

# PROCEEDINGS OF SPIE

## ***Instrumentation, Metrology, and Standards for Nanomanufacturing II***

**Michael T. Postek**  
**John A. Allgair**  
*Editors*

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## Introduction

We are in a time of great technological change in manufacturing. The pace of this change is increasing very rapidly and “nanomanufacturing” is slowly emerging as a viable entity. Instrumentation, metrology, and standards are the key infrastructural underpinnings of the emerging nanotechnology enterprise. Advances in fundamental nanoscience and, ultimately, manufacturing of new nanotechnology-based products all depend to a great degree on our capability to accurately and reproducibly measure the properties and performance characteristics at the nanometer scale. Both physical and documentary standards are needed to ensure product consistency worldwide. New nanotechnology-based industries that mass-produce products will require high-performance, cost-effective, reliable instrumentation and improved measurement methods to meet the requirements of effective manufacturing. Along with these comes the need for effective collection, transmission, and interpretation of measurement information and data.

As new nanostructures emerge and are fabricated, assembled, and manufactured into usable products, standardization for instrumentation and metrology will be vital for providing quality control and ensuring reproducible performance. Globally accepted standards for measurement, and identification of properties and structures at the nanoscale, are necessary to ensure an even playing field for products to compete successfully in the International marketplace. The 2008 SPIE Conference on “Instrumentation, Metrology and Standards for Nanomanufacturing” continued this theme begun in 2007. This is a forward-looking conference geared to assist the manufacturers of nano-based products to have the tools, measurement infrastructure, and standards needed for mass production, so that they may be able to take advantage of the economies of scale. The goal of this conference is to become the forum for the exchange of foundational information and discussion of instrumentation, metrology, and standards which are the key to the success of nanomanufacturing, because “if you cannot measure it you cannot manufacture it.”

**Michael T. Postek**

