Nanotechnology Standardization Activities
– Domestic and Global –
A quick trip through history
Impact of Standardization

Roughly **80 percent** of global merchandise trade is affected by standards and by regulations that embody standards.

**Source:**
National Institute of Standards and Technology
Testimony before the U.S. House of Representatives
Committee on Science, Subcommittee on Technology
September 13, 2000
Key Terms

Standards
**Market-driven** product and service specifications (e.g., technical requirements, management systems, etc.)

Regulations
**Mandatory** technical specifications, which may include particular standards or conformity assessment procedures

Conformity Assessment
**Processes and systems** used to verify the compliance of a product to either a standard or a regulation (e.g., testing, certification)
Why Nanotechnology Standards Are Important

- Encourage the development and commercialization of new technologies
  - Improve communication among stakeholders
  - Foster innovation – encourage diffusion of new technologies
  - Lower barriers to market entry
  - Promote market efficiency
- Protect public health and environment
  - Serve as one of the bases for regulations
ANSI leads the U.S. private-sector led standards and conformity assessment systems.

- Advances the national economy
- Benefits the public health, safety, welfare and environment
- Facilitates domestic and international trade, commerce, communications and understanding
The ANSI mission is to enhance the global competitiveness of U.S. business and the American quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems and ensuring their integrity.
ANSI’s Representation of U.S. Interests

- U.S. member of ISO
- U.S. member of the IEC, via ANSI’s U.S. National Committee
- Member of regional forums in the Pacific Rim and the Americas
- Liaison with groups in Europe, Africa and the Middle East
- Bilateral agreements with other national standards bodies
Facilitation, Coordination and Harmonization

- ANSI’s Standards Panels
  - Cross-sector coordinating bodies established to promote the development and compatibility of voluntary consensus standards and conformity assessment programs necessary to support national and global priorities
    - Coordinate the efforts of the private and public sectors
    - Identify existing standards and compliance programs
    - Define where gaps exist
    - Recommend where additional work is needed
Standards and compliance solutions for domestic and global priorities

- 2004: Nanotechnology Standards Panel
- 2005: Healthcare Information Technology Standards Panel
- 2006: ID Theft Prevention and ID Management Standards Panel
- 2007: Biofuels Standards Panel
ANSI Nanotechnology Standards Panel (NSP) Formation

...I am writing to inquire whether the ANSI would consider coordinating the development of standards, including nomenclature, in the area of nanotechnology ...

— Dr. John Marburger, Director Office of Science and Technology Policy Executive Office of the President June 15, 2004
ANSI Nanotechnology Standards Panel
www.ansi.org/nsp

- A cross-sector coordinating body responsible for facilitating the development of standards supporting nomenclature/terminology; materials properties; and testing, measurement and characterization procedures

- Chair
  - Dr. Clayton Teague, Director
    National Nanotechnology Coordination Office

- Membership
  - Nearly 70 members representing academia, government, industry, standards developing organizations, and legal entities
U.S. Interface to ISO via Technical Advisory Groups

U.S. Leadership in ISO/TC 229
Between 1947 and the present day, ISO published more than 15,000 International Standards. ISO's work program ranges from standards for traditional activities, such as agriculture and construction, through mechanical engineering, to medical devices, to the newest information technology developments, such as the digital coding of audio-visual signals for multimedia applications.
ISO/TC 229, Nanotechnologies

- Established in June 2005
  - Led by the United Kingdom
  - Currently 35 Participating member bodies and 10 Observer member bodies
  - Works in cooperation (i.e., liaison) with organizations such as OECD, VAMAS, Asia Nano Forum and others

**Specific tasks include** developing standards for: terminology and nomenclature; metrology and instrumentation, including specifications for reference materials; test methodologies; modeling and simulations; and science-based health, safety, and environmental practices.
ISO/TC 229 Working Groups

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<tr>
<th>Working Group 1</th>
<th>Working Group 2</th>
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<tr>
<td>Terminology and Nomenclature</td>
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<td>Define and develop unambiguous and uniform terminology and nomenclature in the field of nanotechnologies to facilitate communication and to promote common understanding.</td>
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<td>Metrology and Characterization</td>
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<td>The development of standards for measurement, characterization and test methods for nanotechnologies, taking into consideration needs for metrology and reference materials.</td>
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<td>Health, Safety and Environment</td>
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<td>The development of science-based standards in the areas of health, safety, and environmental aspects of nanotechnologies.</td>
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<td>Materials Specification</td>
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<td>Scope still under development</td>
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ISO/TC 229 Programme of Work

http://www.iso.org/iso/standards_development/technical_committees/list_of_iso_technical_committees/iso_technical_committee.htm?commid=381983

ISO Technical Committee

ISO/TC 229
Nanotechnologies

ANSI-Accredited
U.S. Technical Advisory Group

U.S. TAG
ISO/TC 229
Nanotechnologies

There is a direct relationship between the scope of an ISO TC and a corresponding U.S. Technical Advisory Group (TAGs)
Summary: Organizational Relationships

ISO Technical Committee 229
Nanotechnologies

U.S. Technical Advisory Group (TAG) to ISO TC 229
Nanotechnologies

International Organization for Standardization

U.S. Member of the ISO
U.S. TAG to ISO/TC 229

- Over 55 members from various stakeholder organizations
  - Government, NGOs, SDOs, Industry, Academia
- Responsible for formulation of U.S. positions on technical and administrative issues brought before ISO/TC 229, including
  - Nominates and approves accredited experts to participate ISO/TC 229 Working Groups and Project Group activities
  - Nominates and approves delegates to attend ISO/TC 229 meetings
  - Develops and submits NWIP to ISO/TC 229 for standardization
- Within the United States, the U.S. TAG to ISO/TC 229 works cooperatively with the USNC TAG to IEC TC 113
Nanotechnology Standardization Activities – Domestic and Global
Heather Benko, ANSI

TAG WG 1
Terminology and Nomenclature

TAG WG 2
Measurement and Characterization

TAG WG 3
Health, Safety and the Environment

experts

experts

experts

experts
Engage and Influence

ISO/TC 229
Nanotechnologies

→

Working Group experts
U.S. delegates
Project leaders
Committee officers

→

U.S. TAG
ISO/TC 229
Nanotechnologies
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www.ansi.org/nsp | www.ansi.org/isotc229tag