

Invitation

Workshop on Combinatorial Approaches to Functional Materials May 5th and 6th 2014 in San Francisco, California

Dear Recipient,

It is a pleasure to invite you to the “**Workshop on Combinatorial Approaches to Functional Materials**”, with focus on Microelectronic, Energy-related, and Catalytic materials, on **May 5th and 6th, 2014 in San Francisco, CA**.

The Workshop is expected to draw nearly 100 experts from Industry, Academia, National Labs and the U.S. Government, as well as participants from abroad. Supported by the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST) and the Office of Science and Technology Policy (OSTP), the Workshop is organized by Applied Materials Inc., a leading provider of innovative solutions to the Semiconductor, Display and Energy industries, and the University of South Carolina.

Purpose

The Materials Genome Initiative (MGI), announced by President Obama in 2011, aims to support U.S. institutions to discover, develop, and deploy advanced materials twice as fast, at reduced cost. While much progress has been made in foundational computational techniques, materials deployment and commercialization would benefit greatly from the increased support of experimental data. Combinatorial approaches to synthesize, characterize, and catalog material properties provide an important tool toward these aims.

Today, combinatorial methods are firmly established and commercialized in the field of pharmaceutical research and biosciences. However, combinatorial applications for inorganic materials are less mature, although there are vigorous research activities and some commercialization in the academic and industrial communities. The purpose of this Workshop is to assess current challenges in combinatorial methodologies as applied to microelectronic, energy-related, and catalytic materials, and **to create a plan to develop the infrastructure required to enable a sustained Materials Genome Initiative (MGI) approach to novel materials**.

The first day will include brief topical presentations, breakout groups and large group discussions, fostering dialogue between experimental, theoretical, modeling, data informatics, and commercial development practitioners. Discussions on the second day will be directed towards identifying significant and transformative opportunities for the private sector, academia, and Federal Government to advance outcomes of national importance through high throughput experimental materials methodologies.

Please come prepared for a highly interactive Workshop—your active participation will significantly influence the future of the field.

Sincerely,

The Workshop Organizing Committee

P.S.: This event has been announced on the Federal Register. Due to limited space, we encourage you to sign up as soon as possible.

Workshop Organizing Committee Contact Information:

<p>Dr. Charina L. Choi Office of Science and Technology Policy, Washington, DC Direct: (202) 456-6025 Mobile: (202)-672-0179 Email: cchoi@ostp.eop.gov</p>	<p>Prof. Stefano Curtarolo Duke University, Durham, NC Direct: (919) 660-5310 Email: stefano.curtarolo@duke.edu</p>
<p>Dr. Martin L. Green (<i>Technical Conference Chair</i>) National Institute of Standards and Technology, Gaithersburg, MD Direct: (301) 975-8496 Mobile: (240) 672-3360 Email: martin.green@nist.gov</p>	<p>Prof. Jason R. Hattrick-Simpers University of South Carolina, Columbia, SC Direct: (803) 777-4693 Mobile: (609) 315-1606 Email: simpers@cec.sc.edu</p>
<p>Dr. Ajey M. Joshi Applied Materials, Inc. Santa Clara, CA Direct: (408) 584-2453 Mobile: (408) 203-8728 Email: ajey_m_joshi@amat.com</p>	<p>Prof. Ichiro Takeuchi University of Maryland, College Park, MD Direct: (301) 405-6809 Email: takeuchi@umd.edu</p>

**WORKSHOP ON COMBINATORIAL APPROACHES TO FUNCTIONAL MATERIALS - AGENDA
SAN FRANCISCO, CA - May 5-6, 2014**

Monday, May 5

8:00 AM Registration and Breakfast

Introductory Remarks:

8:45 AM Kickoff – *(Martin Green, Group leader, NIST)*

Welcome – *(Om Nalamasu, CTO, Applied Materials)*

Topical Overviews:

9:15 AM Synthesis and Metrology of Combinatorial Material Libraries - *Ichiro Takeuchi (U. Maryland)* (20 min)
Discussion (10 min)

9:45 AM Electronic Materials and Applications - *Martin L. Green (NIST)* (20 min)
Discussion (10 min)

10:15 AM **Break**

10:35 AM Energy-related Materials and Applications - *John Perkins (NREL)* (20 min)
Discussion (10 min)

11:05 AM Catalytic Materials and Applications – *Billy Bardin (Dow Chemical)* (20 min)
Discussion (10 min)

11:35 AM Integration of Theory and Experiment - *Kristin Persson (LBL)* (20 min)
Discussion (10 min)

12:05 PM **Lunch**
Goals for the Field— *(Tom Kalil, OSTP)*

Panel Discussion:

1:05 PM Commercialization of High Throughput Technologies

Presentations (10 min. each) from:
Steven Kaye (Wildcat Discovery Technologies - Battery technology)
David Lazovsky (Intermolecular - Advanced Memory)
Howard Turner (Kinestral Technologies - Smart Windows)
Brian Hayden (Ilika - Electronic Materials)
Discussion (45 min)

2:30 PM **Break**

Breakout Sessions:

2:50 PM Guidance on Goals and White Paper (15 min.)

3:05 PM Discussions within five topical groups.

Session leaders:

Library Synthesis/Metrology

Jason Hatrick-Simpers (U. South Carolina), Sara Barron (NIST)

Electronic Applications

David Thompson (Applied Materials), Toyohiro Chikyow (NIMS, Japan)

Energy-related Materials

Bill Tumas (NREL), Bruce van Dover (Cornell)

Catalytic Materials

Jochen Lauterbach (U. South Carolina), John Gregoire (Caltech)

Theory/Experiment

Carla Gomes (Cornell), Jim Warren (NIST)

4:05 PM Reports out from Breakout Sessions (10 min. each)
Large-group discussion (20 min.)

5:15 PM Networking Reception (hosted by Applied Materials)

Tuesday, May 6

8:00 AM Breakfast

Panel Discussion:

8:30 AM Specifying and Funding the Necessary Infrastructure to Enable a Sustained MGI Approach to Novel Materials in the U.S.

Panelists:

Bill Tumas (NREL)

Bruce van Dover (Cornell)

Carla Gomes (Cornell)

David Thompson (Applied Materials)

Jason Hatrick-Simpers (U. South Carolina)

Jim Warren (NIST)

John Gregoire (Caltech)

Jochen Lauterbach (U. South Carolina)

Sara Barron (NIST)

Toyohiro Chikyow (NIMS, Japan)

10:00 AM **Break**

10:15 AM Building the Framework of the White Paper

12:00 PM End of workshop