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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Nanotechnologies -- Terminology and definitions for
nano-objects -- Nanoparticle, nano-fibre and nanoplate**

纳米科技 纳米物体的术语和定义 纳米颗粒、纳米纤维和纳米片

(English Translation)

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules.

This standard uses the translation method identical with ISO/T S27687.2008 "Terms and definitions nanoparticles nanotechnology nano objects, Nanofibers and nano-chip. " this standard was proposed by the Chinese Academy of Sciences.

This standard by the National Standardization Technical Committee of nano technology (SAC/TC279) centralized.

This standard was drafted. National Center for Nanoscience.

Introduction

Authoritative institutions predict that nanotechnology will be over and all areas of life, such as communication, health, manufacturing, materials science and technology and infrastructure capacity Students tremendous impact. Therefore, in order to promote and regulate the development of application-related technologies, the need for industry and research institutions to develop and provide the appropriate technical Standard surgery. In addition, in terms of managers, health and environmental protection agencies, based on a sound and a sound system to establish a reliable standard of measurement system Systems and evaluation rules is indispensable.

In the field of nanotechnology, although small in size, with microscopic techniques, the researchers are still common in everyday life to the shape of the object is satisfied M Material name. "Na" means 10-9, namely 1nm = 10-9m.

The standard will cover nanotechnology-related particles vocabulary. In order to establish a uniform standard, we introduced a new technique of nano objects, etc.

Language to form a rational, structured term hierarchy. The system created a hierarchy way vocabulary, containing the terms and technique in nanotechnology Language in the hierarchy. This standard provides a current list of related terms and phrases in this field. This standard is nanotechnology terminology system Part, aimed at promoting nanotechnology related industry, government organizations, community interaction and related parties.

This standard is to define the terms of these nano-objects. These objects have different shapes. This standard relates to the three basic shape Shaped like shown in Figure 1.

a) nanoparticles b) nanorods c) nanosheets 1 a schematic view of the shape of some nano-object diagram in between this standard there are many words hierarchy, Figure 2 illustrates this hierarchy.

2 and nano-object hierarchy diagram related terms Terms and definitions of nanotechnology nano-objects Nanoparticles, fibers and nano-sheet

1 Scope

This standard gives a particle in the field of nanotechnology-related terms and definitions, aimed at promoting nanotechnology related industry, government Governmental organizations, community interaction and related parties.

2 Associated with the particle core terms

Nanoscale

In the size range between 1nm ~ 100nm.

Note 1: This size range is usually, but not exclusive demonstration of larger size can not be extrapolated from the property. For these properties, the upper scale, the lower limit is similar.

Note 2: This definition is introduced in the lower (about 1nm) The purpose is to avoid a single atom or atom clusters believed to be nano-objects or nano-structural units.

Nano-object One-, two- or three external dimensions at the nanoscale (2.1) objects.

Note: The generic term for all discrete nanoscale objects.

3 Particles and aggregates term

Nano-objects (such as nano particles, nano-fibers and nano-sheet, see Chapter 4) generally (large) clumps, rather than discrete form.

Due to the surface energy, which may occur between the nano coexist interacting bodies. In describing this type of interaction, usually used to order Under terms. The following terms apply to different sizes and shapes of objects. Taking into account the terms of the integrity

and importance of nanoscale in introducing the following terms.

Particle

With defined physical boundaries of a small portion of the material.

[ISO 14644-6:2007, the definition 2.102]

Note 1: A border can also be seen as an interface.

Note 2: A particle can move as a whole.

Note 3: This definition applies to the universal particle nano objects.

Aggregates agglomerate Accumulation weakly bound particles, aggregates or a mixture of both, the sum of its external surface area of \u200b\u200ba single particle surface area similar.

Note 1: Aggregates and support forces are weak forces, such as van der Waals forces or simple physical entanglement.

Note 2: The aggregates are also known as secondary particles, and the source of particles is called primary particles.