

Workshop on the
Directed Assembly of Functional Materials and Devices
Invited Talks and Call for Posters

March 19-20, 2008

**Advanced Measurements Laboratory, 215/C103
National Institute of Standards and Technology
Gaithersburg, Maryland, USA**

Controlling the placement of nanoscale units into designed structures and patterns through directed assembly processes answers one of the grand challenges of nanotechnology. Innovative approaches using the directed assembly of nanoscale units are being developed to facilitate the nanofabrication of new materials and applications that can incorporate biological functionality, or devices such as flexible, large-area electronics devices. Directed assembly methods provide an opportunity to overcome limitations of traditional semiconductor processing; specifically, the small materials set with which to work, restriction to two dimensional patterning, and exorbitant equipment costs. Moving directed assembly from research demonstrations to viable manufacturing processes is difficult because it requires control over the simultaneous transport, placement, and interactions of a potentially large set of nanoscale units with different size, shape, and chemical functionality. New measurements and process control methods must be developed to enable the successful implementation of this groundbreaking technology.

Objectives

This workshop will bring together leading researchers and stakeholders from industry, government, and academia that are actively engaged in research and development of the directed assembly of nanoparticles into functional materials and devices. Through invited presentations and focused discussions, the workshop will explore and identify the most pressing measurement and technological needs to advance directed assembly as a viable manufacturing method for future nanotechnology applications.

Sessions:

- 1) Directed Assembly: Vision and Possibilities
- 2) Nanoparticles: Properties and interactions
- 3) Directed Assembly: Strategies and methodologies
- 4) **Open call for poster presentations**

Invited Speakers

Haw Yang (U.C. Berkeley), **Christopher Murray** (U.Penn), **Oleg Gang** (BNL), **Babak Parviz** (U. Washington), **Dan Herr** (SRC), **Mike Natan** (Oxonica), **Mike Bevan** (Johns Hopkins), **Abe Stroock** (Cornell), **Sharon Glotzer** (U.Michigan), **Heiko Wolf** (IBM), **Kate Stebe** (Johns Hopkins), **Chong Ahn** (U. Cincinnati), **CJ Kim** (UCLA), **Hiroshi Matsui** (CUNY Hunter College), **Alex Tkachenko** (Siluria), **Tobias Kraus** (Leibniz Institute for New Materials), **Theresa Mayer** (Penn State)

NIST Organizing Committee

**Steven Hudson, Jeseong Hwang, J. Alexander Liddle, Eric Lin,
Vivek Prabhu, Scott Stanley**

Please see the following urls for details and regular updates:

<http://polymers.nist.gov>

<http://cnst.nist.gov>

http://polymers.nist.gov/Directed_Assembly/Directed_Assembly_Workshop2.htm

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