

### The NNN Newsletter

#### Nanomanufacturing 2010: A Review of Events and Milestones



As we approach the year end, the National Nanomanufacturing Network staff would like to extend our warmest wishes for a happy holiday season to our partners and affiliates, as well as the broader nanomanufacturing community and stakeholders.

The past year has been very exciting as we have witnessed the establishment of several nanomanufacturing methods within industry roadmaps, along with numerous companies moving closer to commercial viability of nano-enabled products. This comes in a timely fashion as we celebrate the 10th anniversary of the National Nanotechnology Initiative (NNI), which has catapulted the U.S. to a global leadership role in nanotechnology research and development.

While nanomanufacturing has become a thematic topic for many technical and professional societies, various events this past year have focused solely on areas of emerging nanomanufacturing R&D and trends in nanotechnology commercialization, including several workshops that will ultimately contribute towards the NNI roadmap in focus areas.

[More...](#)

Regards,  
Jeff Morse, Managing Director,  
National Nanomanufacturing Network

Learn More about the



### Nanotechnology Innovation Summit Overviews Successes of the First Decade of the National Nanotechnology Initiative, Emphasizes Challenges Remaining

The Nanotechnology Innovation Summit held December 8-10, 2010 in Washington, D.C. provided a broad view of the emergence, growth, and success

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### Upcoming Events

December 28 - 30, 2010  
[International Conference on Nanotechnology and Biosensors](#)

January 4 - 7, 2011  
[NSF CMMI Research and Innovation Conference](#)

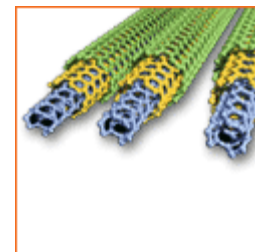
January 5 - 7, 2011  
[Advances in Microfluidics and Nanofluidics](#)

January 7 - 9, 2011  
[International Conference on Environmental Science and Development](#)

January 22 - 27, 2011  
[MOEMS/MEMS at SPIE Photonics West](#)

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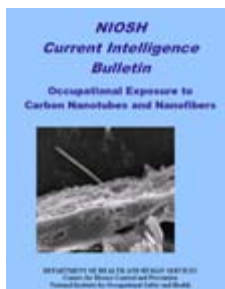
### Recently Published

From Our Affiliates

Fate and Transport of

of the National Nanotechnology Initiative (NNI) marking the 10th anniversary of the interagency Federal initiative. The event was preceded by a preliminary workshop held on Wednesday December 8, 2010 where attendees heard directly from program managers at numerous funding agencies who described their research priorities in the context of the NNI Strategic Plan. As that plan calls for increased emphasis on goal-oriented research driven by national priorities, technology transfer, and support for commercialization activities, it was appropriate that "innovation" served as the theme for the anniversary workshop. [More....](#)

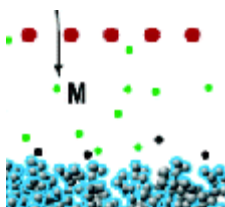
## NIOSH Recommends Maximum Exposure Level of 7µg/m<sup>3</sup> for Carbon Nanotubes



In late November, the National Institute for Occupational Safety and Health (NIOSH) published a Current Intelligence Bulletin entitled "Occupational Exposure to Carbon Nanotubes and Nanofibers." The document is not an official "agency determination or policy," and

was released solely by NIOSH for peer-review and comment. NIOSH's carbon nanotube recommended exposure limit (CNT REL) is set 7µg/m<sup>3</sup> for these preliminary purposes. The document begins by noting that while there are no scientific reports of "adverse health effects in workers producing or using carbon nanotubes... or carbon nanofibers," NIOSH is concerned because some studies have shown that the potential for worker exposure exists. [More....](#)

## Filling of Nanoporous Electrode Structures for Dye Sensitized Solar Cells by Initiated Chemical Vapor Deposition



As dye sensitized solar cells (DSSC) have exhibited increased potential as a competitive photovoltaic technology for harvesting sunlight, the utilization of mesoporous titanium dioxide

(TiO<sub>2</sub>) has played a significant role for increasing cell efficiency by providing the photosensitizing dye with greater surface area. A key limitation for DSSCs is the use of liquid electrolyte, which presents challenges for sealing and packaging, durability, and

Engineered Nanomaterials in the Environment

[Journal of Environmental Quality 39\(6\):1896-1908](#)

Heterogeneous Graphene Nanostructures: ZnO Nanostructures Grown on Large-Area Graphene Layers  
[Small 6\(21\):2448-2452](#)

Synthesis of a Pillared Graphene Nanostructure: A Counterpart of Three-Dimensional Carbon Architectures  
[Small 6\(20\):2309-2313](#)

The Role of Surface Functionality on Acute Cytotoxicity, ROS Generation and DNA Damage by Cationic Gold Nanoparticles  
[Small 6\(20\):2246-2249](#)

Drug encapsulation within self-assembled microglobules formed by thermoresponsive supramolecules  
[Chemical Communications 46\(45\):8537-8539](#)

## Affiliated Centers



long-term robustness—highly important aspects for any technology to compete in the growing markets of renewable energy and solar photovoltaics. [More....](#)

## SouthWest Nanotechnologies Receives Consent Order Permitting the Manufacture and Commercial Distribution of Single-wall Carbon Nanotubes



SouthWest  
NanoTechnologies, Inc.  
(SWeNT), the world  
leader in high quality  
carbon nanotubes

(CNT), has received an Environmental Protection Agency (EPA) consent order which will permit SWeNT to manufacture and distribute Single-Wall Carbon Nanotubes (SWCNT) for commercial applications. SWeNT is currently the only U.S. manufacturer permitted to commercially distribute SWCNTs. "We have ramped up our production capacity and manufacturing teams in anticipation of this consent order, and will now be in a position to satisfy the commercial demand for our products in the specified applications," explains SWeNT CEO Dave Arthur. [More....](#)

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