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Foresight Nanotech Institute Launches Nanotechnology Roadmap. Foresight Nanotech Institute, the leading nanotechnology think tank and public interest organization, and Battelle, a leading global research and development organization, have launched a Technology Roadmap for Productive Nanosystems through an initial grant of \$250,000 from The Waitt Family Foundation. The group is assembling a world-class steering committee to guide this groundbreaking project, and has garnered the support of several important industry organizations as roadmap partners. Productive Nanosystems are molecular-scale systems that make other useful materials and devices that are nanostructured. The Technology Roadmap for Productive Nanosystems will provide a common framework for understanding the pathways for developing such systems, the challenges that must be overcome in their development and the applications that they can address. (Foresight 6/21/05)
http://www.foresight.org/cms/press_center/128

Organizers of the second annual International and North Coast Nanotechnology Business Idea Competitions today announced they are accepting submissions for the 2005 event, which will award winners \$150,000 in prize money at the conclusion of NANO Week in October. The competition seeks to encourage the development of business ideas that will commercialize nanotechnology research being done around the world. The International and North Coast Nanotechnology Business Idea Competitions is the culminating event of NANO Week, October 17-21, which this year will focus attention on the next generation of nanotechnology-based products and applications from the aerospace, automotive and consumer products industries. (6/16/05)
<http://www.tiime.case.edu/nano/index.html>
Also see: <http://www.nano-network.org/>

Nano-levers point to futuristic gadgets. Billions of tiny mechanical levers could be used to store songs on future MP3 players and pictures on digital cameras. As bizarre as the idea might sound, researchers at a Dutch company have already demonstrated that miniscule mechanical switches can be used to store data using less power than existing technologies and with greater

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reliability.

Nanomech memory, developed by Cavendish Kinetics in the Netherlands, stores data using thousands of electro-mechanical switches that are toggled up or down to represent either a one or zero as a binary bit. Each switch is a few microns long and less than a micron wide – roughly a hundred times smaller than the width of a human hair. (NewScientist 6/24/05)

http://www.newscientist.com/article.ns?id=dn7577&feedId=online-news_rss20

Research offers clues about C60 behavior in natural environments. In some of the first research to probe how buckyballs will interact with natural ecosystems, Rice University's Center for Biological and Environmental Nanotechnology finds that the molecules spontaneously clump together upon contact with water, forming nanoparticles that are both soluble and toxic to bacteria. The research challenges conventional wisdom: since buckyballs are notoriously insoluble by themselves, most scientists had assumed they would remain insoluble in nature. The findings also raise questions about how the buckyball aggregates – dubbed nano-C60 – will interact with other particles and living things in natural ecosystems. The findings appear in the June 1 issue of the journal Environmental Science & Technology. (PhysOrg 6/22/05)

<http://www.physorg.com/news4684.html>

New Material Could Improve Fabrication of Nanoscale Components. A team of chemists at Penn State has developed a new type of ultrathin film, which has unusual properties that could improve the fabrication of increasingly smaller and more intricate electronic and sensing devices. The material, a single layer made from spherical cages of carbon atoms, could enable more precise patterning of such devices with a wider range of molecular components than now is possible with conventional self-assembled monolayers. The research is published in the current issue of the Journal of the American Chemical Society. The molecules that make up the material have larger spaces and weaker connections between them than do components of conventional self-assembled monolayers. "The bonding and structural characteristics of this monolayer give us the opportunity to replace its molecules with different molecules very easily, which opens up lots of possibilities for both directed patterning and self-assembled patterning," says Paul S. Weiss, professor of chemistry and physics. (Penn State 6/22/05)

<http://www.science.psu.edu/alert/Weiss6-2005.htm>

Solar to Fuel: Catalyzing the Science. In the past 150 years, burgeoning industrialization has increased carbon in the atmosphere by 40 percent and driven a continuing rise in global temperatures. The trend won't stop soon. Among the consequences: rising sea levels, increased air pollution, and more hurricanes, floods, and droughts. Meanwhile, the age of cheap oil and gas has come to an end. In the short term humans urgently need to use energy more efficiently, and we need to stop putting carbon straight into the air. More important for the long term, we need to find or create ways to use energy that don't release any carbon at all. (Berkeley Lab 5/13/05)

<http://www.lbl.gov/Science-Articles/Archive/sabl/2005/May/01-solar-to-fuel.html>

New Chem-bio Sensors Offer Simultaneous Monitoring. Researchers at the

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Georgia Institute of Technology and the Vienna University of Technology have developed a modular system that combines chemical and biological sensing tools capable of providing simultaneous, nano-level resolution information on cell topography and biological activity. The tools integrate micro and nanoscale electrodes into the tips of an atomic force microscope (AFM). A veritable Swiss army knife of sensors, the patented technique is currently being tested to combine other sensing methods to give scientists a more holistic view of cellular activities. The research is published in Vol 44, 2005 of the chemistry journal *Angewandte Chemie*. (ScienceDaily 6/30/05) <http://www.sciencedaily.com/releases/2005/06/050630063042.htm>

Nano World: Wiring up single molecules. A new method to carve infinitesimal gaps into nanowires soon could help scientists connect electronics to single molecules. This in turn could lead to computers based on molecular transistors with vastly greater computing power than conventional machines. Researchers at Northwestern University in Chicago who are developing the technique already have created notches only 2.5 nanometers wide — or 2.5 billionths of a meter, the breadth of a DNA molecule — in gold nanowires, into which a variety of compounds, such as genes, could be plugged. "I believe we'll hit 1 nanometer within the year," senior researcher Chad Mirkin told UPI's Nano World. (WorldPeaceHerald 6/30/05) <http://www.wpherald.com/storyview.php?StoryID=20050630-032056-1446r>

(Past tense) Industry meets academia to discuss nanofoods. Nanotechnology researchers and food industry representatives are meeting in the Netherlands next week to discuss how the technology may apply to processing operations, reports Ahmed ElAmin. Along with the technical talk a major item on the agenda will be how to prepare the public for its actual introduction into what they eat. Food processors and researchers are studying ways of making nanomachines on a microscopic scale that can help companies ensure the safety and quality of their products. More controversially they are also working on ways to make everyday foods carry medicines and supplements by creating tiny edible capsules, or nanoparticles, that release their contents on demand at targeted spots in the body. (Foodproductiondaily.com 6/17/05) <http://www.foodproductiondaily.com/news/ng.asp?id=60733>

A Sharper Focus for Soft x-rays. Zone Plate Lenses Capable of Better than 15-Nanometer Resolution. Progress in nanoscience and nanotechnology depends not only on examining the surfaces of things but on seeing deep inside biological organisms and material structures to identify what they're made of — and what electronic, magnetic, optical, and chemical processes may be in play. For measuring internal variations in shape, organization, magnetism, polarization, or chemical make-up over distances of a few nanometers (billionths of a meter), x-ray microscopy not only complements electron microscopy but also offers important advantages. (BerkeleyLab 6/29/05) <http://www.lbl.gov/Science-Articles/Archive/ALS-soft-x-rays.html>

Motorola calls on Congress for increased funding of nanotechnology. Jim O'Connor, vice president of Technological Commercialization at Motorola, Inc., testified today before the U.S. House of Representatives Science

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Subcommittee on Research to share Motorola's thoughts on where the United States stands competitively and innovatively when it comes to nanoscience and nanotechnologies. (nanotechwire 7/2/05)

<http://nanotechwire.com/news.asp?nid=2091>

Nanotube bike enters Tour de France. This year's Tour de France will see cyclists from the Phonak Team use a bike with a frame containing carbon nanotubes. Swiss manufacturer BMC claims that the frame of its "Pro Machine" weighs less than 1 kg and has excellent stiffness and strength. To create the frame, BMC used a composite technology developed by US sports equipment specialist Easton. The company's "enhanced resin system" embeds carbon fibre in a resin matrix that's reinforced with carbon nanotubes. Easton says that this improves strength and toughness in the spaces between the carbon fibres. (nanotechweb 7/1/05)

<http://nanotechweb.org/articles/news/4/7/1/1>

Nanotech As Disease Detector. Startup Nanosphere may have a technology that can sniff out telltale markers early enough to advance treatment. The challenge: translating potential to real-life results. There's tremendous hype about the promise of nanotechnology in medicine. Now, the companies pioneering the field have to prove the promise can become a reality. Among the players making the rounds at the Biotechnology Industry Organization convention in Philadelphia is William Moffitt, president and chief executive officer of Nanosphere, a startup looking to use nanotechnology to revolutionize the medical-testing industry. "Nanotech is going to create the next major advance in diagnostics," Moffitt says. (Businessweek 6/21/05)

http://www.businessweek.com/technology/content/jun2005/tc20050621_8895_tc048.htm

Microsoft woos world's scientists. Microsoft's British research arm is looking into what kind of software scientists will require in the future. The company has brought together 40 leading scientists to a meeting in Venice to discuss their needs... The challenges facing scientists have been outlined by the man behind the initiative, Stephen Emmott of Microsoft Research. "By 2020, science will, I claim, be in the process of a profound transformation as a consequence of the emergence of 'new kinds' of science," he wrote in a paper entitled Towards 2020 Science. "For example, advances in areas such as computational systems biology could re-shape the health and pharmaceutical sectors as a result of a fundamentally greater understanding of biological processes, and therefore of disease. "Advances in artificial chemistry and nanoscience could create entirely new technology. (BBC 7/1/05) <http://news.bbc.co.uk/1/hi/technology/4638583.stm>

Lehigh University's new mission: space, the final frontier. In high-tech team-up, school will get a hand in James Webb scope. Lehigh University researchers will work with NASA on what some scientists hail as the most important astronomy project of the decade – the successor to the Hubble Space Telescope... Under an agreement announced Tuesday, Lehigh will give researchers from the National Aeronautics and Space Administration free access to the school's nanotechnology and electron microscopy facilities. In return, Lehigh professors get to work on developing technologies for future Mars rovers and spacecraft, as well as the James Webb Space Telescope –

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Hubble's successor and the most expensive space science mission under development at NASA. "It looks like nanotechnology will play a big role in space exploration, and we get to be a part of that," said Martin Harmer, director of Lehigh's Center for Advanced Materials and Nanotechnology. (OrlandoSentinel 6/30/05)

http://www.orlandosentinel.com/news/custom/space/all-a1_5nasajun30.0.5840960.story?coll=orl-news-headlines-sp

China to create nanotechnology standards. China this week created a body that will draw up standards for nanotechnology, an emerging field of research that seeks to create materials and devices on the scale of atoms and molecules. Bai Chunli, vice president of the Chinese Academy of Sciences and China's National Centre for Nanoscience and Nanotechnology will head the National Nanotechnology Standardisation Committee. "The country which completes the standardisation work first might greatly influence the future international standards in nanotechnology," said Bai in an interview with the Xinhua news agency. (SciDev 6/21/05)

<http://www.scidev.net/gateways/index.cfm?fuseaction=readitem&rgwid=5&item=News&itemid=2179&language=1>

Brookhaven Scientists Create a New Nanostructure. Scientists from the U.S. Department of Energy's Brookhaven National Laboratory have devised a method to create a new, intriguing nanostructure: ultra-thin, ribbon-like "nanobelts" bound to nanotubes. Their research achieves several "firsts" in the field of nanoscience, the study of materials on the scale of a billionth of a meter. Additionally, the new structure, described in the June 4, 2005, online version of Nano Letters, is likely to have unique electrical and mechanical properties, and may be useful in many developing nanotechnologies. (Physorg 6/26/05) <http://www.physorg.com/news4797.html>

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