

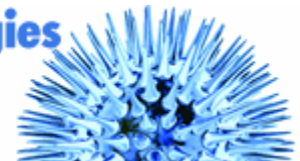
# Day 1 Scene Setting Summary



**NIST**



**Nanotechnologies**  
International Workshop  
26-28 February 2008



# Desired Workshop Outcomes

Overarching Goal: facilitate the movement of nanotechnology innovations from a research to a market environment, while ensuring human health and environmental safety

## Workshop Objectives:

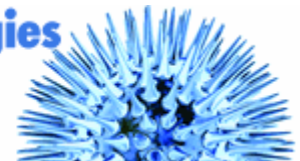
- Identify short- and medium-term documentary standards needs
- Identify measurement solutions needed to support development of documentary standards
- Consider who will work on what
- Identify mechanisms for continued information sharing and coordination



NIST



**Nanotechnologies**  
International Workshop  
26-28 February 2008



# Scene-setting Summary

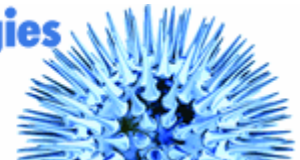
- Much work is underway in multiple venues
  - Industry and governments are active
  - Less activity/understanding by end users
- Industry venues: ASTM International, IEEE-SA, SEMI
- Standards Developing Venues like: ASTM International, IEC, IEEE-SA, ISO, SEMI, etc.
- Government regulator venues: OECD
- NMIs: VAMAS, measurement research



NIST



**Nanotechnologies**  
International Workshop  
26-28 February 2008



# Range of Current Documentary Standards Activities

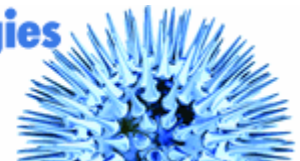
- “Traditional” standards committees addressing nano-scale issues: ASTM E42 and others, IEEE product committees, SEMI, ISO and IEC sector/application specific committees
- Horizontal activities: ASTM E56, IEEE nanotechnology roadmap, IEC TC113, ISO TC 229
- Supporting work: VAMAS, OECD WPMN, NMI research



NIST



**Nanotechnologies**  
International Workshop  
26-28 February 2008



# Focus of Current Work

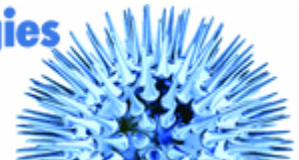
- Terminology
- Instrument-based measurement/characterization
- Data gathering
- Standard practices, standard test methods



**NIST**



**Nanotechnologies**  
International Workshop  
26-28 February 2008



# Measurement/Documentary Standards Interface

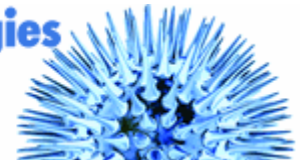
- Nanomaterials are time- and environment-dependent and measurements are instrument-dependent
  - What is a traceable measurement?
  - Are measurements reproducible?
  - How much is enough?
- Reference materials are needed, but differences of opinion exist on approach
- Nanotechnology is both multi-disciplinary and multi-measurement dependent
  - Is a measurement strategy needed?
  - Is a comprehensive standards roadmap needed?
  - What about regulators' interest in EHS?
- Need to connect the measurements we conduct and the properties/behaviors we are trying to predict



NIST



**Nanotechnologies**  
International Workshop  
26-28 February 2008



# Needs/Gaps

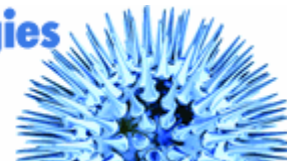
- Market Need
  - Is there a need, and if there is how do we determine?
  - Who will use the standard?
- Improved communications
  - Trusted central repository of information on who is doing what
  - Sharing of information/work programs within SDOs and across SDOs
  - Sharing of information between NMIs and OECD on the one hand and SDOs on the other
  - Where or how to use existing data, documents, etc.



NIST



**Nanotechnologies**  
International Workshop  
26-28 February 2008



# Needs/Gaps

- Fundamental knowledge gaps
  - Need to complete research in a range of areas to support standards (in vitro vs. in vivo)
  - Need to understand more about the fundamental science underlying measurement and characterization techniques
  - NMIs can help standardizers bring metrological principles to bear
  - Do we know what to measure?
- Measurement and characterization
  - What are top priorities, how much is enough?
- Supporting reference materials
  - RM, CRM, SRM hierarchy needs to be clear
- Interoperability across database and file formats



NIST



**Nanotechnologies**  
International Workshop  
26-28 February 2008

