

Agenda

**American Energy & Manufacturing
Competitiveness Partnership: Dialogue 6**
Accelerating Advanced Materials Manufacturing

May 8, 2015

Hosted by: **Dr. Edward Ray**
President
Oregon State University and

Dr. Cynthia Powell
Director, Office of Research and Development
National Energy Technology Laboratory

Location: **Food Innovation Center**
Oregon State University
1207 NW Naito Pkwy #154
Portland, OR 97209

Time: 8:00 a.m. – 4:30p.m.

Attire: Business

Contacts: Drew Steigerwald 740-816-3142
Chad Evans 703-945-7917

Wi-Fi: **TBD**

8:00 a.m. Registration and Light Breakfast

8:30 a.m. Welcome and Opening Remarks

Mr. Chad Evans

Executive Vice President
Council on Competitiveness

Dr. Edward Ray

President
Oregon State University

Dr. S. Julio Friedmann

Principal Deputy Assistant Secretary for Fossil Energy
U.S. Department of Energy

Dr. Cynthia Powell

Director
Office of Research & Development
National Energy Technology Laboratory

9:00 a.m. Briefing on the Goals and Objectives of the Clean Energy Manufacturing Initiative (CEMI)

This session will describe the thrusts and new developments in the Department of Energy (DOE) Clean Energy Manufacturing Initiative (CEMI), created in the Office of Energy Efficiency and Renewable Energy (EERE) and joined by the Offices of Fossil Energy (FE) and Nuclear Energy (NE). This overview will highlight the critical role of advanced materials—and in particular, a national initiative around accelerating the manufacturing of such materials—plays in achieving the overarching goals of CEMI.

Mr. Reuben Sarkar

Deputy Assistant Secretary for Transportation
Office of Energy Efficiency & Renewable Energy
U.S. Department of Energy

9:15 a.m. Extreme Environment Materials

DOE has a vested interest in facilitating the design, development, and deployment of advanced materials—in particular those that exist and operate in extreme environments or under harsh conditions. These materials enable technologies that cross-cut DOE—applications such as A-USC and supercritical CO₂ power cycles, advanced nuclear cycles, advanced turbines, safe and reliable drilling, geothermal cycles, industrial waste heat recovery, and

concentrated solar power cycles. This session will give an overview of the work at NETL in these areas and lay a foundation for the following sessions focused on accelerating these material systems into the marketplace.

Dr. Cynthia Powell

Director
Office of Research & Development
National Energy Technology Laboratory

9:30 a.m. Identifying Common Challenges

Moderator: **Mr. Chad Evans**
Executive Vice President
Council on Competitiveness

Advanced materials includes a wide range of materials, applications and processes—from nanoscale films and coatings, to advanced alloys and composites, to innovative recycling processes. In spite of this diversity, a number of common challenges exist that—if addressed—could accelerate the development and deployment of a wide range of materials and technologies into the marketplace.

In this opening session, participants will introduce themselves and discuss what—from their perspective—are the most significant challenges to furthering the manufacturing of advanced materials in the U.S.

Questions to consider:

- What does the term “advanced materials” mean to you and your organization?
- How do you see your role in the research, development and deployment of advanced materials and materials-based technologies?
- What challenges do you perceive as being barriers to the manufacturing scale-up and deployment of advanced materials and what are potential solutions?

10:45 a.m. Coffee Break

11:00 a.m. Aligning Resources and Capabilities with Needs

Moderator: **Dr. Cynthia Powell**
Director, Office of Research and Development
National Energy Technology Laboratory

Three barriers have been highlighted as important to unleashing the potential for deployment of advanced materials faster in the United States: insufficient access to capital, insufficient access to shared

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infrastructure, and high technical risks. In this discussion, participants will suggest tools and capabilities to include in a national initiative that could help overcome these barriers, in addition to other shared barriers identified in the first session.

Questions to consider:

- What potential “platform” technologies—those technologies or investments that could benefit a number of different classes of advanced materials—would be most effective at accelerating new materials into the marketplace?
- In developing and deploying advanced materials, where is access to capital most critical? Where is it most constrained? What innovative financing mechanisms could be applied to accelerate advanced materials into the marketplace?
- What types of shared infrastructure are most useful and effective? To what degree can the right shared infrastructure derisk potential investments in new advanced materials?

Kickoff Discussants:

Mr. Chris Colbert
Chief Strategy Officer
NuScale

Mr. Matthew Carter
Associate Technical Fellow
The Boeing Company

Mr. Robert “Skip” Rung
President & Executive Director
Oregon Nanoscience and Microtechnologies Institute (ONAMI)

12:15 p.m. Lunch and Lab Tour

The Food Innovation Center is a joint initiative between Oregon State University (OSU) and the Oregon Department of Agriculture (ODA) to foster the success of food and agricultural enterprises by supporting food innovation throughout all industry sectors. The FIC is located in the Pearl District of Portland, OR.

1:30 p.m. The Role of Modeling: Developing a Virtual Materials Design and Testing Platform

Moderator: **Dr. Ron Adams**
Interim Director, Vice President for Research
Oregon State University

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Many researchers and companies are accustomed to designing, developing, and deploying materials based on experiments and experience. Incorporating virtual design and testing into this process has the potential to increase competitiveness and energy productivity. Dialogue participants will discuss the major challenges in implementing virtual design and testing and steps needed to overcome these challenges.

Questions to consider:

- What is the potential virtual materials design to spur innovation and solve challenges you face in the design and development of new materials and technologies?
- What are the barriers to wider adoption and use of virtual materials design and testing?
- What strategic investments could leverage existing resources and capabilities in virtual materials design that would create real and extensive impact?

Kickoff Discussants:

Mr. Greg Mulholland

Co-Founder and Chief Operating Officer
Citrine Informatics

Dr. Suresh Baskaran

Chief Science and Technology Officer, Energy and Environment Directorate
Pacific Northwest National Laboratory

Dr. Mark Hartney

Director, Office of Strategic Planning
SLAC National Accelerator Laboratory

2:45 p.m. Coffee Break

3:00 p.m. Accelerating Advanced Materials Manufacturing Next Steps

Moderator: **Dr. S. Julio Friedmann**
Principal Deputy Assistant Secretary for Fossil Energy
U.S. Department of Energy

Dialogue participants will discuss different structures for a public-private partnership (or program) that create clear and concise guidelines as well as potential funding mechanisms for this potential national initiative (managed by consortia, user-facility, NNMI, privately funded incubator, etc.).

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Discussants will share their perspectives on the necessary markers along a roadmap to creating an initiative around accelerating advanced materials manufacturing.

Questions to consider:

- What are gaps that could be immediately addressed—and are they financing, policy, and/or technology gaps?
- What are necessary steps in the roadmap for the next 2-5 years that ensure effectiveness, accessibility, and differentiation from existing public-private partnerships?
- What are the critical features in public-private partnerships that lead to success?
- How can a national initiative based on advanced materials encourage participation across the private sector – across industries, companies of all sizes, and technological expertise?

Kickoff Discussants:

Dr. Kristen Bloschock

Advanced Materials Lead, Advanced Manufacturing
Lockheed Martin Corporation

Mr. Jeff Dyck

Senior Vice President and President, Steel Manufacturing Business
Schnitzer Steel Industries, Inc.

Mr. David Kenney

President & Executive Director
Oregon Built Environmentally Sustainable Technologies

4:15 p.m. The Path Forward

Dr. Edward Ray

President
Oregon State University

Dr. Cynthia Powell

Director, Office of Research and Development
National Energy Technology Laboratory

Dr. S. Julio Friedmann

Principal Deputy Assistant Secretary for Fossil Energy
U.S. Department of Energy

Mr. Chad Evans

Executive Vice President
Council on Competitiveness

4:30 p.m. Conclude and Reception