

## REGULATORY AND LEGISLATIVE DEVELOPMENTS

### **CDER Outlines Risk Assessment for Nanomaterials**

CDER's Nanotechnology Risk Assessment Working Group has released a paper describing the risk assessment and management process employed by the working group. It aims to better understand how nanomaterials are used in regulated drug products. The working group uses traditional risk assessments to identify and evaluate factors that may affect quality, safety, and efficacy.

<http://rd.springer.com/article/10.1208/s12248-013-9466-6#>

### **Paper on Gold Nanoparticle Aerosols**

Scientists from the European Commission Joint Research Center have published a study on the use of gold nanoparticle aerosols for inhalation studies with the spark ignition technique. The report identifies areas that need to be addressed for inhaled nanoparticles, including the distribution and transport within the respiratory tract, as well as toxicological responses within the lungs and other tissues to the presence or accumulation of nanoparticles. It also details the potential for nanoparticles to cross the air-blood barrier into blood circulation and accumulate in secondary organs or tissues.

<http://link.springer.com/article/10.1007%2Fs11051-013-1574-9>

### **HSE Guidance on Nanomaterials in the Workplace**

The UK's Health and Safety Executive (HSE) has released a new guidance advising how to limit occupational exposure to manufactured nanomaterials for workers. It also explains how to comply with the Control of Substances Hazardous to Health Regulations 2002 (COSHH). The guide specifically addresses carbon nanotubes (CNTs) and other biopersistent high aspect ratio nanomaterials (HARNs). Evidence indicates that exposure to some nanomaterials can cause lung or skin inflammation.

<http://www.hse.gov.uk/pubns/books/hsq272.pdf>

### **Analytical and Regulatory Challenges for Nanomaterials**

*Speciality Chemicals Magazine* has published an article on the regulatory challenges presented by nanomaterials, as presented by two Intertek scientists. The scientists emphasized accurate data analysis and method validation as key to complying with and properly implementing the regulations of the European Commission. Users of nanotechnology must develop a validated process and the correct instrumentation for detection, characterization, and analysis.

<http://edition.pagesuite-professional.co.uk/Launch.aspx?PBID=67f08a11-651b-4137-b71f-7b095df83d87>

### **2014 Budget for CDC**

According to *Science* magazine, the Center for Disease Control and Prevention's budget has been requested by 2014. Although it allocates less money for the CDC than in previous years, it increases the budget for development in certain areas, including the "Advanced Molecular Detection Initiative." This initiative aims to better identify and target harmful pathogens.

<http://news.sciencemag.org/scienceinsider/2013/04/obamas-2014-science-budget.html#CDC2>

### **US Inventors Led World in 2012 Nanotechnology Patents**

According to a report released by the law firm McDermott Will & Emory, inventors in the United States filed for a majority of patents and grants focused on nanotechnology in 2012. 54 percent of patent and grant applications reviewed in the study were for US inventors, with South Korea following at 7.8 percent. Government funding for nanotechnology has increased in several countries since 2000. The second largest field for nanotechnology patents and grants was chemistry and biological sciences, including medicine.

<http://www.mwe.com/files/Uploads/Documents/Pubs/Nanotechnology2.pdf>

### Call for Papers: Special Issue "Smart Nanovesicles for Drug Targeting and Delivery"

The Journal of Pharmaceutics is issuing a call for papers to be published in its special issue "Smart Nanovesicles for Drug Targeting and Delivery" in November 2013. This is an open source, peer-reviewed journal. Possible topics include: surfactant, polymeric, and phospholipid vesicles, cationic vesicles, exosomes, intercellular drug delivery, stimuli responsive carriers, and more. The deadline for submission is July 5.

<http://www.hindawi.com/journals/jph/si/580753/cfp/>

### NCI Office of Cancer Nanotechnology Research Public Discussion Forum

The NCI Office of Cancer Nanotechnology Research launches a public discussion forum for input on focus and research questions. Ideas must be posted by **May 1, 2013**, after which the forum will be open for votes on suggestions from the community.

<https://nanocancer.ideascale.com/>

### Growth Predicted for US Nanotechnology Drug Market Through 2016

A report from Global Information, Inc. predicts an annual growth rate of 73.97 percent for the nanotechnology drug delivery through 2016, along with an annual growth rate of 84.79 percent in the US in the same time period. Despite this expected growth, one of the main challenges for nanotechnology proves to be rising safety concerns over toxicity.

<http://www.giiresearch.com/report/inf264464-global-nanotechnology-drug-delivery-market.html>

### Nano-Reinforced Polymer Products for Medical Devices

Foster Corporation has begun to offer "nano-reinforced composites for minimally invasive devices." This increases the structural integrity of the devices while still maintaining thin wall components. This is particularly useful for the devices such as catheters. Nanotechnology provides engineers with flexibility, since they can customize the properties of a medical device without altering its base polymer.

<http://www.drug-dev.com/ME2/dirmod.asp?sid=&nm=&type=news&mod=News&mid=9A02E3B96F2A415ABC72CB5F516B4C10&tier=3&nid=EE209AF699C44EBCBC787AC8B237EAF>

## REVIEWS AND OTHER PUBLICATIONS OF INTEREST

**Effects of Long and Short Carboxylated or Aminated Multiwalled Carbon Nanotubes on Blood Coagulation.** Plos One, February 2013, Vol. 7, (7). Meng Jie, Cheng Xuelian, Liu Jian, Zhang Weiqi, Li Xiaojin, Kong Hua, Xu Haiyan.  
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0038995>

**Rational HIV Immunogen Design to Target Specific Germline B Cell Receptors.** Science 1234150, March 2013. Joseph Jardine, Jean-Philippe Julien, Sergey Menis, Takayuki Ota, Oleksandr Kalyuzhniy, Andrew McGuire, Devin Sok, Po-Ssu Huang, Skye MacPherson, Meaghan Jones, Travis Nieusma, John Mathison, David Baker, Andrew B. Ward, Dennis R. Burton, Leonidas Stamatatos, David Nemazee, Ian A. Wilson, and William R. Schief.  
<http://www.sciencemag.org/content/early/2013/03/29/science.1234150>

**Mechanism of One-Way Traffic of Hexameric Phi29 DNA Packaging Motor with Four Electropositive Relaying Layers Facilitating Antiparallel Revolution.** ACS Nano, March 2013. Zhengyi Zhao, Emil Khisamutdinov, Chad Schwartz, and Peixuan Guo.  
<http://pubs.acs.org/doi/abs/10.1021/nn4002775>

**Quantum dot imaging platform for single-cell molecular profiling.** Nature Communications, 4, 1619, March 2013. Pavel Zrazhevskiy and Xiaohu Gao.

<http://www.nature.com/ncomms/journal/v4/n3/full/ncomms2635.html>

**Development and in vivo efficacy of targeted polymeric inflammation-resolving nanoparticles.** PNAS, March 2013. Nazila Kamaly, Gabrielle Fredman, Manikandan Subramanian, Suresh Gadde, Aleksandar Pesic, Louis Cheung, Zahi Adel Fayad, Robert Langer, Ira Tabas, and Omid Cameron Farokhzad.

<http://www.pnas.org/content/early/2013/03/25/1303377110.abstract?sid=c523dbc8-6e33-4b3b-bb08-26c93ce3c418>

**Intracellular Aggregation of Multimodal Silica Nanoparticles for Ultrasound-Guided Stem Cell Implantation.** Science Translational Medicine, Vol. 5 (177), p.177ra35, March 2013. J. V. Jokerst, C. Khademi, S. S. Gambhir, Intracellular Aggregation of Multimodal Silica Nanoparticles for Ultrasound-Guided Stem Cell Implantation.

<http://stm.sciencemag.org/content/5/177/177ra35>

**Detecting Lyme disease using antibody-functionalized single-walled carbon nanotube transistors.** Science Direct, Vol. 45, pp.163-167, March 2013. Mitchell B. Lerner, Jennifer Dailey, Brett R. Goldsmith, Dustin Brisson, A.T. Charlie Johnson.  
<http://www.sciencedirect.com/science/article/pii/S0956566313000389>

**$\beta$ -Cyclodextrin-crosslinked alginate gel for patient-controlled drug delivery systems: regulation of host-guest interactions with mechanical stimuli.** J. Mater. Chem. B, Vol. 1, Issue 16, 2155-2161, February 2013. Hironori Izawa, Kohsaku Kawakami, Masato Sumita, Yoshitaka Tateyama, Jonathan P. Hill, Katsuhiko Ariga.  
<http://pubs.rsc.org/en/Content/ArticleLanding/2013/TB/c3tb00503h>

**Three-dimensional optical manipulation of a single electron spin.** Nature Nanotechnology, Vol. 8, pp. 175-179, February 2013. Michael Geiselmann, Mathieu L. Juan, Jan Renger, Jana M. Say, Louise J. Brown, F. Javier García de Abajo, Frank Koppens, Romain Quidant.  
<http://www.nature.com/nnano/journal/v8/n3/full/nnano.2012.259.html>

**Rewiring DNA Origami.** Science, Vol. 339 no. 6126 pp. 1357, March 2013.  
<http://www.sciencemag.org/content/339/6126/1357.3.full?sid=6c6832fd-6548-49cf-b723-2e2e77d5f530>

## CONFERENCES AND WORKSHOPS

**Nano 2013, April 22, 2013, Troy, NY**  
 Nanotoxicity  
 Commercialization for nanotechnology  
<http://alumni.rpi.edu/s/1225/2col.aspx?sid=1225&gid=1&pgid=1213>

**Symposium: Nanotechnology Platform-based Biomarker Assays at 2013 AAPS, National Biotechnology Conference, May 21, 2013, San Diego, CA**  
 Nanotechnology in Cancer  
 Biomarkers  
[http://www.nxtbook.com/nxtbooks/aaps/nbc2013\\_preprogram/#/0](http://www.nxtbook.com/nxtbooks/aaps/nbc2013_preprogram/#/0)

**The Accelerating Development of Difficult-to-Deliver Drugs, June 4-6, 2013, Philadelphia, PA**  
 Nanomaterial for Drug Delivery  
 Drug Reformulation  
 Imaging  
 Advanced Characterization  
 Delivery Technology  
<http://www.worldpharmacongress.com/Formulation-Drug-Delivery/>

**EuroNanoForum 2013, June 18-20, 2013, Dublin, Ireland**  
 Bionanotechnology  
 Nanomedicines  
 Nanosafety  
<http://www.euronanoforum2013.eu/>

**Nanoparticles and Nanotechnology in Medicine 2013, June 19-21, 2013, Milan, Italy**  
 Toxicity  
 Curing Alzheimer's disease  
 Regenerative medicine  
 European legislation  
<http://npmed13.eu/>

**Sydney International Nanomedicine Conference, July 1-3, 2013, Sydney, Australia**  
 Target Delivery  
 Sensing  
 Diagnostics  
 Regenerative Medicine  
 Imaging  
 Translational Medicine  
 NanoSafety  
<http://www.oznanomed.org/>

**Cancer Nanotechnology, July 14-19, 2013, West Dover, VT**  
 Materials synthesis  
 Characterization  
 Biocompatibility  
<http://www.grc.org/programs.aspx?year=2013&program=cncano>

**6th International Symposium on Nanotechnology, Occupational and Environmental Health, October 28-31, 2013, Nagoya, Japan**  
 Nanomaterial processing and characterization  
 Health effects and toxicity  
 ADME  
 Environmental toxicity  
 Risk assessment and management  
<http://square.umin.ac.jp/nanoeh6/index.html>

**Carbon-Based Nano-Materials and Devices, November 3-8, 2013, Hualien, Taiwan**  
 Synthesis of carbon-based nanomaterials  
 Characterization and processing of carbon-based nanomaterials  
 Devices and Applications of carbon-based nanomaterials  
 Multiscale modeling and computation  
<http://www.engconfintl.org/13ap.html>

**REFERENCE SECTION****Nanobio- and Nanomedicine Companies**

Listed alphabetically:

[http://www.nanowerk.com/nanotechnology/nanomaterial/nanobiomedicine\\_a.php](http://www.nanowerk.com/nanotechnology/nanomaterial/nanobiomedicine_a.php)

**Nano Organizations**

National Center for Toxicological Research (NCTR):

<http://www.fda.gov/AboutFDA/CentersOffices/NCTR/default.htm>

National Nanotechnology Initiative (NNI):

<http://www.nano.gov/>

Nano Science and Technology Consortium

(NSTC): <http://www.nstc.in/>

Nano Science and Technology Institute (NSTI):

<http://www.nsti.org/>

The Nanotechnology Institute (NTI):

<http://nanotechinstitute.org/>

**Nano Journals**

American Chemical Society -- Nano Letters:

<http://pubs.acs.org/journal/nalefd>

Institute of Physics – Nanotechnology:

<http://iopscience.iop.org/0957-4484/>

Journal of Nanoscience and Nanotechnology:

<http://www.aspbs.com/jnn/>

NanoTrends - A Journal of Nanotechnology and

its Applications: <http://www.nstc.in/journal/default.aspx>

BCC Research -- Nanotechnology Reports:

<http://www.bccresearch.com/index/category/code/nanotechnology>

Nanomedicine: Nanotechnology, Biology, and

Medicine: <http://www.nanomedjournal.com/home0>

Nanomedicine:

<http://www.futuremedicine.com/page/about.jsp>

Nature Nanotechnology:

[http://www.nature.com/nnano/focus/highlights/index.html?WT.mc\\_id=NM1110CT01](http://www.nature.com/nnano/focus/highlights/index.html?WT.mc_id=NM1110CT01)

**CONTACT**

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