



The NNN Newsletter

In this month's newsletter we are posting the first in a series of system level nanomanufacturing test-bed reviews. System level test-beds are public-private partnerships designed to transfer promising fundamental discoveries and developments from the research laboratory to viable manufacturing platforms that can be adopted by industry. The NNN is taking a close look at some of these collaborations from our affiliate research centers, providing summary details of approach and impact for potential stakeholders and future partnerships of similar focus.

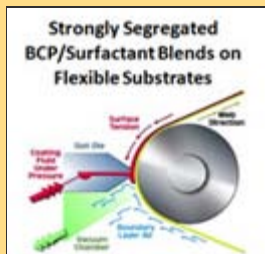
Regards,
Jeff Morse, Managing Director,
National Nanomanufacturing Network

Learn More about the



NNN Test Bed Reviews July 2009

NSF Center for Hierarchical Manufacturing,
University of Massachusetts Amherst



**Self-Assembled
Polymer
Templates for
Device
Fabrication: High-
Rate and Low-Cost
for Roll-to-Roll
Processing**

The rapid generation of highly-ordered arrays of nanoscopic elements with periodicities of <30 nm render the self-assembly of block copolymers (BCPs) ideal scaffolds and templates for nanofabrication. However, several crucial limitations to enable a broad-based adaptation of BCPs in nanomanufacturing must be addressed in order to demonstrate viability of this approach through well-defined product-oriented outcomes. Based on the approach of BCP templating, the focus of this testbed element includes the production of high-volume, cost-sensitive products (e.g., organic electronics, photovoltaic's, energy storage, and flexible displays) that require high-rate processing, low

Upcoming Events

July 26 - 30, 2009

[Microscopy and Microanalysis 2009](#)

July 26 - 30, 2009

[IEEE Nano](#)

July 26 - August 1, 2009

[International Composites/Nano Engineering Conference](#)

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[Seeing at the Nanoscale VII](#)

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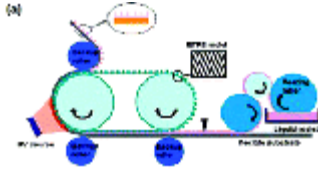
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materials cost and an ability to functionalize or modify the BCP template.

[More...](#)

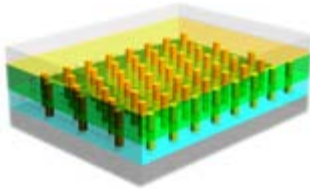
Progress Towards High-Throughput Continuous Nanoimprinting



Nanoimprint lithography (NIL) has emerged as a leading candidate for high throughput, high resolution nanoscale

patterning for devices such as flat panel displays, photonics, or organic optoelectronics. Growing interest in integrated nanomanufacturing on flexible substrates for these and related applications underscores the need to develop rapid throughput NIL techniques conducive with continuous roll-to-roll processes. Ahn, et. al., describe a process for large-area Roll-to-Roll and Roll-to-Plate nanoimprint lithography that represents a significant step towards integration of emerging nanomanufacturing techniques with high throughput production infrastructure. [More...](#)

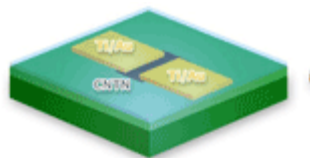
Nanopillars Promise Cost-Effective Photovoltaics



Researchers at the Lawrence Berkeley National Laboratory and the University of California Berkeley report advances in the

fabrication of cost-effective photovoltaics based on bottom-up nanostructured materials. Their model offers a versatile path to the manufacture of low-cost solar modules. [More...](#)

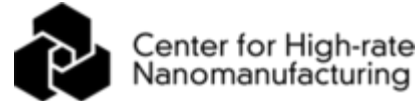
Aerosol Synthesis of Carbon Nanotube Networks for Thin Film Transistors



The thin film transistor (TFT) has been developed over the past two decades for applications in large area devices, most

notably displays. The predominant technology has been hydrogenated amorphous silicon. Recent developments in organic TFTs over the past decade

Affiliated Centers



Recently Published

From Our Affiliates

Robust and Responsive Dendrimer-Gold Nanoparticle Nanocomposites via Dithiocarbamate Crosslinking
[Advanced Materials 21\(22\): 2323+](#)

Hydrophobicity of Perfluoroalkyl Isocyanate Monolayers on Oxidized Aluminum Surfaces
[Langmuir 25\(12\): 6834-6840](#)

Magnetic Transitions in Ultra-Small Nanoscopic Magnetic Rings: Theory and Experiments
[Physical Review B 79\(18\): 184409](#)

A Model-Based Methodology for

offer low-cost alternatives when combined with large area printing and fabrication methods. Moreover, with a new emphasis on large area, flexible substrates for emerging applications--such as flexible displays and e-paper—low -temperature, low-cost, large-area processes are gaining significant momentum. [More...](#)

[Read more on](#) *InterNano*

On-Line Quality Control
[International Journal of
Advanced Manufacturing
Technology 42\(3-4\): 280-292](#)

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