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*The WNEC  
Cutting-Edge  
E-Newsletter*

Issue 4, 6/16/03



## The Vertical Nanotech Newsletter

June 16, 2003...

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- WNEC Brochure is Now Available.
- Register Early and Save!
- NEW "Industry Outlook" Papers on the state of Nanotech Innovation
- Special 50% Discount for Government and Academic Audience

### *Quote of the Day:*

*"The fact that there can even be a credible World Nano-Economic Congress represents a shift from the 'hopes and dreams' of nanotechnology toward its commercial viability. The program and speaker list assembled attests to the substance of this shift, and the congress will be an exciting dose of reality for all those interested in the commercial prospects of nanotechnology."*

**Daniel T. Colbert**

*VP, Major Development Strategies*

**Carbon Nanotechnologies**

### **Interactive Buckyballs Exhibit at WNEC**

The World Nano-Economic Congress in an attempt to combine both science and art will be showcasing a multi-media exhibit created by Professors Jim Gimzewski and Victoria Vesna, both at UCLA

<http://www.chem.ucla.edu/dept/Faculty/gimzewski/index.html> and <http://vv.arts.ucla.edu/>.

The exhibit entitled **◆NANO◆** is an interactive show based on zero wave which will run at the famous Los Angeles County Museum of Art (LACMA) in its LACMA LAB from November for 1 year. It is estimated the show will attract over 200,000 people (Area 100,000 sq. ft). As evidence of this projected number, on one weekend the NANO exhibit attracted some 2,000 people ranging in age from school kids K-12 to 100 years old.

The exhibit's draw is in large part due to its interactive characteristics. A user is able to use his own shadow to manipulate buckyballs moving them in different directions and deforming their shape.

To support this exhibit and its ability to bring emerging science and technology to everyone, Professors Gimzewski and Vesna are attempting to secure funding.

◆We are trying to raise money for it and we also want to have it as a road show,◆ says Gimzewski. ◆We need support. This exhibition links education, bringing nanotech to the general public and having fun. But we need support to see it happen.◆

If Michelle Rodriguez, the actress, the research director of Intel, and children of all ages equally enjoy it, then the WNEC is sure it will provide an excellent addition to the Washington, DC event.

#### 4. **Submit an Article**

- See how you can submit an article and have it published in this newsletter

#### 5. **Contact Us**

- Information on who to contact

### *General Nanotechnology*

#### **Technology Briefing: Science**

The British government has commissioned the Royal Society and the Royal Academy of Engineering to study the fast-growing field of nanotechnology and make recommendations on how it should be regulated, the two science groups said yesterday.

See details at: <http://www.nytimes.com/2003/06/12/technology/12TBRF3.html>

### *Medical & Pharmaceutical*

#### **Micro-organism synthesizes gold nanoparticles**

Scientists from the National Chemical Laboratory and the Armed Forces Medical College, India, have used a micro-organism that normally grows on fig trees to synthesize gold nanoparticles. The organism, *Rhodococcus* sp., reduced a solution of gold chloride ions to produce nanoparticles inside its cells.

Read more: <http://nanotechweb.org/articles/news/2/6/5/1>

#### **High-frequency semiconductors**

Using a silicon-germanium semiconductor nanostructure, scientists from the University of Delaware have managed to produce electromagnetic waves in the much-sought-after terahertz frequency range, which has a number of promising applications, not least in medical imaging.

Read More: [http://www.smalltimes.com/document\\_display.cfm?document\\_id=5988](http://www.smalltimes.com/document_display.cfm?document_id=5988)

### *Chemicals & Advanced Materials*

#### **Nano-nose sniffs out smallest particles**

Researchers at the Oak Ridge National Laboratory in Tennessee have claimed a new world record for weighing tiny amounts of stuff. At the U.S. Department of Energy, they were able to measure variations in the resonant frequency of tiny gold-coated silicon bars just two microns long and fifty nanometers thick by vibrating them with the heat of a solid-state laser at a speed of about two million times a second.

Read More: <http://news.com.com/2100-1008-1016653.html>

#### **Climbing the Waals**

In TNTW last year (weeks 35 and 36), we reported that a team at the University of California at Berkeley were examining the mechanism that enables geckos to climb walls. They discovered that the cumulative effect of weak van der Waals forces between the tiny hairs on the gecko feet and a surface was sufficient to give the gecko its mighty grip. A member of the research team, now at Carnegie Mellon, has gone on to develop synthetic gecko hairs that already have notable sticking power.

Read More: <http://www.newscientist.com/news/news.jsp?id=ns99993726>

### *Aerospace & Defense*

## ***Nanotube Yarn***

Nanotube yarn toughs it out over spider silk. Scientists at the University of Texas at Dallas Richardson and Trinity College, Dublin, have spun super-tough carbon nanotube fibres. The fibres, which are suitable for weaving into electronic cloth, are four times tougher than spider silk and 17 times tougher than the Kevlar fibres used in bullet-proof vests.

Read more: <http://nanotechweb.org/articles/news/2/6/7/1>



## ***Raytheon Partner In Institute For Soldier Nanotechnologies***

The Institute for Soldier Nanotechnologies (ISN), a joint research collaboration between the United States Army and the Massachusetts Institute of Technology, formally opened its doors today with a ribbon cutting and dedication ceremony at the ISN facilities. More than 300 members of the MIT community, the U.S. Army and ISN industrial partners were in attendance. Raytheon is a founding partner of the ISN.

Raytheon's work with the ISN is focused on the "soldier as a system" prospective in the "System of Systems" concept of integration. By harvesting and transitioning the research done at MIT into operational products for the soldier, Raytheon seeks to mature conductive polymer technology into infrared invisible detectors and chemical detectors for sensors.

Read more: <http://www.defense-aerospace.com/data/communiques/data/2003May15936/index.htm>

## ***Energy & Production***

### ***Hydrogen storage using MOFs***

Using a nanoporous metal-organic framework, or MOF, researchers at the University of Michigan (collaborating with a number of other US universities and departments) have managed to produce a material capable of storing up to 4.5% of hydrogen by weight, at low temperature. More importantly, they believe that they have found the route to being able to store up to 6.5% by weight, the figure set by the US Department of the Energy as being the point where hydrogen-powered vehicles become economically viable.

Read more: [http://www.trnmag.com/Stories/2003/052103/Hydrogen\\_storage\\_eased\\_052103.html](http://www.trnmag.com/Stories/2003/052103/Hydrogen_storage_eased_052103.html)

### ***Powering Fuel Cells: Oxide Materials May Facilitate Small-scale Hydrogen Production***

A unique group of oxide materials that readily gives up and accepts oxygen atoms with changes in temperature could be the basis for a small-scale hydrogen production system able to power fuel cells in homes -- and potentially in automotive applications. Scientists have long known that oxides of the rare earth elements cerium (Ce), terbium (Tb), and praseodymium (Pr) can produce hydrogen from water vapor and methane in continuous "inhale and exhale" cycles. By doping iron atoms into the oxides, researchers at the Georgia Institute of Technology have lowered the temperatures at which these "oxygen pump" materials produce hydrogen, potentially allowing the process to be powered by solar energy.

Read More: <http://www.sciencedaily.com/releases/2003/06/030610075242.htm>

## ***IT & Telecommunications***

### ***The wire's on the wall for 3D nanostructures***

Scientists from NASA Ames Research Center, San Jose State University and Eloret Corporation, all in the US, have made quasi-3D nanostructures from zinc oxide. The structures consisted of nanowires grown on top of a random pattern of thin nanowalls.

Read more: <http://nanotechweb.org/articles/news/2/5/15/1>

### ***NASA nano network mimics brain***

Researchers at the NASA Ames Research Center have found a way to grow networks of connected carbon nanotubes. The network appears to work in the same way as the synapses in the brain and shows a capacity for fault tolerance and self-correction.

Read more: <http://www.svbizink.com/headlines/article.asp?aid=4551&iid=300>

## ***WNEC Event Announcements***

**The WNEC Main Brochure is now available Online!**

The Main Conference brochure is complete with sessions, speakers, highlights and information necessary to make your WNEC experience a perfect one. Inside, you will find information about the 70+ speakers including two Nobel Laureates, and leaders from organizations such as Ford, Intel, NEC, Motorola, Lucent, Praxair, GE, US Dept of Energy, Foresight Institute and many others. In addition, you will find full details on the array of sessions and panels, as well as "special" networking sessions not available at any other nanotechnology event.

**To receive this brochure in the mail or as a download, [Click Here](#)**

### *Submit an Article*

If you are interested in submitting an article referencing one of the nanotechnology applications in these vertical industries, please send it to: Jurek Lipski, WNEC Marketing Assistant, [jlipski@iirusa.com](mailto:jlipski@iirusa.com). Your article will be reviewed by the WNEC board of advisors and if accepted your article will be published in the following issue.

If you have any questions, call 212.661.3500 ext 3179.

### *Contact Us*

We are interested in hearing your opinion on Nanotechnology, this newsletter, or about the event. You may send your suggestions or comments to the WNEC team by writing an email to [jlipski@iirusa.com](mailto:jlipski@iirusa.com).

Do you want to stay informed on WNEC developments and be included in our community? - [Join Here](#)

#### **Are you interested in WNEC Speaking opportunities?**

Contact Dexter Johnson, Conference Director, [djohnson@iirusa.com](mailto:djohnson@iirusa.com).

#### **Do you want to get your company in front of the Nanotechnology community of this caliber?**

Sponsorship/Exhibiting Opportunities

Contact Christine Walker, Business Development Manager, [cwalker@iirusa.com](mailto:cwalker@iirusa.com).

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