ISO TC229 and Advanced/Emerging Materials

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ANSI-NSP Workshop on Advanced Materials

August 20, 2020

ISO TC229 Scope

Standardization in the field of nanotechnologies that includes either or both of the following:

- *Understanding and control of matter and processes at the nanoscale, typically, but not exclusively, below 100 nanometres in one or more dimensions where the onset of size-dependent phenomena usually enables novel applications,*
- *Utilizing the properties of nanoscale materials that differ from the properties of individual atoms, molecules, and bulk matter, to create improved materials, devices, and systems that exploit these new properties.*

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Advanced/emerging materials?

ISO TC229 Scope

Size-dependent phenomena that enable novel applications are not strictly limited to the nanoscale (1-100 nm) as reflected in the scope. Examples:

- Agglomerates and aggregates with important three-dimensional structures formed from nanoparticles can be larger than 100 nm;
- Materials with unique/novel size dependent properties may consist of particle beyond 100 nm or with only a fraction of particles below 100 nm. In these cases, standards for nanomaterial and larger sized materials expressing the same properties/phenomena would ideally be consistent for commerce;
- In the medical field, materials engineered to exhibit properties or phenomena, including physical or chemical properties or biological effects, that are attributable to their dimensions, even if these dimensions fall outside the nanoscale range (e.g. up to 1000 nm) have been considered as applications of nanotechnology.

ISO TC229 Activities related to advanced/emerging materials

- JWG1 Terminology
  - Study Group on definitions for advanced/emerging materials
- JWG2 Metrology
  - Measurement standards for graphene
  - Study Group on liposomes
- WG3 Health, Safety and Environment
  - Roadmap includes “nanomaterials and other advanced/emerging materials”

ISO TC229 Activities related to advanced/emerging materials (cont.)

- WG4 Material Specifications
  - Standardization of the characteristics and test methods used in specifications for business to business transactions
  - Superparamagnetic beads
  - Porous alumina/silica

- WG5 Product Performance
  - Performance-based standards for nano-enabled or nano-enhanced products and applications
  - Biomedical applications: nanosensors

Opportunities

- Focus on materials with unique, novel and emergent properties rather than an arbitrary size scale by expanding scope to include advanced/emerging materials
- Reinvigorate TC229 activities
- Continue utilizing and building on existing standards development framework, knowledge and expertise
  - Proactive paradigm for standards development
  - Horizontal structure for foundational standards to facilitate successful introduction of new materials into production and commercialization

Challenges

- Need to define “advanced/emerging materials”
- Need to limit the scope
  - Exclude bulk materials, incidental nanoparticles, biomacromolecules, traditional materials, etc.
- Need to allay concerns of other TCs about scope infringement
- Need to attract additional experts

Thank you!

For more information, contact CDC
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