



American Institute of Chemical Engineers

1st Quarter 2006

Nanotech News

- The Woodrow Wilson International Center for Scholars recently released a report concluding that current government legislation on nanotechnology-based products is limited. It proposes several approaches to augment the US regulatory system. For a copy of the report: <http://www.wilsoncenter.org/events/docs/Effectsnanotechfinal.pdf>
- The House Science Committee convened a hearing on Nov. 17, 2005 to assess research on the potential environmental, health, and safety implications of products utilizing nanotechnology. <http://www.house.gov/science/press/109/109-165.htm>
- Chemical engineers at Rice University reported a new method to produce quantum dots inexpensively, an important goal towards scaling up production. <http://www.media.rice.edu/media/NewsBot.asp?MODE=VIEW&ID=7657&SnID=2026252628>
- A novel humidity sensing device based on nanogold-covered bacteria was reported by chemical engineers at University of Nebraska at Lincoln. <http://ucommxsrv1.unl.edu/unlnews2004/public/fmpro?-db=unlnews.fp5&-format=2004release.shtml&-lay=unlnews&-recid=33499&-find=>
- A team led by chemical engineers at University of Wisconsin-Madison reports that block copolymers can spontaneously assemble into novel 3-D shapes when deposited onto patterned 2-D surfaces, which could lead to new membrane and catalytic materials. <http://www.news.wisc.edu/12067.html>
- UT Austin chemical engineers have developed an organic membrane material to separate impurities like carbon dioxide and hydrogen sulfide from hydrogen gas, an important step towards a purified source of hydrogen gas. <http://www.utexas.edu/opa/news/2006/02/engineering02.html>
- NSEF Forum Award Winner Mike Roco and Emily Letter of the International Risk Government Council complete the first part of a study concerning global nanotechnology governance. For more information: <http://www.irgc.org/> for a copy of the report: http://www.irgc.org/_cgidata/mhscms/_images/12384-3-2.pdf
- Protein nanospring component shows remarkable elastic properties. <http://www.dukenews.duke.edu/2006/01/nanosprings.html>

Society News

New Officers. The new slate of officers has been put in place as Dan Coy has taken the reins of NSEF from Sharon Glotzer. Please join us in thanking Sharon for all of her work in 2005. New officers include:

Past Chair	Sharon Glotzer	U. Michigan
Chair	Dan Coy	Nanophase
1st Vice Chair	Nick Abbott	U. Wisconsin
2nd Vice Chair	Bill Grieco	Rohm & Haas
Sec/Treasurer	Michael Strano	U. Illinois UC
Dir Communications	Mike Wong	Rice U.
Dir Marketing	Bert Diemer	DuPont

NSEF Award Winners. Mihail "Mike" Roco was honored with the inaugural Forum Award, which recognizes outstanding contributions in the advancement of nanoscale science and engineering in the field of chemical engineering through scholarship, education or service. Dr. Roco received the award for his contribution as a key player in the National Nanotechnology Initiative, which is a federal R&D program established to coordinate multi-agency efforts in nanoscale science, engineering, and technology. Dr. Roco is chairman of the U.S. National Science and Technology Council's subcommittee on Nanoscale Science, Engineering and Technology (NSET), and is a senior advisor for nanotechnology at the National Science Foundation (NSF).

Michael Strano was awarded the inaugural Young Investigator Award that recognizes outstanding interdisciplinary research in nanoscale science and engineering by an engineer or scientist who has not yet reached the age of 35. He received the honor for his pioneering work in carbon nanotube chemistry, specifically reactions selective to one-dimensional electronic structures that are essential techniques for nanotube applications. Professor Strano is an assistant professor in the Department of Chemical and Biomolecular Engineering at the University of Illinois at Urbana-Champaign and an affiliate faculty member in the Nanoelectronics and Biophotonics group. His research focuses on the chemical reactivity of nanowires and nanotubes, the processing of nanoparticle systems and molecular electronics.

For more information about the Forum Award, go to <http://www.iche.org/About/Awards/Divisions/NanoForumAwd.aspx>

For more information about the Young Investigator Award, go to <http://www.iche.org/About/Awards/Divisions/NSEFYoungInvestigator.aspx>

To submit a nomination for either the NSEF's Forum Award or the Young Investigator Award, you may use the General Nomination form (found in the 2005 AIChE Awards Brochure and on the AIChE website http://www.aiche.org/uploadedFiles/About/Awards/gen_award_nom_form_06.doc).

The deadline is June 30th, 2006. The original and 8 copies are required. You may send PDF files to: nano@aiiche.org. Hard copies can be mailed to: Ms. June C. Wispelwey, AIChE, 3 Park Ave, New York, NY 10016.

Also, Nanotech Briefs is accepting nominations for their Second annual Nano 50™ list of the top 50 technologies, products, and innovators that have significantly impacted - or will impact - key nanotechnology commercial markets. **This deadline is March 1, 2006.** You can find out more at <http://www.nanotechbriefs.com/nano50/>.

Events

Join us at the 2nd International Conference on Bioengineering and Nanotechnology.

Mark your calendars to join us from September 5-7, 2006, in beautiful Santa Barbara, California.

Nanotechnologists and bioengineers will come together to discuss the intersection of these technologies.

Chairs Matt Tirrell and Gil Lee have assembled an amazing group of speakers:

- Annelise Barron, *Northwestern University*
- Angie Belcher, *Massachusetts Institute of Technology*
- Carlos Bustamante, *University of California, Berkeley*
- Arup Chakroborty, *Massachusetts Institute of Technology*
- Morinobu Endo, *Shinshu University*
- Dan Hammer, *University of Pennsylvania*
- Suzi Jarvis, *University of Dublin*
- Jong-Duk Kim, *Korea Advanced Institute of Science and Technology*
- Deborah Leckband, *University of California, San Diego*
- Carlos Montemagno, *University of California, Los Angeles*
- Chris Murray, *IBM*
- Erkki Ruoslati, *Burnham Institute*
- Tom Soh, *University of California, Santa Barbara*
- Joachim Spatz, *Stuttgart MPI, University of Heidelberg*
- Janos Voeroes, *ETH Zurich*
- Karen Wooley, *Washington University*
- Peidong Yang, *University of California, Berkeley.*

If you would like to submit a paper yourself or want to find out more, [click here](#). Join us at the AIChE Spring National Meeting on April 23-27 in sunny Orlando, FL. Topics include:

- characterization of nanoparticles and nanotubes
- engineered nanoparticle structures
- functional nanoparticles
- particle design via self-assembly
- nanoseparation
- gas-phase nanoparticle synthesis
- engineered nanoparticulate systems for bio applications.

Register now at <http://www.aiche.org/Conferences/SpringMeeting/index.aspx>.

Want to stay current on nanoparticles? Now's the time to register for one of your best opportunities this year! And it's a bargain - two conferences for the price of one. Simply register for the April 23-27 Spring AIChE National Meeting in Orlando (at www.aiche.org), and you will also gain admission to the 5th World Congress on Particle Technology where you can monitor nanoparticle progress in thirteen dedicated sessions. Topics span synthesis, transport, separations, processing, particle imaging and characterization, as well as applications, nanocoatings and engineered nanoparticle structure. While there, plan to stop by the NSEF booth and give us feedback on how NSEF can better serve you. For more info, [click here](#).

Comments and Feedback

Please let us know what you think of NSEF, its newsletter, or provide us with your suggestions by emailing: nano@aiiche.org. Visit our website: <http://www.aiche.org/DivisionsForums/ViewAll/NSEF.aspx>

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Hielscher USA, Inc.: Ultrasonic Dispersing, Deagglomeration and Milling Equipment Nanomaterials are currently on the way from lab to production. Very small powders and particles are available for materials, such as metal oxides, nanotubes or nanoclays. Often these materials need to be mixed into liquid formulations. This is where agglomeration and aggregation blocks surface area from contact with other matter. In particular very fine powders and carbon nanotubes are very cohesive and hard to disperse. As surface activity is a key aspect of nanomaterials, only well dispersed or single-dispersed particles allow utilization of the full potential of the nanomaterials. In result good dispersing reduces the quantity of nanomaterials needed to achieve the same effects. Conventional processing devices, e.g. high-shear or rotor-stator mixers, high-pressure homogenizers or colloid and disk mills fall short in separating the nanoparticles into discrete particles.

Ultrasonic cavitation is very effective in breaking agglomerates, aggregates and even primaries. When ultrasound is being used for the milling of high concentration batches, the liquid jets streams resulting from

ultrasonic cavitation make the particles collide with each other at velocities of up to 1000km/h. This breaks van der Waals forces in agglomerates and even primary particles (milling).

Hielscher manufactures ultrasonic devices for the efficient dispersing, deagglomeration and milling of nanomaterials in lab, bench-top and production level. With devices from 50 to 16,000 watts you can select the appropriate device for quantities from 1mL to several tons/hour. There is more information available at:

<http://hielscher.com/ultrasonics/nano.htm>



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