



The NNN Newsletter

Emerging Nanomanufacturing Techniques Included on Industry Roadmaps



Significant challenges exist for nanomanufacturing processes to gain acceptance within various industries, due in part to a mature infrastructure and supply chain, as well as potentially high capital

expenses for technologies that might supplant existing tools and processes. While these issues are present in most sectors, the semiconductor industry is an prime example of an area where critical need must be demonstrated to justify the costs of replacing a substantial existing infrastructure. For example, optical lithographic tools enable patterning techniques that will only carry the industry for a few more years, after which no proven optical solutions exist to maintain progress within the constraints of the present roadmap. As a result, the International Technology Roadmap for Semiconductors (ITRS, 2009) includes both nanoimprint and directed self-assembly (DSA) patterning as part of the future roadmap for patterning solutions.

[More...](#)

Regards,
Jeff Morse, Managing Director,
National Nanomanufacturing Network

Learn More about the



This Week

Nanotechnology Long-term Impacts and Research Directions: 2000-2020 Webcast

At the behest of the National Science Foundation (NSF), the World Technology Evaluation Center, Inc. (WTEC) conducted an international study involving 200 leading experts from 35 countries that synthesized progress in nanotechnology over the last decade as well as future directions for nanotech. The study's findings--highlighted in a new report, Nanotechnology Long-term Impacts and Research Directions: 2000-2020--will be

Upcoming Events

October 6, 2010

[Environmental Applications of Nanotechnology: Going Green](#)

October 6, 2010

[Large-Scale Engineered Synthesis of BaTiO₃ Nanoparticles](#)

October 13 - 15, 2010

[Non-Destructive RealTime Process Control](#)

October 17 - 22, 2010

[AVS 57th International Symposium and Exhibition](#)

October 23 - 25, 2010

[BIT's 1st Annual World Congress of Nanomedicine 2010](#)

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Upcoming Calls

September 14, 2010

[IEEE Nanosensors 2010](#)

Open Poster Program
Submission Deadline

October 15, 2010

[Nanoinformatics 2010](#)

Deadline for papers and poster
abstracts

Recently Published

From Our Affiliates

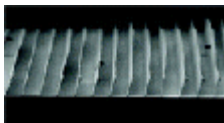
released during a webcast workshop on Sept. 30 from 8:30 a.m. to 4:00 EDT.

A draft report will be [posted for public comment](#) from September 30 to October 15, 2010.

To view the webcast, [access the website](#) and provide your email address.

[NSF Press Release 9/23/10](#) [Workshop Web site](#)

Aligned Carbon Nanotube Patterning Via Dry Contact Transfer Printing



Techniques to align CNT networks in-plane on a substrate have been investigated as a means to

enable CNT-based electronic devices including transistors and interconnects. One approach—transferring CNT thin films from one surface to another via a soft lithography—suffers from limited ability to achieve good adhesion of the CNT films to the transfer substrate and imprecise alignment of the CNT patterns. Ultimately, a transfer technique that can be scaled to large area with high throughput processing at low temperature is required to achieve flexible substrates for many emerging display, lighting, and solar PV applications. Pint et. al. report a scalable means to create aligned CNT thin film patterns on both rigid and flexible substrates.

[More....](#)

NCMS Releases Findings from 3rd Study of Nanotechnology in the U.S. Manufacturing Industry



The National Center for Manufacturing Sciences has released the report from its third, NSF-funded, nation-wide

survey gauging the momentum of nanotechnology development and deployment in the U.S. manufacturing industry. The survey targeted senior executives in U.S.-based manufacturing and research organizations and addressed pre-competitive and strategic issues influencing their organizations' nanotechnology commercialization initiatives. The goals of the survey were to identify and highlight trends in nanotechnology tech transfer and to make recommendations to accelerate product development and competitiveness. [More....](#)

NanoBusiness Alliance Interview with Larry Bock

High-speed and Drop-on-demand Printing with a Pulsed Electrohydrodynamic Jet
[Journal of Micromechanics and Microengineering 20\(9\): 095026](#)

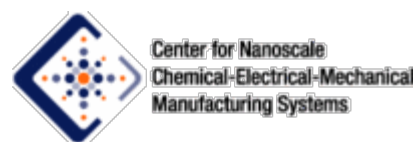
Performance of Ultrathin Silicon Solar Microcells with Nanostructures of Relief Formed by Soft Imprint Lithography for Broad Band Absorption Enhancement
[Nano Letters 10\(8\): 3041-3046](#)

Comparison of Label-free Biosensing in Microplate, Microfluidic, and Spot-based Affinity Capture Assays
[Analytical Biochemistry 405\(1\): 1-10](#)

Light Emission Characteristics and Mechanics of Foldable Inorganic Light-Emitting Diodes
[Advanced Materials 22\(28\): 3062-3066](#)

Image force microscopy of molecular resonance: A microscope principle
[Applied Physics Letters 97\(7\): 073121](#)

Affiliated Centers





Steve Waite talks to Larry Bock about the state of science and engineering in the United States and what he and his organization are doing to help keep the spirit of science and engineering-driven innovation

alive and well in America. Larry is a successful serial entrepreneur who has founded, co-founded or financed the early stage growth of 40 companies in the life and physical sciences from inception to achieving an aggregate market capitalization in excess of \$30 Billion. Larry is a Special Limited Partner and currently serves as Chairman of Lux Ventures' Advisory Board of industry experts. Larry was a co-founder and executive chairman of Nanosys, Inc. [More....](#)

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