two years since their response to the Royal Society/Royal Academy of Engineering report "Nanoscience and nanotechnologies: opportunities and uncertainties". The review will be led by Professor Sir John Beringer, who said: "How the Government is handling issues of nanotechnology and nanoscience will influence the UK's competitiveness in this rapidly growing field, and the public's confidence in Government science policy." "We will be taking a close look at what the Government has done, whether it has responded quickly enough, and how well prepared it is for new developments in nanotechnology." Comments are being invited on: The extent to which the Government has taken forward the commitments described in its Response. The timeliness and effectiveness of the actions taken by Government. Whether there have been significant developments in nanoscience/nanotechnology since February 2005 which raise new issues the Government did not address in its Response, and should now. The Call for Evidence is available from the review's website: Nanotechnology Review

Posted by Nano News at 15:19

Nano-urchins unveiled

Tweaking a standard chemical method to make nanotubes has provided researchers with a structure that looks just like a miniature sea urchin. The nano-urchin's spines could prove useful as scaffolding for further molecular construction, the scientists say. The urchin is made from vanadium oxide nanotubes, packed together with a much higher density than previous structures made from the same materials. "They're not only really dense, but really uniform," said Colm O'Dwyer of the Tyndall National Institute, University College Cork, Ireland, and part of the research team. Changing the high pressure and high humidity conditions used in such nanotube syntheses can produce a variety of different structures. But the nano-urchins were still a surprising result, considering the team used only slightly different procedures, said O'Dwyer. On closer inspection, they noticed that each nanotube in the urchin was almost identical to those seen during single nanotube synthesis, where flat sheets of vanadium oxide roll up into cylinders. The team has shown that the nano-urchin forms when these sheets merge before they begin to roll up. "That's the only real difference between stand-alone nanotube synthesis and the nano-urchin," said O'Dwyer. He adds that these are the most uniform vanadium oxide tubes formed to date in terms of wall thickness, the number of layers, and the dimensions of the hollow centre. The unprecedented density of the urchin's nanotubes provides a wealth of possible applications, said O'Dwyer. The high surface area could be used to support catalysis, for example. But the researchers are particularly interested in using the structures as supports for other materials. Hoping that a battery based on nano-urchins could store the same amount of charge as a standard battery in a much smaller volume, the scientists have packed lithium atoms into the spaces between the tubes' atoms. "Inserting the lithium into the urchin is not that difficult at all," said O'Dwyer. "The only difficult part, which we haven't begun to do yet, is to sediment these on a polymer base, as for lithium polymer batteries." The team also hope to insert optically-active nanoparticles, known as quantum dots, which could prove useful in optoelectronic devices. Source: Royal Society of Chemistry

Blog Export: Nano News, <http://nano-news.eu/>

Posted by Nano News at 12:12

Wednesday, July 5, 2006

Is Nano the New Turbo?

A little bad PR can go a long way toward destroying the public's confidence in a product, especially when it comes to potential damage to human health -- just ask Monsanto. Whether it was fair, GMO became a dirty word, and if the nanotech industry isn't careful its products could suffer the same fate. A study released by Lux Research in late June advised companies with nanotech offerings to be alert not only to real risks, but also to perceived risks that could undermine consumer acceptance of their products, even if they pose no actual danger. It might not even matter if products actually contain nanotechnology. In April, Kleinmann GmbH in Germany recalled its Magic Nano products after dozens of users reported breathing problems following contact with the aerosol form of the household glass-and-ceramic tile sealant. The irony is the product in question contains no nano ingredient (the company won't reveal exactly what's in Magic Nano). But it won't matter to consumers. "If something bad happens to an item that has 'nano' in its name, attention will immediately focus on that," says Craig Martin, executive vice president of Feinstein Kean Healthcare, a strategic communications firm based in Boston. "That's what the Magic Nano incident has shown us." Nano seems to have survived the incident with its hip status intact. Perhaps "nano" is the new turbo. Nevertheless, the Magic Nano incident was a wake-up call for industry, says David Rejeski, director of the Project on Emerging Nanotechnologies at the Woodrow Wilson International Center for Scholars in Washington, D.C. The government hasn't yet established guidelines for testing nanotech products' safety, and that could lead to problems, which some activist groups are quick to point out. "The scary part of it is that if we were to demand that nano products be tested for health and safety prior to release, we're not even sure how to do the tests," Rejeski says. He points out, for example, that there have been a handful of studies on the effects of buckyballs on the lungs of lab animals, but no prominent studies have been done on how such nano-materials interact with the gastro-intestinal tract. While some companies rush to put "nano" in their product's name even if it does not scientifically deserve the moniker (the Wilson Center keeps a database of products that have a reasonable claim to using nano-engineering, which is now more than 200 items large), others, like Dupont, are taking a more methodical approach. This summer, Dupont unveiled its Framework for Responsible Nanotechnology, a set of standards and practices for testing nano-products for health and environmental hazards before releasing them commercially. It's a surprising move from a company not exactly synonymous with public health and environmental stewardship. The framework is also unique in that it was drawn up in coordination with Environmental Defense, a non-governmental environmental rights organization. While Environmental Defense has received flak from other green groups for its partnership with Dupont, it can point to a considerable achievement -- the first public set of standards for how to ensure the safety of nano-engineered products. "We're a science-based organization and we want to help anybody that's going to use science to keep this technology safe," says Scott Walsh, a project manager with Environmental Defense's corporate partnerships department. The framework can serve as a template for other corporations that want to follow Dupont's lead, he said. "We could even see it serving as a format upon which government regulation in this area can be based." Self regulation could also have its down sides, Walsh says. "We might end up with a situation where companies that are acting responsibly, like Dupont, are at a competitive disadvantage to less scrupulous companies which launch products without any safety testing," Walsh says. "If that's what happens, government regulation might become a more reasonable approach than voluntary standards." Strict workplace safety standards and environmental monitoring are crucial for nanotechnology manufacturers and laboratories, said University of Michigan professor of toxicology Martin Philbert. "If there is a problem, the first place it will show up will be among the technicians and dishwashers in some research lab," he said. But so far no national debate has addressed creating regulations to protect workers. If Congress and the White House aren't paying attention yet, some of the federal bureaucracies are starting to prick up their ears. The Food and Drug Administration announced in May that it will hold a public meeting in the fall to solicit opinions for nanotechnology products regulation. But that's just the tip of what needs to be done, says Rejeski. "So far all we've seen from nanotechnology are better tennis rackets and nice pants," he said. "That's about to change. This stuff will be in our drugs, our food, our cosmetics and everything else. It's better to plan now for how to deal with it than wait another five years." Source: Wired News

Posted by Nano News at 23:42

Nano Football Field Created by German Scientists

Scientists at the University of Kaiserslautern, Germany, have created the world's smallest football field, half a micrometer long on a scale of 1:210,000,000. The nano football field is so miniscule that 20,000 of them could fit onto the tip of a human hair. The field was created in plexiglass on silicon. Pictures of the field were taken with a raster electron microscopy (REM). "The challenge was to develop the world's smallest football field", said Dr. Stefan Trellenkamp of the Nano+Bio Center, Kaiserslautern. "The football field of the victorious Kaiserslautern team is 500 nanometers by 380

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nanometers, thus the smallest football field comes from the smallest World Cup city", Dr. Trellenkamp went on to say. Source: University of Kaiserslautern

Posted by Nano News at 12:01

Tuesday, July 4. 2006

Nanotechnology 2015

Nanotechnology 2015 and the Convergence with Biotechnology, Information technology and Neural technologies (Brain science, Cognoscience, Cognitive science) Nanotechnology 2015. Converging nano-bio-neural-info-technologies 2002 to 2015.State of Science, technologies 2003 and expectations up to 2015 and prospects up to 2025. Markets and Market development 2002-2003-2006-2010-2015 and Prospects, Companies, Competition, Branches, Applications, Regions, Countries, Worldwide Opportunities and Risks and Strategies.Continue reading "Nanotechnology 2015"

Posted by Nano News at 19:08

Friday, June 30. 2006

Fraunhofer Researchers to Shed Light on Risks of Engineered Nanoparticles

Nanoparticles have already found their way into a wide range of products: cosmetics, paints or tires. These tiny particles are even a selling point for car-care products. So far, however, little research has been done into how they impact on the environment and the human organism. INOS, the "Identification and Assessment of the Risks of Engineered Nanoparticles on Human Health and Environment" research project funded by the Federal Ministry of Education and Research, now aims to throw light on these issues. The Fraunhofer Institute for Ceramic Technologies and Systems IKTS in Dresden is involved in this project. "We can draw on our extensive experience of working with powders on a nanometer scale," reports project manager Dr. Volkmar Richter of the IKTS. The Dresden-based researchers are now investigating synthetic nanoparticles, which are manufactured by project partners and already in use for engineering purposes. These include hard materials such as tungsten carbide, metals like platinum, and carbon nanotubes. These nanoparticles are sheathed in oxide or organic films at the IKTS – the films form during processing or are applied specifically to modify properties. These protective coatings can however influence how materials interact with water and cells. The scientists are investigating the nanoparticles – with and without protective sheaths, individually and as agglomerates – in cell cultures. This research should allow them to find out how easily the particles can penetrate into cells of skin, lungs, intestines or nervous system. Do they cause genetic damage or have an effect on the immune system? The answers to these questions are still unclear. Research findings are still scarce and often contradictory. "That's not surprising, often you find publications with don't specify the precise characteristics of the particles," Volkmar Richter adds critically. And it is precisely these failings that the IKTS researchers want to address through INOS. A joint project involving TU Dresden and the UFZ Centre for Environmental Research Leipzig-Halle aims to find out how nanoparticles affect cells, without performing tests on animals. The researchers will make their findings public in a database. After the end of the project, an accredited laboratory is also planned, which will act as a point of contact for small and mid-sized enterprises in particular and carry out further analysis of nanoparticles. Source: AZoNano

Posted by Nano News at 12:22

Thursday, June 29, 2006

Nanotechnology - Taking stock of tiny developments

Nanotechnology has been described as one of the century's key new technologies, but Swiss experts say determining its future impact remains difficult. While nanoscience is widely expected to reap huge benefits, fears persist over potential harm to the environment and human health. Experts gathered at a recent conference hosted by the Swiss Federal Laboratories for Materials Testing and Research took a broad look at its impact on science, health, society and the economy. Nanoscience and nanotechnology involve studying and working with matter on an infinitesimal scale. One nanometre is one-millionth of a millimetre and a single human hair is around 80,000 nanometres in width. Today, nanotechnology is still in at an early phase of its development. "It's the age of exploration and discovery - we're rapidly expanding our capabilities," Don Eigler, an IBM Research Fellow from California told swissinfo. Eigler, whose work includes building new structures out of individual atoms, says nanoscience's impact is becoming bigger by the day. "Nanotechnology is not so widely deployed at the moment but it'll come more and more, affecting many aspects of our lives," he added. Nanotechnologies are widely seen as having huge potential in areas as diverse as healthcare, information technology and energy storage. Governments and businesses across the world have started to invest substantially in their development. For the federal laboratories, which are investigating and exploiting nanotechnologies as well as studying their impact on society, there is huge business potential for Swiss industry and small and medium-sized companies. "We are actively contacting companies to offer our know-how and access to experimental facilities," said the laboratories' head, Louis Schlapbach. "We are developing material technologies, improving products and creating new ones that might have short-term market opportunities." Special properties Materials' behaviour at the nanoscale is often very different from when they are in a larger form. Nanomaterials can be stronger, lighter, more easily recyclable, and are often able to conduct heat or electricity in a different way; they can even change colour. These special attributes are already being used in a number of ways, such as in semi-conductors, scratch-free paint, wrinkle and stain-resistant fabrics, sun lotions, skis and photographic paper. But like most new technologies, the benefits of nanoscience have to be weighed up against any potential risks specialists warn. Concern While nanotechnology is expected to greatly benefit many areas of science and industry, nanoparticles could be a cause for concern. Little research has been carried out internationally to determine their effects on people or the environment. Semantics is crucial, according to Schlapbach. "It's very wrong to talk about the risk of nanotechnology when you are referring to nanoparticles". "We need to learn more about the risks of nanoparticles to be able to handle them properly," he added. A 2004 study by the Royal Society in Britain concluded that many nanotechnologies pose no new risks to health, and that almost all the concerns relate to the potential impacts of deliberately manufactured nanoparticles and nanotubes, which are free rather than fixed to or incorporated in a material. The federal laboratories are studying the potential risks of nanoparticles within the scope of the "NanoRisk" project, financed by the Swiss government, part of which considers effects on cells and cell metabolism. Informed debate Another crucial issue is public perception and transparency. There is a lack of guidelines in Switzerland and in other countries to regulate the industry as well as wide-scale public ignorance about the benefits and risks. There are also fears that the public will reject some forms of nanotechnology unless an informed public debate takes place involving all stakeholders. "We owe it to ourselves to do a better job at communicating; it is important to engage the public on this issue as early as possible," said Eigler. Source: swissinfo

Posted by Nano News at 08:39

Wednesday, June 28, 2006

Research into nanotechnology

Researchers are working on a project that could see two million books stored in an area the size of a postage stamp. Leicester University scientists are co-ordinating an international project involving information storage on nanoparticles. The EU-funded Nanospin project aims to manufacture and study the behaviour of magnetic nanoparticles. Chris Binns, professor of nanoscience in the department of physics and astronomy at Leicester University, said: "Nanotechnology appears to hold the key to developments in a wide range of technologies, including materials science, information technology and healthcare."

Posted by Nano News at 18:05

Nanotech Briefs Announces Second Annual Nano 50 Winners

Nanotech Briefs magazine has announced the winners of its second annual Nano 50 awards competition, which recognizes the top 50 technologies, innovators, and products that have significantly impacted, or will impact, the state of the art in nanotechnology. The 50 winners are the best of the best - the innovative people and designs that will move nanotechnology to key mainstream markets. Nano 50 nominees were judged by a panel of independent nanotechnology experts in three categories: Technology, Product, and Innovator. Those receiving the 50 highest scores were named Nano 50 winners. Nanotech Briefs will present the awards at a special reception and dinner during the National Nano Engineering Conference, November 9-10, at the Boston Marriott Newton. Nanotech Briefs is a monthly digital (PDF format) magazine from the publishers of NASA Tech Briefs that reaches more than 10,000 design engineers involved in all aspects of nanotechnology and MEMs. It provides the best of government, industry, and university nanotech innovations with real-world applications in areas such as electronics, materials, sensors, manufacturing, biomedical, optics/photonics, and aerospace/defense. Source: Nanotech Briefs®

Posted by Nano News at 12:50

Tuesday, June 27. 2006

Nanotechnology company to go public

NanoCover Scandinavia A/S, which has just applied for admission to First North marketplace under the Danish OMX exchange, is dealing with sales, distribution and development of NanoCover® a series of products for surface treatment, developed and manufactured by using the most innovative and advanced nanotechnologies to present the user with a product of quite unique qualities. The background for NanoCover's decision to go public is among other things because the company had a subscription record for the company's shares last May when NanoCover sold shares for approximately EUR 3 million, which were subscribed to by altogether 595 new shareholders. The large number of new shareholders has meant that the company has accelerated their application about admission to First North to improve liquidity in the shares. The company's vision is to make the brand "NanoCover" a global synonym for innovative nanotechnology development and sales of products for surface treatment both for the direct user and for industries. Source: COPENHAGEN CAPACITY

Posted by Nano News at 11:31

Monday, June 26, 2006

Drug-Loaded Nanoparticles Use Two-Pronged Approach to Kill Cancer Cells

Tumor cells that develop resistance to multiple anticancer drugs are responsible for a majority of cases in which treatment ultimately fails. In most cases of multiple drug resistance, the tumor cells have evolved the ability to produce a protein in their membrane, known as p-glycoprotein (P-gp), that pumps anticancer agents back out of the cells before the drugs can exert their toxic effects. Certain types of nanoparticles have already demonstrated they can overcome multiple drug resistance by ferrying drugs into cancer cells, bypassing this protein pump. Now, researchers in France have come up with a new way to circumvent drug resistance. Using a lipid nanocapsule, Alf Lamprecht, Ph.D., of the University of Franche-Comté in Besançon, and Jean-Pierre Benoit, Ph.D., of the University of Angers, have created a drug delivery device that both delivers drug into a cancer cell and inhibits p-glycoprotein. This two-pronged approach successfully killed drug resistant tumor cells. The investigators report their findings in the *Journal of Controlled Release*. The key ingredient in the nanocapsule is a fatty polymer known as poly(ethylene glycol)-600-hydroxystearate (PEG-HS), which the investigators used to create a water-soluble coating for the nanocapsule that would also shield the particle from uptake and elimination by immune system cells. But in two strokes of serendipity, the researchers found that once the nanocapsule enters a cell it quickly sheds its PEG-HS coating and that free PEG-HS inhibits p-glycoprotein from inside the cell. PEG-HS, which is currently used as a component in various injectable drugs and has been proven safe for human use, has no effect on p-glycoprotein when it is outside of cells. Taking advantage of this property, the investigators used their PEG-HS-coated lipid nanocapsule to create a sustained-release formulation of etoposide, a proven anticancer drug used to treat testicular cancer and some forms of lung cancer but is particularly prone to multiple drug resistance. They then tested the drug-loaded nanocapsule on glioblastoma cells expressing p-glycoprotein. The results of these experiments showed that smaller nanocapsules were more effective than larger ones, but that all the PEG-HS nanocapsules loaded with etoposide were able to overcome drug resistance and kill the cultured tumor cells. Additional tests conducted on non-malignant astrocytes, another type of brain cell, found that the drug-loaded nanocapsules were far less toxic to these healthy cells than they were to the brain tumor cells. This work is detailed in a paper titled, "Etoposide nanocarriers suppress glioma cell growth by intracellular drug delivery and simultaneous P-glycoprotein inhibition." An abstract of this paper is available through PubMed. View abstractSource: National Cancer Institute

Posted by Nano News at 15:45

Platform Enables Manufacturers to Speed Time to Market for Breakthrough Photonic Applications

NANOIDENT Technologies AG, the leading company in the development and manufacture of organic semiconductor-based photonic solutions, today announced its NANOIDENT Photonic Solutions Platform(TM). An industry first, this new Platform includes unique technical features designed to produce commercial organic photonic devices for applications in a wide range of markets, including consumer, industrial, life science, security and telecommunications. With its groundbreaking manufacturing process, NANOIDENT helps original equipment manufacturers (OEMs) deliver innovative photonic applications to market faster and at a lower cost. NANOIDENT has leveraged the latest developments in nanotechnology and materials science in the development of its Photonic Solutions Platform. The company's solutions are produced using conductive and semiconductive organic materials, making it possible to print electronic circuits on almost any surface using an inkjet printer, resulting in devices that are flexible, ultra thin and low weight. And, unlike traditional silicon-based solutions, NANOIDENT's organic semiconductor-based solutions can be made into a wide variety of shapes and be used in large sensing areas, opening up new application areas for a market that is expected to grow to more than \$250 Billion USD by 2025 (Source: IDTechEx). With NANOIDENT, devices can be manufactured in minutes compared to weeks. "The manufacturing processes for organic semiconductor-based devices offer the opportunity to develop new applications based on organic displays, sensors, solar cells and even organic chips, and more importantly removes the need for a traditional billion dollar semiconductor FAB," said Craig Cruickshank, founder and principal analyst, cintelliq Ltd. "With organic semiconductor-based photonic solutions such as those from NANOIDENT, device manufacturers can develop novel applications that simultaneously increase their competitive advantage while reducing overall development costs." NANOIDENT Photonic Solutions Platform NANOIDENT's Photonic Solutions Platform enables the production of a broad range of photonic devices such as photodiodes, photodiode lines and arrays, biometric sensors, biochip readers, X-ray image sensors and displays. Key components of the Platform include: Organic photodiodes/lines/arrays that convert light into electrical signals Sensor-embedded multicolor OLED light sources that illuminate an object during the data acquisition process Sensor-embedded electronic circuits that provide an analog or digital sensor interface and additional smart sensor functionality NANOIDENT solutions are based on the unique properties of organic semiconductor materials.

Ultra-thin (30-300nm) organic material layers can be deposited in liquid form, enabling circuits to be printed directly onto almost any surface -- including PET foil, glass or paper with an inkjet printer. Production is also environmentally friendly with disposable organic materials. "Due to the unique characteristics of organic semiconductor-based photonic solutions, our customers can create new devices at significantly lower cost than today's silicon-based solutions," said Klaus Schroeter, CEO, NANOIDENT. "With the NANOIDENT Platform, current biometric solutions can become more secure, medical on-site diagnostics can be improved and consumers can enjoy new flexible displays on the latest electronic devices. We look forward to changing the face of the organic semiconductor industry to help our customers deliver these revolutionary applications to market." Availability NANOIDENT's Photonic Solutions Platform is available today directly from NANOIDENT for custom product development projects. The company plans to open its Organic FAB (OFAB) and reach full production in Q4 2006. For more information about NANOIDENT and the new Photonic Solutions Platform, please visit www.nanoident.com. For artwork, please visit: [Image-Download About NANOIDENT AG](#) NANOIDENT is the technology leader in the development and manufacture of organic semiconductor-based photonic solutions. The company's core technology utilizes the latest breakthroughs in materials science and nanotechnology to create a revolutionary Photonic Solutions Platform (TM). The NANOIDENT Photonic Solutions Platform is used to produce the world's first commercial organic photonic sensors, forming a whole new generation of applications in the industrial, biometric and life science markets. NANOIDENT's extremely fast manufacturing process uses liquid conductive and semiconductive materials. This liquid is used to print electronic circuits on almost any surface using an inkjet printer, producing products in minutes for prototype as well as high volume applications. The company's photonic devices are bendable, disposable, light and ultra thin, have application specific spectral properties, and can contain light sources and light detectors as well as electronic circuits. These unique characteristics enable cost effective large device areas for applications such as industrial and biometric sensors, biochip readers, and displays for smart packaging and electronic signage. Privately-held, the company is based in Linz, Austria. Contact: NANOIDENT Technologies AG Paul S. Schleicher +43 732 9010 2200 Untere Donaulaende 21-25A-4020 Linz, Austria Email: press@nanoident.com; Source: Yahoo Finance

Posted by Nano News at 11:28

Friday, June 23. 2006

Germany begins risk survey on nanotechnology

Germany's food safety risk assessment agency has commissioned a study on the potential health effects of nanotechnologies used in products. The German Federal Institute of Risk Assessment (BfR) has commissioned the University of Stuttgart to conduct the survey on the risks of nanotechnological applications in food, cosmetics and other everyday items, according to a report by the Nanoforum. So far nanotechnology has made minor inroads in the food and drink industry, mainly due to consumers' fears about the unknown risks the technology poses to their health. However food companies see great opportunity in the technology as a means of introducing innovative products to the market. Surveys like the one in Germany may either heighten consumer fears about the technology or serve to lessen them, depending on the findings. The outcome could also be new regulations for the food sector relating to the use of nanotechnology. The survey will be performed by ZIRN (Centre of Interdisciplinary Risk-science and Sustainable Development of Technology) which will involve about 100 experts from science, industry, public authorities and non-governmental organisations. A questionnaire will focus on questions relating to current and future applications and potential risks. This information will be debated further in two workshops before being consolidated into a "risk-barometer" to be used to better inform public authorities. BfR is responsible for identifying and assessing potential risks to consumers from foods, feedstuffs, chemicals and consumer products. It is also responsible for proposing risk reduction measures to political circles and informing the general public about them. Emerging nanotechnology was incorporated into \$32 billion in manufactured goods in 2005 – more than double the previous year, Lux Research found. Global research and development spending on the field reached \$9.6bn, up 10 per cent from 2004 the company stated in the fourth edition of its Nanotech Report. For the food and drink industry anything "nano" that involves food contact, to say nothing of actual ingestion, will be subject to a lot of scrutiny for at least the next three years, as regulatory bodies like the Food and Drug Administration get preliminary studies done and rules written. Nanotechnology is the term used to describe matter with lengths of between 1 and 100 nanometres. One nano-metre is equal to one billionth of a metre, and is about the size of a small molecule. Source: Food Production Daily

Posted by Nano News at 16:13

ETH Zurich: A close look at catalysis by gold

In recent years, gold has received more and more attention as a catalyst. ETH researchers have determined a possible reaction mechanism in these highly active catalysts, of the activation of oxygen on gold nano-particles. These results were obtained by using state-of-the-art time-resolved and high energy-resolution fluorescence detected X-ray spectroscopy on catalysts under reaction conditions. Catalysis by gold has received considerable attention in recent years. Particles of gold have been reported to be very active in various oxidation reactions. The particle size greatly influences the catalytic activity of gold particles and with decreasing particle size, the activity increases. Moreover, the type of support also affects the catalytic activity. One example of a reaction with gold catalysts is the CO oxidation in presence or absence of hydrogen, which is relevant for the use of hydrogen in fuel cells. Regarding the mechanism, one of the main questions is how oxygen is activated on the catalyst. Jeroen A. van Bokhoven of ETH Zurich's Institute for Chemical and Bio-Engineering and colleagues at the ESRF, Grenoble, and the University of Southampton have now identified a possible reaction mechanism for the oxidation of CO over the gold particles in supported gold catalysts. The research results have been published in "Angewandte Chemie". How gold activates the oxygen The researchers studied gold supported on the nonreducible support Al₂O₃ and observed a reaction channel that has partially oxidized gold as reaction intermediate. Charge transfer from a reduced gold particle to oxygen activates the oxygen molecule. The researchers propose that reduced gold in small particles has the unique ability to transfer electrons to oxygen. A small fraction of the surface atoms are oxidized and are essential for high catalytic activity for oxidation of CO. The thermodynamic redox behaviour of small gold particles is distinctly different from that of bulk gold, which is inert. The difference likely originates from the different electronic properties of the small gold particles, which contain a large fraction of coordinatively unsaturated atoms with corner and edge positions. The latter have more d-electrons, which are additionally shifted towards the Fermi-level, than atoms in bulk gold. The electronic changes in nano-particles lead to stronger metal-adsorbate bonding and higher reactivity. Exposure of the gold-activated oxygen to CO rapidly forms CO₂ and with re-reduction to metallic gold completing the catalytic cycle. Kinetic analysis of the individual reaction steps indicates that reduction is much faster than the re-oxidation and the rate-limiting step is the activation of oxygen on the gold surface. Valuable tool in determining the structures of catalysts For their experiments Jeroen A. van Bokhoven and colleagues combined in-situ time-resolved and in-situ high energy-resolution fluorescence detected X-ray spectroscopy. This method is likely to become a valuable tool in determining the structures of catalysts under catalytically relevant conditions. Combining high energy-resolution data with time-resolution and the possibility of in-situ measurement in

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combination with mass spectrometry at synchrotrons make it a promising tool in determining the structures of catalytically active sites. Further information: Jeroen A. van Bokhoven Institute for Chemical and Bioengineering Phone +41 44 63 25542 Fax +41 44 63 21162 eMail: j.a.vanbokhoven@chem.ethz.ch Source: uni-protokolle.de

Posted by Nano News at 10:41

Thursday, June 22, 2006

Nano-optical solver offers rapid solution

Nano-optical solver offers rapid solution German firm JCMwave, a Zuse Institute Berlin spin-off, has come up with optical software that can model electromagnetic wave propagation on a laptop, solving Maxwell's equations and offering solutions in just 10 s. James Tyrrell learns more about the company that has grabbed the attention of Infineon Technologies and Siemens. Rigorous simulation of electromagnetic wave propagation can conjure up images of a suite of PCs humming away in an air-conditioned lab, but not if you are running JCMwave's nano-optical software. The German spin-off's powerful light scattering and light propagation algorithms can run on a laptop and deliver accurate solutions within a few seconds. Component optimization rounds that previously took days, weeks or even months, can now be performed in just a matter of hours. Developed to solve electromagnetic problems, JCMwave's software has a wide range of applications from the design of photonic crystal fibre through to microwave and radar technology. However, it especially suits nano-optics, where structures are smaller than the wavelength of light. "For macroscopic systems such as binocular lenses, you might use Gaussian optics or ray tracing, but all of these approximations fail when the feature sizes are very small," Sven Burger, JCMwave's research director told OLE. "Our finite element technique is well suited for all electromagnetic problems where small features play a role." The finite element method can handle complex geometries, as found in integrated optics, isolated features including a single nano-aperture in a metal film or periodic problems such as photonic crystals and diffraction gratings. The technique is the result of years of research and development at Zuse Institute Berlin (ZIB). Keen to realize the software's commercial potential, ZIB scientists and industry partners from Infineon Technologies and Siemens founded JCMwave in 2001. The spin-off takes its name from the initials of Scottish physicist, James Clerk Maxwell, and with good reason. Maxwell's famous electromagnetic wave equations form the heart of JCMwave's simulation tools and are solved without approximation. "You don't need to have a farm of supercomputers," said Burger. "We have very fast solvers that allow calculations to be performed on normal computers." The standalone package is based on mathematical concepts developed at ZIB and works with Windows, Linux or Unix operating systems. "It's a tool that can be used by everybody, even on a laptop," he added. How it works Once the user has chosen the domain and boundary conditions, the package sub-divides the geometry into triangles and determines the associated electric and magnetic fields using a fast matrix equation solver. It turns out that the group's finite element method of modelling the light field is incredibly efficient in terms of computing power. This is thanks to a so-called adaptive grid refinement routine, which is steered by an error estimator to apply the computing power where it is needed most. As Burger explains, this non-uniform grid approach allows users to handle multiscale structures or arbitrary geometries and is particularly useful when modelling discontinuities in the refractive index distribution. The team compared its fast solver software with other competing packages including MIT's MPB solver, which is based on a plane-wave method. "For a target accuracy of 10⁻² we have a speed advantage of about 1000 versus other methods that are used within the industry," said Burger. "This means that we can obtain a solution within a few seconds as opposed to a few hours, which is really significant for many users." Alternatively, Burger says that the high-speed JCMwave software can be used to obtain accuracies that are simply impossible for other packages to achieve, making it an attractive design tool. JCMwave's rigorous simulation software owes a great deal to its strong link with ZIB and the depth of knowledge that this co-operation provides. Researchers at the 150 person-strong, Berlin-based centre for applied mathematics have been working on electromagnetic simulation for more than 20 years. What's more, JCMwave is in a position to build on this, offering not just software, but also a consultancy service to its customers. Industrial applications One example is JCMwave's collaboration with German chip maker Infineon Technologies, to improve light propagation through phase masks. "For Infineon, the goal is to develop phase masks that can produce clearer images in the photoresist and sharper contrast in order to shrink the chip's critical dimensions," explained Burger. "This leads to smaller computer chips in the end." Burger acknowledges that modelling is only one of the many steps in the chip development chain. However, with semiconductor firms placing more and more emphasis on computer simulation to save both time and money, JCMwave could well find itself in the right place at the right time. "The masks have dimensions that are smaller than the wavelength of light, contain sharp edges and display a strong contrast between the metal and surrounding air," said Burger. "If you want to solve Maxwell's equations for such a situation then it is a big advantage to use our adaptive methods, which lead to a very fast convergence of the algorithm and need little memory requirements." It's not just Infineon that has turned to JCMwave for advice. "The European Southern Observatory (ESO) in Chile was looking for a glass fibre that transports light at very high power and with very low losses to operate its adaptive optics system," revealed Burger. "They were interested in designing a hollow core photonic crystal fibre with very small air tubes along the fibre direction and nanometre scale struts in between." As Burger explains, previously it could take up to a whole day to calculate a given mode for a single design. "If you want to optimize the thickness of the fibre core for example, it might take months," he added. "Now, with the finite elements that we use, you can optimize the design within an hour." With some successful projects already under its belt, JCMwave has ambitions to expand into antennas, mobile phone technology and waveguides. "At the moment our largest field is

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nano-optics and lithography, but the software is a simulation tool for electromagnetics, so we can also handle micro-wave or radar problems," he concluded.• JCMwave presented this work at Laser Optik Berlin, which took place in Germany on 23-24 March.Source: Optics.org

Posted by Nano News at 12:00

Sunday, June 18. 2006

SAN MARCO SADDLES USE NEW ULTRA HIGH STRENGTH MATERIAL BASED ON NANOTECHNOLOGY

Selle San Marco, the leading Italian maker of high quality, professional racing bicycle saddles has selected ultra-high strength Sandvik Nanoflex rails for its innovative and patented Magma MG, Rever Profil, Era and SKN saddles. Small diameter Sandvik Nanoflex saddle rail tubing is used as an alternative to round, solid titanium. The result for Selle San Marco is that the overall weight of the saddle is minimised. Titanium carries a reputation as a high quality, low weight material. Sandvik Nanoflex challenges that reputation as a new material that outperforms even the strongest titanium at a lower weight. In general, Sandvik Nanoflex has twice the strength and stiffness compared with even the most sophisticated titanium alloys used in the aerospace industry. The exceptional strength-to-weight ratio and forming properties of Sandvik Nanoflex provide opportunities for additional bicycle applications such as frame tubing, seat posts and handle bars. Other sports uses include lightweight, durable sports handles; tennis, lacrosse and badminton rackets; hiking equipment, crampons and other advanced winter sports gear. Source: New Materials International

Posted by Nano News at 16:07

Seventh International Conference on the Science and Application of Nanotubes

The Seventh International Conference on the Science and Application of Nanotubes started today in Nagano, Japan (June 18 - 23, 2006). With over 500 scientists registered so far, NT06 will be the largest nanotube conference ever. For more informations, go to: [NT'06 Homepage](#)

Posted by Nano News at 09:25

Saturday, June 17, 2006

New Material from a Beetle

The Namib Desert, one of the driest regions in the world, gets less than half an inch of rain per year. But early in the morning, a light fog drifts over the desert, offering the plants and animals living in that harsh environment their only chance for a life-sustaining drink. When that fog rolls in, the Namib Desert beetle is ready with a moisture-collection system exquisitely adapted to its desert habitat. Inspired by this dime-sized beetle, MIT researchers have produced a new material that can capture and control tiny amounts of water. The material combines a superhydrophobic (water-repelling) surface with superhydrophilic (water-attracting) bumps that trap water droplets and control water flow. Potential applications for the new material include harvesting water, making a lab on a chip (for diagnostics and DNA screening) and creating microfluidic devices and cooling devices, according to lead researchers Robert Cohen, the St. Laurent Professor of Chemical Engineering, and Michael Rubner, the TDK Professor of Polymer Materials Science and Engineering. The U.S. military has also expressed interest in using the material as a self-decontaminating surface that could channel and collect harmful substances. The researchers got their inspiration after reading a 2001 article in *Nature* describing the Namib Desert beetle's moisture-collection strategy. Scientists had already learned to copy the water-repellent lotus leaf, and the desert beetle shell seemed like another good candidate for "bio-mimicry." "If you sat at your desk and tried to just think of ways to do things, it would take a very long time," Cohen said. "Once you see these things in action, it's obvious what you have to do." The desert beetle has evolved to take perfect advantage of the tiny amount of water available in the desert. The fog that drifts over the Namib Desert is so light that normal condensation can't take place, so "you need something specially designed to hold and collect that condensation," Rubner said. When fog blows horizontally across the surface of the beetle's back, tiny water droplets, 15 to 20 microns, or millionths of a meter, in diameter, start to accumulate on top of bumps on its back. The bumps, which attract water, are surrounded by waxy water-repelling channels. "That allows small amounts of moisture in the air to start to collect on the tops of the hydrophilic bumps, and it grows into bigger and bigger droplets," Rubner said. "When it gets large, it overcomes the pinning force that holds it and rolls down into the beetle's mouth for a fresh drink of water." To create a material with the same abilities, the researchers manipulated two characteristics -- roughness and nanoporosity (spongelike capability on a nanometer, or billionths of a meter, scale). By repeatedly dipping glass or plastic substrates into solutions of charged polymer chains dissolved in water, the researchers can control the surface texture of the material. Each time the substrate is dipped into solution, another layer of charged polymer coats the surface, adding texture and making the material more porous. Silica nanoparticles are then added to create an even rougher texture that helps trap water droplets. The material is then coated with a Teflon-like substance, making it superhydrophobic. Once that water-repellent layer is laid down, layers of charged polymers and nanoparticles can be added in certain areas, using a properly formulated water/alcohol solvent mixture, thereby creating a superhydrophilic pattern. The researchers can manipulate the technique to create any kind of pattern they want. "I think this is the factory of the future, or the chemical plant of the future," Cohen said. "I think there could be a lot of (applications) we haven't even thought of yet that might come out of this." The research is funded by the Defense Advanced Research Projects Agency and the National Science Foundation. Source: Technology News Daily

Posted by Nano News at 21:05

UK. Micro and nanotechnology in practical marine applications

Of particular interest to any marine company working with anti-fouling/bio-fouling, fuel, lubricants, painting and finishing and composites. Micro and nanotechnology (MNT) is being described as the most significant development since plastics. Expected applications in the marine industry within that time include never-fogging windscreens, composites, heat exchangers, water inlets, anti-corrosives and antifouls. Nano means very, very, very small. A nanometre is one billionth of a metre. A nanoparticle, which is at the root of most applied nanotech, and which is distinct from micro nanotechnology, (the construction of tiny machines by other tiny machines, which is still largely theoretical), is basically a very, very, very small particle. There is the possibility of grants, industry support and partnerships for marine companies who may be interested in working with MNT/taking part in trials in the future. The emphasis for the event is definitely the practical marine applications of MNT rather than the theory behind it. Date 5 July 2006, 1730 for 1800 start. 2100 finish. Venue Cornwall Marine Network offices, Marine Skills Centre, Bridon Marine Building, The Docks, Falmouth, Cornwall, TR11 4NJ.. -Cost £25 per head. Source: BMF news

Posted by Nano News at 12:21

Friday, June 16, 2006

Heidelberg Instruments to support micro and nano research at INRS

Heidelberg, Germany, June 16, 2006: Heidelberg Instruments announced the sale of an advanced DWL66 fs maskless laser lithography system to the Institut National de la Recherche Scientifique, Canada. The DWL66 fs maskless lithography system is capable of binary and grey scale exposure, layer to layer alignment, and is able to produce minimum features down to 0.6 microns. "We look forward to support INRS with their innovative research and development of new materials and components in micro-electronics and photonics, with applications in high speed telecommunication systems. Our DWL66 fs will be used for direct write rapid prototyping and photomask making," says Alexander Forozan, Vice President of Sales and Marketing, Heidelberg Instruments. About INRS Micro and Nano Research: The Laboratory for Micro and Nanofabrication (LMN) of the "Institut National de la Recherche Scientifique" (INRS, University of Quebec) is a brand new state-of-the-art laboratory dedicated to nanotechnology research. The LMN has the tooling for complete process flow allowing fabrication of advanced prototypes in nanoelectronic, millimeter wave and photonic science. Because of its links with other INRS labs involved in femtoscience research and in life and energy science, the LMN is well positioned to play an important role in many important fields like aerospace, transportation and biomedical research. About Heidelberg Instruments, GmbH: With an installation base of more than 250 systems in over 30 countries, Heidelberg Instruments is a world leader in production of high precision maskless lithography systems. These systems are used for direct writing and photomask production by some of the most prestigious universities and industry leaders in the areas of MEMS, BioMEMS, Nano Technology, ASICS, TFT, Plasma Displays, Micro Optics, and many other related applications. Source: Heidelberg Instruments

Posted by Nano News at 12:13

Tuesday, June 13. 2006

Editorial Comment Portable lung breathes life into hi-tech Wales

When the multi-million-pound nanotechnology centre at University of Wales, Swansea officially opened its gleaming doors earlier this year many thought the work there would be confined to the realms of science fiction. Scientists studying the incredibly small, building new materials and machines atom by atom - it sounded like the stuff of Star Trek. But a new project led by Professor Rhodri Williams and backed by nanotech science is likely to produce results, not pipe dreams, in an area where it matters most - our overburdened, underfunded health service. A new 'portable lung' scientists on the seafront campus are working on could be in our wards within 10 years, saving thousands of lives and millions of pounds. The lightweight machine will be essential in fighting acute respiratory infection (ARI). Every winter thousands of elderly patients are taken into already crowded, expensive-to-run intensive care units suffering the effects of ARI. The results are vast expense, and hundreds of delayed operations, a major stumbling block to the smooth running of our hospitals. While what some are calling the 'plastic lung' takes over the functions of the patients' lungs they can recover from life-threatening infections so the prognosis for ARI patients is better too. Nanotechnology experts are currently fine-tuning the portable lung. Blood has a tendency to form dangerous clots when in contact with artificial surfaces but the nanomedicine teams at Swansea are hard at work developing new materials to ensure the portable lung provides a vital new weapon in the doctors' armoury. The new invention could also be used to help frontline troops suffering the effects of chemical weapons. The portable lung project is not only justification for the millions of pounds poured into futuristic nanotechnology it also serves to highlight the worth of the army of new technium centres springing up across Wales. One of the partners in the portable lung project, along with Swansea NHS Trust, is specialist blood treatment firm Haemair Ltd based at the Digital Technium Centre on Swansea University's campus. It is another telling example of how technium centres are starting to turn good ideas into workable, saleable and above all practical inventions that improve people's lives and at the same time enrich Wales' economy. In a land where coal, steel and metal production once ruled, a subtler, better looking, hi-tech, knowledge economy is starting to emerge from the shadows of the steel mills and the pithead wheels. Source: TMC-News

Posted by Nano News at 15:42

Monday, June 12, 2006

Advance Nanotech, CAPE use nanomaterials to develop new organic composites for printing chips

Nanotechnology financiers and facilitators Advance Nanotech Inc (OTCBB) today reported "significant progress" in developing new organic semiconductors. The Advance Nanotech research team, in collaboration with the Centre for Advanced Photonics and Electronics (CAPE) at the University of Cambridge, has developed novel composites made up of organic polymers and nanostructured materials that provide "printable" semiconductors for low-cost inkjet print manufacturing. Peter Gammel, chief technology officer at Advance Nanotech said: "This simplification in the manufacturing of semiconductors will open up a world of new uses for electronics. We will be able to incorporate intelligent circuits into a variety of objects, from clothing to packaging. Dupont, PlasticLogic, Cambridge Display Technology and e-Ink are just a few of the companies who are participating in the printable electronics bandwagon". Xaar is another Silicon Fen company involved at the cutting edge of the ink jet printing technology. Advance Nanotech is "very optimistic" about the demand for printed electronics. Market analysts IDTechEx estimate that printed electronics will grow to \$30 billion in 2015 and reach \$250 billion by 2025. In the future, a full range of electronic and optoelectronic components could be printed - from transistor circuits to photovoltaic films, from RF ID tags to OLEDs and displays, from logic and memory components to wireless interfaces and RF shields. Electronic and optoelectronic fabrication plants will resemble printing presses and enormous markets could be created where conventional silicon chips cannot go today because they are too costly and rigid. Enabling this revolution will require polymer materials that can be inkjet printed and also have carrier mobility and current transport characteristics that make them suitable for electronic device applications. "A one nanometer gap between the molecules of an organic polymer is sufficient to prevent effective charge transport. Today even the best polymer materials exhibit a conductivity that is two to three orders of magnitude lower than silicon," says Dr. Paul Beecher (pictured), a CAPE researcher working on the project. Nanotechnology "Our technology explores an alternative approach to overcoming the poor electrical properties of most organic semiconductors by exploiting the enhanced conductivity brought about by selected nanomaterials. Our most recent results suggest the potential of our technique for addressing this crucial market need." In more than a year of intense R&D effort, the AVNA/CAPE team has optimized the chemical treatment of nanostructured materials and successfully dispersed them in a range of polymers. Selected nanomaterials have been incorporated in organic polymers, thus turning insulating materials into composites that show promising transistor characteristics. CAPE says these composites are quite stable, with no tendency to quickly form aggregates in solution, and are therefore suitable for inkjet print manufacturing. The investment in a new conductive polymer technology was made in partnership with CAPE, a research facility within the Electrical Division within the University's Department of Engineering. Advance Nanotech said it is currently funding 26 portfolio companies in the electronics, biopharma and materials industries. Source: Silicon Fen Business Report

Posted by Nano News at 17:51

Thursday, June 8, 2006

Zyvex and Arkema Strengthen Strategic Partnership in Nanomaterials

Zyvex and Arkema today have announced their intention to strengthen their strategic partnership by jointly developing commercial nanomaterials applications. Through a new licensing arrangement, Arkema will use Zyvex's patented Kentera(TM) dispersion technology, in conjunction with its own Multi Wall Carbon Nanotubes (MWNTs). Arkema will also be the exclusive distributor in Europe of Zyvex's NanoSolve® product line. A recognized industry leader, Arkema produces and distributes high-quality multiwalled nanotubes (MWNTs). Its production capabilities, opened at the beginning of 2006, currently enable Arkema to manufacture 10 tons per year of high-purity MWNTs at its Lacq site (France). With this new facility, Arkema is planning a commercial development to fulfill the expectations of converters in the thermoplastics, epoxy resins, elastomers and coating sectors. Progress is also expected in the field of energy in which the use of carbon nanotubes should help manufacture energy-efficient batteries, super-capacitors and fuel cells. "We are delighted to partner with Arkema since they consistently produce extremely high quality multi-walled nanotubes," said Zyvex President Thomas A. Cellucci, PhD, MBA. "This alliance demonstrates the technical prowess and capabilities of our R&D pioneers who have developed novel and patented technologies in the nanomaterials arena. This partnership further enhances our position as a nanotechnology leader in Europe, North America and Asia." Zyvex is recognized worldwide as a leader in nanomaterials applications. Under the NanoSolve brand, the company markets additives and concentrates with exfoliated and dispersed nanomaterials, with adhesion to various polymers. Zyvex's NanoSolve products can deliver enhanced mechanical and electrical properties in polymers by selectively incorporating the intrinsic properties of carbon nanotubes into composite materials for the Sporting Goods, Aerospace, Defense, and Automotive industries. "Zyvex's NanoSolve product line provides superior dispersion capabilities, which are valuable to our efforts in nanomaterials," said Christian Collette, PhD, Arkema Vice President - R&D. "We look forward to participating in joint development efforts with Zyvex and continuing to supply MWNTs for their commercial applications." "With Zyvex's NanoSolve product line, we can now offer the market probably the most relevant technical solution for high-tech composite nanomaterials developments," said Jean-Marc Corpart, PhD, Arkema Director of New Business Developments - R&D. "It will perfectly complement Arkema's current Graphistrength(TM) MWNT products." About the companies Zyvex Corporation, based in Richardson, Texas, is the first molecular nanotechnology company. Zyvex's vision is to be the leading worldwide supplier of tools, products, and services that enable adaptable, affordable, and molecularly precise manufacturing. Zyvex commercializes nanotechnology to address real-world applications with high growth potential. Zyvex carries its scientific breakthroughs into key commercial applications in the area of materials, tools, and structures. A global chemical player, Arkema consists of three related and integrated business segments: Vinyl Products, Industrial Chemicals, and Performance Products. Present in over 40 countries with 18,400 employees, Arkema achieves sales of 5.7 billion euros (2005). With its six research centers in France, the United States and Japan, and internationally recognized brands, Arkema holds leadership positions in its principal markets. Source: Zyvex Corporation; Arkema

Posted by Nano News at 11:29

Tuesday, June 6, 2006

Schoeller's NanoSphere® Earns Hohenstein Nanotechnology Quality Label

Switzerland-based Schoeller Textil AG's NanoSphere® finishing technology has earned the Germany-based Hohenstein Institutes' Nanotechnology Quality Label. The Hohenstein Institutes, an independent research and service organization with agencies located around the world, focuses on research, testing, consultation and certification related to technologies used in textile and associated applications. In October 2005, the organization began to offer testing and certification for nanotextiles and their suitability for daily use. Certification of the textiles is based on their adherence to a strict definition of nanotechnology developed in conjunction with NanoMat, a Germany-based nanomaterials network; and also on successful performance according to various criteria including abrasion; water, oil and soil repellency; durability to washing; and skin tolerance. "There is considerable disquiet among retailers and consumers because according to the advertising claims of manufacturers, 'everything is somehow nano,' and we had reason to believe that this was not the case," said Jan Beringer, Ph.D., head of the Intelligent Textiles Competence Center of the Textile Services & Innovations Department, Hohenstein Institutes, and who is responsible for the new quality label. "Our institute has been in existence for 60 years, and we were among the founders of the Oeko-Tex Standard — a quality assurance system for toxin-tested textiles. With the nano quality label, in turn, we are taking a step into the future." Beringer said NanoSphere is the first nanotechnology to meet all the test requirements for the Nanotechnology Quality Label. NanoSphere fabric samples retained their micro and nano structures after 5,000 cycles in the abrasion test; and were highly hydrophobic, and had very good oil and water repellency and oleophobia, even after 50 washing and drying cycles and reactivation by brief ironing. The treated fabric also tested positively in regard to skin tolerance. Source: Textile World

Posted by Nano News at 10:03

Monday, June 5, 2006

FEI deal opens up Russian market

Nanotechnology tools maker FEI Co. has just placed three of its electron and ion-beam scopes with Russia's new national nanotechnology center. The Pilot Scientific and Technical Center of Excellence for Nanotechnology Development was opened last week in Moscow to provide a research center for Russian scientists, both industrial and academic, working in nanotechnology. FEI sold two electron microscopes to the new research center. The company's Russian sales agent also supplied the center with a dual-beam scope. While this is not an unusually large sale for Hillsboro-headquartered FEI, the deal is extremely important, said finance chief Ray Link. "It's like having a customer display center at the highest possible level in Russia," he said. "People will be using our tools and then going back to their companies and universities," and presumably recommending FEI tools for their own operations. The center is the most recent evidence of Russia's commitment to nanotechnology development. It is estimated that Russia will have invested more than \$400 million in nanotech by next year -- a big increase for the country, though still less than the United States, where government agencies have spent at least \$2.6 billion over the past two years on nanotech research. But Russia is one of the top five global leaders in nanotech, along with the United States, China, Japan and Switzerland, said Mark Modzelewski of the NanoBusiness Alliance. Nanotech investments in Russia, China, India and Brazil are growing very quickly, outpacing growth rates in Europe, Japan and the United States, which have been the leading regions for nanotech development. The presence of FEI tools in Russia's top nanotech research center is a great recommendation for sales to other national and academic research centers, Link said. Besides Russia, FEI has sold its tools to national research centers in India and Brazil. Worldwide, government nanotech development is expected to reach \$5 billion this year. For the first time, private corporate investment is expected to outpace government investment, reaching an estimated \$6 billion this year, worldwide. Source: The Portland Business Journal

Posted by Nano News at 10:10

Sunday, June 4, 2006

Italy turns to nanotechnology to retain competitiveness in fashion industry

Italian leather processing and high fashion industries, pressured by an increasingly fiercer global competition, have turned to nanotechnology to preserve their stamina and competitiveness, local media reported on Saturday. United Colors of Benetton, a well-known fashion group with strong Italian characters, has recently signed a cooperation protocol with Singular ID Italia, a nanotechnology company existent for only 16 days whose pillar business was to commercialize magnetic tags for the protection of brands. General manager Stefano Gallucci of Singular ID Italia, encouraged by the deal, was confident about his company's growth potential. "Quite a number of small and medium-sized companies have responded to us positively," he said. Italian firms have to take measures to secure their advantages in design and production technics, he noted. After 30 years of rapid growth, Italy's small and medium-sized companies have begun to struggle uphill with rivals from developing countries where production costs are low and productivity is high. These companies, each with no more than 250 employees and an annual turnover less than 50 million euros, have been the power house of Italian economy and also bear the most brunt of the country's economic slowdown. Last year, Italy's aggregated industrial output fell 1.8 percent year-on-year. In a break-down, the leather and shoe-making sector went down 7.7 percent, the highest among all industries, while the textile and apparel industry dropped 6.5 percent. So far, nanotechnology-based renovations developed by scientists of VEGA have been applied to sunglasses, automobile glasses, sports suits, water faucets, ice cream makers, golf balls and cosmetics. To speed up nanotechnology research, the Ministry of Education, Universities and Research has planned to provide a fund of 26 million euros to support promising programs in VEGA, the first nanotechnology research facilities of Italy. Source: People's Daily Online

Posted by Nano News at 16:31

Convention in Liverpool brings experts to discuss the future of nanotechnology

Technology is racing forward at a breakneck speed, but entrepreneurs and venture capitalists would do well to choose their projects carefully. Early nanotech products are already on the market and Web-based commerce is beginning to recover to the highest levels of activity seen since the Dot.com bubble burst. Cautious investment in technological breakthroughs, however, was a running theme at the annual TECH 2006 convention in Liverpool co-sponsored by TDO and the Case Center. The convention gives attendees from throughout the Central New York region the chance to learn about the technological and systemic trends that could end up shaping their businesses far into the future. The day-long event features morning and afternoon keynote speakers as well as two lecture "tracks" divided into "technology" and manufacturing. Typically, the technology track deals with computers and communications while the manufacturing track deals with processes and systems pertinent to that industry such as Six Sigma and lean manufacturing. Following up on a major theme—nanotechnology—from 2004, the morning keynote address was given by Keith Blakely, CEO of Nanodynamics, Inc. Nanotechnology is a buzzword for devices and products that manipulate matter on such a minute scale that its very characteristics can be altered. Blakely's company has several products on the market, including a 10-pound fuel cell battery designed for military use and a hollow core golf ball that allows for more accurate drives. Neither design would be possible without nanomaterials. "You are going to see nanotechnology change the way you live," said Blakely before cautioning, "it's not hype, but that doesn't mean there is value in every nanotech company." Many emerging technology companies have numerous patents and no shortage of investment capital, but have yet to turn a profit, Blakely warned. A "build it and they will come" mentality is a recipe for investment disaster as Blakely himself discovered when he began his first business in Buffalo in 1981. "What's going on in nanotech right now is not so much revolutionary as it is evolutionary," Blakely explained. Elements to take into consideration before investing in nanotech products are their economic implications—what contemporary frameworks will be displaced by the technology? For example, consider the effects the introduction of the automobile had on the rail industry. Also pertinent are political and health concerns—we are dealing with particles smaller than a virus—that could derail public acceptance of a product. Emerging nanotech products include fuel cells, improved photovoltaic (solar) panels, flash memory for computers, shock-resistant clay, germ-proof bandages and more efficient delivery systems for medicines. But a lot of other technologies are conceptual without a product and the companies that produce them base their valuations on future earning potential. Many, said Blakely, are still trying to secure a revenue stream. Blakely explained his own solid oxide fuel cell, a product he has marketed to the military. Unlike a battery, a fuel cell doesn't simply store energy but produces it. It also requires fuel, in this case a propane cylinder. Blakely said the cell is roughly five times more efficient than an internal combustion engine and at 10 pounds is easily transportable. It can supply about five days of power in combat. Following up in the afternoon was assistant professor and Chair of Entrepreneurship and Innovation at the University of North Dakota, Dr. Jeffrey Stamp. Breaking the TECH mold from

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previous years, Stamp presented a workshop that ran the entire afternoon portion of the convention. Stamp contended that many people in the business world throw so many buzzwords around that they don't clearly comprehend their meanings. "Entrepreneurship," said Stamp, "is simply the essence of advantage and a matter of how you find it," of making small decisions that have a major outcome. He too stressed the important of selling something rather than speculating on it. "You cannot create value until you sell something," he said. Stamp also argued that a sense of context and consequences were vital. Entrepreneurs need to see the entire picture and understand how short term decisions create long term results. He agreed that this meant "thinking outside of the box." However, he noted, "People say that, but there's no idea what the box actually is. The box is simply your current perception of reality. Source: Oswego County Business Magazine

Posted by Nano News at 14:17

Friday, June 2, 2006

Nobel Prize Winner to Launch Online Nanotechnology Course

A groundbreaking nanotechnology course is to be launched at Oxford University for professionals wanting to understand more about the 21st century science. The postgraduate part-time course will be delivered entirely online, with the programme drawing on the University's world-class researchers working in this field. Nanotechnology is of increasing interest to the materials and physical sciences industries. It is an area where very, very small structures play a critical role – the prefix 'nano' being derived from the Greek word 'nanos' meaning 'dwarf'. The scale used is a 'nanometre', which is a billionth of a metre, or put another way 1/10 of the thickness of metal film on a packet of crisps; or 1/80,000 the diameter of an average human hair. Flexible LCD screens, more efficient fuel, glass that cleans itself, safe suncreams, tiny implanted battery-less blood pressure monitors, new concepts in the detection of molecules in blood to help medical diagnosis and stain-proof trousers are all examples of current or future applications of nanotechnology. This programme results from the close collaboration between Oxford University's Begbroke Science Park and the Department for Continuing Education to develop accredited course modules in nanotechnology leading to a postgraduate certificate award. Students should have educational qualifications in a physical science discipline or demonstrable work experience in any of these areas. The course has three modules, all of which are available to study separately and a residential weekend in Oxford at the end of the formal study period. The Tutors will provide online support and replicate the tutorial system electronically. Professor Sir Harry Kroto, a Nobel prize winner for Chemistry and world authority on nanotechnology based in Florida State University, is launching the course in Oxford on 2 June. He said: 'On the horizon are numerous exciting possible applications in numerous diverse areas, ranging from civil engineering to advanced molecular electronics, so promising to transform our lives and global economics. We now know we should one day be able to build buildings so strong that they will not fall down in earthquakes; aeroplanes so light that they will be able to glide to safety if the engines fail; and surgical techniques that will enable us to carry out medical operations almost non-invasively.' Professor Peter Dobson, from the Engineering Science Department, said: 'Oxford is well placed to offer this unique opportunity to gain an understanding of the science and characterisation techniques that describe the behaviour of nano-scale process and structure. The University has a long-established and universally recognised reputation for nanotechnology research in several of its departments and interdisciplinary collaboration is embedded in the culture here. There are now several examples of spin-off companies that exploit nanotechnology. This research is backed by world-class researchers and equipment including an ultra-high resolution electron microscope, a web-based remotely operated scanning electron microscope and a suite of state-of-the-art micro and nano-analysis equipment operated by the Department of Materials at Begbroke.' Source: Oxford University

Posted by Nano News at 10:55

Thursday, June 1, 2006

Science's Tiny - Big Unknown

Nanotechnology may revolutionize our lives. The first generation of engineered products has reached consumers, and with them come hard questions about safety. Magic Nano was billed as a miraculous solution for household drudgery, able to repel dirt and moisture from bathroom surfaces through the wonders of nanotechnology. Instead, the spray-on ceramic sealant quickly has become an emblem of the growing global fears over incorporating artificial particles tens of thousands of times smaller than the width of a human hair into such everyday products as golf balls, sunscreen and clothing. Three days after Magic Nano went on sale in Europe in March, it was pulled from store shelves because at least 110 customers reported symptoms including racking coughs, chest pain and difficulty breathing. "When I started to feel dizzy and nauseous, I got scared," said Carola Sennmann, a 37-year-old hairdresser in the German city of Goettingen, who felt flu-like symptoms within 30 minutes of spraying Magic Nano in her shower. When she began to gasp for breath, she was rushed to the emergency room and suffered a sleepless, fevered night before the symptoms subsided. Doctors were baffled. Sennmann, though, had her own diagnosis: "I blame it on nanotechnology." Last week, German regulators released tests that showed Magic Nano contained no nanoparticles. The product was designed to deposit an oil-and-water-repellent nano-thin film composed of silicon dioxide, but lab tests have yet to verify that property. Experts still don't know what caused the illnesses in a case that highlights the murky definitions and poorly understood risks in one of the fastest-growing segments of science and technology. "So the speculation begins," said Andrew Maynard, chief scientist of the Project on Emerging Nanotechnologies at the Woodrow Wilson International Center for Scholars in Washington. "This is the great danger — you're going to have a response against nanotech as a whole." Simply understanding what nanotechnology is can be daunting for most people. The scientists and engineers immersed in it face a greater challenge: calculating the immediate and long-term risks of tinkering with the chemical and biological building blocks of matter to construct particles so small they can pass freely through the walls of individual cells. Nanotechnology involves the manufacture or manipulation of particles or structures that are 1 to 100 nanometers — billionths of a meter — in at least one dimension. A human hair is about 100,000 nanometers wide. Such tiny particles can be made by breaking down larger blocks with ultra-fine grinders, controlled electrical explosions or lasers that blast apart raw materials. Chemical reactions can grow nanosized crystals, and metals can be vaporized to form nanomaterials when cooled. Nanoparticles take on new chemical, electrical and physical properties that lead to "lighter, stronger, smarter, cheaper, cleaner and more precise" products, nanotechnology pioneer Ralph C. Merkle wrote in a seminal 1997 article. Future Prospects Some scientists believe that within a few decades nanotechnology will produce limitless, pollution-free energy and supercomputers the size of a grain of salt. It will transform deserts into lush gardens with cheaply desalinated sea water, they say, and neutralize noxious wastes by disassembling dangerous molecules into safe, reusable components. "Nanotechnology has the potential to create revolutionary change across multiple, key areas of human endeavor," according to trade group NanoBusiness Alliance. "To maintain its global economic lead and to keep the U.S. homeland secure, we must win the nanotech race." Today's uses are more mundane. The minute specks already are in hundreds of products, such as spill-proof garments, cosmetics that claim to cure cellulite and health foods. Irving, Texas-based RBC Life Sciences Inc. sells a weight-loss chocolate drink that features "NanoClusters" that are 100,000 times smaller than a grain of sand, which it said "carry nutrition into your cells." Although smaller, the nanoparticles consist of the same substance as sand — silica. Carbon nanotubes, far lighter than steel yet 50 times as strong, toughen tennis rackets and may one day be used to build aircraft. Lux Research Inc. in New York projects a \$2.6-trillion global market for nanotechnology-enabled products by 2014, or about 15% of that year's projected manufacturing output. In 2005, more than \$9.6 billion was spent worldwide on nanotech R&D, about half of that by government and half by the industry. Yet alterations in the chemistry of everyday life can have unpredictable consequences, experts said. New, engineered nanomaterials have variable sizes, shapes and coatings that affect their properties in so far poorly understood ways, said Nigel Walker, who heads the nanotech safety program of the National Institutes of Health. Source: LATimes.com

Posted by Nano News at 19:36

Wednesday, May 31, 2006

Nanotechnology in Northern Europe 2006 selects best speakers

Nanotechnology in Northern Europe 2006 – the largest nanotech event in the region was held in Helsinki for the second time, from the 16th - 18th May 2006. The event attracted a total of 650 participants from over 100 organisations and 25 countries. The diversity of the event was demonstrated by the sessions (from Molecular and Quantum Electronics to Commercialisation and IPR), and the range of participants. In order to recognize the efforts of the event speakers, NTNE 2006 encouraged attendees to vote for the best speakers in each of four categories. The winners were: Best Academic Speaker: Professor Lars Samuelson Professor Samuelson, a leading figure in nanotechnology research from Lund University in Sweden, presented the latest breakthroughs in nanowire technology. Best Governmental Speaker: Nicholas Hartley (Head of the Unit, Strategy and Policy, European Commission) Dr. Hartley received this recognition for his keynote address, in which he set out the role of nanotechnology in the EU framework programme. Best Industry Speaker: Morten Stilling (Atomistix) Morten's contribution, 'Crystalline Magnetotunnel Junctions' featured as part of a session on nanotechnology instruments and tools. Best Professional Services Speaker: Katja Feiring and Jukka Korhonen (Papula-Nevinpat). Katja and Jukka presented an informative guide to nanotech patenting. Many of the academics attending the conference presented posters detailing their latest research. The conference Scientific Committee selected a number of posters for special recognition. The Best Poster Award was given to Rainer Koch and co-workers from Institut für Reine und Angewandte Chemie, Germany. A number of events took place alongside the congress sessions, including a Nanotech Venture Forum. The event featured a lively panel discussion with leading venture capitalists, followed by an opportunity for seven companies to pitch their company to the panel members. Of these companies, Amroy Europe won the Best Nanotech Venture Award. Amroy has recently developed a carbon nanotube based material called Hybtonite, which has applications in products ranging from wind turbine blades to ice hockey sticks. Presentations from the congress are available to be viewed on the event website at www.nano.fi/ntne2006. Nanotech Northern Europe 2007 will continue to grow as the largest nanotechnology event in the region. Source: Nanotechnology Now

Posted by Nano News at 11:04

The Role of Nanotechnology in European Drug Discovery

The advent of nanotechnology-based products such as nano-arrays and dendrimers is anticipated to revolutionise treatments for diseases such as cancer. The realisation that the nano-scale has certain properties needed to solve important medical challenges and cater to unmet medical needs is driving nano-medical research. Increasingly, research is focusing on the novel chemical and physical properties of nano-sized materials to develop new applications that improve human health. Frost & Sullivan finds that the Drug Discovery Nanotechnology Market in Europe earned revenues of US\$174.2 million in 2005 and estimates this to reach US\$545.4 million in 2012. "Within the realm of drug discovery and development, nanotechnology focuses mainly on improving diagnostic methods as well as developing superior drug formulations and drug delivery systems to enhance disease therapy," notes Frost & Sullivan's Drug Discovery Team Leader Dr. Amarpreet Dhiman. "The small size, surface tailorability, improved solubility and multifunctionality of nano-particles are opening many new avenues of research for biologists." The novel properties of nano-materials offer the ability to interact with complex biological functions in novel ways that operate at the very scale of biomolecules. This rapidly growing field allows cross-disciplinary researchers the opportunity to design and develop multifunctional nano-particles that can target, diagnose and treat diseases such as cancer. While nanotechnology products are undoubtedly promising, one major issue that will have to be addressed is their long-term stability. In particular, nano-particles and nano-materials used for drug discovery applications can become a cause for concern if they degrade too rapidly or if they remain in the body for prolonged periods. The need, therefore, is to ensure that they meet optimum levels of stability. The ability of nano-materials to interact with biological organisms leads to the possibility that they may be harmful to humans and the environment. Current understanding of the potential toxicity of nano-particles is limited, but research indicates that some of these products may enter the human body and become toxic at the cellular level, in various body fluids, tissues and/or organs. "The impact of nano-particle interactions with the body are dependent on their size, chemical composition, surface structure, solubility, shape and how the individual nano-particles amass together" explains Dr. Amarpreet Dhiman. "Nano-particles may modify the way cells behave and the potential routes of exposure include the gastrointestinal tract, skin and lungs." Nanotechnology-based solutions in drug discovery are still a long way from realisation. The challenge will be to ensure optimum safety and limited exposure, where the key elements for toxicity screening should include the physical and chemical characterisation of nano-materials, tissue cellular assays and animal studies. "Nanotechnology has an extremely interdisciplinary character having a broad range of disciplines and the industry must increase awareness about the technology and its potential to

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encourage dialogue between nanotechnology and other communities biologists such as chemistry, genomic engineering and biotechnology," says Dr. Amarpreet Dhiman. "By collaborating together extensively, the complexity of combining disciplines in nanotechnology will generate new businesses and help accelerate critical advances."Source: AZoNano

Posted by Nano News at 09:40

Tuesday, May 30, 2006

ARM Working with UK Universities On Nanotechnology

ARM is amongst a group of companies working with researchers from five UK universities on nanotechnology that will power the technology of the future. The nano-transistor research is being carried out by teams at the universities of Edinburgh, Glasgow, Manchester, Southampton and York. It has received £5.3m funding from the EPSRC, science funding council. Richard Sinnott of the National e-Science Center at the University of Glasgow is leading the e-Science development activity. Alongside ARM, industrial partners include Wolfson Microelectronics, Synopsys, Freescale, National Semiconductors and Fujitsu Microelectronics Europe. The project has also received the support of the National Microelectronics Institute, the trade association for UK microelectronics. The e-Science and Grid technology will be provided by the National e-Science Centre run jointly by Glasgow and Edinburgh Universities and the e-Science North-West Center at the University of Manchester. Source: IQ Online

Posted by Nano News at 22:32

European Nanotechnology Trade Association Established

The Institute of Nanotechnology, a global leader in nanotechnology matters, today announced plans to launch the European Nanotechnology Trade Association (ENTA), to support industry's uptake of nanotechnology. Created to represent the interests of nanotechnology businesses across Europe, ENTA will act to bridge gaps between governments, science and industry policy makers and business. It will also openly interface with the public and watchdog organizations to ensure transparency and that new nanotechnologies are developed in a safe and responsible manner. Backed by companies such as Procter and Gamble, BP International, Thomas Swan & Co., Nexia Solutions, Imerys, SmartBead Technologies and LOT-Oriel, ENTA's membership is open to businesses and organizations for whom nanotechnology has or may have an impact. The Institute of Occupational Medicine and other key advisors including Mewburn Ellis LLP, Marks and Clerk, Darbys, Technesium TC, DMEM, and CENAMPS have also joined ENTA. Membership of ENTA offers a platform for networking (including opportunities to attend governmental and legislative focused events), disseminating technology briefings to media, accessing new markets, and for overall risk reduction in the exploitation of nanotechnology. Membership of the ENTA provides: statistical analyses information sharing access to specialist advice latest news, and hot topics sales and marketing focussed events networking opportunities with other players in the field opportunities to meet potential partners and financiers access to international initiatives and government programs invitations to events; and discounts at conferences and exhibitions ENTA will work closely with the media and government bodies to express industry's views and needs (on legislation, standards, standard operating procedures), and build strong relationships with NGOs and the public so to ensure full community engagement. The Official launch will be on 1st June 2005, however ENTA is currently active in surveying Europe's leading nanotechnology organisations to shape future strategy and initiatives. Industry leaders are encouraged now to become involved in shaping the future of ENTA and nanotechnology, in both advisory and member capacities. For further information, or to air your views, contact Del Stark, Tel: 44 (0) 141 330 2143. Fax: 44 (0) 141 330 2144 Source: Scenta

Posted by Nano News at 16:23

Nano particles were not the cause of health problems triggered by sealing sprays

According to the findings of the Federal Institute for Risk Assessment (BfR), nano particles are not the cause of the health disorders, in some cases severe, which occurred after using so-called sealing sprays. Based on the information from manufacturers and chemical studies commissioned by BfR, the products do not contain any nano-sized particles. The term "nano" in the product names is intended far more to draw attention to the wafer-thin film that forms on the surface of glass or ceramic after the spray-application of the products. More than 110 incidents of, in some cases severe, health disorders were notified to the poison control and treatment centres and BfR at the end of March 2006 after consumers had used the products Magic-Nano-Glasversiegeler (glass sealer) and Magic-Nano-Keramikversiegeler (ceramic sealer) in spray cans with a propellant. Initially it was thought that nano particles were involved in the intoxications. Immediately after the occurrence of the first cases, BfR set out obtaining the exact formulation of the products from the manufacturers in order to establish the causes of the incidents. An expert meeting with the companies responsible for manufacturing the sprays at BfR on 23 May 2006 revealed that the products do not, in fact, contain any nano particles. This was also confirmed by chemical analyses commissioned by BfR from two specialist laboratories. Hence, nano particles are not a potential cause of the health problems experienced by users. The extent to which other components in the products caused the symptoms has not yet been fully elucidated. However, there is no doubt that the same liquid,

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which does not contain any nano particles either, was sold for several years as a pump spray without any health impairments being notified. Taking into account ongoing studies another expert meeting at BfR will aim to identify, the toxic mechanisms responsible for the disorders that occurred after inhaling the aerosols. Source: Chemie.DE

Posted by Nano News at 10:55

Monday, May 29, 2006

First vice-president calls for more activities on nano-technology

First Vice-President Parviz Davoudi on Monday called for more activities in the field of nano-technology. He said that Iranian students should give preference to part of nano-technology which has direct impacts on social life standards. He said in his address to Conference on 'Completion of Nano Technology Cycle' at Amir Kabir University of Technology, that the Westerners have launched hue and cry over Iranian program to produce nuclear energy and they would do the same for nano-technology. "Currently, the Islamic Republic of Iran has 40 nano-technology centers, ranking second in the region after India and fifth at global level." He advised the students to move toward production instead of being a buyer and a mere consumer and then move toward applied aspects of the new science (nano) in line with social needs. He said that the government's purchases should be channeled to nano-technology to provide incentives for large enterprises to usher in innovation by making use of nano-technology. Source: Irna

Posted by Nano News at 19:07

Thursday, May 25, 2006

Keithley Sponsors First Weblog for Nanotechnology Electrical Testing

Keithley Instruments, Inc. (NYSE:KEI), a leader in solutions for emerging measurement needs, has co-developed and sponsored the first Nanotechnology Test Weblog, or Blog, designed exclusively for engineers and researchers dealing with electrical testing issues in the field of nanotechnology and MEMS (micro electromechanical systems). The Nanotest Weblog keeps visitors abreast of the latest news in the nanotechnology and MEMS industry through frequent posts of technical and business developments. The Weblog is coordinated by "Nanotech Briefs" magazine and can be accessed directly at www.nanotestblog.com. Linda Bell, Publisher of "Nanotech Briefs," said she expects the new blog to be an important contribution to the emerging field of nanotechnology. "Engineers working in the rapidly changing disciplines of nanotechnology and MEMS need to stay abreast of the latest developments in their respective fields, and the Nanotest Blog is the ideal way for engineers to do that," said Bell. "With the support of Keithley, this Blog creates a center for those seeking to study and improve upon the latest test techniques in developing nano-materials," says Bell. "The ability to create accurate and repeatable measurements at the nano-scale level is critical to engineers seeking to develop these next generation materials." "The Blog is a means to communicate advances in nanotechnology measurement technique and capability," according to John Tucker, Keithley's Lead Industry Consultant and Marketer for Nanotechnology. "Engineers and researchers who are developing the next generation of materials and electronics, including those for the semiconductor industry, need to be kept informed of the latest breakthroughs and electrical testing technologies. The Blog offers a forum to share feedback on the many issues of making measurements on the nanoscale." "Visitors to the Nanotest Weblog can post responses to particular items or post questions to other Weblog visitors. There is also a link to a library of white papers and articles as well as announcements of upcoming conferences and events of interest to the nanotechnology and MEMS test and measurement community. Nanotechnology is an important new area of research that promises significant advances in electronics, materials, biotechnology, alternative energy sources, and dozens of other applications. Keithley Instruments is the world leader in the creation of electrical measurement solutions for nanotechnology. Nanotechnology requires the measurement of very small currents and voltages, capabilities that Keithley has pioneered for 60 years. With their unequalled performance, Keithley's measurement tools enable nanotechnology researchers to observe phenomena that were impossible just a few years ago. Keithley is seen by many nanotechnologists as a key enabler of their work. These researchers depend on Keithley's measurement expertise and knowledge to help them unlock the secrets at the nanoscale level and accelerate the jump from the nanotech research lab to commercial production. To learn more about Keithley products used in nanotechnology measurement applications, and for a free copy of our guide to Measurement Solutions for Nanoscale Device and Materials, visit <http://www.keithley.com/nano>. For More Information. For more information on Keithley's Nanotest Weblog or any of Keithley's test and measurement solutions for the semiconductor and nanotechnology industries, visit www.keithley.com/pr/051 or contact the company at: Telephone: 800-688-9951; 440-248-0400; 440-248-6168; E-mail: publisher@keithley.com; Internet: www.keithley.com; Address: Keithley Instruments, Inc., 28775 Aurora Road, Cleveland, OH 44139-1891 Source: Business Wire

Posted by Nano News at 17:22

New Tools for a Nanotechnology Workshop

Until recently, nanoscale devices could only be crafted through chemical reactions or by pushing components together on a smooth surface. Researchers at the Technical University of Denmark have developed and demonstrated practical tools allowing the precise manipulation and assembly of complex, three-dimensional nanomachines. Nanotechnology has been advancing steadily ever since the arrival of microscopes capable of imaging structures on the atomic scale. Once limited to taking still pictures, modern scanning electron microscopes (SEM) now provide real-time video and can even be used to weld two components together. Other techniques, such as scanning probe microscopy, are frequently used to push nanoscale structures together on a smooth surface. The construction of two-dimensional devices is therefore possible, but extending nanomachines into the third dimension has been a much more difficult prospect. Complex, three-dimensional structures have been successfully assembled in solution, by coating each component with a chemically active substance that encourages it to bond with the right partner. This technique is not ideal, however, because adding extra chemicals may change the mechanical or electrical properties of the structure. In many cases it would be vastly preferable to build a new machine by picking up and placing individual components one by one, in exactly the order desired. The Technical University of Denmark's Department of Micro and Nanotechnology has dedicated itself to perfecting such "pick-and-place" technology. While a considerable amount of research has already been devoted to the design of micrometer-sized tools, some of which are even

commercially available, practical demonstrations of three-dimensional assembly are suspiciously absent. Professor Kristian Mølhave has not only designed several new nanoscale tools, but also modeled their mechanical properties and demonstrated them in action. The first figure shows one of his simpler designs, a “gripper” that can be opened and closed by placing a small amount of static charge on the prongs. The force of its grip is only about a millionth of a Newton, but this is more than sufficient to overcome the natural adhesion of a nanowire to the surface it lies on. Prior to Mølhave’s work, common wisdom held that nanoscale components would be just as likely to stick to the tools as to each other. “Most people thought it would not work at all, because of the strongly adhesive capillary and Van der Waals forces on the nanoscale”, Dr. Mølhave explains to PhysOrg.com. “That’s exactly the kind of thing that made me want to try to do it.” His results speak for themselves. As the sequence of images in the second figure shows, adhesion to the tool is a problem that can be overcome. The tools coming out of Mølhave’s laboratory have continued to advance. Not only can they be fabricated en masse, but newer versions of the gripper have several activation modes. This allows a greater control over the applied force, as well as providing a channel for feedback to the tool’s operator. The grippers are also surprisingly easy to use! In high school demonstrations of the apparatus, students are picking and placing nanowires within an hour or two of being shown the equipment. Mølhave’s enthusiasm for these developments is clear. “We have just taken the first steps from “poking around with a stick” to having “Tools” with more degrees of freedom and complexity,” he claims, going on to specify that a functional nanoscale workshop should really have a variety of equipment. Just as we have several kinds of screws and screwdrivers, nanoengineers will want a variety of structural elements and specialized tools to manipulate each one. Robot actuators that can hold the tools and guide them with nanometer precision are already commercially available. A fully functional workshop would allow scientists to design and assemble working prototypes of complex machines, as well as measure the properties of individual components much more easily and accurately. Mølhave speculates that this achievement is only a year or two away. Then his real work can begin, for the creation of prototypes is clearly not enough. “Once we have this nano-workshop up and running,” Mølhave says, “we will be able to work towards the automation of assembly processes.” If he and his colleagues continue working at their present pace, the mass production of nanomachines may be closer than we think! Source: PhysOrg.com

Posted by Nano News at 16:42

Wednesday, May 24, 2006

Nanotechnology: A mini revolution

The best things are supposed to come in small packages. In the future, this could be more true than ever. Thanks to nanotechnology - the manipulation of tiny elements - we could enjoy a host of new developments, including furniture that can think, cars that change colour, even mobile phones with Breathalysers - no more will we drink and dial. The official British Standards Institution (BSI) definition of nanotechnology is the design and control of things at a nanoscale (100 nanometres and below). To put this into some sort of perspective, 100nm is one thousandth of the width of a human hair, and roughly 500 times the size of an atom. By this definition, we've been dealing with nano-sized particles for a long time. Intel's latest microchips have components measuring just 65nm across. Skin cream has used nanoparticles for years, and many polymers (large organic molecules formed by stringing lots of smaller elements together) are also made up of nano-sized units. What makes today's nanotechnology different is our ability to manipulate these tiny components more directly than ever before, along with the ability to drastically change their properties, explains Philip Kuekes, a nanotechnology scientist at the Hewlett-Packard Laboratories in California. Because of their size, nanoparticles can take advantage of quantum physics, where the traditional laws of physics break down. "Those laws give you a lot more knobs to turn," says Kuekes, adding that while 100nm is the official threshold, many materials only begin to experience quantum-physics effects at smaller sizes. "Some things change at 100nm, while other things only change at 3nm or 4nm," he explains. Nanoparticles' diminutive size also means that their surface area relative to their interior is greater than that of larger particles. Because many chemical and other physical reactions happen at the surface of a material, this larger surface area can exaggerate a nanoparticle's properties. Sticky materials may be stickier, for example. One of the most attractive propositions of nanotechnology is simply the ability to work in minute sizes. The California Institute of Technology (Caltech) scientist Richard Feynman recognised this in 1959, when he gave his seminal speech on nanotechnology, entitled *Plenty of Room at the Bottom*. Feynman proposed using a mechanical tool to build a set of smaller tools, which could in turn be used to build even smaller tools. Eventually, scientists would be working on such a small scale that they could bolt atoms together in any configuration, which would theoretically enable them to build any substance from scratch, he postulated. "Manipulating properties at a nanoscale has only been done for 20 years or so, following the invention of the scanning probe microscope," says Andy Garland, CEO of the Technology Transfer Centre at the Institute of Nanotechnology at Stirling University. Discovered in 1982, this class of microscope made it possible to "see" articles at the atomic level. Since then, researchers have worked to refine nanotechnology. In 1991, scientists discovered the carbon nanotube (CNT), a cylinder of rolled-up carbon atoms a couple of nanometres across, which is both flexible and hundreds of times stronger than steel. CNTs can, theoretically, be strung together to create incredibly strong and light structures that could revolutionise the future of architecture. These, along with other molecules such as buckminsterfullerenes (spherical carbon molecules that could be used as nanoscale ball bearings), are not created by physically placing atoms together but by using chemical self-assembly. Even though we have not yet created atom-sized robots that can build other robots, the opportunities for chemical and other types of nanotechnology are immense, says Dr. Andrew Maynard, chief science adviser for the Project on Emerging Nanotechnologies, based in Washington, DC, which examines the social effects of nanotechnology. "Nanotechnology will make small but subtle changes in areas that will have profound implications," predicts Dr Maynard. "People won't realise how important they are until they look back." For example, using nanotechnology to give lithium ion batteries a much greater capacity and charge could get them into cars, thus affecting how we view automotive energy and the use of oil. In that sense, Dr Maynard believes that nanotechnology will be as pervasive a development as the industrial revolution, but taking place over decades rather than centuries. Small wonder that governments are interested. The US Federal Government has invested \$6.5bn in nanotechnology since the formation of its National Nanotechnology Initiative (NNI) in 2001. The UK has some catching up to do: in 2003, just £90m was earmarked for a six-year nanotechnology push. In spite of the funding, most developments are enhancing existing products. Nanoparticles already make sun cream colourless, fuel last longer and socks fresh. But we will have to wait another three to five years to see new products that would not have been previously possible, says Andy Garland. Nanotechnology will become even more exciting, but some experts advocate caution. In a 2004 report, the Royal Society and the Royal Academy of Engineering recommended that more research be done into the potential health and environmental effects of nanoparticles. The reinsurance company Swiss Re has also raised concerns about absorption of nanoparticles through the lungs and the skin into the blood and brain. Nanotechnology will proceed in small steps over the next few years, so don't expect to see clothes that change colour in the stores this Christmas. Indeed, perhaps appropriately, given the nature of the technology, some of the developments won't be visible to the consumer at all. Small wonders CONSUMER PRODUCTS What's already there? Nanomaterials are now used for self-cleaning windows, fabrics and anti-graffiti paint. Carbon nanotubes are reportedly used in the Nissan X-Trail car to strengthen its bumper. What's coming soon? Materials will gain new properties, including colour-changing abilities. Antibacterial surfaces will become more common (Motorola hopes to build phones with these surfaces in 2-3 years). Stronger, lighter materials could change everything from architecture to transport. The

US company LiftPort hopes to launch a "space elevator" by 2018 using ribbon made of carbon nanotube composites, to ferry satellites 62,000 miles into space. Expect computer-storage densities to increase. Hewlett-Packard Laboratories is working on electronic switches nanometres thick. This could lead to computers with memories thousands of times greater. HP Labs predicts the emergence of "smart objects" with built-in computers, including clothing. Pipe dream or possibility? Work to build robots at nano level is still rudimentary. If it came to fruition, we might realise Richard Feynman's vision of molecular manufacturing - creating substances by building them out of atoms. In such a scenario, you could take an old car tyre, put it in your nanotech converter, press the button, and turn it into a hamburger, but this, if feasible, is decades away.

THE BODY What's already there? Researchers at Edinburgh University have moved a tiny droplet of water using light-sensitive molecules, which could lead to applications for "lab on a chip" technologies, while at Stanford University, researchers have used heated carbon nanotubes to kill cancer cells. The US firm EndoBionics has developed a micron-scale MicroSyringe for injecting drugs into the heart, while at the nano scale, AcryMed's SilvaGard protects medical implements from bacteria. What's coming soon? Companies including QinetiQ are developing an antiviral nanomaterial for masks that could protect people against bird flu. Another promising area is targeted medicine delivery, whereby an infected site is magnetised so that magnetic nanoparticles will only attach to that tissue. Pipe dream or reality? Some experts predict the use of nano-sized robots that will travel in the bloodstream, cleaning arteries and administering drugs and repairs.

*** THE ENVIRONMENT** What's already there? Nanotechnology is already used in fuel enhancers. The UK transportation firm Stagecoach is currently using Oxonica's Environ, a nanotechnology catalyst that helps to reduce emissions and increase fuel efficiency. What's coming soon? Nanotechnology could make water purification easier and cheaper, thanks to nano-engineered filters. With even worse water shortages on the horizon, desalination could be a significant application in decades. Batteries could be made more efficient due to the use of nanotechnology-based separator plates that will be able to hold more energy than conventional ones and significantly increase power density. Fuel cells could also be made smaller and more efficient. A 2004 report from the Royal Society and the Royal Academy of Engineering predicted the distribution of power production closer to the point of use, which could have significant effects on energy policy. Iron nanoparticles could be used for land remediation, breaking down organic chemicals in the environment and thus ridding it of some pollutants. However, some experts are concerned about releasing them into the environment without sufficient research on their broader effects. Pipe dream or possibility? Smart nanotechnology-based sensors could be placed ubiquitously into the environment, measuring a plethora of environmental conditions, reporting back on temperature and vibration, and watching out for chemical or biological content. Source: The Independent

Posted by Nano News at 14:09

UK food regulator finds 'gaps' in regulating nanotechnology

Gaps in regulating future uses of nanotechnology include those relating to particle size, to the use of nano versions of already approved ingredients, and to packaging, according to a UK legislative review of the food sector. The UK food safety regulator is worried that harmonised EU-wide legislation to fill in the gaps could take years to come into force, and calls for a speeded up process to ensure food safety. A potential solution would be to amend legislation to require that all nanocomponents be subject to their own risk assessment, the review document suggests as a way forward. Nanotechnology has been touted as the next revolution in many industries, including food manufacturing. It is a sector for which the topic is likely to become a hot consumer issue due to fears over the unknown consequences of digesting particles designed to behave in specific way in the body. "The future success of nanotechnology will depend on rational and informed work to understand and minimize these potential adverse effects on health and the environment," the Food Standards Agency (FSA) said yesterday in its regulatory review of the topic. The report provides manufacturers with an outline of potential areas for future regulation relating to the use of nanotechnology and nanomaterials in foods. It finds that the existing regulatory model for risk assessment is applicable to nanomaterials, although there are gaps in the information needed to identifying potential environmental and health hazards. "This review has not identified any major gaps in regulations but there is uncertainty in some areas whether applications of nanotechnologies would be picked up consistently," the FSA stated. Most potential uses of nanotechnologies that could affect the food area would come under some form of approval process before being permitted for use. On the whole the process is adequate to identify any potential risk associated with the presence of newly designed nanomaterials that might be used as food ingredients, the FSA stated. "It is less certain that this regulatory framework would apply to ingredients that have a history of use and which might in future be marketed in smaller particle sizes of 100nm or below," the FSA stated. In such cases, the general safety articles of the EU Food Law Regulation would apply. The law requires that food placed on the market should be safe to eat. Other applications of nanotechnology in food processing would require evaluation under the novel foods law only if they significantly affect the properties of the final product. The use of food additives in the EU falls under legislation that sets out lists of permitted additives, the foods in which they can be used, and maximum levels of use. All current permitted additives were previously assessed for safety by independent scientific committees advises the European Commission. Assessments are now carried out for the EU by a recently created European Food Safety Authority. Each additive must also comply with specific purity criteria laid down in related European Commission directives. The criteria dictate the chemical structure and purity of each additive. Any new

nanomaterials would need to undergo safety assessments by EFSA before they were included on the relevant positive list and so be permitted in foods. For the majority of additives, specifications have also been elaborated for the material as used. The only examples in the food additives area that specifically limits the presence of small particles is the specification for microcrystalline cellulose, where the presence of small particles below five microns is limited because of uncertainties over their safety. There is also a limit on the molecular weight distribution of carrageenan, which the FSA said could be regarded as a size limitation. The limit is based on concerns over the potential toxicity in the gut associated with the smaller “degraded” components of carrageenan. "As none of the other permitted additives include limitation on the size of particles, it could be argued that in principle there are gaps in the legislation," the FSA stated. "The European Commission has no plans, as far as we are aware, to address these gaps." The regulator suggests that individual specifications, which are set out in Commission directives, could be amended at the committee level. "Therefore, action could be taken fairly quickly if EFSA recommended that amendments were required to address the issue of particle size, whether as a result of its own assessment or on the basis of information or a request from member states," the FSA stated. In relation to fixing the gaps the agency has issued a call for research proposals to assess the potential applications of nanotechnology for food additives and other novel ingredients. The research will consider consumer safety and the regulatory implications of their possible use. The review also covered current controls relating to regulation (EC) 1935/2004, which covers materials, such as packaging, that come into contact with foods. The regulation is drawn widely enough to deal with the potential migration of ‘nanocomponents' into food from contact materials. It requires that such materials should not transfer their constituents to foods in quantities that could endanger human health, or bring about an unacceptable change in the composition of the food or a deterioration in its sensory properties. Where the ‘nanocomponent' might be intended to migrate into the food as part of an ‘active' packaging system, it must only do so to improve the shelf life or to maintain or improve the condition of the food. However, any change to the food must comply with EC provisions applicable to food. Where that ‘nanocomponent' is part of an ‘intelligent' packaging system the material or article may only monitor the condition of the food in the packaging or the environment around the food. Furthermore it may not give information to the consumer that could mislead them about the condition of the food. Both types of material or article must be labelled to say that they are ‘active' or ‘intelligent', under current law. A provision within the law allows the European Commission, acting on its own or in response to a member state request, to ask EFSA to conduct an independent health risk assessment of any substance or compound used in the manufacture of a food contact material or article. Under the law some materials and articles are subject to specific measures. Different requirements may apply to ‘nanocomponents' incorporated into these materials or articles. In relation to plastic materials and articles, provisions in Commission directive 2002/72/EC do not yet differentiate between nanoscale components and others, the FSA found. A previous report by the Royal Society that these components should be treated as new chemicals is not yet covered by the legislation, the FSA noted. Otherwise, monomers or starting substances have to be included in a positive list and if they aren't on that list they cannot be used. Additives to the polymer in order to achieve a technical effect are currently subject to an open list system. This will change in the future but the Commission has not set a date for this. Ceramic materials and articles are covered by legislation that is currently being reviewed and amended, although the sole subject of that legislation will remain the control of migration of lead and cadmium into foodstuffs. Other issues affecting the safety, quality and nature of food with which these materials come into contact are covered by the provisions of the Regulation No. (EC) 1935/2004. In the future the food safety aspects of rules on food contact ceramics will be the responsibility of the FSA. As is the case for other food contact materials, food contact ceramics may only be manufactured from substances on a positive list. Regenerated cellulose film materials are subject to manufacture only from substances on a positive list, with the exception of colorants and adhesives, but these must be non-detectable in the food using a validated method. Any plastic coating of regenerated cellulose film on the food contact side may only be manufactured using substances listed in Directive 2002/72/EC on food contact plastics. The legislation as it stands does not differentiate between chemicals produced routinely by current methods and those that may be developed by nanotechnology, the FSA stated. There is currently no scope in the European legal framework for food contact materials and articles to develop specific measures to deal with ‘nanocomponents' on their own, the FSA noted. However the European Commission and other member states are currently debating a working document on the subject, that could go on to become a proposal for rules on substances and materials that are problematic and not dealt with elsewhere in the legislation on food contact materials. Until that working document completes its passage through the European procedure for adopting rules on food contact materials, the products of nanotechnology would have to be dealt with by the specific controls on particular materials and articles. "The negotiation and adoption of all the specific measures on all the materials and articles for which harmonised EU legislation is envisaged could take many years," the FSA stated. The FSA plans to work with the European Commission and other member states to develop harmonised EU controls on food contact materials in relation to nanotechnology. "The European Commission has informally declared its intention to develop controls for the application of nanotechnology in the manufacture of food contact materials and articles, although unless a real problem arises from the use of this technology, specific rules are likely to take some time to put in place," the FSA stated. A potential solution would be to amend the legislation to require that all nanocomponents be subject to their own risk assessment, the FSA suggests. This would bring all nanocomponents within scope of the requirement regardless of the material they are incorporated into. The solution would also apply to those materials and articles not already covered by the specific measures currently in place. Nanoscale technology offers new opportunities

for the packaging industries, and various potential food contact applications have been suggested, including improved barrier properties, better temperature performance, thinner films for flexible packaging, and nanoscale pigments for inks."However, little is known about the impact on chemical migration into food from such applications," the FSA stated. The agency has issued a call for research proposals to "assess new and potential applications of nanotechnology for food contact materials in the UK, considering the consumer safety and regulatory implications of their possible use."The review considered areas where regulations require some form of formalised 'prior approval' or 'positive list' of permitted products or processes as well as those relying on case-by-case assessment, including deliberate use or adventitious or accidental presence of nanomaterials. The review also considered wider issues of openness and transparency of regulation and risk assessment in an area where high technical innovation may give rise to competing demands for commercial confidentiality for new nano-materials or nanotechnology. Regulation in the food area is largely decided at European Union level, and UK food law generally implements in the UK the measures that have been agreed at the bloc level. The review is an outcome of a June 2003 government-commissioned report by the Royal Society and the Royal Academy of Engineering. The report raised concerns about exposure to manufactured nano-sized particles and the possible harmful effects on human health. The report made a number of recommendations, many centering on the need for a programme of research and public engagement to better understand the potential risks. The government published its response to the report in February 2005. This included a commitment to a number of actions, including a review of existing regulations to identify any gaps to ensure that human health and the environment are adequately protected from any potential risks. The European Commission published a regulatory action plan relating to nanotechnology in June 2005. Consumer groups and some scientists have also called for increased regulator supervision and transparency as the technology is developed. Source: Food Production Daily

Posted by Nano News at 10:57

Friday, May 19. 2006

Biosensor uses nanotechnology to spot the right smell

An electronic biosensor using nanotechnology techniques could help companies to develop the right smells for their foods, or to sniff out rotting ingredients in the receiving area. The researchers say that an electronic nose based on natural olfactory receptors could be used to give companies a means of honing in on precise smells according to product and consumer requirements. The tiny bioelectrics sensors may take some of the guess work out of this process. The technology could also be used to pick up the smells produced by bacteria and pathogens as they break down foods, helping to increase product safety. "The potential uses of smell technology are endless," said Josep Samitier, the coordinator of the Spot-Nosed project. Researchers at project are using nanotechnology to developing biosensors to mimic the way human and animal noses respond to different odours. The researchers claim that the nose biosensor is capable of detecting odours at concentration that would be imperceptible to the human nose. "Our tests showed that the nanobiosensors will react to a few molecules of odorant with a very high degree of accuracy. Some of the results of the trials surpassed even our expectations," Samitier said. The accuracy was achieved by using proteins corresponding to olfactory receptors in animal noses. A layer of the proteins is placed on a microelectrode, Data is then measured by determining the reaction when the proteins come into contact with different odors. The Spot-Nosed researchers copied the genes from several hundred different proteins from rats, which they claim is enough to determine almost any type of smell due to the number of reactions the proteins produce. The human nose uses 1,000 different proteins to allow the brain to recognize 10,000 different smells. While the project has to date focused on replicating the physical reaction that takes place in animal noses to determine odours, the researchers say that their next step will be to develop an electronic nose that recognizes smells using high accuracy electronic instrumentation on a nanoscale level. While the project has so far focused on replicating the physical reaction that takes place in animal noses, the researchers now plan to work on developing the instrumentation and software tools necessary for an electronic nose to recognise smells. The approach is being developed and tested by researchers in Spain, France and Italy under the European Commission's Future and Emerging Technologies (FET) project. The total funding for the project is about €2.3m, with €1.5 of that from the EU. Source: Food Ingredients & Food Science

Posted by Nano News at 15:27

Thursday, May 18, 2006

Beyond the hype and the scare stories, how safe are nanoparticles ?

Nanotechnology has been touted as the next technology revolution, transforming everything from communications to medicine, water decontamination to homeland security. But scientific progress has been accompanied by fears over unknown consequences of nanotechnology, with one pressure group even calling for a moratorium on all research until more is known. More specific concerns have been voiced by various parties – including the UK Royal Society and Royal Academy of Engineering – about exposure to manufactured nano-sized particles and the possible harmful effects on human health. The future success of nanotechnology will depend on rational and informed work to understand and minimize these potential adverse effects on health and the environment. This is where Andrew Maynard of the Woodrow Wilson International Center for Scholars steps in. He explains what is known about effects of nanoparticles on the body in the latest issue of Nano Today magazine. “We need to understand both how harmful a substance is, and how much of it can get into the body, if risk is to be understood and managed,” says Maynard. Nanoparticles may have greater reactivity, and so toxicity, than larger sized particles. Because of their size, nanoparticles may also evade some of the body’s natural defense systems and accumulate in some tissues. But currently, there is little information on the impact of engineered nanoparticles, and what there is can be contradictory. Maynard begins by saying that not all nanomaterials are likely to be of concern. He sets out from the vast range of available nanoscale materials those that are likely to be relevant to human health. Maynard then reviews what has been established about the behavior of nanomaterials in the body, considering how nanoparticles may get into the body via the lungs, skin, or digestive system as well as possible toxic effects. But risks from even harmful nanoparticles only arise if there has been exposure to a high enough dose. The current picture of how nanomaterials might be released and dispersed in the environment is described in the article, as well as ways of measuring exposure. “Not only is it necessary to consider the potential for engineered nanomaterials to be released in a form that leads to exposure, chemical and structural transformations between the point of release and the point of exposure will also likely determine health impact,” explains Maynard. Maynard suggests how potential risks should be managed alongside public awareness of the issues. By providing a context for considering these risks, he is able to suggest directions for further work to ensure the development of safe nanotechnology-based products. This article appears in the May issue of Nano Today magazine, which covers current issues in nanotechnology. Highlights from the other articles include: While the potential harmful effects of nanoparticles in the environment are often highlighted, one beneficial proposed application is the removal of contaminants from groundwater. Paul G. Tratnyek and Richard L. Johnson from Oregon Health & Science University discuss the benefits and remaining uncertainties of the remediation of contaminated groundwater using nanoparticles containing zero-valent iron (nZVI). There are already over 200 products on the market that include nanosized materials or components, according to a recent report. The growing commercialization of products exploiting nanomaterials has been accompanied by increasing calls for regulation. Paula Gould investigates how regulatory bodies are approaching the problems of agreeing measurement standards and regulating exposure to nanoparticles. R. P. H. Chang of Northwestern University believes we should make the most of the excitement and novelty surrounding ‘nano’ to spark young people’s interest in science. Certainly, various nanoscience courses have been put together around the world for undergraduates, postgraduates, and even school children. Peter Goodhew of the University of Liverpool, UK looks at how these courses have sought to balance teaching new nano-related material with the basics of conventional science. Source: Nano Today

Posted by Nano News at 11:29

Wednesday, May 17, 2006

FDA Asked to Better Regulate Nanotechnology

Citing research suggesting that some invisibly small engineered nanoparticles might pose health risks, a coalition of consumer and environmental groups petitioned the Food and Drug Administration yesterday to beef up its regulation of nanoparticle-containing sunscreens and cosmetics and recall some products. The legal filing was synchronized with the release of a report by the environmental group Friends of the Earth that highlighted the growing number of personal care products with nanoingredients, defined as smaller than 100-millionths of a millimeter. At least 116 such products are on the market, the report found. "Scientific bodies are beginning to develop an understanding of the serious risks that may be associated with nanomaterials," said Joseph Mendelson, legal director of the Washington-based International Center for Technology Assessment, which spearheaded the FDA filing. "Every day, consumers are being asked to be a test market for some of those risks." Nanotechnology encompasses a wide range of materials that, because of their small size, exhibit novel chemical or biological properties. Among the FDA-regulated products being sold are sunscreens containing titanium dioxide or zinc oxide nanoparticles (which offer strong ultraviolet protection while remaining colorless) and cosmetics with nanoscale liposomes -- tiny chemical bubbles that deliver moisturizers and other ingredients to the skin. A number of animal studies have shown that at least some nanoparticles can penetrate cells and tissues, migrate through the body and brain and cause biochemical damage. But whether nano-spiked cosmetics and sunscreens pose health risks remains largely unknown, pending completion of long-range studies recently begun by the FDA and other agencies. An Australian government medical committee concluded this year that metal oxide nanoparticles in sunscreens mostly remain on the outer layer of skin, where DNA damage is not a big concern. The FDA regulates sunscreens as nonprescription drugs and does not require extra safety tests specific for nanoparticles. The agency has little authority over cosmetics. But John Bailey, a vice president at the Cosmetic, Toiletry and Fragrance Association, a trade group, said his level of confidence in the safety of those products is "very high." "I think these are safe and very beneficial products," said Bailey, who oversaw the FDA's cosmetics program for a decade. Asked why companies rarely release the results of their safety studies, Bailey said the information was generally proprietary -- as are the ingredients. "We really don't know much about what they're putting in, or the levels," he said. But companies have lots of incentive to make their products safe, he added. Two years ago, Britain's Royal Society recommended that nanoproducts not be sold until they have undergone independent safety assessments and the results are made public. It also said that products containing engineered nanoparticles should be labeled as such, a move the industry has opposed. The FDA does not comment on legal challenges and has six months to respond to yesterday's petition. Source: Food and Drug Administration

Posted by Nano News at 10:30

Tuesday, May 16, 2006

ARM and Freescale work with UK universities on nanotechnology

ARM, Freescale and National Semiconductor are among a group of companies working with researchers from five UK universities on a project to investigate the feasibility of new types of semiconductor transistor which are significantly smaller than those used in current ICs. The nano-transistor research will be carried out by teams at the universities of Edinburgh, Glasgow, Manchester, Southampton and York. It has received £5.3m funding from the EPSRC, science funding council. There is considerable interest across the industry in nanoscale chip technology to move the power and performance of next generation mobiles to new levels. "The circuits we currently use cannot cope with this form of mismatch and randomness," says Professor Alan Murray, of the University of Edinburgh. "They will require at least re-design - possibly even complete replacement - with circuits that have not yet been invented." The other companies taking part include Wolfson Microelectronics, Synopsys and Fujitsu Microelectronics Europe. The intention is to use computer-modelling to analyse the behaviour of nanoscale transistors which are expected to be the semiconductor technology at the heart of future generations of mobile phone and handheld devices. "We can't wait for silicon technology to create viable, production-line nanoscale transistors. It will then be too late to start looking for ways to use them. We must start now," said Murray. The universities will implement a new type of multi-centre research which makes use of shared data and computing power available on a Grid of networked computers across the UK. "Through close collaboration with our partners, we expect to revolutionise the way in which the disparate teams involved in electronics design process work," said Professor Richard Sinnott, of the National e-Science Centre at the University of Glasgow. Source: ElectronicsWeekly.com

Posted by Nano News at 18:49

Moen and DFI Sign Agreement on Diamon-Fusion® Nano-Coating for Showhouse® Faucet

Diamon-Fusion International, Inc. (DFI Nanotechnology), global developer and exclusive licensor of the Diamon-Fusion® patented hydrophobic nanotechnology, has signed a supply and co-branding agreement with global faucet manufacturer MOEN Incorporated. Moen recently unveiled its newest Powder Room Faucet Collection, "Vivid®", under its luxury line ShowHouse® at the national kitchen and bath trade-show in Chicago (KBIS 2006). As part of this agreement, Moen became DFI's newest Global Strategic Partner, a list of highly reputable companies (all distributors of DFI innovative technologies) that includes DuPont and Alcoa among others. Moen Incorporated, a 50-year US-based global company with distribution centers worldwide, is one of the world's leading manufacturers of faucets and a major supplier of stylish kitchen sinks and innovative bath accessories in North America, Moen is part of Fortune Brands' Home and Hardware group - a leading consumer brands company that includes leading cabinetry, door and lock manufacturers. In 2004, Moen launched ShowHouse® by Moen, a new line of luxury faucets and accessories for the kitchen and bath. The new and innovative Vivid® Collection received impressive reviews at KBIS 2006 including a special mention at the KBIS Show Daily Trend Spot, "the latest and the greatest", pointing out the unique faucet with a glass waterway. Water flows out of a raised fountain to create a cascading stream of water that transitions into a free flowing stream as it travels down the glass waterway. To guard against water marks and deposits, the glass is treated with DFI's patented Diamon-Fusion® hydrophobic nano-coating as a standard feature, ensuring long life. The coating causes the water to bead as it progresses down the waterway, thus preventing water from standing on the dish once the water is turned off. Jennifer Rowel, ShowHouse Brand Manager at MOEN, reported: "The Diamon-Fusion® coating was one of the key features that helped us provide the 'wow' factor we were looking, merging hi-end visual impact and practical luxury with latest and most innovative technologies." Guillermo Seta, Vice President and Executive Director of DFI Global Operations, stated: "This new alliance with MOEN provides two core elements for DFI: a new consumer-driven market by a manufacturer with a history of innovative design and another world's leading company (in Moen) that places confidence on our coating as a standard feature." DFI's nano-coating supplies a full range of enhanced hydrophobic properties to the treated glass surface and works at nanoscale levels to change the molecular composition of any silica-based surface. It also provides a cross-linked, branched, and "capped" coating along with a strong and durable covalent bond. Source: DFI

Posted by Nano News at 09:48

Monday, May 15, 2006

Europe Reinforces Nanotechnology Network in Sicily

The European nanotechnology network Frontiers will gather in Sicily on May 16 and 17 to stimulate and discuss the integration of science amongst its members. Jointly, future research directions will be determined and new international initiatives and collaborations will be launched. Frontiers, a Network of Excellence supported by the European Commission, was initiated two years ago and aims to establish leadership in life sciences related nanotechnology through integration of strengths, facilities and investments in Europe. Representing twelve renowned nanotechnology institutes scattered over Europe, 200 researchers with varying backgrounds bring together a considerable knowledge pool. Through its integrated approach Frontiers will strengthen Europe's position in nanotechnology and increase the competitive R&D position with respect to the US and Japan. Nanotechnology offers enormous potential for all industrial sectors and especially promising are applications in the medical field. One goal of the Frontiers program is to concentrate the development of nanoscience around industrial problems whose solutions will lead to marketable new technologies, tools and devices that in turn will have great impact on science, industry, and society. Recently, this strategy led to the establishment of the first Frontiers spin-off: Medimate. Medimate develops electrolyte analyzers for Point of Care with current focus on the detection of lithium in blood. Lithium is the number one medication for manic depressive patients. More spin-offs are expected to result from the Frontiers network in the near future. Research focus areas in Frontiers close to application that will be addressed during the meeting in Sicily include: Targeting of drugs. By employing tailored nano-particle carriers that can carry a drug without undesired side effects to its final 'destination' and allow the drug to be released selectively there, even to pass biological barriers like the blood-brain barrier to treat brain tumours. Biochips and bio arrays. For accurate detection of genes or proteins with applications in drug screening, clinical diagnostics and forensics. Biosensors Capable of recording, for example, one or a few key components in real time (such as glucose sensors for automated insulin administration). Regenerative medicine. Both very mature sub-areas, such as bone-anchored implants (dental implants, artificial hip joints, intraocular lenses), and very immature, emerging areas, such as stem cell-based tissue engineering. Source: Frontiers

Posted by Nano News at 18:15

Capsulation contributes to worldwide nanotech network

In April the Capsulation NanoScience AG, a Berlin based nanotechnology company that is specialised in the development of intelligent 'packaging' systems for active substances has become a member of the European Nanotechnology Trade Alliance (ENTA). As a leading organization and opinion leader in nanotechnology, ENTA aims at mentoring, networking and contacting among nanotech providers such as Capsulation and with potential customers and investors. Members of ENTA already include companies such as Procter & Gamble, Unilever or Shell Technology Ventures and many others. For Capsulation, it is very important to join forces with other players in the field. We need to create larger networking between different nanotech providers on one hand, and with different customer industries on the other hand.' says Alexander Herrmann, CFO at Capsulation. 'In addition, we have to clarify 'What is nanotechnology about?' to whom, who is not familiar with this new approach. Finally, our membership with ENTA represents a quality feature differentiating Capsulation from other suppliers.' Together with other leading nanotech companies, Capsulation's contribution is dedicated to increasing the awareness of consumers, industrial clients and investors with respect to Nanotechnology and its social and economic impact for the society. Del Stark, CEO of ENTA: 'We are very proud to have Capsulation as a new member as this company is a leader in the development of new life science products for the pharmaceutical market.' About ENTA The European Nanotechnology Trade Alliance (ENTA) represents the interests of its members across Europe ENTA offers an integrated programme aimed at promoting the benefits of nanotechnology and mitigating regulatory and reputational risk for the whole industry and supporting all actions that ensure new nanotechnologies are developed in a safe and responsible manner. In addition to the above, ENTA represents the interests of nanotechnology businesses across Europe and acts to bridge the gap between industry, governments, science, and importantly, the public in promoting the benefits of nanotechnology. ENTA works closely with the media and government bodies to express the nanotechnology industry's views and needs, on for example, legislation, standards, standard operating procedures, and public support. Capsulation NanoScience AG is a leading nanotechnology company focusing on the development of tailor-made drug delivery systems and other innovative life science products based on nano-sized capsules. The company applies its worldwide-patented so-called LBL-Technology®. Based on their minute size, their functionality and their highly reproducible production process the capsules can be used for a multitude of different applications. Accordingly, the precisely sized capsules can be made to function in a manner to suit the intended application, and can be given the appropriate biochemical, electrical, optical and magnetic properties as required by the customer. In order to

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meet customers needs for complete product solutions Capsulation has recently designated a Japanese licensee as the preferred developer, manufacturer and distributor for automated LBL-units. Only six month after the signing of the licence agreement, EBARA has started operation of the first prototype plant (LBL-Unit®) for the manufacture of Capsulation's LBL capsules. In 2005, renowned growth consultants Frost & Sullivan have awarded the year's "Product Differentiation Innovation Award" in the global nanobiotechnology market to Capsulation NanoScience AG, Berlin. The company has received the award for the innovative and diverse use of their proprietary nanobiotechnology product platform, which can be implemented in various life sciences applications. Source: Capsulation NanoScience AG

Posted by Nano News at 11:58

Sunday, May 14, 2006

France, Italy, Spain, the UK, and the US are working together to bridge the gap between nanoscience and nanotechnology

A team of chemists from France, Italy, Spain, the UK, and the US are working together to bridge the gap between nanoscience and nanotechnology. They have now devised a method that could allow them to organize tiny molecular machines on a surface and so build devices that pack in thousands of times as many switching units, for instance, than is possible with a conventional silicon chip. Chemist Fraser Stoddart, now at the University of California Los Angeles, and his co-workers have designed and made numerous molecules based on hanging ring-shaped molecules on other chain-like molecules and loops. By incorporating functional chemical groups along the length of the chain or around these loops, they have shown that it is possible to make the molecular beads switch between these various functional groups using heat, light, or electricity. The ultimate aim of creating such molecular-scale devices is to use them as switching units or logic gates in a future computer based on molecules instead of silicon chips. Before that will be possible, however, the nanoscientists must find a way to organize arrays of these molecules on a surface so that input and output connections can be made between the molecules and the outside world. Stoddart and colleague Alberto Credi of the University of Bologna, Italy, and co-workers at the University of Birmingham, UK, the University Paul Sabatier, Toulouse, France, and the University of Valencia in Spain recognize that in order to exploit their molecular machines they will need to find a way to organize them at interfaces, deposit them on functional surfaces, or immobilize them into membranes or porous materials. This will allow the molecular machines to work together and to be "addressed" on the nanometer scale. The researchers believe that modifying the surface of an electrode to incorporate an organized layer of molecular machines could be the key to success. The team reports in the current issue of *Advanced Materials* how they have recently succeeded in applying an incredibly thin layer, just a few molecules thick, of a particular molecular machine to a glass surface. The molecular machine in question is a switchable rotaxane--a ring-shaped molecule held on a short chain by two blocking groups, making it resemble a dumbbell with a collar around the handle. A special technique was used to make thin layers of this dumbbell-shaped component in solution on a glass slide coated with ITO (indium tin oxide). By using two solutions--one containing the dumbbells and the other a soapy surfactant compound--the researchers were able to force the molecules to organize themselves because of electrostatic repulsion and attraction between the surfactant, the molecules, and the surface, until ultimately they became attached with the same orientation to the ITO layer on the glass slide. The researchers then tested their thin layers of dumbbell molecules to see whether they would work as planned. They found that the thin film exhibited a reversible switching behavior when exposed cyclically to an acid and then a base. This, they explain, demonstrates that the thin film is capable of transducing a chemical input signal--the acid-base--into an electrical output signal. This bodes well for interfacing other molecular machines in a similar way. There is, however, a puzzle that remains unsolved in this particular experiment. The team's other molecular machines have an obvious switching capacity between two functional units on the chain or loop, as mentioned previously. However, there are no functional units on the dumbbell, so there is actually nothing to switch. The researchers are still puzzling over how the switching they observe takes place in the dumbbell molecules. Ultimately, control using a light source or electricity will be required before such layers will be useful in the development of molecular computers, but this first small step to organizing molecular machines could lead to the required breakthrough.

Posted by Nano News at 10:26

Friday, May 12. 2006

Europe 'left behind' in nanotechnology stakes

EUROPE could lag behind the US and the Far East when it comes to making cash out of nanotechnology, according to a report by patent and trade mark attorneys Marks & Clerk. Nanotechnology involves creating machines that could fit on a human hair. Millions are being spent in Britain on developing microscopic engineering systems, but analysts at Marks & Clerk fear that this investment may not produce massive returns. European researchers aren't filing enough patents, which means their ideas could be ripped off. The Marks & Clerk report discovered a dramatic increase in the filing of patent applications for nanotechnology across the world, highlighting its growing commercial importance. However, companies and institutions in Europe are filing far fewer patent applications than their US and Far Eastern counterparts. The report found that in nanoelectronics, among the top 30 players, only 8 per cent of patents were filed by European applicants, compared with 24 per cent by US applicants and 51 per cent by Japanese applicants. Neil Parkinson, partner at Leeds-based Marks & Clerk and co-author of the report, said: "While it is good to see significant public investment in Europe, the low number of patents filed shown by our report gives serious cause for concern. The commercial potential for nanoelectronics is huge. We predict that activity in the Far East will remain at high levels, and is likely to increase as nanoelectronics moves from its current research phase towards product development, with Japanese companies likely to be at the front of the pack." The US market holds the promise of some stellar start-ups, with huge investment potential. Europe is in danger of missing the boat." Source: Yorkshire Post Today

Posted by Nano News at 15:56

Scientists urge transparency in nanotech safety testing

The UK's Royal Society has called for companies developing products containing nanoparticles to disclose how they are tested for safety. The call comes as more and more food companies are examining the technology, either to develop smart packaging or functional foods. The problem they face is consumer resistance due to fears over the uncertain nature of the new technology. Many fear the technology could act on indeterminable ways on their health or the environment. Professor Ann Dowling, chair of a Royal Society and Royal Academy of Engineering report into nanotechnologies, said that increased transparency would also help stimulate collaboration between industrial researchers and academic scientists to develop consistent and agreed methods of testing. She also called for international agreements and cooperation to identify and carry out the research needed to underpin regulation. "Nanoparticles can behave quite differently from larger materials of the same substance and it is these properties that many manufacturers seek to take advantage of," Dowling stated in a report. "But these novel properties also mean that some nanoparticles may need to be subject to specific testing. And in order that the public can have confidence in these products the industry should publish details of their testing procedures." Earlier this year the Woodrow Wilson International Center for Scholars in the US released a nanotech database listing about fifteen food and drink items among the 212 products using the technology. Among them are a canola oil product, a cocoa drink and a chocolate gum. The database is the first publicly accessible online inventory of nanotechnology consumer products. However the relatively low number of food and drink products indicates that processors are taking a cautious dip in the technology in terms of developing new products. Most uses of nanotechnology in the food and drink industries will remain "below the waterline" -- applications that make an economic difference for producers, packagers and retailers, but that consumers don't really notice, according to a US research analyst. Lux Research senior analyst Mark Büniger, one of the authors of a new report into the technology, says the food and drink industry will benefit through relatively mundane improvements in food cost, packaging, and safety, rather than from direct product applications. The "mundane" uses include antimicrobial sensors and coatings, printable RFID tags, and the like. At the same time, industry is studying more "high-profile" product enhancements, such as "tunable" ingredients in functional foods, and other applications that are ingested. For the most part he believes the real benefits will come in using nanoparticulate conducting inks to create smart packages, and other innovations that food technologists care a lot about but consumers never see. "In a purely economic sense, the splashy products are less important than the hidden ones -- they are low-volume stunts that appeal to a strongly-motivated niche," Büniger told FoodProductionDaily.com in an interview. "Nanotech in food has a lot of appeal to the kind of people who drink Red Bull for breakfast, but clearly not mainstream consumers." By comparison the commercialization of nanotechnology continues to gain speed worldwide in many industries, according to a new reference report released this week by Lux Research. Emerging nanotechnology was incorporated into \$32 billion in manufactured goods in 2005 -- more than double the previous year, Lux Research found. Global research and development spending on the field reached \$9.6bn, up 10 per cent from 2004 the company stated in the fourth edition of its Nanotech Report. For the food and drink industry anything "nano" that involves food contact, to say nothing of actual ingestion, will be subject to a

lot of scrutiny for at least the next three years, as regulatory bodies like the Food and Drug Administration get preliminary studies done and rules written. "What happens after that is impossible to say – it depends on how well companies actually engineer nanomaterials to be safe, how well they communicate with the public as crises inevitably arise, and how much better the new products actually perform compared to non-nano alternatives," Bunger said. He noted that currently there is more risk than reward in a manufacturer hyping up the fact that they are producing some kind of nanofood for general consumption. "If you look at the broadest trends in food overall, they are towards more natural ingredients, organics, and such," he said. "There is certainly a smaller segment going for high-tech, functional foods as well, and nanotech in food will appeal to these consumers. Few people complain when you create high-tech, high-margin consumables for partiers, fitness nuts, and other edge-seekers. It's when you put something nano in everyone's milk that you invite great scrutiny with little potential payoff." The less riskier applications, and ones that offer a greater reward, is in the incremental improvements in packaging, food safety, agribusiness, and other similar applications. Nanotech has great potential to really restrict the spread of foodborne disease, reduce the amount of pesticide on crops and antibiotics in livestock and help with supply-chain planning, Bunger believes. Safety concerns and a need for regulation before products are introduced are some of the constraints that could hold the industry back from exploiting the technology with more gusto. "There are real risks and perceived risks," he said. "Even in nanofoods, the perceived risks are much larger than the actual risks. Companies need to do their labwork and be completely transparent with the results – that's the only way to work." He noted that consumers are extremely wary of any junk that goes into food these days. Natural ingredients like sugar and fat are under fire. "If you are introducing something perceived as new or risky – which nanofood clearly is -- it had better be for a product that appeals to risk-takers, or that replaces something consumers have already decided to cut out of their diets," he said. "As a plausible but purely hypothetical example, if sugar as a nanoparticulate powder could deliver the same taste at much lower mass than sugar in visible crystals, I think you'd have a hit product." In 2004 the Royal Society, in conjunction with the Royal Academy of Engineering, published the study concluding that nanotechnology posed no new risks, but warning about the potential effects of free nanoparticles on health and the environment. Nanotechnology is the ability to measure, see, manipulate and manufacture things usually between 1 and 100 nanometers. A nanometer is one billionth of a meter; a human hair is roughly 100,000 nanometers wide. The Woodrow Wilson International Center inventory can be accessed online at www.nanotechproject.org/consumerproducts. Source: Food Production Daily

Posted by Nano News at 10:25

Thursday, May 11. 2006

Container uses nanoparticles to extend shelf life

A plastic container that uses silver nanoparticles to keep foods fresher longer, points the way forward for processors looking to incorporate the technology into their packaging. The technology is attractive to the food industry as it promises to yield new solutions to key challenges. Research and development underway includes the development of functional food, nutrient delivery systems and methods for optimizing food appearance, such as colour, flavour and consistency. In the food-packaging arena, nanomaterials are being developed with enhanced mechanical and thermal properties to ensure better protection of foods from exterior mechanical, thermal, chemical or microbiological effects. The new containers, being marketed to consumers by Sharper Image in the US, are infused with naturally antibacterial silver nanoparticles. This keeps foods fresher three or even four times longer than normal, Sharper Image claims. The containers can be used to store fruits, vegetables, herbs, breads, cheeses, soups, sauces and meats while maintaining color, flavor and nutritional values much longer. Silver is naturally anti-germ, anti-mold and anti-fungus. In tests comparing FresherLonger to conventional containers, the 24-hour growth of bacteria inside FresherLonger containers was reduced by over 98 percent because of the silver nanoparticles, the company claimed. To further preserve flavor and nutrients — and to delay and reduce spoiling — the FresherLonger containers have an airtight silicone-gasket locking system. The containers are made of air- and odor-impermeable polypropylene. The silver nanoparticles average about 25nm (nanometers) in diameter, or about 200 thousandth of a human hair. Their natural color gives FresherLonger Miracle Food Storage containers a distinctive golden hue. The Sharper Image is a specialty retailer. A variety of other companies are also pioneering developments in food packaging, including techniques to improve food safety and supply chain tracking. Some nanotech products, such as anti-microbial films, have already entered the market. For example nanotechnology, in the form of nanoparticles, could be used by companies to target nutrients to specific areas in the body, according to scientists. A variety of companies are also pioneering developments in food packaging, including techniques to improve food safety and supply chain tracking. Some nanotech products, such as anti-microbial films, have already entered the market. However public and scientific concern about the health effects of the technology, which due to its nature is difficult to understand, could hold back its development. Worldwide sales of nanotechnology products to the food and beverage packaging sector jumped to US\$ 860m (€ 687.5m) in 2004 from US\$ 150m (€ 120m) in 2002, according to a study by consultant Helmut Kaiser. The German firm predicts that nanotechnology will change 25 per cent of the food packaging business in the next decade leading to a yearly market of about \$ 30bn (€ 24bn). Nanotechnology is the ability to measure, see, manipulate and manufacture things usually between 1 and 100 nanometers. A nanometer is one billionth of a meter; a human hair is roughly 100,000 nanometers wide. Source: FoodProductionDaily

Posted by Nano News at 15:52

Wednesday, May 10, 2006

Nanotechnology as applied to the development of medications

The Ministry of Education and Science has chosen a project of the School of Pharmacy of the University of Navarra which studies intelligent biomaterials, for participation in the National Plan for Scientific Research, Development and Technological Innovation. The project "NANOFAR: Preparation and characterization of new nanostructured materials for the controlled release of medications" involves research on nanotechnology as applied to the development of medications. Its purpose is the development of "intelligent biomaterials," able to pass the cell membrane that normally impedes access of drugs to the target cell. These materials increase the capacity to attack only diseased cells without damaging healthy ones. That is, they permit the design of highly selective drugs with very low toxicity. In addition, these materials make possible the liberation of the therapeutic agent in a sustained manner over time, without the necessity to administer the drug repeatedly. The project intends to demonstrate the effectiveness of nanomedicine in the treatment of infectious diseases such as brucellosis, via a strategy that could potentially be applied to other diseases, such as cancer. Collaborative research NANOFAR is a collaborative research project involving three groups: the special research line in Nanotechnologies and Controlled Drug Release, part of the Department of Pharmacy and Pharmaceutical Technology of the University of Navarra; the Molecular Nanoscience and Organic Materials Group of the Institute of Material Sciences of Barcelona (CSIC), of the Autonomous University of Barcelona; and the Group for Design, Synthesis and Structure of Peptides and Proteins of the Institute of Biomedical Research of Barcelona. Source: Basque Research

Posted by Nano News at 17:07

Russia could become leader in nanotechnology - Putin

"A program for the development of nanotechnology must be put in place in Russia in the near future," President Vladimir Putin said. "Russia could become a leader in nanotechnology, one of the most effective aspects and ways of saving energy," Putin said in an annual address to the Federal Assembly in Moscow on Wednesday. "I find it necessary to develop and adopt an effective program in this area in the near future," Putin said. Putin said he hoped joint work by the government and the Academy of Sciences to improve the scientific field "will not be formal, and will bring real results," and give the Russian economy promising scientific projects. In addition, it is extremely important "not to make a mistake in selecting priorities in the development of the space sector," he said. "Space construction is Russia's defense shield, the capability of early detection of global natural cataclysms and a site for obtaining new materials and technologies," Putin said. The president said that "large capital investments" were required to fulfill this task. Source: Interfax

Posted by Nano News at 11:58

Tuesday, May 9, 2006

Scots universities 'missing out' on nanotechnology cash

THE authors of a new report have warned Scottish universities are in danger of missing out on commercial returns in nanotechnology. Marks & Clerk's Nanotechnology Report claims the rapid growth of patent applications in three key areas of nanotechnology in the United States and the Far East is not being matched closer to home. The trademark attorney, which has an office in Edinburgh, claims that universities here are not filing enough patents in nanoenergy, nanoelectronics and nanotechnology in health and personal care. However, experts at Edinburgh University today played down the report saying patents were only one way of measuring the successes of nanotechnology. Nanotechnology is the study of technology the size of atoms and molecules, which is used in sectors as diverse as renewable energy, tissue engineering, medical implants and sunscreens and cosmetics. In nanoelectronics, among the top 30 players accounting for about half the total number of patent families, only eight per cent were filed by European applicants, compared with 24 per cent from the US and 51 per cent from Japan. A similar picture emerges in nanoenergy, where there were 398 priority applications for nanoenergy patents in the US from 2000-2005, but the figure in Europe was just 30 per cent of that. The comparative dearth of patent applications in Europe comes despite record levels of investment in research, particularly from public funds. Paul Chapman, the Edinburgh-based partner in Marks & Clerk, said: "A benchmark used by venture capitalists in giving out money is looking at a university's or a company's intellectual property position. If they see a large number of patents then they are more likely to invest." The university may have a strong position in nanotechnology, but if they don't file the patents they are not showing that to the world and will lose out to the Far East and the US." Dr Rhian Ganleese, co-author of the report, said: "Whilst it is good to see significant public investment in Europe, the low number of patents filed shown by our report gives serious cause for concern. European institutions and companies may be forgoing their claim to commercial returns by not filing patents on their research." David Leigh, Forbes professor of organic chemistry at Edinburgh University, said successful commercial returns on nanotechnology could not be measured in patents alone. He argued: "Patents are just one measure of activity. Europe is one of the major players in nanotechnology, with Scotland in particular having a very good international profile." "We may not be so quick to patent things but another measure of our success could be the number of spin-off companies which come out of our universities, compared to places like India and China." Source: Scotsman.com

Posted by Nano News at 13:58

Monday, May 8. 2006

Nanotechnology MSc opens for enrolment

University College London (UCL) is introducing a full and part-time nanotechnology MSc course from September 2006 in response to mounting industry demand for highly skilled graduates. Nanotechnology is rapidly establishing itself as a key technology discipline across an assortment of industries, ranging from microelectronics to healthcare. UCL's MSc in nanotechnology is designed for graduates who wish to enter this new and dynamic area of technology, either as industrial researchers, technical managers or academic researchers. The course is taught by expert researchers from UCL's highly respected Department of Electrical Engineering. The department has a proven track record of achievement across its courses. Its undergraduate courses (including a new programme in nanotechnology launching in 2007) rank highly in the UK by the Times Higher Education Supplement 2006 and it also the top research-based electronics engineering department in London as rated by the Research Assessment Exercise (2001). Students will also benefit from the state-of-the-art research facilities belonging to the London Centre for Nanotechnology, which offers eight levels of laboratory space and a complete range of nanocharacterisation facilities. The centre has been designed to act as a focus for current interdisciplinary nanoscale materials, and is essential in ensuring that the UK remains internationally competitive in biotechnology. 'Nanotechnology has huge potential in areas as diverse as healthcare, IT and energy storage', says Professor Ian Boyd, First Chair of Electronic Materials in UCL's Department Electronic Engineering. 'Governments and businesses across the world have started to invest substantially in the development of nanotechnology and the demand for accomplished, capable workers in this space is rapidly escalating. The training and experiences shared on this course will lay the foundation for a new generation of nanotechnology experts to advance this field and uncover new potential uses for a discipline we have only just begun to explore'. 'We are giving the UK the opportunity to lead the way in what is emerging to be a critical cornerstone of modern science and industry'. Source: University College London (UCL)

Posted by Nano News at 18:40

Nanoscience and Nanotechnology in Austria 22. may 2006

The Austrian NANO Initiative, is the multi-annual public funding programme for nanoscale sciences and nanotechnology. The Austrian NANO Initiative is organising this event in cooperation with BMVIT Federal Ministry of Transport, Innovation and Technology and Innovationsservice Salzburg to discuss prospects and risks of Nanotechnology, inform about ongoing and further activities in Nanoscience and Nanotechnology, support companies and research institutions in their cooperation needs => NANO Cooperation Talks. For more Details see the event website: www.matchmaking.at/nanoEvent Date: Monday, May 22nd, 2006, 10:00 - 18:00 Event Location: Salzburg, Kavalierhaus Schloss Klessheim Event Language: German Program: Details (75,65 kb) Source: Austrian NANO Initiative

Posted by Nano News at 13:54

Saturday, May 6, 2006

U.K. scientist compares carbon nanotubes to asbestos

A U.K. scientist has suggested that certain nanotechnology materials, such as carbon nanotubes (CNTs), could be similar to asbestos and have harmful effects on biological systems. Anthony Seaton, a professor at Aberdeen University, and one of Britain's leading environmental health experts, has warned that nanotechnology products are being deployed without proper care and without any effective biological safety testing. Speaking at the Nanoparticles for European Industry conference in London, Seaton compared CNTs to asbestos citing the fibrous nature of both materials. "It's a long way from asbestos to nanotubes, but there is a link," a Royal Society of Chemistry report quoted Seaton as saying. When asbestos was first introduced it was known as a wonder material, particular for its flame-proof qualities, and was quickly and broadly deployed as a building material. But since then it has been learned that it sheds tiny particles easily and that these can enter the lungs and cause asbestosis, mesothelioma and other forms of lung cancer. It remains the largest source of work-related deaths in the U.K. Seaton said nanotechnology-based materials and processes being advocated for modern products have not been properly assessed and could have similar unforeseen impacts; possibly causing respiratory, cardiac and immune problems. Seaton was the author of "Nanoscience and nanotechnologies: opportunities and uncertainties" published in 2004, the report said. Specific questions raised about the toxicity of nanoparticles and how to measure it have not been adequately answered, Seaton said. "There is very little evidence that anyone has put any thought or money into answering these questions," the BBC reported him saying at the conference. Source: EETimes.com

Posted by Nano News at 19:07

Friday, May 5. 2006

Largest Nanotechnology Event in Northern Europe

NTNE2006 is the largest nanotechnology event in Northern Europe. Arranged now for the second time, the congress brings up to 500 scientists, industry experts, entrepreneurs and investors from 25 countries to Helsinki, Finland for 16-18 May 2006. Meet innovative nanotechnology companies. NTNE2006 exhibition is the key event in 2006 for meeting the leading nanotech instrument and tool manufacturers as well as prominent research organisations and innovative SMEs. You have the opportunity to meet 100 companies and research organisations in the exhibition and surrounding events! Over 80 high-level international speakers. Congress sessions combine cutting-edge research to innovations and commercial development of nanotechnology. Keynote speakers: Sumio Iijima, Senior Research Fellow, NEC Corporation Japan; Bob Iannucci, Senior Vice President, Head of Nokia Research Center; Nicholas Hartley, Head of Unit, Strategy and Policy, DG Research, European Commission; Livio Baldi, Director, STMicroelectronics, ENIAC support group. Nanotech Venture Forum. Leading VCs and area experts discuss nanotechnology impact, winning business models and timeframes. Innovative early-stage companies introduce their business plans providing both interesting case-studies and investment opportunities. VC panelists: Steven Morrell, Partner, Teknoinvest, USA; Robert Jelski, Sector Adviser, Partner, 3i plc, UK; Juha Mikkola, Senior Partner, Eqvitec Partners, Finland; Aymeric Sallin, Managing Partner, NanoDimension AG, Switzerland. NTNE2006 Event Partners: Nokia, Nordic Innovation Centre, Tekes, UK Trade & Investment, IRC, NAO MITEC, Veeco Instruments, Obducat, FEI Company, NaNet, NanoØresund, Nanoforum. More information, congress program and exhibition catalogue are available at www.nano.fi. **PRESS RELEASES / PRESS LUNCH** If you wish to receive the congress press releases, please send your contact information to the email address below. Press lunch is arranged on Tuesday 16 May 2006 at 12:30. If you attend the press lunch, please contact: Jukka Mäntyjärvi. Netprofile Finland Oy. Tel. +358 9 6812 080 or +358 40 580 1477. Source: PRWEB

Posted by Nano News at 11:52

Thursday, May 4, 2006

Toxic warnings for nano industry

Most nanotechnology poses no known risk to humans but some researchers question whether nanoparticles may be different, because they are known to be able to cross over into areas of the body that larger particulates, which humans are exposed to every day, cannot reach. A very interesting read for those who follow nanotechnology. Continue reading "Toxic warnings for nano industry"

Posted by Nano News at 15:47

Wednesday, May 3, 2006

Nanotechnology's potential goes far beyond improved toothpaste

NANOSCIENCE and nanotechnology involve studying and working with matter on an ultra-small scale. One nanometre is one-millionth of a millimetre and a single human hair is around 80,000 nanometres in width. Nature has been doing nanotechnology for a long time, and it has become expert in it. Consider the super-fine hairs on a gecko's feet which allow it to stick to walls and even hang upside down on a glass sheet. Similarly, working at a scale a million times smaller than a pinhead allows researchers to "tune" material properties, making them behave in different ways from normal, large-scale solids. Nanotechnology is used to create paint that is particularly hard-wearing. Manipulating substances at the nano-scale has allowed the development of toothpastes with just the right level of abrasiveness. The technology stretches across the whole spectrum of science, touching medicine, physics, engineering and chemistry. In the last 15 years, more than a dozen Nobel prizes have been awarded in nanotechnology, from the development of the scanning probe microscope to the discovery of fullerenes, tiny molecules of pure carbon. One of the defining moments in nanotechnology came in 1989 when Don Eigler used a scanning probe microscope to spell out the letters IBM in xenon atoms. According to experts in the field, nanotechnology will revolutionise life in the 21st century to the same degree as the steam engine, electricity and the computer did in the past. However, it is a science that is only really beginning. Last year Professor David Leigh, of Edinburgh University, announced he and colleagues had invented the first nanomachine that could move something bigger than another nano-sized object. The device was able to move a drop of water up a 12-degree slope - the equivalent of a conventional motor moving a piston by a millimetre and managing to lift an object twice the height of the 1,815ft CN Tower in Toronto. Source: Biotechnology

Posted by Nano News at 19:10

Nano chips to maximise space

An international research team from University College London's (UCL) Centre for Nanotechnology has developed a ceramic material that could result in fundamental changes to technology. The material can be used in the creation of self-assembled circuit boards with various layers being insulated from each other by just a few atoms dramatically reducing processor size requirements. Professor Gabriel Aeppli, the director of the London Centre of Nanotechnology, says the technology has the potential to create three-dimensional memory in very small spaces. "By integrating circuits in the third dimension you can compact a whole rack of circuit boards, something that would normally take up centimetres of space, into sub-micron distances," he said. Aeppli believes the ceramic circuits could significantly increase the power of random access memory (Ram) chips over the next five to 10 years. "We will be dealing with far greater densities of stored data, in three-dimensions rather than two. In those terms, we are talking about an increase in many orders of magnitude," he said. Aeppli's ultimate vision for the technology is the creation of supercomputer-level processing power devices the size of current Pentium 4 processors. But the technology does present problems such as how the levels of heat generated from a three-dimensional processor might be dissipated. Aeppli says that with current processing technologies reaching their limits, 3D processing may represent the best chance of a way forward. "Three-dimensional integration is one of the key routes to keeping Moore's Law [that says technological growth will double every 18 months] going. Current two-dimensional processor technology is going to near its end as future device sizes get closer and closer to inter-atomic distances," he said. Quocirca analyst Clive Longbottom says if we continue with current chip technology, processors will become "hotter than the surface of the sun" in less than five years. "We are really beginning to struggle with heat and power in business data centres. We just cannot get enough power into them to service the processor requirements and the parallel need for cooling," he said. "The amount of money we are spending on air conditioning is starting to exceed the amounts spent on the computer itself. If we can get control of heat and power then we can look at expanding compute power. 3D storage capacity could also dramatically reduce the space needed in server rooms for hard-disks, says Longbottom. "You could look at seriously reducing the amount of real estate required. Tens of terabytes of storage needs a large area of space. If you looked to do that with nanotechnology you could make vast reductions," he said. "It just has to get through the bleeding-edge phase and prove itself to be cost effective." Source: University College London

Posted by Nano News at 15:50

Friday, April 28. 2006

Imago Secures \$3.4m in Equity Funding

Imago Scientific Instruments, the world leading provider of Atom Probe Tomography instruments, announced today that it has completed a \$3.4 million round of equity funding led by Draper Fisher Jurvetson (DFJ), Portage Venture Partners (PVP) and Cipio Partners. "We are delighted to have the continued support from venture capitalists of this caliber to help us build a world class company," said Timothy Stultz, president and CEO. The capital raise comes less than 2 weeks following Imago's acquisition of Oxford nanoScience (ONS) from UK-based Polaron plc. "The acquisition of ONS strengthened our position as the dominant company in the global market for atom probe microscopes," said Dr. Stultz. "We now have the largest product line, largest installed base, highest revenues, and a dominant intellectual property position in atom probe technology." "With its proprietary position, rapid growth and strong management team, Imago is extremely well positioned to become a large, leading supplier of advanced metrology tools to the microelectronics and materials research industries," said Warren Packard, board member and managing director of DFJ. "The strategic acquisition of ONS and increased working capital from this equity funding will help further accelerate the growth of an already dynamic company in an exciting industry," said Matt McCall, board member and PVP partner. "This is definitely a company to keep an eye on." Source: AZoNanoInfo: Imago Scientific Instruments

Posted by Nano News at 13:27

BASF to take Nanotechnology to Asia

BASF has opened its first research center for nanotechnology in Asia. The new center in Singapore involves a €13 million expenditure up to 2008, and will employ 20 staff, mainly scientists and technicians. BASF already operates 17 development sites in Asia Pacific, but this is the first time the company is carrying out research dedicated only to nanotechnology in the region. "This is a bold step for BASF – a step geared to helping us realize our ambitious goals in nanotechnology," said Dr. Stefan Marcinowski, member of BASF's Board of Executive Directors and Research Executive Director. "The new center will allow us to work more closely with highly respected research institutions in Asia and to attract top talent, enabling us to better serve our customers in the region." Marcinowski stressed that BASF would play an active role in Singapore's outstanding research community through this new facility, while sharpening its current focus on the so-called "growth cluster" nanotechnology. "We plan to spend around €180 million in nanotechnology research worldwide between 2006 and 2008," he added. Mr. Teo Ming Kian, Chairman of the Singapore Economic Development Board (EDB), said: "We are delighted that BASF has selected Singapore to be a key node of their global R&D strategy. This is in line with EDB's aim to move Singapore from simply being a place to implement technology efficiently, to one where we also create first-of-its-kind technology and know-how. The EDB warmly welcomes the opening of BASF's Competence Center for Nanostructured Surfaces. It is a shining endorsement of the capabilities, infrastructure and intellectual property protection in Singapore." Dr. Martin Brudermüller, member of the Board of Executive Directors of BASF and responsible for Asia Pacific, said, "This center will help us better pick up new emerging technology trends. It allows us to strengthen our ties with innovative, technology-driven customers in Asia and open up new market opportunities. As part of our global research network, this center will also exchange know-how, competencies and innovative solutions with other research centers in our global network, for example, in Europe and the United States." The Competence Center for Nanostructured Surfaces in Singapore will concentrate on nanostructured surface modification that could, for example, offer a solution to the problem of biofouling on ship hulls and other marine surfaces is an issue with both environmental and economic relevance. Although no alternatives to the use of biocides are available at present, developments in nanotechnology could offer an innovative and environmentally friendly solution. The objective of the project is to understand the mechanism of organism buildup on surfaces in seawater and to develop biocide-free nanostructured coatings that minimize the physical adhesion of marine organisms to surfaces. BASF aims to concentrate major technology-driven issues of particular relevance to the future in growth clusters: energy management, raw material change, nanotechnology, plant biotechnology and white biotechnology. These cross-sectional technologies are outside the realm of the classical disciplines and can only be brought to fruition by interdisciplinary and international cooperation. Between 2006 and 2008, a total of €800 million will be allocated for the research activities pursued within the five growth clusters. BASF's expenditures for research and development is projected to increase to €1,150 million in 2006, representing about 18 percent or €180 million more than in 2004. Source: BASF

Posted by Nano News at 13:18

Wednesday, April 26, 2006

Nanotechnology-Created Armor

An Israeli company has developed a material that could very well become the armor of the future. A sample of this new material was subjected to severe shocks generated by a steel projectile traveling at velocities of up to 1.5 km/second. The material withstood pressures up to 250 tons per square centimeter, or the equivalent of dropping four diesel locomotives onto an area the size of your fingernail. According to the report, this nanotechnology-created armor is "five times stronger than steel and at least twice as strong as any impact-resistant material currently in use as protective gear." Currently the company is only able to produce a few kilograms of this material each day, but there are plans for mass production by 2007 and the likelihood of the first product rollout in less than three years. Their review reveals the Dragon System from Pinnacle is the best. It weighs a mere 17.5 pounds and will only set you back \$4,600. That's a small price to pay, however, to stop 50-caliber bullets aimed at your heart. If you're still not sure, watch these videos. Bulletproof armor is just the tip of the iceberg for applications. Scientists are currently exploring how to use nanotechnology to create wet-suit-like gear for soldiers that would not only be bulletproof, but keep out chemical weapons and even increase jumping ability.

Posted by Nano News at 21:14

IMEC Confirms Sustained Annual Increase in Revenues

IMEC, Europe's leading independent research institute for nanoelectronics and nanotechnology, confirms during its General Assembly a sustained annual increase in revenues since its foundation in 1984. IMEC's performance criteria have increased year over year, giving the Belgian-based research institute points in a year when the framework agreement with the government of Flanders will be renewed. The Flemish government accounts for 18% of the financing for IMEC's research activities. With a total self-generated revenue of 162 million euro, IMEC's annual budget has increased with a firm 23% as compared to 2004. The total budget is now 197 million euro. The rise primarily results from an increase in revenue from contract research with the international industry. For one of its core activities, research on IC process technologies for the sub-45nm generation, IMEC collaborates with eight of the top ten IC manufacturers in the world and other organizations. Besides self-generated revenue, IMEC receives an annual grant from the government of Flanders amounting to 35 million euro. This grant is indispensable in sustaining IMEC's long-term research. The revenues from contract research were generated through collaboration with local industry (22%) as well as with international industry (68%), through projects of the European Commission (8%) and the European Space Agency (2%). In 2005, more than 550 partners worked with IMEC through a bilateral collaboration, while more than 600 were involved in European projects where IMEC acts as a partner. Additionally, IMEC collaborated with 139 Flemish partners. The quality of IMEC's research was presented in the 1521 scientific papers and conference contributions that IMEC published, often achieved in collaboration with Flemish universities. "These results prove that the hard work of 2005 has certainly paid rich rewards, both technologically and financially," said Gilbert Declerck, President and CEO of IMEC. "Currently, we are discussing our new business plan for the coming 5 years with the Flemish Government. In this plan, we are highlighting the importance of multi-disciplinary research, heterogeneous technologies, and integration because our future well-being will be marked by a strong synergy of disciplines. By strengthening our "More-than-(Gordon) Moore" research and our "More-Moore" research, we are prepared to build this future." About IMEC IMEC is a world-leading independent research center in nanoelectronics and nanotechnology. Its research focuses on the next generations of chips and systems, and on the enabling technologies for ambient intelligence. IMEC's research bridges the gap between fundamental research at universities and technology development in industry. Its unique balance of processing and system know-how, intellectual property portfolio, state-of-the-art infrastructure and its strong network of companies, universities and research institutes worldwide position IMEC as a key partner for shaping technologies for future systems. As an expansion of its wireless autonomous microsystems research, IMEC has created a legal entity in the Netherlands. Stichting IMEC Nederland runs activities at the Holst Centre, an independent R&D institute that develops generic technologies and technology platforms for autonomous wireless transducer solutions and systems-in-foil. IMEC is headquartered in Leuven, Belgium, and has representatives in the US, China and Japan. Its staff of more than 1450 people includes more than 500 industrial residents and guest researchers. In 2005, its revenue was EUR 197 million.

Posted by Nano News at 15:23

CAPE Moves into Cambridge Research Facility

The Cambridge University Electrical Engineering department has completed a new research facility for the development of emerging technologies in optoelectronics, nanoelectronics, displays and other markets. The £14.4 million (\$25 million) facility will be the home of the Centre for Advanced Photonics and Electronics (CAPE) consortium, one of its member companies announced yesterday. The new CAPE facility, located on the University of Cambridge's science and technology campus in West Cambridge, comprises over 4800 square meters of research and laboratory space, and includes a cleanroom equipped with dedicated process, assembly, and test and measurement tools. The new building represents the culmination of nearly two years of collaboration between the university and CAPE's member companies. CAPE, founded in 2004, is a partnership between Dow Corning, which released yesterday's announcement, and optoelectronics component supplier Alps Electric Co. Ltd., optical systems firm Marconi/Ericsson and Advance Nanotech, a nanotechnology-focused business incubation company. Together with the University of Cambridge, CAPE is developing new photonics and electronics technologies, applications and business opportunities. The new CAPE facility will also house the University of Cambridge department of engineering's electrical division, comprising over 20 academics, and approximately 70 post-doctoral researchers and 150 post-graduate students, the university said. "The opening of this facility represents an important milestone for the CAPE consortium. By collaborating together in a strategic, pre-competitive environment, CAPE partners will gain access to research results that would be virtually impossible for any one of us to fund or accomplish alone," said Gregg Zank, chief technology officer of Dow Corning. "This is exactly the kind of technology and business innovation that is required for electronics and photonics companies -- and their customers -- to succeed today." Areas of focus for the new facility include communications, sensors (including biosensors) and smart power. To date, CAPE research projects have included optical waveguides and optical interconnects for advanced data and communication, as well as advanced functional optical element materials and emerging display technologies. As part of Dow Corning's participation, the company said one of its top scientists, Terry Clapp, works at CAPE. Source: www-cape.eng.cam.ac.uk

Posted by Nano News at 10:02

Tuesday, April 25. 2006

Irish chip breakthrough for nanotechnology research

Work has completed on a new test microchip that will be used in Irish universities with the aim of furthering research into nanotechnology. The processor is the result of collaboration between Intel Ireland and scientists at the Centre for Research in Adaptive Nanostructures and Nanodevices (CRANN), located in Trinity College, Dublin. Known as the Adaptive Grid, the chip is said to be suitable for testing materials and devices at the nano scale of a billionth of a metre. Using Intel's knowledge in manufacturing, the silicon chips have been patterned and functionalised to act as templates for the arrangement of materials such as carbon nanotubes. The trick is to encourage these nanotubes to bed down in predefined trenches on the silicon grid pattern. It is thought that this way CRANN researchers can find them, measure them and gain more reliable information about these materials and their distinct properties. In the future more functionality can be added to form the basis of practical, usable devices. More revisions of these chips are currently being planned. At an event in Trinity College yesterday to mark the development Intel Ireland general manager Jim OHara called it an example of the synergy gained through academia partnering with industry. "Collaboration can be very powerful. Here, scientists and technologists are working together to unravel the promise of the nanoscale. I'm delighted that Intel Ireland and CRANN have achieved the first test chips in this project and I look forward to many new scientific and technological breakthroughs ahead as a result." CRANN director Prof John Boland said that the technology would "provide both CRANN and Intel with a unique window to the future and ensure Ireland is recognised as a world-class centre for research". The centre was set up two years ago and receives funding from Science Foundation Ireland and the National Development Plan. CRANN works closely with Intel Ireland and other industry and university participants. Source: SiliconRepublic.com

Posted by Nano News at 10:35

Monday, April 24, 2006

Cientifica announces "Nanotechnologies for the Textiles Market"

Cientifica, the world's leading sovereign seller of nanotechnology research and technology information, releases report "Nanotechnologies for the Textiles Market" which reveals that textile applications of nanotechnologies are already a US\$ 11 billion market, and will increase by a factor of ten by 2012. The report is the world's most comprehensive analysis of the impact of nanotechnologies to the textile industry, and draws on the views of experts from such major textile producing nations as China, India, Pakistan and Indonesia, in addition to the major markets of Europe, North America and Japan. Containing over 70 tables and figures, "Nanotechnologies for the Textiles Market" covers apparel, home textiles, medical textiles, military textiles, sports textiles and other technical textiles. The report gives a comprehensive analysis of all current and projected applications of nanotechnologies to the textile industry, with full cost benefit and pricing analysis, market forecasts, timelines, and company details for each of the six sectors. The report reveals that: The value of nanomaterials supplied to the textile industry will reach US \$8.6 billion by 2012. The market for textiles making use of nanotechnologies will reach US \$13.6 billion by 2007, and expand to US \$115 billion by 2012. Clothing textiles will still make up the largest share of the total textile market although sports/outdoor textiles and non-conventional technical textiles will exhibit far higher growth rates. Nanotechnologies will provide incremental improvements to existing textile sectors, but offer the highest growth in the non-traditional sectors. Helen Yu, senior analyst at Cientifica commented, "Global competition and increasingly demanding and affluent consumers are driving the adoption of nanotechnologies at an ever increasing pace. The textile industry is poised to be the first sector to experience a major impact from nanotechnologies." Cientifica is the world's leading independent supplier of research and technology information, with activities spanning from basic research through scientific networks to consultancy, business intelligence and investment appraisals. With offices and representatives around the globe, Cientifica is the number one choice of anyone looking to see the big picture about technology. Source: Cientifica

Posted by Nano News at 09:49

Sunday, April 23. 2006

The SchauPlatz NANO at the HANNOVER FAIR 2006

The SchauPlatz NANO is a platform for communication, which is hosted by Beiersdorff GmbH. Relevant companies get the possibility to be part of a nano community which is supporting and inspiring one another. Companies can present themselves with relation to the whole market on different communication levels like fairs, discussion panels or press gatherings. At the trade fairs, important new contacts within the nano platform and business contacts to visitors, attendees and journalists are tied. The SchauPlatz is a dynamic platform reacting flexible to market demands and environment. All attendees are equally integrated in a custom-made communication concept and a sophisticated marketing and stand concept. On trade fairs, the SchauPlatz NANO is presented as an application-oriented B-to-B-Platform for nanotechnology, serving the requirements of the professional visitors. A wide range of products is shown. Visitors with no detailed interest are able to gain descriptive information about the state-of-art of nanotechnology. The SchauPlatz NANO gives visitors a concentrated look at technological approaches in the field of nanotechnology. It is an integrated exhibition platform for companies with research and development programs dealing with nanotechnology in the following sectors: life science, tools & sensors, optics & electronics, materials & surfaces, education and training research. Select choice exhibits give a gleam into the possibilities of this new technology. Event: 24 April through Friday, 28 April 2006 Source: Schauplatz NANO

Posted by Nano News at 10:53

Saturday, April 22. 2006

Nanotechnology Products for Industry, Retail & Trade

A lot of retailers and traders are interested in having their own brand. Percenta Europe Ltd. as a wholesale and direct partner of one of the biggest development centres for nanotechnology can give you the opportunity to distribute your own branded goods. Percenta Europe Ltd. are one of the first companies to specialise on research and distribution of nano-based surface sealants and they offer a wide range of nano sealing products for private and professional use. The unique and multifunctional surface finishes provide a long lasting protection on a chemical nanotechnological basis. They provide: Window Sealant, Car Glass Sealant, Wood & Stone Sealant, Stainless Steel Sealant, Car Body Care Sealant, Nano Multi Foam, Wheel Rims (alloy/steel) Sealant, Glass & Ceramics Sealant, Textile & Leather Sealant, Synthetic Materials Sealant, Concrete / Flooring Sealant, Anti-Condensation for Glass, Anti-Condensation for Synthetic Materials, Anti-Static for Laminate, Furniture Polish with Anti-Static Effect, Nanotechnology 2 K Boat Sealant - Anti Fouling, Nanotechnology Eraser Pads ...All products are free from silicone, acrylics and teflon !It makes no difference if you start with only one product and take further products later on, or if you start directly with the whole nano range. You are always one step ahead, whether you are a textile discounter who wants to have new products in your range or a building business that not only builds the house, but also seals it afterwards. Leave the competition behind. Percenta Europe Ltd. offer a lot of ideas to increase the value and the advantage of business competition of the produced materials, especially for textile, synthetic material and building material industries. With Percenta's special nano cleaning and sealing products, costs can be decreased by about 90%. Expensive and environmentally unfriendly cleaning agents are no longer necessary. A long lasting seal is of advantage, as the treated surfaces only need to be cleaned with water and a wet cloth. Source: Percenta Europe Ltd.

Posted by Nano News at 01:03

Friday, April 21. 2006

Chinese city of Weifang wants investment from Portuguese chemical companies

The city of Weifang, in the Chinese province of Shandong, wants to attract investment from the Portuguese chemical industry, Wang Xiulu, the city's head of promotion and investment, said Wednesday. "Economic cooperation with Portugal is important so that we can diversify and internationalize our economy, and our major interest is to attract companies from the chemical sector to Weifang," Wang told Portuguese news agency Lusa on the sidelines of Weifang International Forum for Economic Cooperation and Development, where Portugal, together with Germany and Malaysia, is a highlighted country. One of the big investments the city has attracted is the signing of a partnership between Weifang Yaxing Chemical and Lanxess, of German group Bayer which, in 2005, moved a production unit from the United States to Weifang with a production capacity of 12,000 tons of hydrazine hydrate, a chemical used in the pharmaceutical and water treatment industries, representing an investment of US\$23 million. "Weifang hosts projects from companies in Germany, France, Belgium, the Netherlands and other European countries and we also want to begin our economic cooperation with Portugal," Wang said, adding that, "the main objective of the meeting with the secretary of state is to boost economic cooperation with Portugal and discuss carrying out projects of common interest." In 2005, Weifang, a city with 8.5 million inhabitants and whose main income is from the manufacturing industry, attracted US\$38 million in investments, according to Wang. Wang also said that the tax and customs benefits that the city provided to new investors were the biggest factor for attracting new companies, including a 50 percent reduction of total taxes paid, local tax exemption and payment of provincial and national taxes by city authorities, as well as value added tax (VAT) exemption. The Weifang government has said that preferential foreign investment sectors were nanotechnology, chemical engineering, new materials, electronics, information technology, and real estate development. Source: macauhub

Posted by Nano News at 21:18

Thursday, April 20, 2006

Taiwan launches Nano Mark program

From a conference brochure for Nano Tech Taiwan 2006: "Taiwan's pioneering Nano Mark campaign links industry, academia, and government to promote the development and marketing of quality products employing nanotechnology and protect consumer rights. Directed by the Industrial Development Bureau of the Ministry of Economic Affairs (Taiwan, ROC), it is the world's first such national-scale program to encompass classification, standardization, regulation, and promotion of nanotechnology and related products...The graphic design is based on the symbol for "infinity" to evoke the infinite possibilities this revolution promises."

Continue reading: [Taiwan launches Nano Mark program](#)

Posted by Nano News at 22:57

Nanotechnology in Consumer Products

Not much is known about the health effects of nanotechnology. As the Washington Post notes, "Because of their tiny size, nanomaterials have special properties that make them ideal for a range of commercial and medical uses, but researchers are still trying to determine how they might affect humans and animals."

Continue reading: [Lot 49](#)

Posted by Nano News at 20:29

Tuesday, April 18. 2006

EU Funds Nanoelectronics Research in Dresden

The European Union has decided today to support a Nanotechnology Research Center in Dresden. Science and industry work hand in hand at the Fraunhofer-Center Nanoelectronic Technologies CNT in Dresden developing new process technologies for nanoelectronics. The European Commission has granted funding of 232.5 million euro to support the research platform. Congratulations to all those involved !

Continue reading: [Fraunhofer-Gesellschaft](#)

Posted by Nano News at 05:36

Friday, April 14. 2006

Nano Spray Recall Raises Potential Health Risks

Not much is known about the ingredients in Magic Nano, a household glass and tile sealant, but its recent recall may have been a first for the nanotechnology industry, a key player in future computer-related innovations. "We still don't know if Magic Nano actually used nanotechnology particles or a really thin layer of particles it called nano," Andrew Maynard, an expert on airborne particles, told internetnews.com. "Either way, this incident is a wake-up call to the industry because it highlights the problems we face if we don't do diligence with this new technology," added Maynard, a science advisor to the Project on Emerging Nanotechnologies. Magic Nano was first sold in supermarkets and discount stores in late March. According to the German Federal Institute for Risk Assessment (BfR), Magic Nano was recalled by the manufacturer, Kleinmann GmbH (a subsidiary of Illinois Tool Works) after BfR issued a product warning on March 31. Between March 27 and March 30, it said 97 people who reportedly used the aerosol spray claimed to suffer from health problems ranging from trouble breathing to six cases requiring hospital treatment in which water accumulated in the lungs (pulmonary edema). BfR has since met with the manufacturer but did not get clear answers as to Magic Nano's ingredients. BfR said it is possible that the reported health effects were associated with very fine airborne droplets produced by the aerosol product. Maynard said the mystery surrounding Magic Nano's ingredients was unhelpful to the nascent nanotechnology (define) industry because it could unfairly tar other nanotech developments. Nanotechnology is used to measure, see, manipulate and manufacture things usually between 1 and 100 nanometers. A nanometer is one billionth of a meter; a human hair is roughly 100,000 nanometers wide. Nanotechnology is at the cutting edge of semiconductor research, as chip designers look to pack more processing into ever-smaller pieces of silicon. "I can't imagine nano-scale features on a chip are going to harm anyone directly," said Maynard. "It would have to come in contact in a way that would harm the human body, and that's more likely with other products." Science has shown there is evidence that [nano materials] present a new risk to the health of the body, enough to say we need to be careful. "Rather than new regulations, Maynard is calling for greater transparency from manufacturers in what their products contain and the potential risks. "Product development will always outstrip our understanding of risk, but there is a lot we can do to narrow that gap," said Maynard. Last month, the Project on Emerging Nanotechnologies issued the first publicly available online inventory of over 200 consumer products, which manufacturers claim are made with nanomaterials or use nanotechnology. Ten products in the project's inventory are described as "sprays" but most are pump-action sprays. Magic Nano is the only known, maker-identified nanotechnology product that was available to consumers in the form of an aerosol can. "Pump-action sprays typically form droplets that are much larger than those from aerosol cans," said Maynard. "These are less likely to reach the sensitive deep lung when inhaled." Source: internetnews.com

Posted by Nano News at 23:44

Thursday, April 13, 2006

Nanotechnology Raises Health Questions

WASHINGTON - Federal regulators said Thursday they want to get a better handle on the burgeoning use of nanotechnology in everyday products, as their German counterparts struggle to understand why nearly 100 people suffered respiratory problems after using a novel cleaning product made with the submicroscopic particles. The Food and Drug Administration said it plans an October meeting to discuss the new kinds of nanotechnology materials being developed for use in the products it regulates, including drugs, foods, cosmetics and medical devices. FDA-regulated products account for about 25 cents of every dollar spent each year by U.S. consumers.

Nanotechnology involves the manufacture and manipulation of materials at the molecular or atomic level. At that scale, materials are measured in nanometers or billionths of a meter. Nanoscale materials are generally less than 100 nanometers in diameter. A sheet of paper, in comparison, is 100,000 nanometers thick.

The FDA announcement comes as officials with Germany's Federal Institute for Risk Assessment continue to probe 97 cases of intoxication, some of them severe, in people who had used a recently introduced aerosol cleaning product called "Magic Nano."

The product, which is not sold in the United States, has since been withdrawn from sale in Germany. Officials there said they assume inhalation of the aerosol droplets caused the respiratory problems, but that they cannot rule out whether the nano particles it contains also contributed.

"These incidents have demonstrated that the introduction of new technologies in consumer products must be coupled with an assessment of the possible risks arising from their use. It is incumbent on science to communicate this message to consumers as well," Institute president Andreas Hensel said in a statement.

The FDA said the October meeting would help alert the agency to any scientific issues about nanotechnology.

"They seem to be more open about finding out what's going on rather than saying they have everything under control," said Andrew Maynard, chief science adviser to The Project on Emerging Nanotechnologies, which was jointly established last year by the Woodrow Wilson International Center for Scholars and the Pew Charitable Trusts.

The project recently released a catalog of more than 200 products on the market that includes nanotechnology.

Nano materials, because of their special properties, can pose different safety issues than their larger-sized counterparts, the FDA said.

Source: Food and Drug Administration

Posted by Nano News at 14:09

Tuesday, April 11. 2006

Nanotechnology Zaps Prostate Tumor Cells

Super-small organic particles loaded with an anti-cancer drug attach themselves to prostate tumor cells and use the chemotherapy to destroy cancer, researchers report. In experiments with mice, researchers used these custom design "nano-particles" to home in on, and then enter, malignant cells, delivering lethal doses of chemotherapy while leaving healthy cells unaffected.

Tumors shrank dramatically after this type of treatment, the researchers reported, and all of the treated mice survived. "We were interested in developing a nano drug-delivery system," said lead author Dr. Omid C. Farokhzad, an assistant professor of anesthesia at Brigham and Women's Hospital and Harvard Medical School. "These nano-particles are so small that you can put 500 of them side-by-side, and they are as thick as a human hair," he added.

This small drug-delivery system is able to attach itself to the surface of a prostate cancer cell and then get drawn into the cell, Farokhzad said. "This was effective in eradicating cancer in a mouse model of prostate cancer," he said.

His team's report appears in this week's issue of the Proceedings of the National Academy of Sciences.

In the study, Farokhzad's team created tiny sponge-like nano-particles soaked with the chemotherapy drug docetaxel. The particles were designed to release the drug after dissolving in a cell's internal fluids. The nano-particles were made from materials already familiar to experts, and approved for medical applications by the U.S. Food and Drug Administration.

The advantage of this drug-delivery system is that it can selectively release a large dose of a drug directly into a cancer cell.

"If you were to get that concentration of a cancer drug into the cell through normally administered chemotherapy, you would have to give such a large dose that it would cause dramatic toxicity," Farokhzad said. "The system is designed to limit the toxicity, but increase the efficacy."

"Nano-particle drug delivery can be used not only for other cancers, [but] also for other diseases," Farokhzad added. "The targeting molecule on the surface of the nano-particle is equivalent to the GPS system in your car," Farokhzad said. "You can change that targeting on the nano-particle surface and thereby reprogram it to go to a different destination," he explained.

But before this drug-delivery system is ready for common use, it needs to be tested in larger animals and in human clinical trials, Farokhzad said.

One expert thinks these findings are important.

"This is a very significant paper," said Raoul Kopelman, a University of Michigan Distinguished Professor and Kasimir Fajans Collegiate Professor of Chemistry, Physics and Applied Physics and a member of the Biophysics and the Biological Nanotechnology Center at the University of Michigan Medical School.

"It is a better than expected demonstration of the potency of targeted nano-particles for cancer therapy," he said.

Another important point is the researchers' emphasis on biocompatibility and biodegradability of the nano-particles, Kopelman said.

"Each matrix component is FDA-approved, which does not make FDA approval automatic, but still should accelerate it. Still, a nano-particle bio-elimination study will most probably be required for FDA approval," he said.

More informations: U.S. National Cancer Institute.

Source: HealthDay

Posted by Nano News at 10:24

Friday, April 7. 2006

Finland is home to a fast-growing cluster of micro- and nanotechnologies

In recent years a sizable concentration of micro- and nanotechnologies has formed in Finland, which also pursues their commercial exploitation. Finland's network of cooperation in micro- and nanotechnology was identified and assembled between 2002 and 2006 as a part of the country's national Centre of Expertise Programme. The network was given the name Finnish MicroNano Technology Network FMNT. "The project's mission was to translate top-level expertise into commercially exploitable products. We also wanted to get all the Finnish companies linked to the value chain in different parts of the country to support each other during their growth and development," explains Technopolis Ventures Oy's Program Director Jouko Strand.

Strand believes that the Helsinki metropolitan area can already be regarded as an important international cluster of expertise.

"Altogether some 60% of the country's research resources for micro-nanotechnologies and new materials are concentrated in the area. The expertise of universities and polytechnics is also represented and companies have accumulated an abundance of knowhow in the field. Furthermore, some major global players are located in the region, such as Vaisala Corporation, VTI Technologies and Suunto."

Strand points out that Finland's micro-nanotechnologies cluster generated net turnover of EUR 600 million in 2004 and employed 3,400 people. These figures include some 115 companies and a host of research and innovation organizations. The players are either producers of technology or strong technology exploiters. Some significant players - such as Nokia - were excluded, while only the portions of exploiters' net turnover figures related to the relevant technologies were included.

FMNT has increased its visibility in Europe. At present FMNT is involved in two EU projects as well as in the OMNI-NET project (Innovative network exploiting transversality, Optics Valley, Paris) launched in October 2005. The OMNI-NET project aims to build a European meta-network in cooperation with 13 European clusters and organizations.

The "Finnish Micro&Nano Technology Network - proactive integrator of European Microsystems Clusters" project was implemented during 2002-2006. The project proposal for the Center of Expertise for Adaptive Materials and Microsystems was voted a top project for the national Centre of Expertise Programme in 2002 and an award of EUR 150,000 was granted for its implementation. Technopolis Ventures Oy was responsible for implementing the project, which was administered by Culminatium Ltd Oy.

The Center of Expertise for Adaptive Materials and Microsystems is a part of the Uusimaa Centre of Expertise Programme. Altogether 22 technology centers and science parks in different parts of Finland implement the national Centre of Expertise Programme, which is coordinated by the Finnish Science Park Association TEKEL.

The current term of the Centre of Expertise Programme expires at the end of 2006, and the operating concept of the Programme for the following term, 2007-2013, is changing. In future the Programme will focus more clearly on enhancing the cooperation between Centres of Expertise in selected and nationally important clusters of expertise. The Finnish Government will announce the clusters to be included in the Programme, and the associated Centres of Expertise, based on a two-stage application process. Only those Centres of Expertise with the most advanced knowhow will be admitted to the Programme.

Source: FMNT

Posted by Nano News at 21:07

Monday, April 3. 2006

Nanostart AG Invests in NanoDynamics, Inc.

Nanostart AG (FWB:NNS) has made an investment in the company NanoDynamics, Inc. from Buffalo, New York. The company that was founded in March 2002 is a leading supplier of nanomaterials and of nanotechnology-enabled products. The participation represents a major success for Nanostart AG as the company was still given the chance to invest although the financing round was already completed. NanoDynamics has developed platform synthesis technologies for nanosized metal and ceramic powders, as well as a novel process for affordable production of multiwall carbon nanotubes (CNT). The processes have already been scaled to commercial volumes for several products including nanosized silver which is of particular interest as an antimicrobial additive for paints, plastics, construction materials, and surfaces. It is also finding increasing use in the electronics industry for ink-jet printing of circuits and electromagnetic interference shielding. NanoDynamics holds altogether over 60 patents and patent applications protecting its proprietary processes, materials, and end-products.

To successfully promote the commercialization of its technology, NanoDynamics has divided up its business into three areas "Materials", "Products" and "Innovations". The Materials division focuses on the production of nanoscale materials and structures, the Products division goes on to convert these materials and structures into marketable applications for a broad range of industries, including the semiconductor and electronics industry, medical technology as well as the energy industry. For example, NanoDynamics produces portable fuel cells with a power capacity of between 50 and 250 watts. All the activities from the research and patents area have been pooled together by the management in the Innovations division. Through a combination of strategic partnering, custom product development, and out-licensing activities, the company is able to tap further earnings sources and increase the overall value of its investment in intellectual property.

"By making this investment in NanoDynamics, Nanostart AG will again be strengthening its presence in the USA and at the same time will be proving that it has access to the Top Names in the nanotechnology area", states Marco Beckmann, CEO of Nanostart AG. Keith Blakely, NanoDynamics CEO, particularly stresses the strategic significance of Nanostart AG for his company: "As Europe's leading nanotechnology investment company, Nanostart AG offers us an international perspective. Besides this, we will also be able to profit from its contacts and experience in both industry and the financial sector. Although our current financing round had been oversubscribed and was already completed, we saw significant strategic value in having Nanostart AG as one of our investors. We did all we could to make this possible and are now naturally very pleased to have Nanostart AG on our side as a very important European investor."

About NanoDynamics, Inc.:

NanoDynamics, Inc. is a leading nanotechnology company offering nanomaterials, nano-enabled products and cutting edge technologies to its customers and partners around the world. NanoDynamics' has successfully developed proprietary technologies and commercialized a range of nanomaterials that are already improving the form, function and performance of a wide range of industrial and consumer products and industries, including electronics, semiconductors, fuel cells, transportation, energy and biotechnology.

For more information please visit: <http://www.nanodynamics.com>

About Nanostart AG:

Nanostart AG is Europe's leading nanotechnology investment company whose activities are divided into two areas: one of its focuses is investing in fast-growing nanotechnology companies; its other key area of activity is advising companies in the financial industry on investments in the nanotechnology sector.

For more information please visit: <http://www.nanostart.de>

Source: Finanzen.net

Posted by Nano News at 12:56

Friday, March 31. 2006

Berkeley Nanotechnology Forum

The third annual Berkeley Nanotechnology Forum 2006 (BNF06) will focus on where nanotechnology is being used today and explore promising future applications at an all-day forum on Saturday, April 15, at the Haas School of Business. The theme for this year's forum is "Nanotechnology: Living up to the Promise." The keynote speakers will be Stan Williams, director of quantum research for Hewlett Packard Labs, and Matthew Nordan, president of Lux Research. Panel discussions for the day include Future Funding for Nanotechnology Innovation, Nano-Energy Applications, and Nano-Bio Applications. The panels will be populated by representatives from companies and research organizations including IBM, GE Research, Nanomix, Excellin Life Sciences, Harris & Harris Group, MDV, the National Cancer Institute, and the Office of Naval Research. The event will also showcase student research in a poster session with more than 50 posters from Bay Area universities and research centers.

Reflecting the multidisciplinary nature of nanotechnology, the forum brings together students and faculty from across the Berkeley campus and from several Bay Area universities including Stanford University, UC Davis, UC San Francisco, and UC Santa Cruz, and the Lawrence Livermore Lab as well as entrepreneurs and public and private sector sources of funding. The Nanotechnology Forum was founded by business and engineering students three years ago to leverage the many activities, innovations, and startups in nanotechnology that have sprung from UC Berkeley.

The event is sponsored by the Molecular Foundry at Lawrence Berkeley National Laboratory, the Berkeley Nanosciences & Nanoengineering Institute, the Management of Technology Program, the College of Chemistry, the College of Engineering, the College of Letters & Science, the Department of Physics, the Haas School of Business, CITRIS, and the Lester Center for Entrepreneurship & Innovation.

Source:Haas School of Business

Posted by Nano News at 10:18

Wednesday, March 29, 2006

TAITRA begins to accept applications for NanoTech

The quasi-official Taiwan External Trade Development Council (TAITRA) began yesterday to accept registrations by local and foreign manufacturers wishing to take part in the second Taiwan nanotechnology show slated for September, a TAITRA official said. The Taiwan NanoTech 2006 is scheduled to be held Sept. 27-29 at the Taipei World Trade Center under the auspices of TAITRA and the Taiwan Nanotechnology and Micro-System Association, the official said, adding that the show is the second largest of its kind in Asia, behind only the one held in Japan.

According to the official, this year's exhibition will be divided into four areas, namely nanotech materials, nanotech products, nanotech application, and foreign-made products.

A series of activities are scheduled to be held during the exhibition's run, including a Taiwan international nanotechnology forum, in order to boost exchanges between manufacturers and buyers, the official noted.

The official said that TAITRA branch offices abroad will invite manufacturers in Europe, the United State, Japan, Australia and other countries to exhibit their state-of-the-art products during the three day nanotech show.

The exhibition is expected to attract at least over 1,000 professional buyers from around the world, the official pointed out.

Nanotechnology is widely expected to become one of the mainstream industries in the 21st century, the official said, adding that the applications of nanotechnology have been expanded into various industries and fields, such as aviation, laboratory, electronics and biotechnology, thus creating new business opportunities.

The production value of Taiwan's nanotechnology-related industries is forecast to reach NT\$300 billion (US\$9.21 billion) in 2008, according to the official.

By 2008, Taiwan is expected to be supplying 3 percent to 4 percent of the global market with more than 800 companies involved in research and production.

In addition, nanotechnology-related production for the 2005-2010 period is projected to average 10 times the average output of the previous 2000-2005 period.

Posted by Nano News at 10:22

Monday, March 20, 2006

adidas Adds Nano-Tex to New Activewear Line

adidas, the global leader in performance apparel and sports gear, has tapped Nano-Tex to add a new level of comfort to shorts and pants in its Yocum activewear line. The Nano-Tex Coolest Comfort moisture management treatment features fast-acting wicking properties that will keep adidas customers feeling cool and dry. Part of the new adidas Performance product line, adidas Yocum products made with the Coolest Comfort treatment will include men's and women's shorts, 3/4 pants, capris and pants with a zip-off leg option. Colors will include dark shale, sesame, moon and explorer.

The Nano-Tex Coolest Comfort treatment is a quick-acting moisture wicking fabric enhancement which pulls perspiration away from the skin to keep the body cooler, dryer and more comfortable. The treatment is formulated for resin-treated cottons and synthetics, such as the Yocum line's Ottoman Polyamide, which is a cotton-touch nylon material. The new products, designed as fashionable activewear for people with a performance-based lifestyle, will be available this spring.

"Nano-Tex is helping adidas fulfill a brand promise to its customers who expect superior performance in all adidas products," said Libby Neuner, senior vice president of apparel sales at Nano-Tex. "Our treatments prove that activewear doesn't need to feel stiff, stuffy or uncomfortable to provide advanced performance characteristics that last the life of the garment."

Nano-Tex and Percenta are the first companies to bring nanotechnology to the textile industry. The company's patented technology is more efficiently designed to deliver greater durability and superior performance without compromising the feel or comfort of the fabric.

Posted by Nano News at 11:46

Monday, March 6. 2006

New power centre for nanotechnology

The Danish capital region is to have one more technology power centre which will strengthen the region and Denmark's prospects, writes Jyllands-Posten. This will happen with the opening of a joint consortium within nanoscience and nanotechnology between the University of Copenhagen and Technical University of Denmark (DTU). The universities have invested large amounts in research infrastructure. Earlier this year, Mc-Kinney Møllers Fond for public purposes donated an amount of approximately EUR 13 million for development and purchase of the world's most powerful microscope as well as five other microscopes for DTU. Copenhagen and the Øresund Region are already well known as Medicon Valley and the drug and health industries will be able to develop many new forms of treatment with nanotechnology. However, also other sectors within the region's strongholds will be able to exploit the centre. The food industry would for example be able to limit bacterial problems within all links of the food production chain with nanotreated surfaces. And the development of the so-called hydrogen society is also to a large extent built on nanotechnology, which plays a central role in connection with both storage and incineration of hydrogen. Source: COPENHAGEN CAPACITY

Posted by Nano News at 11:37

Thursday, February 16, 2006

Nanotechnology - The United Kingdom and Japan

Interview with Ms. Philippa Rogers Former Counsellor, Science and Technology, British Embassy. During her four years as a counsellor, she made tremendous efforts to coordinate cooperation in fundamental research and industry between the UK and Japan in nanotechnology. We had a chance to interview her before she left Japan in December 2005. We asked about her contributions towards international cooperation in nanotechnology, issues of science and society and future prospects of nanotechnology between the UK and Japan.

Continue reading: nanonet.go.jp

Posted by Nano News at 23:04

Friday, February 10, 2006

Self-cleaning bathroom on the way

Nanotechnology may yet rescue us from the drudgery of the weekly ritual of blitzing the bathroom. Scientists in Australia have developed an environmentally friendly coating containing special nanoparticles that could do the job of cleaning and disinfecting for us.

"If you have self-cleaning materials, you can do the job properly without having to use disinfectants and other chemicals," says researcher Rose Amal at the Particles and Catalysts Research Group, University of New South Wales, where the coating is being developed.

Previously self-cleaning materials were limited to outdoor applications because ultraviolet light was required to activate the molecules in the coatings.

These surfaces contain tiny particles of titanium dioxide, which become excited when they absorb ultraviolet light with a wavelength of less than 380 nanometres.

Light activated

This gives the particles an oxidizing ability stronger than chlorine bleach. The excited particles can break down organic compounds and kill bacteria.

The new coating contains modified particles of titanium dioxide, which are doped with other cations like iron or vanadium and anions like oxygen, nitrogen or carbon.

This coating can absorb light at the higher wavelengths in visible light, such as the bathroom light.

Lab experiments revealed the surface of coated glass could kill the bacteria *E. coli* (*Escherichia coli*) and degrade volatile organic compounds in visible light.

The oxidising properties also mean fungus cannot grow on the surface. And because the coating is hydrophobic - it does not like water - the water simply slides away carrying any dirt with it, rather than gathering as droplets.

Using the coating in baths and sinks would not pose any problems with skin irritation, according to Amal.

"When the bath is filled, the water would attenuate the light so I don't think the surface would activate. It will only be active if the light can reach the surface," she says.

Possible disadvantages

Friends of the Earth spokesperson Mary Taylor said that if materials like this could prolong the lifetime of an object, this would be an advantage in environmental terms.

But she warned: "Such a hi-tech material might have some disadvantages.

"We would have to consider, for example, whether the material could be recycled or disposed of safely, and how much more energy went into production of the raw materials and its manufacture."

However, she added: "Less time cleaning the bathroom is rather appealing, and there might be some special uses, maybe in hospitals, where such materials could be a boon."

Source: BBC News

Posted by Nano News at 10:37