Introduction and Review of the Research Needs Identified in the 2004 Instrumentation and Metrology Workshop

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Abstract

Experts in manufacturing processes, measurement science and tools, and computational methods will meet to set research goals and chart other next steps necessary to convert progress in nanotechnology into safe, practical products. In addition, the workshop will focus on advancements since the January 2004 NNI Grand Challenge workshop on Instrumentation and Metrology (report now available at: www.nano.gov). The workshop will focus on the identification of technical challenges that need to be undertaken as well as the directions the community feels it needs to take going forward. A set of research recommendations will be identified will be compiled from discussions at the workshop.

Organized by the federal Interagency Working Group on Manufacturing Research and Development (R&D), the *Workshop on Instrumentation, Metrology, and Standards for Nanomanufacturing* will feature presentations by R&D managers in a variety of industries, including electronics, aerospace, chemical, and paper. Facilitated break-out sessions will be devoted to identifying key technical challenges that stand in the way of achieving safe, reliable, and cost-effective manufacturing methods needed to make products envisioned for markets and applications ranging from biotechnology and health care to advanced materials and consumer electronics.

Workshop discussions will yield recommendations for future research to enable the manufacture of real-world nanotechnology products. These will help to guide the interagency working group, which was established by the National Science and Technology Council to coordinate federal R&D efforts that respond to economic or other national needs and to help U.S. manufacturers leverage these efforts into a competitive technological advantage.

The workshop will conclude with an industry-led Nanotechnology/Nanomanufacturing Stakeholder Meeting, which will focus specifically on predictive modeling capabilities and elements of a nanotechnology design infrastructure.