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**Weekly Clips**

June 2, 2009 - July 5, 2009

In this issue...

1. FramingNano Publishes Third Newsletter
2. Photon-fueled single-molecule DNA nanomotor
3. Nanotubes Boost Plant Pollutants
4. FDA: We Can Handle Nanotech Safety
5. Test for Cancer With a Take-Home Kit
6. Green groups raise nanotechnology fears
7. EU warns that lobbyists are fuelling confusion on nanotechnology
8. Innovation and Creativity in a Complex World
9. Approaches to safe nanotechnology
10. Nanotechnology and social inclusion - fear shouldn't drive public opinion
11. Another step in advancing nanotechnology fabrication techniques
12. Humidity doesn't interfere with this nanotechnology gas sensor
13. Observing carbon nanotubes can damage them – even at 80 kV
14. Using Nanotechnology, Scientists Revolutionise Therapeutic Drug Discovery
15. NanoNow Web Series
16. Can we 'milk' oil from algae?
17. New Method Vastly Improves Nanotechnology Coatings for Implants
18. Tiny Troubles: How Nanoparticles Are Changing Everything From Our Sunscreen to Our Supplements
19. How Nanotechnology Could Hold The Key To A Solar-Powered Future
20. Transhumanist Salvation or Judgment Day?
21. First Meeting of the Society for the Study of Nanoscience and Emerging Technologies, Sept 2009

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- 1) FramingNano Publishes Third Newsletter  
AZoNano | June 8, 2009  
<http://www.azonano.com/news.asp?newsID=11932>

The FramingNano Project Consortium has published the third newsletter which summarises outcomes from the Delphi consultation exercise and the recent FramingNano stakeholder workshop which took place on February 26, 2009 in Brussels. A second round Delphi questionnaire will be disseminated during June which will build upon the feedback received from the first Delphi consultation and from the multi-stakeholder workshop. The FramingNano Newsletter is a quarterly news service provided within the activities of the FramingNano project and diffused extensively across Europe and beyond, in order to disseminate information on the project, and on risk-benefit assessment and NS&T governance and regulation themes.

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- 2) Photon-fueled single-molecule DNA nanomotor  
Nanowerk | June 10, 2009  
<http://www.nanowerk.com/spotlight/spotid=11086.php>

(Nanowerk Spotlight) Molecular-size motors have evolved in nature, where they are used in virtually every important

biological process. In contrast, the development of synthetic nanomotors that mimic the function of these amazing natural systems and that could be used in man-made nanodevices is in its infancy. Building nanoscale motors is not just an exercise in scaling down the design of a macroworld engine to nanoscale dimensions. Many factors such as friction, heat dissipation and many other mechanical behaviors are just very different at this scale – everything is constantly moving (under kinetic energy supplied by the heat of the surroundings) and being buffeted by other atoms and molecules (Brownian motion)...

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### 3) Nanotubes Boost Plant Pollutants

Nanotech and Development News | June 10, 2009

<http://www.merid.org/NDN/more.php?id=1960>

Researchers at the University of Lancaster, United Kingdom, have shown that carbon nanotubes can pierce plant root cells, allowing other pollutants to easily infiltrate the cellular structure of plants. The researchers, Edward Wild and Kevin Jones, wanted to better understand the fate and interaction of nanoscale materials in the natural environment, due to the growth in production of these materials. Wild says "[T]here are also suggestions that nanomaterials might be useful in bioremediation, whether that's cleaning up groundwater or removing pollutants from contaminated sites, so we were interested to see what interactions there would be [with typical contaminants]." Wild and Jones used a special technique that allowed them to see exactly where molecules end up within the cellular structure of plants, bacteria, or fungi...

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### 4) FDA: We Can Handle Nanotech Safety

Nanotech and Development News | June 10, 2009

<http://www.merid.org/NDN/more.php?id=1959>

Dr. Annette McCarthy, of the United States Food and Drug Administration's (FDA) Center for Food Safety and Applied Nutrition, said this past weekend, while speaking at the IFT International Food Nanoscience Conference in Anaheim, California, that the FDA already has sufficient authority to assess the safety of nanotechnology, and that its regulation has nothing to do with its size. McCarthy said that "It's industry's responsibility to make sure a product is safe and part of that is making sure that product is regulated. We believe that the regulatory authority is sufficient to address nanotechnology but there are further questions we need to address..."

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### 5) Test for Cancer With a Take-Home Kit

Singularity Hub | June 11, 2009

<http://singularityhub.com/2009/06/11/test-for-cancer-with-a-take-home-kit/>

What if checking for cancer was as easy as a pregnancy test? Soon, it will be. Catching cancer early is the most crucial step to providing effective and proactive treatment against it. But most folks won't undergo expensive and inconvenient testing until symptoms start to surface, and by then it could be too late. New advances in nanotechnology could change that, bringing an over-the-counter prostate cancer test kit to your pharmacy in the next few years.

Qun Huo, a chemist at the University of Central Florida, is leading a project to develop such a kit. She and her research team have created gold nanoparticles specially engineered to attach themselves to cancer-producing proteins in the body...

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### 6) Green groups raise nanotechnology fears

ABCNews | June 12, 2009

<http://www.abc.net.au/news/stories/2009/06/12/2596423.htm?section=australia>

Environmentalists have raised concerns the ever-expanding application of nanotechnology may be doing humans

harm.

With developments in nanotechnology opening up new applications for silver, the alarm is being raised on how much of it we are being exposed to...

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7) EU warns that lobbyists are fuelling confusion on nanotechnology  
Nanowerk | June 16, 2009

<http://www.nanowerk.com/news/newsid=11194.php>

(Nanowerk News) The highest-ranked health official in the EU executive has hit out at lobby groups who stoke fear of nanotechnology. Robert Madelin, director-general at the European Commission's health and consumer affairs directorate, said it was "irresponsible" to use panic in order to attract attention.

Madelin said conflicting messages emanating from NGOs, industry and academia are fuelling confusion among the public about a new technology with significant potential...

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8) Innovation and Creativity in a Complex World  
AZoNano.com | June 16, 2009

<http://www.azonano.com/news.asp?newsID=12084>

"The future path through cyberspace is filled with threats and opportunities, most of which cannot even be imagined today," says Gene Stephens, a member of the FBI Futures Working Group, the World Future Society, and a charter member of Police-Futurists International. "With the equivalent of 5,000 years of technological progress expected between 2000 and 2025, it's difficult to forecast the dilemmas that lie ahead."

Yet, that is precisely what Gene Stephens has endeavored to do.

Stephens says that the rapid rate of technological advancement may lead to development of a whole host of new internet-enabled devices in the decades to come. Many of these devices could be exploited by criminals in surprising ways. For instance, cybernetic brain implants, which exist today in limited form, could become more capable and popular in the next three decades as innovations in nanotechnology, materials and computer science enable researchers to better understand how neurons interact with inorganic matter. Future-implants, which will likely be Internet enabled to allow for brain-based Web surfing, could be vulnerable to hi-jack or disruption...

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9) Approaches to safe nanotechnology  
Nanowerk | June 16, 2009

<http://www.nanowerk.com/spotlight/spotid=11200.php>

(Nanowerk Spotlight) New technologies are always polarizing society – some only see the inherent dangers, others only see the opportunities. Since these two groups usually are the loudest, everybody else inbetween has a hard time to get their message across and with objective information and facts. Nanotechnologies are no different. The nay-sayers call for a total moratorium everytime scientific research with concerning conclusions is published while opportunistic hypsters are only interested in selling more products or reports and ridicule even the faintest objections and concerns as uninformed panicmongering...

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10) Nanotechnology and social inclusion - fear shouldn't drive public opinion  
Nanowerk | June 17, 2009

<http://www.nanowerk.com/spotlight/spotid=11228.php>

Nanowerk Spotlight) As nanotechnologies are increasingly becoming the focus of public interests and concerns, there

is a risk that public opinion is shaped by either fearmongering or unrealistic expectations. Public engagement in policy making, i.e. having a say in decisions about technological developments that will affect people's lives significantly, should be based on objective information and facts. Public engagement is one of the processes that allows for increased social inclusion. Engagement seeks to achieve increased two-way information flow and knowledge exchange as well as increase overall technological literacy...

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#### 11) Another step in advancing nanotechnology fabrication techniques

Nanowerk | June 19, 2009

<http://www.nanowerk.com/spotlight/spotid=11266.php>

(Nanowerk Spotlight) One of the outstanding challenges in nanotechnology generally, and in the exploitation of so-called 'bottom-up' assembly of basic nanoscale building blocks such as nanowires, is the development of techniques for assembling large numbers of such nanostructures into more complex systems and precisely specified patterns in an accurate, deterministic manner. For instance, it is possible to build transistors, optical devices, and sensors with very specific properties – such as alloy composition or physical dimension – using nanowires. Thus many useful applications of nanowires will depend on the ability to take these building blocks and organize them in some deterministic way in order to ultimately construct and interface with a nanowire-based system...

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#### 12) Humidity doesn't interfere with this nanotechnology gas sensor

Nanowerk | June 23, 2009

<http://www.nanowerk.com/spotlight/spotid=11299.php>

(Nanowerk Spotlight) Gas sensing applications are numerous in our modern society and include process monitoring, environmental compliance, health applications, homeland security, agriculture, etc. Gas sensors often operate by detecting the subtle changes that deposited gas molecules make in the way electricity moves through a surface layer. Thus, the more surface available, the more sensitive the sensor will be. Nanoscale materials – particles, nanotubes and nanowires – are intriguing materials for next-generation nanotechnology gas sensors since their relative surface areas are so large (for more on this topic read: "Bomb sniffing dogs today, nanotechnology tomorrow" and "Nanotechnology puts your nose on a carbon nanotube ")...

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#### 13) Observing carbon nanotubes can damage them – even at 80 kV

Nanowerk | June 25, 2009

<http://www.nanowerk.com/spotlight/spotid=11356.php>

(Nanowerk Spotlight) A few days ago we ran a Nanowerk Spotlight ("Nanotechnology structuring of materials with atomic precision") on a nanostructuring technique that uses an extremely narrow electron beam to knock individual carbon atoms from carbon nanotubes with atomic precision, a technique that could potentially be used to change the properties of the nanotubes. In contrast to this deliberately created defect, researchers are concerned about unintentional defects created by electron beams during examination of carbon nanomaterials with transmission electron microscopes like a high-resolution transmission electron microscope (HRTEM).

For a long time it has been thought that if the accelerating voltage of electrons could be reduced to 80 kV in an electron microscope, then the electrons would not possess sufficient energy to cause knock-on damage in carbon nanomaterials. Knock-on damage occurs when electrons are scattered by the nucleus of the atom they are probing. Upon scattering, energy is transferred. In some circumstances this energy can be large enough to dislodge the atom from its position...

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#### 14) Using Nanotechnology, Scientists Revolutionise Therapeutic Drug Discovery

AZoNano.com | June 25, 2009

<http://www.azonano.com/news.asp?newsID=12259>

A revolutionary new protein stabilisation technique has been developed by scientists funded by the Biotechnology and Biological Sciences Research Council (BBSRC) which could lead to 30 per cent more proteins being available as potential targets for drug development - opening up exciting possibilities in drug discovery.

Understanding the structure of proteins is a vital first step in developing new drugs, but to date, drug development has been slowed because due to their instability, proteins are difficult to work with in lab conditions. However, using nanoparticles, scientists from the Universities of Birmingham and Warwick have found a way to preserve membrane proteins intact, enabling detailed analysis of their structure and molecular functions...

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15) NanoNow Web Series

Nanotechnology Now | June 25, 2009

[http://www.nanotech-now.com/news.cgi?story\\_id=33672](http://www.nanotech-now.com/news.cgi?story_id=33672)

A look inside the pioneering world of nanotechnology, presented by the University at Albany's College of Nanoscale Science and Engineering, recognized as the world's leading college for nanotechnology.

"NanoNow" features interviews with leading elected officials and high-tech executives, segments that demonstrate the growing impact of nanotechnology on society and an inside look at cutting-edge science and research at CNSE...

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16) Can we 'milk' oil from algae?

Toronto Star | June 29, 2009

<http://www.thestar.com/sciencetech/article/658052>

Imagine a dairy cow so small that you cannot see it. Now imagine when you milk the cow you get oil, not that white stuff we drink. Now imagine there are trillions of these oil-secreting cows and they replicate every 24 hours or less.

As strange as it might sound, a scientist from the University of Manitoba believes it is possible to genetically manipulate microbes called diatoms so they produce oil in the same way cows produce milk. Such an approach, he contends, could lessen our dependence on fossil fuels...

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17) Secure and sustainable Nanotechnology as a motor for innovation in Switzerland and Europe

Nanowerk | June 29, 2009

<http://www.nanowerk.com/news/newsid=11420.php>

(Nanowerk News) As one of the key technologies of the 21st century, nanotechnology will significantly shape our economy, our society and indeed our lives. Already today it finds uses in many areas, from IT and electronics via materials with "tailor-made" properties to medical applications in the fields of diagnostics and therapy. But the bright future for products and processes improved and enhanced by nanotechnology is clouded by questions of safety and security. How do nanoparticles behave in the human body? How do they react with our environment?

In order to discuss these questions, and also future (more or less) desirable developments related to the "nano" theme, among as wide an audience as possible, Empa decided three years ago to establish a platform for dialog – the NanoConvention. In 2009, for the third time, we are bringing together the most important players from science, industry, the economy, finance, politics, the administration and society, this time in Zurich. Workshops, lectures and discussion sessions will be organized where high profile speakers from Switzerland and abroad will illuminate from various perspectives the latest developments in the world of nanotechnology, debate the risks involved and the opportunities offered, and dare to predict what the future holds in store...

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### 18) New Method Vastly Improves Nanotechnology Coatings for Implants

Nanowerk | June 29, 2009

<http://www.nanowerk.com/news/newsid=11421.php>

(Nanowerk News) Tel Aviv University researcher Prof. Noam Eliaz of the TAU School of Mechanical Engineering has developed an electrochemical process for coating metal implants which vastly improves their functionality, longevity and integration into the body.

The new process could vastly improve the lives of people who have undergone complicated total joint replacement surgeries so they can better walk, run and ultimately avoid rejection of the implant by their bodies...

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### 19) Tiny Troubles: How Nanoparticles Are Changing Everything From Our Sunscreen to Our Supplements

The Environmental Magazine | June 29, 2009

<http://www.emagazine.com/view/?4723>

It's a beautiful summer day. You pull on your stain-resistant cargo shorts and odor-resistant hiking socks, gulp down an energy-boosting supplement, slather yourself with sunscreen and head out for a ramble in the woods. Are you poisoning yourself? When you get home, you jump in the shower and toss your clothes in the wash. Are you poisoning the environment? Maybe.

Your sunscreen, energy drink and high-tech clothing may be among the 800-plus consumer products made with nanomaterials: those manufactured at the scale of atoms and molecules. Sunscreen that turns clear on the skin contains titanium dioxide, an ordinary UV-blocker in extraordinarily small particles. Odor-eating socks are made with atoms of germ-killing silver. Supplement makers boast of amazing health effects from swallowing nanosolutions that are completely untested for effectiveness or safety. And that stain-repellant clothing? The manufacturer won't even tell you what nanomaterials are in it.

The problem is not just that you, the consumer, don't know what's in the products you use. The much bigger problem is that at the nanoscale, common substances behave in uncommon ways. And nobody—not even the world's leading nanoscientists—knows what nanoparticles do inside the body or in the environment...

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### 20) How Nanotechnology Could Hold The Key To A Solar-Powered Future

AZoNano.com | June 30, 2009

<http://www.azonano.com/news.asp?newsID=12328>

A new generation of 'nano-structured' millimetre-sized solar cells that could convert the sun's energy to electricity more than twice as efficiently as current technology, is the subject of an Imperial College London exhibit called 'A Quantum of Sol' at the Royal Society Summer Science Exhibition 2009, which opens to the public today (30 June). Visitors to the exhibit will be able to play at being solar power engineers, and use prisms to see how much electrical power can be generated by the different colours within the spectrum of light.

The exhibit is led by Dr Ned Ekins-Daukes, a researcher from the Department of Physics and the Grantham Institute for Climate Change at Imperial, who also launches the first in a series of Grantham Institute briefing papers at the exhibition today (30 June).

The 'Quantum of Sol' exhibit explains the technology behind so-called 'third generation' solar cells. These are designed on the nano-scale, which means the materials they are made of are custom-built on a scale 1000 times smaller than the size of a human hair. These third generation solar cells can capture more of the sun's energy than existing silicon solar panels because they contain different layers of material that absorb a broader spectrum of colours. Individually targeting different colours of sunlight in this way captures more of the sun's energy, creating much more efficient solar cells...

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21) Transhumanist Salvation or Judgment Day?

10 Zen Monkeys | June 30, 2009

<http://www.10zenmonkeys.com/2009/06/30/transhumanist-salvation-or-judgment-day/>

We're starting to brush up against real robots, real nanotech, and maybe even the first real artificial intelligence. But will emerging technologies destroy humankind — or will humankind be saved by an emerging transhumanism?

And which answer is more liberating?

If anybody knows, it's R.U. Sirius. The former editor in chief at Mondo 2000 (and a Timothy Leary expert) has teamed up with "Better Humans LLC." They're producing a new transhumanist magazine called h+. (And R.U. is also one of the head monkeys at 10 Zen Monkeys.) But can he answer this ultimate question? Terminator Salvation played with questions about where technology ends and humanity begins...

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22) First Meeting of the Society for the Study of Nanoscience and Emerging Technologies, Sept 2009

Seattle, WA | Posted on July 3rd, 2009

[http://www.nanotech-now.com/news.cgi?story\\_id=33773](http://www.nanotech-now.com/news.cgi?story_id=33773)

This conference will run in conjunction with a NanoEthics Symposium hosted by the University of Washington's Center for Workforce Development. The joint meeting includes 13 invited speakers and well over 80 submitted papers exploring economic, societal, philosophical aspects of nanotechnology. To register for the conference and to learn more about the speakers and their presentations, please visit <http://thesnet.net>. This event is being jointly hosted by the University of South Carolina and the University of Washington.

The Society for the Study of Nanoscience and Emerging Technologies is poised to become an international organization to promote open intellectual exchange towards the advancement of knowledge and understanding of nanotechnologies in society. [S.NET](http://thesnet.net) represents diverse communities, viewpoints, and methodologies in the social sciences and humanities. It welcomes contributions from scientists and engineers that advance the critical reflection of nanotechnologies and related developments..

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