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Instrumentation, Metrology, and Standards for Nanomanufacturing, Optics, and Semiconductors VI

**Michael T. Postek
Victoria A. Coleman
Ndubuisi G. Orji**
Editors

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Introduction

The Instrumentation, Metrology, and Standards for Nanomanufacturing, Optics, and Semiconductors VI (Conference 8466) brought together a broad spectrum of scientists and manufacturing engineers into a common forum to discuss the issues associated with measurements and standards for nanomanufacturing. Nanomanufacturing is the essential bridge between the discoveries of nanoscience and real world nanotech products and it is the vehicle by which the world will realize the promise of major technological innovation across a spectrum of products that will affect virtually every industrial sector. For nanotech products to achieve the broad impacts envisioned, they must be manufactured in market-appropriate quantities in a reliable, repeatable, and commercially viable manner. In addition, they must be manufactured so that environmental and human health concerns are met, worker safety issues are appropriately assessed and handled, and liability issues are addressed. Critical to this realization of robust nanomanufacturing is the development of the necessary instrumentation, metrology, and standards. Integration of these instruments, interoperability, and information management are also critical elements that must be considered for viable nanomanufacturing. Advanced instrumentation, metrology and standards allows the physical dimensions, properties, functionality, and purity of the materials, processes, tools, systems, products, and emissions that will constitute nanomanufacturing to be measured and characterized. This will in turn enable production to be scalable, controllable, predictable, and repeatable to meet market needs. If a nano-product cannot be measured it cannot be manufactured; additionally if that product cannot be made safely it also should not be manufactured.

The Instrumentation, Metrology, and Standards for Nanomanufacturing, Optics, and Semiconductors VI is a relatively new conference, but is now beginning to develop a constituency and the goal is to become the leading forum for the exchange of foundational information and discussion of instrumentation, metrology, and standards which are needed components of nanomanufacturing. The conference was composed of 28 papers broken up into six technical sessions with the highlight of this year's conference being the plenary session covering various aspects of roll-to-roll nanomanufacturing. A great advantage of this conference is its diversity of technical content. This diversity facilitates cross pollination of various disciplines and reinforces the multidisciplinary nature of nanotechnology.

Michael T. Postek
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